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Arizona Department of Mines and Mineral Resources Mining Collection

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PRINTED: 01/17/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: COPPERSTONE

ALTERNATE NAMES:
MOON MOUNTAIN
CYPRUS COPPERSTONE GOLD

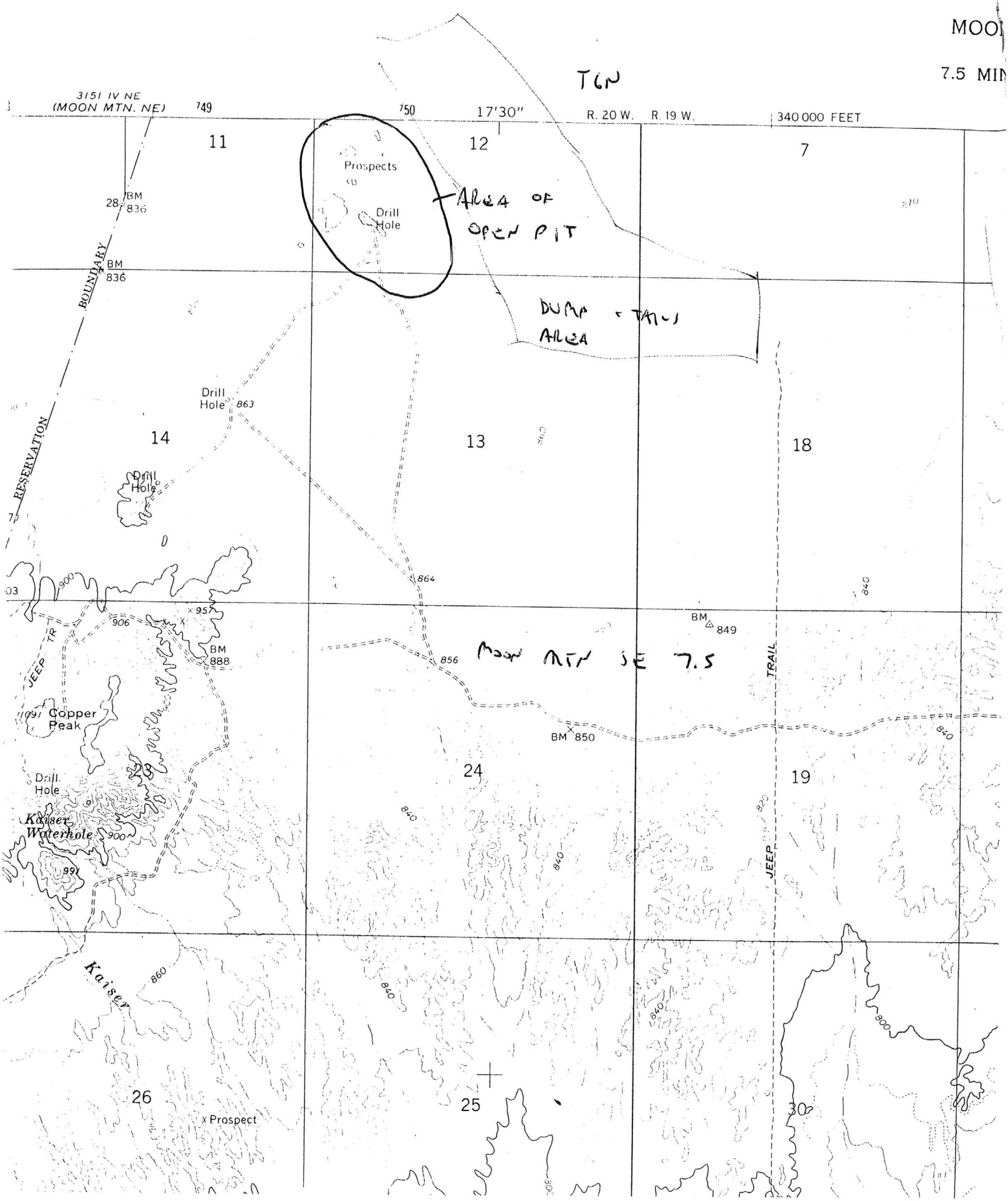
LA PAZ COUNTY MILS NUMBER: 795

LOCATION: TOWNSHIP 6 N RANGE 20 W SECTION 12 QUARTER SW
LATITUDE: N 33DEG 52MIN 21SEC LONGITUDE: W 114DEG 17MIN 57SEC
TOPO MAP NAME: MOON MTN SE - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
GOLD

BIBLIOGRAPHY:
ADMMR COPPERSTONE MINE FILE
AGS VOL 15 P. 8
AGS 1988 SPRING FIELD TRIP GUIDE
PLANT PROCESS FLOWSHEETS -ADMMR ROLLED MAPS
PHOTO FILE - P4


MOO
7.5 MIN
T6N
3151 IV NE
(MOON MTN. NE)
749
750
17'30"
R. 20 W.
R. 19 W.
340 000 FEET
11
12
7
Prospects
Drill Hole
AREA OF OPEN PIT
DUMP + TAILS AREA
BM 836
BM 836
RESERVATION BOUNDARY
Drill Hole 863
14
13
18
Drill Hole
864
900
957
906
BM 888
JEEP TR
856
MOON MTN SE 7.5
BM 849
TRAIL
Copper Peak
BM 850
840
23
24
19
Drill Hole
Kaiser Waterhole
900
991
840
840
JEEP
Kaiser
860
840
840
800
26
25
30
x Prospect

USGS - MRDS DDS 20
Printed: July, 1998

RECNO	TC00084
REC_TYPE	S
USER_FIELD	*U94/2
REP_DATE	89 12
FIL_LINK	USBM 0040120006, CIMRI MIO
REP	BOLM, KAREN S.
REP_AFF	USGS
DIST	MOON MOUNTAINS DISTRICT, LA PAZ DISTRICT
COUNTY	LA PAZ
STATE_CODE	AZ
CTRY_CODE	US
PHYS	12 BASIN AND RANGE
DRAIN	15
LAND_ST	49
ELEV	880 FT
UTM_N	3751253.
UTM_E	750673.9
UTM_Z	+11
TOWNSHIP	006N
RANGE	020W
SECTION	12
SECT_FRACT	NE
MERIDIAN	GILA AND SALT RIVER
POSITION	18 MILES S OF PARKER ON E SIDE OF COLORADO RIVER, 12 MILES N OF QUARTZSITE.
LOCATION	SITE CONSISTS OF 290 UNPATENTED MINING CLAIMS LEASED BY CYPRUS, COVERING 5800 ACRES OF FEDERAL LAND. ; INFO FROM LAND.ST :(1992)
SITE	COPPERSTONE
LAT	33.8736
LONG	-114.2900
CTRY_NAME	UNITED STATES
COMMOD	AU AG BA
ORE_MAT	GOLD, CHALCOPYRITE, PYRITE
COMMOD_COM	PRESENCE OF QUARTZ, HEMATITE, AND CHRYSOCOLLA IS A GOOD INDICATOR OF GOLD MINERALIZATION.
MAJOR	AU
CLH_USE	94/07/11
TRACE	AG BA
PROD	L
LOC_STRUCT	PROBABLE FAULT SEPARATING JURASSIC METAMORPHOSED VOLCANIC ROCKS AND OVERLYING SEDIMENTARY BRECCIAS DERIVED FROM THEM.
STATUS	7
YR_DISC	1979
NAT_DISC	B
YRFST_PROD	1987
YRLST_PROD	ACTIVE
OWNER	CYPRUS MINERALS CORPORATION (1991), DON PATCH RETAINS ROYALTY RIGHTS (1988)
OPER	MORRISON-KNUDSEN (1989)
EXPL_COM	LIFE OF PROJECT IS ESTIMATED AT 7-9 YEARS. NO PREVIOUS MINING OCCURRED AT THIS SITE. UNDERGROUND DEVELOPMENT WAS STOPPED BY CYPRUS IN 1990 DUE TO LOWER GOLD PRICES AND BECAUSE OF CAVING GROUND CONDITIONS WHICH REQUIRED COSTLY SUPPORT METHODS. CYPRUS MAY CONSIDER REACHING THE FORMER UNDERGROUND MINING TARGETS FROM THE SURFACE. ; TOTAL$: 25 ; MILL$: 13.9 ; ECON.YEAR: 1987
DEP_TYPE	SHEAR ZONE
DEP_FORM	TABULAR
DEPTH_TOP	0-100

D_T_U	FT
MAX_LEN	3000.
M_L_U	FT
MAX_THICK	1000.
M_T_U	FT
DEP_SIZE	M
STRIKE	N30W
DIP	32NE
DDESC_COM	GOLD IN A BRECCIA UNIT ABOVE A LISTRIC FAULT, IN QUARTZ LATITE BELOW THE LISTRIC FAULT, AND IN BASALT PLUGS. THE BASALT PLUGS HAVE THE LEAST MINERALIZATION. THE LISTRIC FAULT IS IN THE UPPER PLATE OF A DETACHMENT FAULT. THE MINERALIZED CONTACT ZONE EXTENDS HORIZONTALLY FOR 3,000 FT AND AT LEAST 1,000 FT DOWN DIP AND IS GENERALLY SEVERAL TENS OF FT THICK.
QUAD250	SALTON SEA
OV_LEN_WK	2900
O_L_U	FT
OV_WID_WK	1200
O_W_U	FT
DWORK_COM	THE BENCH OPEN PIT WILL BE 360 FT DEEP.
MIN_AGE	MIO OR YOUNGER
NORE_MINS	BARITE, QUARTZ, SPECULAR HEMATITE, CHRYSOCOLLA, EARTHY RED HEMATITE, MALACHITE, FLUORITE, ADULARIA, MAGNETITE, CALCITE, MANGANESE OXIDES, AMETHYST
ORE_CNTL	FAULTS AND BRECCIATION, DETACHMENT FAULTING
REG_STRUCT	MOON MOUNTAINS DETACHMENT FAULT
ALTER	SERICITIZATION, SOME CHLORITIZATION
CONT_CODE	NA
GEOL_COM	FRACTURE AND FAULT FILLING WITH HYDROTHERMAL BRECCIATION OF QUARTZ LATITES.
GEN_COM	INFO.SRC : 1 PUB LIT
REF	WALENGA, KAREN, 1987, NEW OPERATION TO DOUBLE ARIZONA GOLD PRODUCTION: SOUTHWESTERN PAY DIRT, NO. 581, P. 4A-5A.|WALENGA, KAREN, 1988, CYPRUS STARTS WORK ON UNDERGROUND MINE AT COPPERSTONE: SOUTHWESTERN PAYDIRT, NO. 592, P. 5A.|SPENCER, J.E., DUNCAN, J.T., AND BURTON, W.D., 1988, THE COPPERSTONE MINE: ARIZONA'S NEW GOLD PRODUCER: ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY FIELDNOTES, V. 18, NO. 2, P. 1-3.|PETERSON, E.K., AND DUPREE, J.A., 1993, PRELIMINARY INVESTIGATION OF BULK MINABLE GOLD DEPOSITS, COLORADO RIVER INDIAN RESERVATION, ARIZONA AND CALIFORNIA, IN MANYDEEDS, S.A., AND SMITH, B.D., EDS., MINERAL FRONTIERS ON INDIAN LANDS: BUREAU OF INDIAN AFFAIRS DIVISION OF ENERGY AND MINERAL RESOURCES, P. 35-42.|NIEMUTH, N.J., 1987, ARIZONA MINERAL DEVELOPMENT 1984-1986: ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES DIRECTORY 29, 46 P.|SAWYER, M.B., GURMENDI, A.C., DALEY, M.R., AND HOWELL, S.B., 1992, PRINCIPAL DEPOSITS OF STRATEGIC AND CRITICAL MINERALS IN ARIZONA: UNITED STATS BUREAU OF MINES SPECIAL PUBLICATION, 334 P.|MINERAL TODAY, 1/90, P. 26.
CONT_NAME	NORTH AMERICA
STATE_NAME	ARIZONA
WORK_TYPE	S
AP_ITEM	AU|AU|AU
AP_ACC	ACC|EST|EST
AP_AMT	6.|60.|1.953
AP_U	TOZ|TOZ|KG
AP_YEAR	1987|1988|1988
AP_GRADE	UNSPECIFIED|UNSPECIFIED|UNSPECIFIED

AP_SOURCE	WALENGA, 1987, P. 4A; SAWYER AND OTHERS, 1992; MINERAL TODAY, 1990.
AP_COM	COPPERSTONE WILL BE THE LARGEST GOLD PRODUCER IN ARIZONA AND WILL MORE THAN DOUBLE THE STATE'S 1986 GOLD OUTPUT OF 42,556 OZ.
RPR_ITEM	AU ORE (UNDERGROUND)|AU ORE (PIT)|ORE-PROV|ORE-PRO V
RPR_ACC	EST|EST|ACC|ACC
RPR_AMT	1100|5800|4000.|6000.
RPR_U	ST|ST|ST|ST
RPR_YEAR	1988|1987|1986|1987
RPR_GRADE	0.18 OZ/ST|0.08 OZ/ST|0.09 OZ AU/ST|0.085 TOZ AU/ST, SURFACE
RPR_SOURCE	WALENGA, 1988, P. 5A; NIEMUTH, 1987.
ECON_COM	TOTAL WORK FORCE OF ABOUT 105, WITH 65 CONTRACT MINERS FOR M-K AND 40 CYPRUS EMPLOYEES; PRODUCTION COSTS ARE ABOUT $200 PER OZ
ENV_COM	13.9 HYDROLOGOIC UNIT CODE CALCULATED 3-94 USING GIS OVERLAY ANALYSIS WITH 1:1000000(EST) SCALE FEDERAL OWNERSHIP BOUNDARIES.
MILL_CAP	2500 T/D
UPD_DATE	90 09; 93 11
UPDATER	BERGER, MARY A.; ORRIS, GRETA J.
COMMOD_TYP	B
QUAD24	MOON MOUNTAIN NE; MOON MOUNTAIN SE
DATE_ISSUE	95/5/18
UPD_AFF	USGS; USGS
PROF_ID	100
PROF_LOC	100
PF_COMMOD	100
PROF_EXPL	100
PFDESC_DEP	25
PFDESC_WRK	100
PROF_GEOL	42
PROF_REF	100
PPROD_RESV	40
PROF_ALL	78
HR_AGE_MV	JUR
HR_TYPE_MV	BRECCIA, METAMORPHOSED QUARTZ LATITE, BASALT
DEP_CODE	11200
HUC	15030106

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992 La Paz County

CYPRUS GOLD COMPANY
Cyprus Copperstone Gold Corp.

Copperstone T6N R20W Sec. 12
P.O. Box AI, Parker, AZ 85344 - Phone (619) 665-9261 - Employees: 115 (Includes 60 Morrison-Knudsen contract miners) - Located 12 miles north of Quartzsite - Open pit gold mine - Cyanide agitation leach - Rated capacity 2,850 TPD.

Resident Manager George R. Burns
Plant Superintendent Kurt G. Markola
Administrative Supervisor Mark A. Browning
Mine Superintendent Jay L. Cupp
Geologist Graham L. Kelsey
Senior Mine Engineer Joe F. Hatrick
Mill Maintenance Supervisor Emmett P. Sours
Operation Supervisor Gary R. Eastham
Human Resource & Safety Supervisor Susan P. Fullmer

COPPERSTONE UG (F) LA PAZ

NEWS RELEASE

Bonanza

TSX Venture Exchange
Trading Symbol: BZA

AMERICAN BONANZA ENCOUNTERS MULTI-OUNCE GOLD GRADES IN UNDERGROUND SAMPLES AT COPPERSTONE

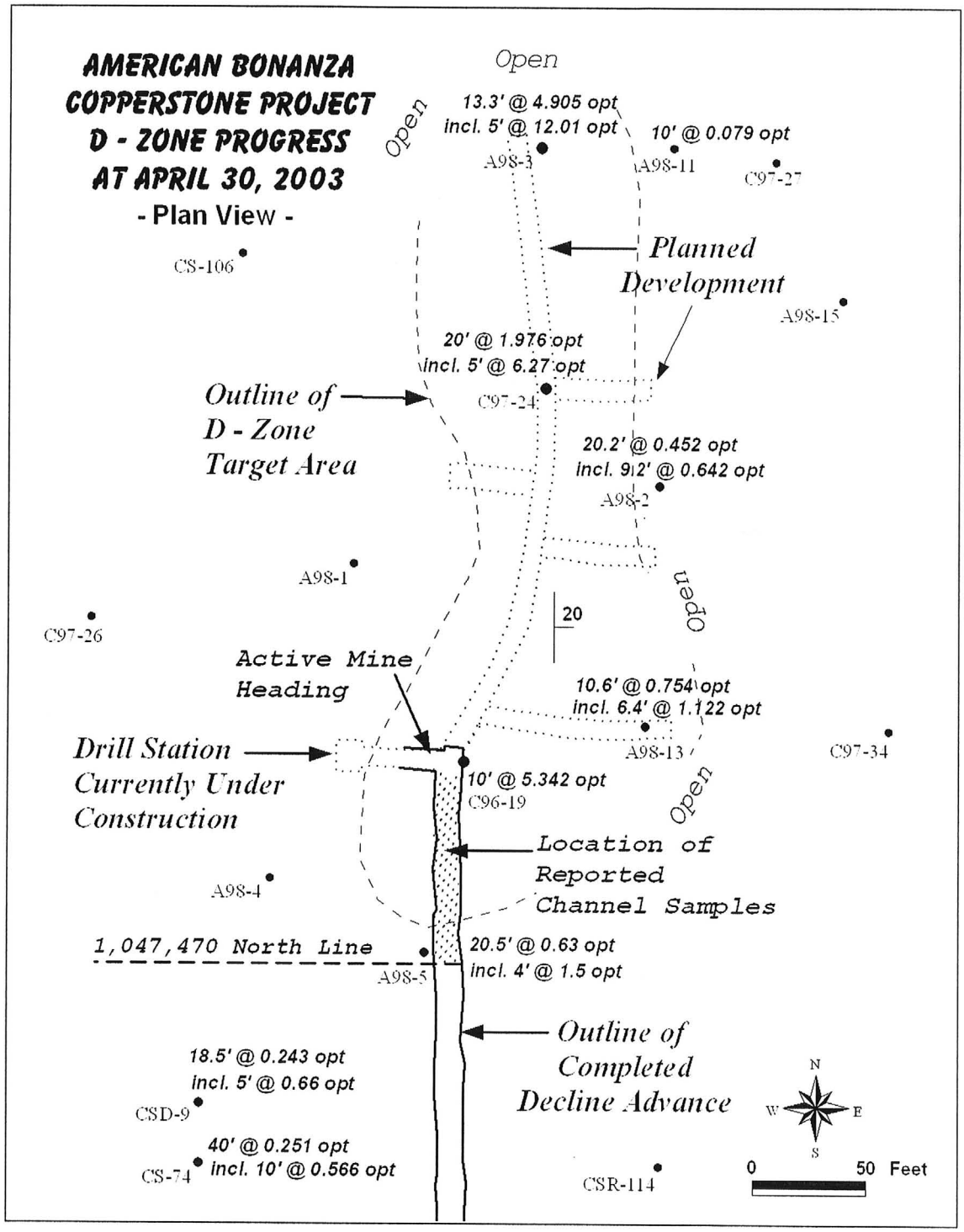
May 5, 2003- **AMERICAN BONANZA GOLD MINING CORP.** ("Bonanza") is delighted to announce that the underground decline at the Copperstone Project in Arizona has encountered very high gold grades in the initial target: the southern portion of the D-Zone.

North of gridline 1,047,470 North, (please refer to the attached plan map) a total of 42 channel samples were collected from face and rib exposures during the mining of eight rounds covering 80 linear feet. The channel sampling is designed to characterize the mineralization of various rock types. All samples contain gold, and sample values range to a high of 11.5 ounces per ton ("opt") gold and average 1.2 opt gold; a complete listing of the assay results is provided as part of this news release, in the table below.

Significant multi-ounce channel samples include 4.5 feet grading 9.1 opt gold, 1.5 feet grading 11.5 opt gold, 6.4 feet grading 4.1 opt gold, 9.5 feet grading 4.1 opt gold, 2.1 feet grading 3.6 opt gold, 2.1 feet grading 3.2 opt gold, and 5.1 feet grading 2.9 opt gold.

Underground channel sampling confirms the gold mineralization in the initial drill hole within the D-Zone encountered to date by the underground development. Drill hole C96-19 is a core hole drilled from surface that lies within the D-Zone, about 80 feet North of the southern margin of the D-Zone. Drill hole C96-19 represents Bonanza's initial target within the D-Zone and contains 10 feet grading 5.3 opt gold, as previously announced. Channel sampling from the same mining round that exposes drill hole C96-19 in the back of the underground workings (about 5 feet south of drill hole C96-19) returned values of 9.5 feet grading 4.1 opt gold, 4.5 feet grading 9.1 opt gold, and 4 feet grading 1.9 opt gold – which confirms the very high gold content of drill hole C96-19, with locally higher grades.

As expected, routine channel sampling south of gridline 1,047,470 North (south of the D-Zone) did not return significant gold assays as this area lies outside of the D-Zone target area. A comprehensive panel sampling program has commenced to characterize the gold grade of the mineralized horizons, and design of an assay protocol tailored for very high grade samples has begun, which will examine the performance of metallic screen fire assays, multi-assays, and/or large assay charges up to 5 assay ton charges. Future sampling will focus on panel samples using the very high grade assay process.


AMERICAN BONANZA
COPPERSTONE PROJECT
D - ZONE PROGRESS
AT APRIL 30, 2003
- Plan View -
Open
Open
13.3' @ 4.905 opt
incl. 5' @ 12.01 opt
10' @ 0.079 opt
A98-3
A98-11
C97-27
CS-106
Planned
Development
A98-15
20' @ 1.976 opt
incl. 5' @ 6.27 opt
Outline of
D - Zone
Target Area
C97-24
20.2' @ 0.452 opt
incl. 9.2' @ 0.642 opt
A98-2
A98-1
Open
20
C97-26
Active Mine
Heading
10.6' @ 0.754 opt
incl. 6.4' @ 1.122 opt
A98-13
C97-34
Drill Station
Currently Under
Construction
10' @ 5.342 opt
C96-19
Open
Location of
Reported
Channel Samples
A98-4
1,047,470 North Line
20.5' @ 0.63 opt
incl. 4' @ 1.5 opt
A98-5
Outline of
Completed
Decline Advance
18.5' @ 0.243 opt
incl. 5' @ 0.66 opt
CSD-9
40' @ 0.251 opt
incl. 10' @ 0.566 opt
CS-74
CSR-114
N
W
E
S
0
50 Feet

The underground workings at Copperstone now extend over 1,800 feet northward from the portal site at the northern end of the Copperstone Open Pit and provide access to the D-Zone mineralization.

Brian Kirwin, Bonanza's President and CEO stated: "These impressive results support the Company's view of the very high grade potential of Copperstone. Completion of the decline into the D-Zone and the confirmation of the mineralization indicated by surface drill holes represent major milestones in the development of the Copperstone project."

The attached underground plan map of the D-Zone provides a current picture of progress at the D-Zone. Completion of the decline to this point was recently delayed as ground conditions were encountered that required extra ground support for safety. Bonanza has established an effective stabilization program for these localized conditions and will schedule accordingly.

Intensely sheared, altered and replaced rock has been encountered in the decline within the D-Zone. Alteration is consistent with alteration visible in the very high grade intervals in the core holes previously drilled from surface which currently define the D-Zone.

Surface drilling indicates that the Copperstone Fault in the D-Zone is thought to be from ten (10) to forty (40) feet thick; none of the channel sampling to date tests the true thickness of the target zone. The decline has been designed to intersect the Copperstone Fault in the D-Zone at the mineralized interval within drill hole C96-19. In other areas, the high grade portions of the Copperstone Fault may be above or below the decline and will be defined by underground core drilling.

Currently a cross cut is being driven westward to establish an underground drill station. Underground sampling programs continue in the active mine heading. An underground core drilling rig will be mobilized to Copperstone after the drill station development is complete. Extensive core drilling from underground will locate and define the grade profile of the Copperstone Fault in the D-Zone and is scheduled to commence during May.

Subsequent underground core drilling, drifting, cross-cutting and sampling will provide detailed assay and geologic data describing the D-Zone. This detailed data is planned to be sufficient to refine the D-Zone resource estimation into reserve-level definition. This work comprises the next stage of underground work at Copperstone, and has already begun.

A summary of assay results from the channel samples is as follows, presented generally from North to South, with grades over 0.1 opt gold highlighted for convenience:

Channel Sample Number	Sample Length (feet)	Gold Grade (opt Au)		Channel Sample Number	Sample Length (feet)	Gold Grade (opt Au)
North end of sampling, adjacent to DH#C96-19						
9077	**9.5**	**4.07**		**1718**	**2.7**	**0.41**
9078	**4.0**	**1.90**		**1719**	**2.8**	**0.55**
9079	**4.5**	**9.09**		1720	2.8	0.04
1761	**2.1**	**0.15**		**1716**	**1.7**	**0.20**
1759	**5.1**	**2.86**		**1721**	**0.5**	**0.14**
1758	**2.7**	**0.34**		**1762**	**2.1**	**3.58**
1754	**5.6**	**0.31**		**1740**	**1.5**	**11.54**
1756	0.5	0.06		**1741**	**2.5**	**0.58**
1757	2.6	0.07		1742	1.0	0.08
1732	1.8	0.02		1743	1.6	0.01
1733	1.4	0.01		**1710**	**6.4**	**4.12**
1734	2.0	0.01		**1696**	**2.7**	**0.15**
1735	**1.4**	**0.42**		**1695**	**2.6**	**0.29**
1736	**1.1**	**0.17**		1691	2.9	0.06
1737	5.0	0.07		**1692**	**3.0**	**0.27**
1738	**3.1**	**0.13**		1694	2.8	0.03
1739	3.2	0.05		1693	3.1	0.09
1729	1.9	0.02		1687	4.1	0.03
1728	**2.2**	**2.68**		**1688**	**1.8**	**0.23**
1727	**4.6**	**0.93**		**1689**	**2.8**	**0.30**
1717	**2.1**	**3.22**		1686	1.1	0.03
				South end of sampling: 1,047,470 North		

DETAILED INFORMATION

The Copperstone gold mineralization occurs within a package of sedimentary and volcanic rocks, in northwest striking, moderate to shallow dipping fault zones, principally the Copperstone Fault. Intensely sheared, altered and replaced rock characterizes the Copperstone Fault in the vicinity of the D-Zone. Alteration consisting of intense hematite and magnetite replacement, chloritization and silicification has been observed in the Copperstone Fault underground and is consistent with alteration visible in the very high grade intervals in the core holes previously drilled from surface which currently define the D-Zone.

Gold mineralization is restricted to these fault zones, with little to no gold mineralization present in the wallrocks. Future exploration and development efforts will target these mineralized faults to follow up along strike and dip from the current results and previously drilled mineralization.

Mining services were provided by a mining contractor, Merritt Construction Company of Kingman Arizona, under direct supervision of Bonanza personnel. The current heading is designed to be 11 feet wide by 12 feet high. The sampling and assaying were conducted by Bonanza personnel under the supervision of Gregory French, CPG #10708, a Qualified Person as defined in Canadian National Instrument 43-101.

The channel samples were collected by Bonanza personnel at the face of each mining round, and were selected on a geological basis to characterize the gold mineralization associated with various rock types, alteration types and structural horizons. Because the channel sampling was designed to characterize the gold mineralization of various rock types, some samples were collected specifically to confirm that some particular rock types do not contain gold.

The channel samples were collected at assorted orientations, and generally are perpendicular to the feature characterized. Because the Copperstone Fault dips gently to the east, many channel samples were collected from a near vertical channel.

The channel samples average 2.8 feet in length, with a minimum of 0.5 feet and a maximum length of 9.5 feet. Sample sizes range between 10 and 20 pounds, averaging 15 pounds. True thickness of the Copperstone Fault at the D-Zone is thought to be from ten (10) to forty (40) feet thick from surface drilling, and none of the channel sampling to date tests the true thickness of the target zone. Approximately five samples were collected from the face and rib of each mining round (predominantly the samples were collected from the face). The general spacing of samples is as follows: approximately five samples were collected at each face, and spacing between the mining faces averages ten feet.

The channel samples were bagged, labeled and tied at the Copperstone project site by Bonanza personnel. Reference samples for each interval were collected and stored in plastic bags. Geologic information was recorded on standardized sample description forms which included color, rock type, alteration, mineral species and abundance.

Samples were collected at the end of each day and stored in a secure facility at the Copperstone project site. Two or three times weekly Bonanza personnel transported the samples to America West Airlines' airfreight desk at the regional airport at Lake Havasu City, Arizona.

America West Airlines transported the samples to the airport in Reno, Nevada. There, representatives of American Assay Laboratories (AAL) in Sparks, Nevada received the samples and took custody of the samples. AAL is ISO / IEC 17025 certified and has successfully completed Canadian proficiency testing (CCRMP).

At the AAL laboratory, the channel samples were dried, crushed to –10 mesh, pulverized to –150 mesh, split to 1,000 gram pulps, fire assayed for gold and silver using 1- and 2-assay ton fire assay with a gravimetric finish. All samples greater than 0.100 opt, standards, and blanks were submitted to additional labs for verification. A total of 42 channel samples were sent for assay, and a total of 75 additional check assays were performed on these samples (for a total of 117 individual assays for these channel samples); the very high grade samples were thoroughly checked. An additional routine 27 duplicate, standard and blank assays were performed.

Check assays were submitted to BSI-Inspectorate, Sparks, NV and Chemex Labs, Sparks, NV for 2-assay ton gold analysis. Both labs are ISO 9002 certified. AAL or Bonanza personnel delivered the samples to the check labs.

ABOUT AMERICAN BONANZA

American Bonanza is engaged in the acquisition, exploration and development of high-grade gold properties. Bonanza's metallogenic exploration techniques represent state-of-the-art tools for modern exploration in the Great Basin of the American Southwest, and will be the catalyst for future corporate growth.

AMERICAN BONANZA GOLD MINING CORP.

(signed) Brian Kirwin
President and Chief Executive Officer

The TSX Venture Exchange has not reviewed and does not accept responsibility for the adequacy or accuracy of this news release.

For further information call or write:
Brian Kirwin, President and Chief Executive Officer (775) 824-0707
Giulio T. Bonifacio, Executive Vice President and Chief Financial Officer (604) 699-0023

VERBAL INFORMATION SUMMARY

FILE: **Copperstone**

COUNTY: La Paz

DATE: 1-11-96

BY: Diane Bain

INFORMATION FROM: Dan Patch, 6850 N. 86th St., Scottsdale, AZ 85250, 602-483-8367.

Dan Patch verified by phone that Royal Oak Resources, 1425 W. Pender St., Vancouver, BX V6G 2S3, 604-682-8320, is still drilling his property. They have completed reverse circulation drilling and are currently diamond drilling. Patch reports the results are quite favorable.

VERBAL INFORMATION SUMMARY

FROM: Diane Bain

DATE: 2/15/95

MINE: Copperstone, La Paz County

Jim Kostreva of Cyprus Copperstone Gold, P O Box AI, Parker, Arizona 85344, reports that reclamation at Copperstone is nearly complete and Cyprus will be closing the office within a few months.

VIS6.4

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Information from: **Cyprus Minerals 10K (1990)**

   Company:

   Address:

2. Phone:

3. Mine: **Copperstone**

4. ADMMR Mine File:

5. County: **La Paz** MILS Number:

6. Summary of information received, comments, etc.:

   1990 Gold production: 106,500 tr. oz.

   1990 Reserves at end of year: 3,200,000 ton @ 0.069 tr. oz./ton

   RESERVE DEPLETION ANTICIPATED DURING 1993

Date: **April 25, 1991** Engineer: **Ken A. Phillips**

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Mine file: COPPERSTONE
2. Mine name if different from above:
3. County: La Paz
4. Information from: M. Browing and Bill Burton

   Company: Cyprus Copperstone Gold Corp.

   Address: P.O. Box AI

   Parker, AZ 85344

   Phone: 619-665-9261

5. Summary of information received, comments, etc.:

Cyprus Copperstone now has a rated mill capacity of 2,850 TPD and on good days can achieve 3,000 TPD. Sinking of the decline to develop the underground portion of the deposit is now underway and additional exploration drilling will occur underground as it will be far more cost effective. Open pit reserves are now approximately 8 million tons containing about 800,000 ounces of gold.

Date: October 17, 1988

Nyal J. Niemuth, Mining Engineer

9/21/87

Cyprus Gold

Parker phone number 669-2186 619-665-9261

address:
601 Riverside
Riverside Plaza #11
Parker, AZ 85344

mailing:
P.O. Box AI
Parker, AZ 85344

Copperstone:

Radio phone 619-922-6244

This is the address they put on to get things direct to the mine site - cyprus & copperstone mine site
13 miles north of Quartzsite, AZ on Arizona 95 and than 5 miles west on Plant Road

COPPERSTONE LA PAZ COUNTY

RRB WR 6/12/87: Brad Giles of Morrison Knudson reports that they have the contract to mine the Copperstone for Cyprus. He wanted to know who had to be notified or what permits are required. Someone from M-K will be in Monday or Tuesday for "Pertinent Facts."

RRB WR 7/17/87: Cyprus has both ball mills and the office complex at Copperstone (file) La Paz County.

NJN WR 8/14/87: Herm Bauer, Cyprus Minerals Co (card) reported that Cyprus does not fully understand the Copperstone (file) La Paz County, geology as it is difficult to learn much from the rock chips of rotary drilling, but believes that mining the deposit will prove insightful. They have planned an aggressive exploration program in the area and anticipate mine start-up will occur in October, 1987.

NJN WR 9/18/87: Attended the Maricopa AIME meeting. Maggie McGee, Mine Manager, gave a presentation on Copperstone (file) La Paz County. I have written a summary of his report and circulated it. Additionally, five drawings on the mill plant preocess design were donated to the Department. They have been added to the upstaris map collection.

NJN WR 11/27/87: M. M. McGee, Manager of Copperstone (file) La Paz County reported that they had their first pour of dore, a small one, on November 12. The grand opening will be held in January.

NJN WR 12/29/87: Phil Blacet (card) reported that there are two major low angle breccias at the Copperstone (file) La Paz County and that one may actually be a volcanic breccia and one of the others could be a thrust. Mr. Blacet also confirmed the age of the host rocks as 55 million years old. The mineralization however, may be of a different age or be syngenetic to the volcanic rocks.

NJN WR 2/12/88: Visited on my own time the Copperstone (file) La Paz County, viewing the facility and taking pictures. Site personnel report public visittation is allowed from 8:00 to 5:00 after checking in and receiving hard hats and safety glasses.

COPPERSTONE LA PAZ COUNTY

NJN WR 3/21/86: It was reported that the age of the mineralization at the Copperstone (f) La Paz Co. is 50 million years old. If this is true, then it is older than the middle to late Tertiary extensional detachment faulting!

NJN WR 10/31/86: Called Ms. Abercrombie of Cyprus Mines (c), Denver office, for active mines information. She reported that construction at the Copperstone (f) La Paz County will start in January, production should start in July if permitting and construction goes as anticipated. Tom O'Neil will be the project manager. There will be no local address until the project has progressed further, contact should be made through the Denver office.

NJN WR 2/13/87: Chuck Bentzen (c) reported that Cyprus Minerals (c) has appointed M. M. McGee to be mine manager of their Copperstone property (file) La Paz Co.

KAP WR 3/20/87: In the company of Mike Greeley and with Alan Rabinoff of the BLM a visit was made to the Copperstone (file) property north of Quartzsite, La Paz County. Mindon "Maggie" McGee, who will be mine manager accompanied us on the property. A separate report has been written. The 3,000 ton per day open pit gold mine which was scheduled to come on stream by mid 1987 will now more than likely not come on stream until late fall of 1987.

NJN WR 4/10/87: Pete Reblitz reported that "Maggie" McGee, manager at Cyprus' Copperstone (file) La Paz County has established a temporary office in Parker Arizona whose address is P O Box 412, Parker, Arizona 85344, 669-8636.

KAP WR 5/1/87: Discussed plans at Cyprus Minerals' Copperstone (file) project, La Paz County with a reporter at the Arizona Republic. She was somewhat disappointed that the project was not opposed by the public.

NOTE DATE OUT OF SEQUENCE

NJN WR 4/24/87: Chuck Benson (card) reported that the 5 final contractors being asked to bid for the mining at Copperstone (file) La Paz County are: Industrial Construction, Morris Knutson, Peter Kiewit, Target and Johnson Brothers.

COPPERSTONE. LA PAZ COUNTY

NJN WR 7/13/84: It was reported that Amoco minerals has 10 million tons of .06 oz/ton Au blocked out at their Copperstone Project, (La Paz Co)

KAP WR 12/7/84: Frank Mack, Consulting Geologist, P O Box 2924, Littleton, Co 80122 phone (303) 799-6620 reported that he had worked for Amoco at their Copperstone project in La Paz County. He said he still trys to keep some sort of track of activities. There have been three drill rigs running at the property throughout 1984. However, 1985 expenditures are to be cut drastically. Thus far, the deposit size falls short of Amoco's minimum target size of 2,000,000 ounces of gold.

NJN WR 11/23/84: It was reported that AMOCO Minerals (c) currently has three drill rigs operating at their Copperstone Claims (f) La Paz Co.

CJH WR 1/17/86: Visitor: Thomas J. O'Neil, Manager, Business Development, Cyprus Metals Co., 7200 South Alton Way, P. O. Box 3299, Englewood, Colo. 80155; phone (303) 740-5219. Furnished him with our "Pertinent Data" cicular, the "Arizona Native Plant Lay" and a "Laws and Regs". The Copperstone Au operation (file) Yuma County is now under development. It will be an open pit with KCN heap leaching. The president of Cyprus Metals is Kenneth Barr.

NJN WR 2/28/86: Dan Patch (c) reported that the phone number for Cyprus Minerals (f) at their core shed for the Copperstone (f) La Paz Co. is 669-8636. The geologist in charge of the project there is Ron Graichen.

NJN WR 2/28/86: Ron Graichen project geologist for Cyprus' Copperstone (f) La Paz Co. reported that the property has reached the final drilling phase this winter with the fill in drilling on 100' centers. The company is currently evaluating the property to decide if development towards production should begin. Although not a mining engineer he believes a possible scenario for the property might employ 70 people for 6 years at a mining rate of 2000 tons per day. The company has tried for three years to negotiate a lease on the Colorado River tribal lands to the west without success. He promised to send us a copy of an abstract of the talk he presented on the deposit last fall at the North West Mining conference.

COPPERSTONE LA PAZ COUNTY

KAP WR 1/14/83: Amoco Minerals is reported to be pursuing a gold and silver target known as the Copperstone in La Paz County north of Quartzite. It is purported to have a large bulk potential.

RRB WR 1/21/83: Visited the Copperstone Claims of Amoco Minerals, Box 3299, Englewood, Colo. 80155. They apparently cover the Charles Ellis Claims and consist of 315+ claims in La Paz County. There was considerable equipment on the property and the watchman said that the crew left just before Christmas and would return to continue the drilling program on February 15, 1983.

MG WR 2/26/83: Amoco Minerals Co. (Subsidiary of Standard Oil of Indiana) reportedly has a gold prospect known as the Copperstone (La Paz Co.). The property is in the NE corner of T6N R20W. Amoco drilled the property in late 1982 and plans to drill again in the spring of 1983.

JHJ Memo 6/2/83: Amoco - Copperstone Project, T6N R20W Sec 12. Information from Mr. Tom Roder, caretaker for Mr. Dan Patch, owner of the claims. A Mr. Graham Kelsey is project geologist. Offices are in Parker in the Desert Winds Motel. A lady geologist named Leslie was at the drill rig. There was only one rig working. It was inaccessible to me due to the deep sand. I was advised not to go to the drill site. Depth of the sand was usually 30-50 feet deep. However, one hole went 600 feet to get through the sand. Mr. Roder had no information to provide. He assumed Amoco is looking for all kinds of minerals, not gold specificially.

NJN WR 2/24/84: Dan Patch (c) reported that Amoco Minerals has told him the Copperstone Project (Copperstone Claims) La Paz County is their number one project in the U.S. right now. They have millions of tons of economic grade Au delineated and are continueing to drill more. Art Humphry of Amoco's Minerals, Denver office, Ph: (303) 761-5921 is exploration manager of Copperstone.

ABSTRACTED FROM ADMMR 1986
DIRECTORY OF ACTIVE MINES
April 24, 1987

CYPRUS METALS CO.

7200 S. Alton Way, P.O. Box 3299, Englewood, CO 80155, Phone (303) 740-5000.

Copperstone

Temporary office in Colorado until production begins - Open pit gold mine - Located 15 miles north of Quartzsite - Under development - Production to begin mid 1987 - Anticipated production rate 2000 TPD agitation leach - Employees 70.

Project Manager ..... Thomas O'Neil

COMPLETE AND MAIL TO:

STATE MINE INSPECT
1624 WEST ADAMS, ROOM 208
PHOENIX, ARIZONA 85007-2606

COPPERSTONE (A)

FOR OFFICE USE ONLY
T-UP NUMBER 28117101
STATE NUMBER 10138400
MSHA NUMBER

Joe

JUL 1987

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statute Section 27-303, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start XX stop ____ move ____ (Please check one) a mining operation.

If this is a move, please show last location: ____
If you have not operated a mine previously in Arizona, please check here: ____ If you want the Education and Training Division to assist with your mine safety training, please check here: ____
If this operation will use Cyanide for leaching, please check here: ____

COMPANY NAME: Morrison-Knudsen Co., Inc

DIVISION: Mining Division

MINE OR PLANT NAME: Copperstone Gold Project **TELEPHONE:** 602-669-9832

CHIEF OFFICER: Duane E. Eubanks Mine Manager

COMPANY ADDRESS: P.O. Box Y

CITY: Parker **STATE:** AZ **ZIP CODE:** 85344

MINE OR PLANT LOCATION: (Include county and nearest town, as well as directions for locating property by vehicle: Situated in Yuma County approximately 21.5 miles south of Parker, Arizona on Hwy. 95. Project is located about 5.4 miles west of Mile post 122.

TYPE OF OPERATION: Surface/Open Pit **PRINCIPAL PRODUCT:** Gold

STARTING DATE: 22 June 1987 **CLOSING DATE:** January 31, 1990 **DURATION:** 31 Months

PERSON COMPLETING NOTICE: Duane Eubanks **TITLE:** Mine Manager

DATE NOTICE MAILED TO STATE MINE INSPECTOR: 16 June 1987

FORM 101-106 REV. 08/86

COPPERSTONE (f) 12 [illegible]

COMPLETE AND MAIL TO:

STATE MINE INSPECTOR
1616 WEST ADAMS, SUITE 411
PHOENIX, ARIZONA 85007-2627

STATE MINE INSPECTOR
JUL 27 1989

FOR OFFICE USE ONLY
START-UP NUMBER 98122182
STATE NUMBER 07 1163
DEPUTY NUMBER Joe
NEW ✓ MOVE

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statutes, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start ____, stop ____, move ____ an operation.

Please check the appropiate boxes: Contractor [XX], Owner [ ], Operator [ ]. Open Pit Mine [XX], Underground Mine [ ], Mill [ ], Quarry [ ], Aggregate Plant [ ], Hot Plant [ ], Batch Plant [ ], Smelter [ ], Leach Plant [ ].

If this is a move, please show last location: ____

If you have not operated a previously in Arizona, please check: ____ If you want the Education and Training Division to assist with your mine safety training, please check: ____

If this operation will use any hazardous material; ie. cyanide, please check: ____

COMPANY NAME: Stevens Drilling Company

MINE OR PLANT NAME: Cyprus Copperstone Gold

DIVISION: ____

CHIEF OFFICER: Raymond Stevens TELEPHONE: (801)864-3368

COMPANY ADDRESS: P.O. Box 175 268 West 500 North

CITY: Hinckley STATE: Utah ZIP CODE: 84635

MINE OR PLANT LOCATION: (include county and nearest town, as well as directions for locating property by vehicle): Parker Arizona, La Paz county

TYPE OF OPERATION: Exploration Drilling PRINCIPAL PRODUCT: Gold

STARTING DATE: May 19, 1989 CLOSING DATE: ____

PERSON COMPLETING NOTICE: Raymond Stevens TITLE: President

DATE OF REPORT TO STATE MINE INSPECTOR: 7/24/89

FORM 101-106 REV. 03/89

COPPERSTONE (A)

COMPLETE AND MAIL TO:

STATE MINE INSPECTOR
705 WEST WING, CAPITOL TOWER
PHOENIX, ARIZONA 85007-2859

STATE MINE INSPECTOR
MAY 12 1986

FOR OFFICE USE ONLY
START-UP NUMBER 6811/6087
STATE NUMBER 10039700
MSHA NUMBER _____

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statute Section 27-303, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start X stop _____ move _____ (Please check one) a mining operation.

If this is a move, please show last location: _____
If you have not operated a mine previously in Arizona, please check here: _____ If you want the Education and Training Division to assist with your mine safety training, please check here: X
If this operation will use Cyanide for leaching, please check here: X

COMPANY NAME: Cyprus Minerals Company

DIVISION: Gold

MINE OR PLANT NAME: Cyprus Copperstone **TELEPHONE:** 602-669-8636(Parker) 303-740-5621(Denver)

CHIEF OFFICER: M. D. Martin

COMPANY ADDRESS: Cyprus Minerals Co.-Copperstone,7200 S. Alton Way, Englewood, CO 80112
Cyprus Copperstone, Geronimo Street, Parker, AZ

CITY: Parker **STATE:** Arizona **ZIP CODE:** 85344

MINE OR PLANT LOCATION: (Include county and nearest town, as well as directions for locating property by vehicle: Approximately 18 miles south of Parker, and approximately 12 miles north of Quartzite on Highway 95, turning west on gravel road between milepost 121 and 122, Yuma County, Arizona.

TYPE OF OPERATION: open pit gold mine **PRINCIPAL PRODUCT:** gold

STARTING DATE: early to mid 1987 **CLOSING DATE:** unknown **DURATION:** 5-10 years

PERSON COMPLETING NOTICE: J. A. Sturgess **TITLE:** Environmental Coordinator

DATE NOTICE MAILED TO STATE MINE INSPECTOR: 5-7-1986

FORM 101-106 REV. 01/86

Circulate then file in Copperstone

EXHIBIT

OMB Approval No. 0348-0006

FEDERAL ASSISTANCE

2. APPLICANT'S APPLICATION IDENTIFIER	a. NUMBER	3. STATE APPLICATION IDENTIFIER	a. NUMBER
	b. DATE Year month day 19	NOTE TO BE ASSIGNED BY STATE	b. DATE ASSIGNED Year month day JAN 07 1987

1. TYPE OF SUBMISSION (Mark appropriate box)
- ☐ NOTICE OF INTENT (OPTIONAL)
- ☐ PREAPPLICATION
- ☐ APPLICATION

Leave Blank

SECTION I—APPLICANT/RECIPIENT DATA

4. LEGAL APPLICANT/RECIPIENT

a. Applicant Name	Bureau of Land Management
b. Organization Unit	Yuma District Office
c. Street/P.O. Box	3150 Winsor Avenue, P.O. Box 5680
d. City	Yuma
e. County	
f. State	Arizona
g. ZIP Code	85365
h. Contact Person (Name & Telephone No.)	Allan J. Belt, Area Mgr. ((602)726-6300 ask for James Atkins or Charles Botdorf)

5. EMPLOYER IDENTIFICATION NUMBER (EIN)

6. PROGRAM (From CFDA): a. NUMBER 15.999; MULTIPLE ☐; b. TITLE: DOI, BLM

7. TITLE OF APPLICANT'S PROJECT (Use section IV of this form to provide a summary description of the project.) DRAFT ENVIRONMENTAL ASSESSMENT FOR THE CYPRUS COPPERSTONE PROJECT-MINING PLAN OF OPERATIONS. APPLICANT HAS REQUESTED COMMENTS BACK BY THE 22ND OF JANUARY, 1987.

8. TYPE OF APPLICANT/RECIPIENT (A—State; B—Interstate; C—Substate Organization; D—County; E—City; F—Special District; G—Special Purpose District; H—Community Action Agency; I—Higher Educational Institution; J—Indian Tribe; K—Other (Specify)): FEDERAL AGENCY
Enter appropriate letter

9. AREA OF PROJECT IMPACT (Names of cities, counties, states, etc.): Yuma, Arizona

10. ESTIMATED NUMBER OF PERSONS BENEFITING

11. TYPE OF ASSISTANCE (A—Basic Grant; B—Supplemental Grant; C—Loan; D—Insurance; E—Other)
Enter appropriate letter(s)

12. PROPOSED FUNDING

a. FEDERAL	$ .00
b. APPLICANT	.00
c. STATE	.00
d. LOCAL	.00
e. OTHER	.00
f. Total	$ .00

13. CONGRESSIONAL DISTRICTS OF:
a. APPLICANT
b. PROJECT

14. TYPE OF APPLICATION (A—New; B—Revised; C—Revision; D—Continuation; E—Augmentation)
Enter appropriate letter: A

15. PROJECT START DATE Year month day 19

16. PROJECT DURATION Months

17. TYPE OF CHANGE (For 14c or 14e) (A—Increase Dollars; B—Decrease Dollars; C—Increase Duration; D—Decrease Duration; E—Cancellation; F—Other (Specify):)
Enter appropriate letter(s)

18. DATE DUE TO FEDERAL AGENCY ▶ Year month day 19

19. FEDERAL AGENCY TO RECEIVE REQUEST

a. ORGANIZATIONAL UNIT (IF APPROPRIATE)

b. ADMINISTRATIVE CONTACT (IF KNOWN)

c. ADDRESS: same as above

20. EXISTING FEDERAL GRANT IDENTIFICATION NUMBER

21. REMARKS ADDED ☐ Yes ☐ No

SECTION II—CERTIFICATION

22. THE APPLICANT CERTIFIES THAT ▶ To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.

a. YES, THIS NOTICE OF INTENT/PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____

b. NO, PROGRAM IS NOT COVERED BY E.O. 12372 ☐
OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW ☐

23. CERTIFYING REPRESENTATIVE
a. TYPED NAME AND TITLE
b. SIGNATURE

SECTION III—FEDERAL AGENCY ACTION

24. APPLICATION RECEIVED Year month day 19

25. FEDERAL APPLICATION IDENTIFICATION NUMBER

26. FEDERAL GRANT IDENTIFICATION

27. ACTION TAKEN
- ☐ a. AWARDED
- ☐ b. REJECTED
- ☐ c. RETURNED FOR AMENDMENT
- ☐ d. RETURNED FOR E.O. 12372 SUBMISSION BY APPLICANT TO STATE
- ☐ e. DEFERRED
- ☐ f. WITHDRAWN

28. FUNDING

a. FEDERAL	$ .00
b. APPLICANT	.00
c. STATE	.00
d. LOCAL	.00
e. OTHER	.00
f. TOTAL	$ .00

29. ACTION DATE ▶ Year month day 19

30. STARTING DATE Year month day 19

31. CONTACT FOR ADDITIONAL INFORMATION (Name and telephone number)

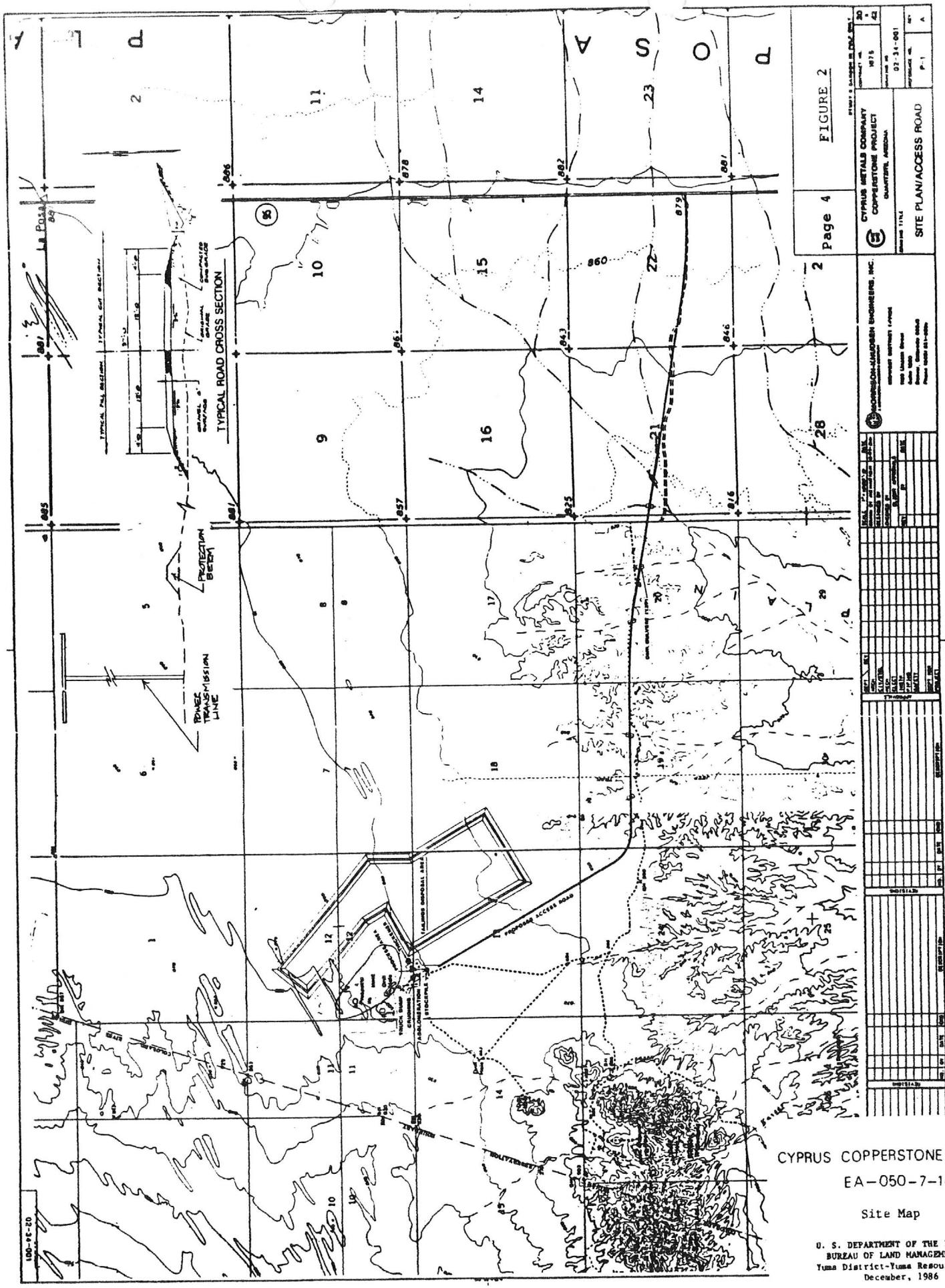
32. ENDING DATE Year month day 19

33. REMARKS ADDED ☐ Yes ☐ No

NSN 7540-01-008-8162
PREVIOUS EDITION IS NOT USABLE

424-103

STANDARD FORM 424 PAGE 1 (Rev 4-84)
Prescribed by OMB Circular A-102



CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Site Map

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Map I-2

Copperstone - file
La Paz County K

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Governor Jane Dee Hull Russell F. Rhoades, Director

NOTICE OF THE PRELIMINARY DECISION TO ISSUE AN AQUIFER PROTECTION PERMIT, MAJOR MODIFICATION

Public Notice No. 116-98 APP published on November 26, 1998 in The Sun Times (Parker).

Pursuant to Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 1, the Director of the Arizona Department of Environmental Quality (ADEQ) intends to issue an Aquifer Protection Permit (APP) major modification to the following applicant:

The Cyprus Copperstone Gold Mine
Cyprus Copperstone Gold Corp.
1501 W. Fountainhead Pkwy., Ste. 290
Tempe, AZ 85282

Aquifer Protection Permit No. P-100229

The Cyprus Copperstone Gold Corp. (CCGC) mine is located approximately 13 miles north of the city of Quartzsite, Arizona, in La Paz County. It occupies portions of Sections 11, 12, and 13 of Township 6 N, Range 20 E of the Gila and Salt River baseline and meridian. Latitude is 33° 52" 20" north, and longitude is 114° 17" 19" west.

The CCGC Mine was operated as an open pit gold mining and beneficiation facility that used heap leaching and carbon in pulp/carbon in liquour technology for gold extraction and recovery. The CCGC mine site originally consisted of an open pit mine, ore crushing facility, heap leaching and vat leaching facilities, a tailings impoundment, reclaim solution pond, waste rock dumps, off-road tire burial cell, and inert construction debris solid waste disposal facilities. Ore was mined, crushed and leached on-site. A mine closure plan was implemented in 1995, and CCGC has completed most of the closure activities, including removal of all ancillary mining operation facilities, characterization and clean up of any soil contamination, capping and armoring the waste rock stockpile, and capping of the heap leach pad and tailing impoundment facilities. All closure activities have been completed except the construction of an evapotranspiration cell within the reclaim solution pond. Once the evapotranspiration cell is completed, groundwater monitoring will continue for a minimum of eight quarters to ensure compliance with Arizona Aquifer Water Quality Standards. Specific information regarding design, construction, operation, and closure activities for the facility can be found in Part III of the draft APP permit.

The draft APP permit and related file are available for public review Monday through Friday, 8:00 a.m. to 5:00 p.m., at the Arizona Department of Environmental Quality, Aquifer Protection Program Section, Mining Unit, 3033 N. Central Avenue, 4th Floor, Phoenix, Arizona. If you would like additional information, please contact Gregg Crandall at (602) 207-4362, or the Mining Unit secretary at 207-4692. In addition, a copy of the draft permit is available for review at the Parker and Quartzsite public libraries.

Persons may submit written comments in writing to Gregg Crandall at ADEQ, Aquifer Protection Program Section, Mining APP Unit, 3033 N. Central Avenue, Phoenix, AZ 85012 within 30 days from the date of this notice.

Within 45 days after the publication of this public notice, a decision whether to conduct a public hearing shall be made by the Department. If a hearing is to be held, the ADEQ shall schedule the hearing to begin on or before 75 days the close of public comment.

The Department will consider all comments received in making a final decision on whether to issue or deny the APP permit. Any person who has submitted a comment will receive notification of the final decision.

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1991

CYPRUS GOLD COMPANY

Cyprus Copperstone Gold Corp.

Copperstone T6N R20W Sec. 12
P.O. Box AI, Parker, AZ 85344 - Phone (619) 665-9261 - Employees: 115 (Includes 60 Morrison-Knudsen contract miners) - Located 12 miles north of Quartzsite - Open pit gold mine - Cyanide agitation leach - Rated capacity 2,850 TPD.
Resident Manager ..... M. L. Schroder
Plant Superintendent ..... G. R. Burns
Administrative Supervisor ..... M. A. Browning
Mine Superintendent ..... K. G. Markkola
Geologist ..... G. L. Kelsey
Senior Mine Engineer ..... J. Hatrick
Mining Engineer ..... S. Anderson
Mill Maintenance Supervisor ..... E. P. Sours
Operation Supervisor.....G. R. Eastham
Construction Supervisor.....D. F. Douglas
Human Resource and Safety Supervisor.....S. P. Fullmer

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1990

CYPRUS GOLD COMPANY

Cyprus Copperstone Gold Corp.

Copperstone T6N R20W Sec. 12
P.O. Box AI, Parker, AZ 85344 - Phone (619) 665-9261 - Employees: 115 (Includes 60 Morrison-Knudsen contract miners) - Located 12 miles north of Quartzsite - Open pit gold mine - Cyanide agitation leach - Rated capacity 2,850 TPD.

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Administrative Supervisor ..... M. A. Browning
Mine Superintendent ..... K. G. Markkola
Geologist ..... G. L. Kelsey
Senior Mine Engineer ..... J. Hatrick
Mining Engineer ..... S. Anderson
Mill Maintenance Supervisor ..... E. P. Sours
Operation Supervisor.....G. R. Eastham
Construction Supervisor.....D. F. Douglas
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ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1989

Cyprus Gold Company

Cyprus Copperstone Gold Corp.

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P.O. Box AI, Parker 85344 - Phone (619) 665-9261 - Employees 115 (Includes 60 Morrison-Knudsen contract miners) - Located 12 miles north of Quartzsite - Open pit gold mine - Cyanide agitation leach - Rated capacity 2,850 TPD.

Resident Manager ..... M. L. Schroder
Plant Superintendent ..... K.G. Markkola
Administrative Supervisor ..... M.A. Browning
Mine Superintendent ..... G. R. Burns
Chief Assayer and Metallurgist..... J. A. Cole
Geologist ..... G.L. Kelsey
Senior Mine Engineer ..... J. Hatrick
Mining Engineer ..... S. Anderson
Mill Maintenance Supervisor ..... E.P. Sours
Operation Supervisor.....G. R. Eastham
Construction Supervisor.....D. F. Douglas
Human Resource and Safety Supervisor.....S. P. Fullmer

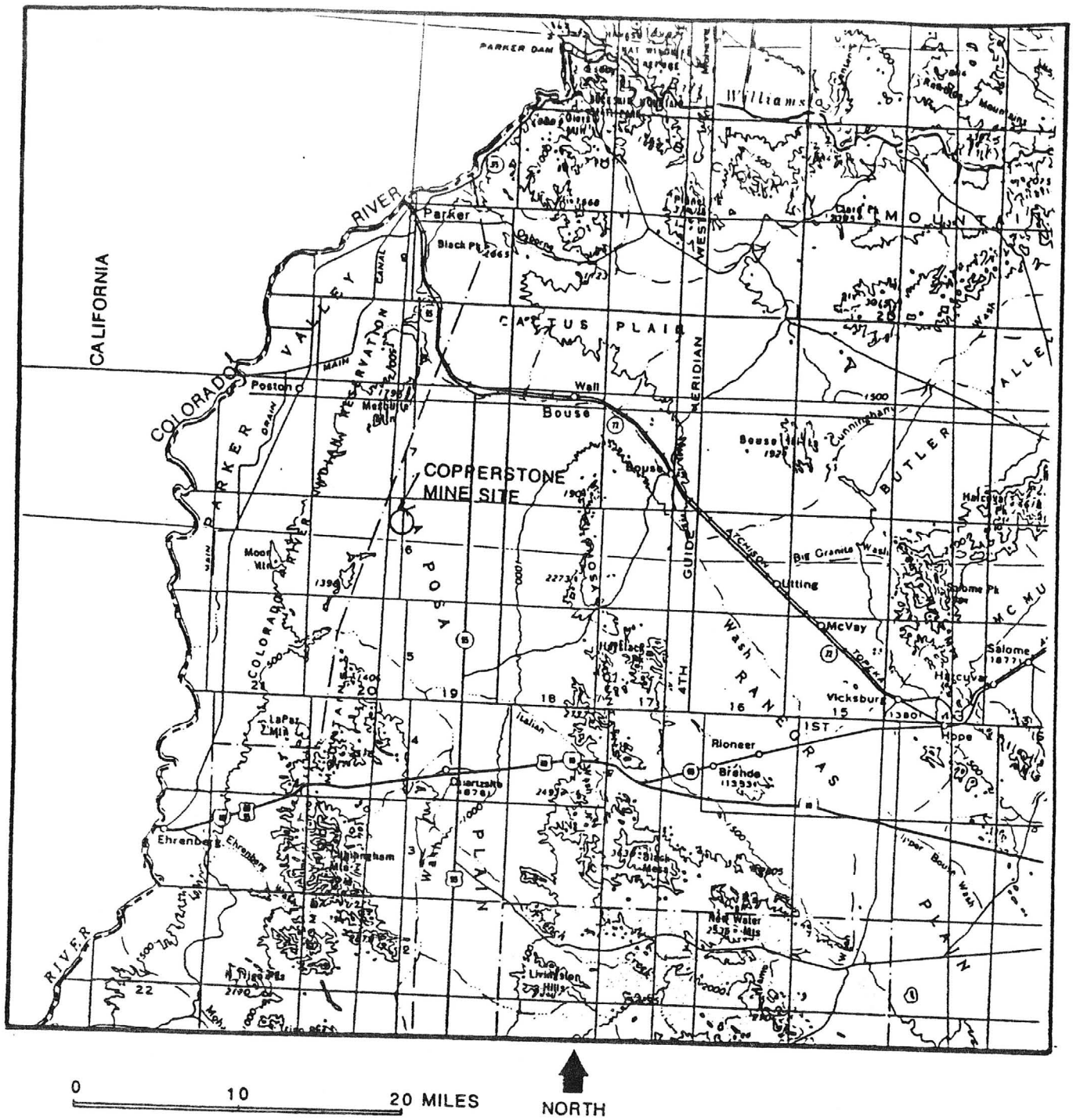
ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1988

CYPRUS COPPERSTONE GOLD CORPORATION

Copperstone T6N R20W Sec. 12

P.O. Box AI, Parker 85344 - Phone (619) 665-9261 - Employees 115 (Includes 60 Morrison-Knudsen contract miners) - Located 12 miles north of Quartzsite - Open pit gold mine - Cyanide agitation leach - Rated capacity 2,850 TPD - Underground mine under development.

Resident Manager ..... G.R. Stephan
Plant Superintendent ..... K.G. Markkola
Administrative Supervisor ..... M.A. Browning
Mine Superintendent ..... M.L. Schroder
Chief Assayer ..... W.D. Hamby
Geologist ..... G. Kelsey
Senior Mine Engineer ..... D.F. Douglas
Underground Engineer ..... J. Jones
Mining Engineer ..... G. Burns
Metallurgist ..... J.A. Cole
Mill Maintenance Supervisor ..... E.P. Sours



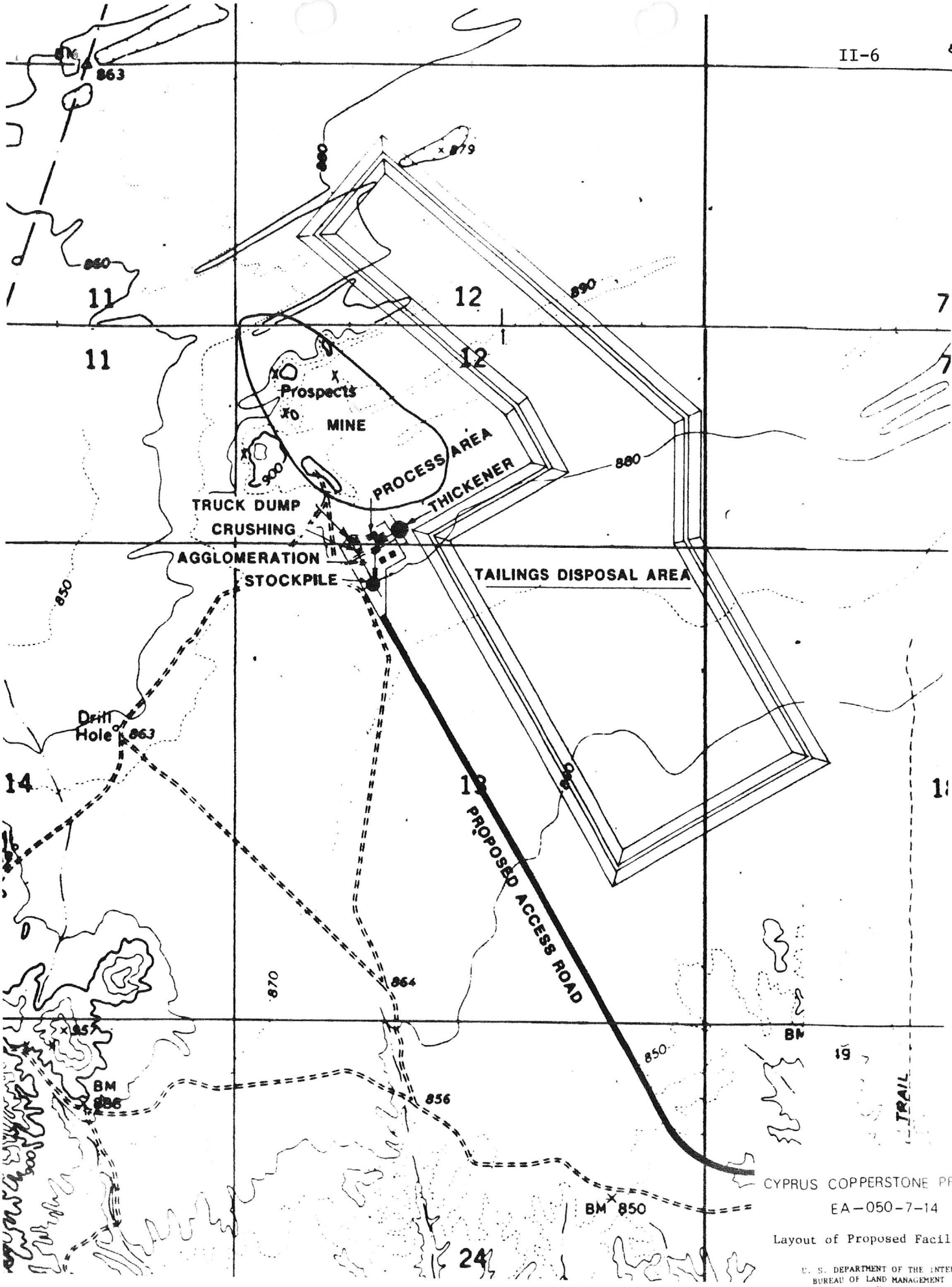
CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Location of Copperstone Project

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Map I-1



CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Layout of Proposed Facilities

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Map II-1

ADMMR
Arizona Department of Mines and Mineral Resources
1502 West Washington, Phoenix, AZ 85007 Phone (602) 255-3795
Toll Free in Arizona 1-800-446-4259 FAX (602) 255-3777

Copperstone Gold Production Summary

Production began in the fourth quarter of 1987.

Original estimate of reserves (1987) was 446,000 recoverable ounces. Grade was 0.083

Cyprus reported in 1988 that it expected to produce 175,000 ounces from underground beginning in late 1989, but these underground efforts were later abandoned.

Mining of ore from the pit depleted reserves in December 1992. The mill was expected to operate on stockpiled low grade ore through April of 1993. Low grade material was also heap leached. The amount produced was not reported in the 1993 annual report and the 1993 10-k was not found.

	1987	1988	1989	1990	1991	1992
Production (troy ounces	3,300	63,000	73,300	106,500	112,000	116,200
Reserve (tons)	5,900,000		3,500,000	3,200,000	2,100,000	
Reserve grade (tr. oz/ton)	0.083		0.069	0.069	0.071	

Production data from Cyprus' Annual Reports and Form 10-K's.

Total ounces reported produced 1987 - 1992 was 474,300. Perhaps another 30,000 ounces would havve been produced in 1993. - Nyal Niemuth July 1999.

Nov, 1998 MARICOPA ECTN ATME

making a presentation on a mining operation that hasn't had an awful lot of publicity even when it was in production several years ago.

Copperstone: There really was gold in that thar desert!

In 1980 Cyprus Minerals acquired 100% working interest in 65 original Copperstone claims from a local prospector, Dan Patch. Early exploration by other mining companies focused on the site as a porphyry copper target. Cyprus was the first to recognize the area's gold potential.

On November 12, 1987 Cyprus Minerals Company (it still hadn't merged with Amax yet!) poured its first gold bar at the Copperstone project in La Paz county, 18 miles south of Parker. Over the next 6 years Cyprus would wrest 500,000 ounces of gold from the ground. For Cyprus who had dealt mainly in copper, coal and molybdenum, this was their first major foray into the realm of gold mining. And a major undertaking it was - with stripping ratios most miners would turn away from, at times almost 10 to 1. For those unfamiliar with the term, simply put, for every ton of ore mined, 10 tons of waste or overburden had to be removed. For every million tons destined for the mill, between 7 and 10 million tons of waste had to be removed. Reserves at the time were estimated at approximately 6 million tons with an average of 0.085 ounces of gold per ton, or for those of you metrically inclined, 2.9 g/t.

The ore was mined from a pit 2,900 feet long by 1,200 feet wide by 360 feet deep, 885 m. by 365 m. by 110 m. respectively. For those who like to play with numbers, that's one and a quarter billion cubic feet of material, or a little over 100 million tons of rock in place. See what I meant about stripping ratios?

The mining division of Morrison-Knudsen Company provided the contract mining services for this part of the project. A host of other contractors were also involved including MINPROC (Mining and Process Engineering Services) of Australia who did the basic lay-out and metallurgical design while their American associate, Cimetta Engineering and Construction Company of Tucson Americanized the plans and arranged for the procurement of major equipment items. The Industrial Company (TIC) of Steamboat Springs, Colorado was awarded the contract for construction, dry commissioning, ore flow and start-up operation of the gold ore processing plant which was designed to operate at 3,000 tpd. The plant included the standard crushing circuit, i.e., jaw and cone crushers followed by fine grinding in balls mills followed by C-I-P (carbon-in-pulp) tanks for leaching. The Tailings Disposal System was built by the Sundt Corporation.

The $14 million project began in April, 1987, and the first gold poured less than 9 months later. As labors go, this one had its own unique problems. Rick will share some of them with us this month including avian environmental problems, early ore reserve/geostatistical problems, the aborted underground attempts, the pushbacks

continued....

which extended the mine life an extra two years, ground control problems and reclamation.

Rick spent a total of four years as consulting engineer during two separate periods at Copperstone. The first in 1989 with Cyprus began his career as an independent, and his work since then has taken him on extended contracts at locations ranging from Alaska to Honduras. Among Rick's major clients are Cyprus, Redpath-McIntosh, Hecla, Alaska Gold and BHP. His degree is in Mining Engineering with a minor in mineral processing from the Colorado School of Mines. Besides SME, Rick is a member of the Northwest Mining Association and the Arizona Geological Society.

Call today and reserve a space for this eventful presentation. Arizona hasn't had many gold mines per se, and Copperstone was one of its best, at least in the latter part of this century. Who knows? Perhaps the 21st century will see another intrepid adventurer sink his shovel, or perhaps a shaft, into the untapped reserves lying below the open pit. Royal Oak Mines has a lease on the property now and their drilling to date indicates that another 500,000 ounces of gold lies waiting beneath the shifting desert sands.

Bring a friend, join the fun and we'll see you at our favorite watering hole - Beef Eaters Restaurant.

Remember, reservations are required for the meeting.

Call ***945-4630*** today. Call and make your reservations and join us on ***Thursday, November 19th*** for ***Rick Ackermann's*** presentation on ***"Copperstone - There really was gold in that thar desert!".***

I need your reservations no later than noon on Tuesday, November 17th. Call 945-4630 now.

Remember, an organization is only as good as the effort put forth by its members. That's you!

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Rick Ackermann, personal communication

continued....

Arizona Bureau of Geology and Mineral Technology
FIELDNOTES
Vol. 18, No. 2
Summer 1988

The Copperstone Mine: Arizona's New Gold Producer

by Jon E. Spencer
and John T. Duncan
Arizona Geological Survey

and William D. Burton
Cyprus Minerals Company
P.O. Box 3299
Englewood, CO 80155

Arizona's annual gold output will almost double in 1988 as a result of production from Cyprus Minerals Company's Copperstone gold deposit in La Paz County, west-central Arizona. During 6 years of expected mine life, the deposit is predicted to yield approximately 510,000 troy ounces of gold worth $230 million, based on a value of $450 per ounce. Unlike many recent gold discoveries in the Southwest, Copperstone is a new discovery in an area not previously identified as a mineral district. In this article, the geology and regional setting of the Copperstone deposit are described. Although the deposit is still not completely understood, enough is known to warrant reassessment of estimates of mineral-resource potential in west-central Arizona.

Regional Geologic Setting

West-central Arizona and adjacent areas of California and southern Nevada contain some of the most spectacularly exposed detachment faults in the world. The term "detachment fault" is commonly applied to large-displacement, gently dipping (inclined) normal faults. In this region, hanging-wall rocks, or rocks overlying the detachment faults, were displaced northeastward relative to footwall rocks, rocks that underlie the faults. The faults originally dipped to the northeast, but are now rotated and warped to form undulating surfaces that are nearly horizontal over large areas.

The north- to northeast-dipping Moon Mountains detachment fault, exposed at the northern tip of the eastern Moon Mountains, separates two large, geologically distinct areas: to the northeast lie numerous detachment faults, such as those in the Buckskin, Rawhide, and northern Plomosa Mountains; to the south, in the Dome Rock, southern Plomosa, and most of the Moon Mountains, detachment faults are absent. The Copperstone gold deposit lies within the hanging wall of the Moon Mountains detachment fault and flanks the area of pervasive faulting.

Miocene (5- to 24-million-year [m.y.]-old) detachment faults in west-central Arizona are associated with numerous copper, iron, and gold deposits, especially in the Buckskin and Rawhide Mountains, that have yielded metals worth many millions of dollars (Figure 1; Table 1; Wilkins and Heidrick, 1982; Spencer and Welty, 1986). Copper-gold deposits associated with detachment faults typically lie along or within a few tens of meters of the faults; a few, however, are hundreds of meters above the faults. Detachment-fault deposits contain fractures and thick, irregular zones that are commonly filled with the minerals specular hematite, chrysocolla, quartz, barite, fluorite, calcite, and manganese oxides. Pyrite and chalcopyrite, which are commonly oxidized, are also present in many deposits.

The northeastern tip of the Moon Mountains is primarily composed of Mesozoic (63- to 240-m.y.-old) granitic rocks that form the footwall of the Moon Mountains detachment fault. Hanging-wall rocks are mostly metamorphosed Jurassic (138- to 205-m.y.-old) volcanic rocks. Older (Paleozoic; 240- to 570-m.y.-old) metamorphosed sedimentary rocks that are brecciated (composed of

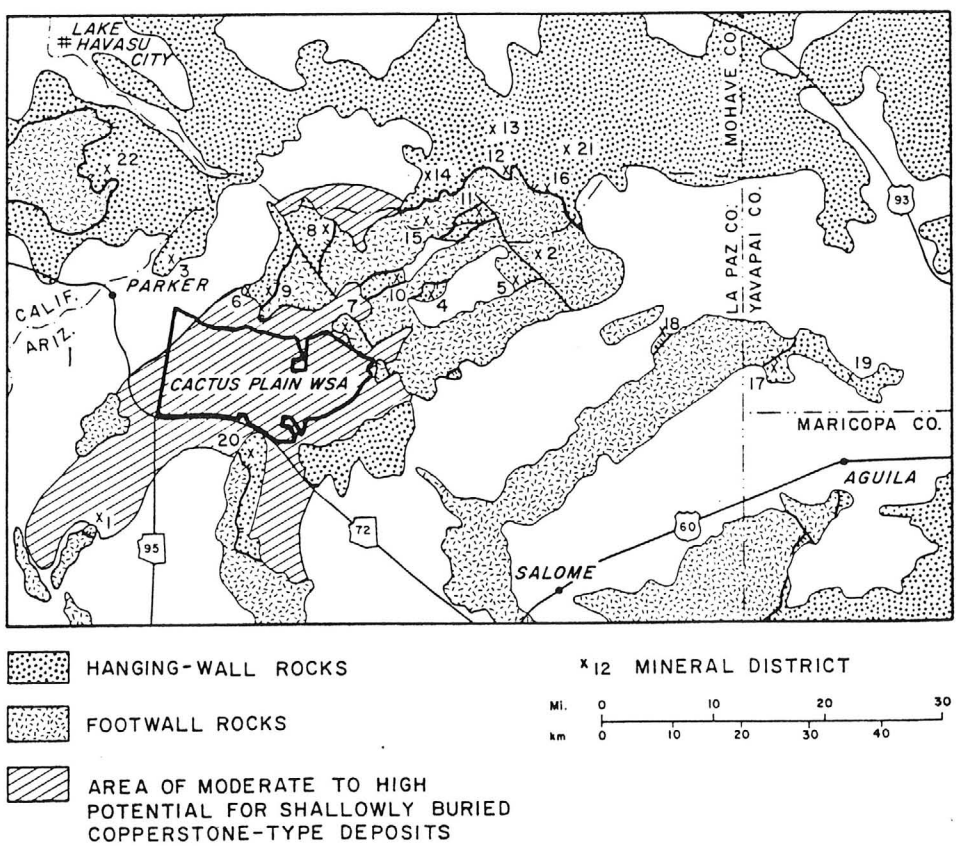

Figure 1. Map of part of west-central Arizona showing mineral districts where mineral deposits are known or suspected to be related to detachment faults. Middle Tertiary and older rocks are divided into hanging wall and footwall rocks, which lie above and below, respectively, regionally northeast-dipping detachment faults. Also shown is the outline of the Cactus Plain and Cactus Plain East Wilderness Study Areas. Numbers refer to mineral districts listed in Table 1.

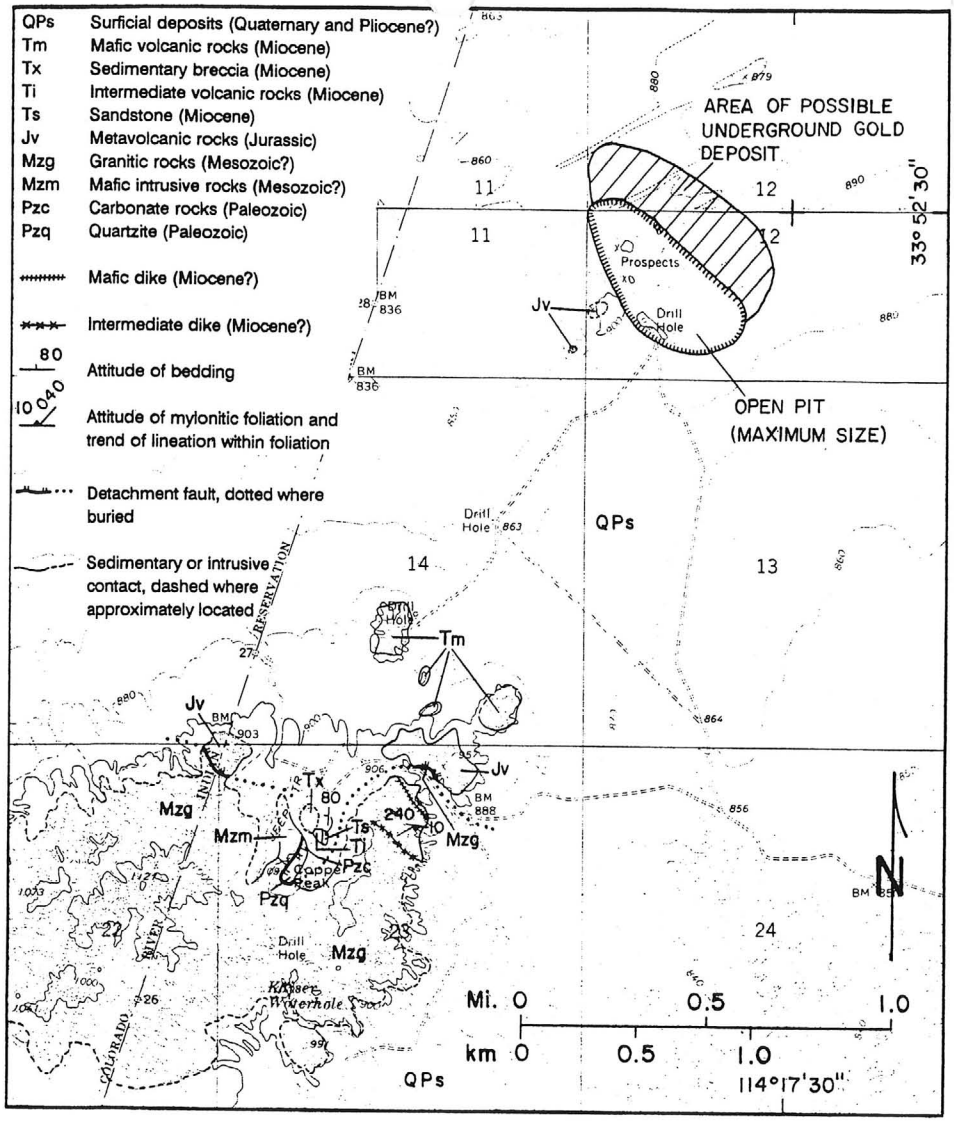

Figure 2. Geologic map of northeastern Moon Mountains showing location of Copperstone mine.

broken rock fragments) underlie Copper Peak; steeply dipping, younger (Miocene) volcanic and sedimentary rocks, including sedimentary breccias derived from the Jurassic volcanic rocks, are also present adjacent to Copper Peak (Figure 2). The copper-iron mineralization that characterizes detachment-fault deposits elsewhere in west-central Arizona is also evident in brecciated rocks along the Moon Mountains detachment fault at Copper Peak and at the edge of the Colorado River Indian Reservation.

Geology

The Copperstone mine is approximately 1½ miles northeast of exposed bedrock in the northeastern Moon Mountains (Figure 2). Bedrock exposures in several very small hills surrounded by alluvium contain evidence of gold mineralization and led to the discovery of the Copperstone deposit. Mineral deposits are present above and along a gently dipping contact that is probably a fault; the contact separates Jurassic metamorphosed volcanic rocks and overlying sedimentary breccias derived from them. The mineralized contact zone dips approximately 30° to the northeast, extends horizontally for 3,000 feet and at least 1,000 feet down dip, and is generally several tens of feet thick. The sedimentary breccia and a volcanic rock that contains vesicles (relict gas bubbles) are almost certainly Miocene in age and are mineralized, indicating that mineralization is Miocene or younger.

Drill-core samples reveal that some brecciation occurred after quartz veins were formed; however, numerous northwest-trending quartz-amethyst veins exposed in the mine pit are not brecciated. Steeply dipping, northwest-striking fractures and narrow shear zones exposed in the mine pit locally cut quartz-amethyst veins and contain subhorizontal slickenside lineations, which are smooth and polished striations that result from friction along a fault plane.

Gold is present where quartz and specular hematite are abundant in the breccia zone and locally within veins in the metamorphosed volcanic rocks. Chrysocolla, barite, earthy red hematite, and malachite are also common in the gold-mineralized zone. Fluorite, adularia, magnetite, calcite, chalcopyrite, pyrite, and manganese oxides are present in smaller quantities. Gold, however, is rarely visible. The presence of quartz, hematite, and chrysocolla is a good indicator of gold mineralization.

Fluid-Inclusion Characteristics

Fluid inclusions are bubbles of liquid and gas that are commonly trapped inside minerals during mineral formation. The composition of fluid inclusions in mineral deposits reflects the composition of the aqueous fluids that formed the deposits. One can determine the salinity of the inclusions by determining the freezing temperature of the fluid within them. The minimum temperature of the fluid at the time it was trapped can be determined by heating the sample until the two phases (liquid and gas) in the inclusion become one. Fluid inclusions in quartz-amethyst from the Copperstone mine contain between 16 and 22 percent sodium-chloride equivalent (by weight) and were trapped at minimum temperatures between 200° and 260° C. These characteristics are similar to those of other mineral deposits along Miocene detachment faults in west-central Arizona, but are substantially different from those of most other types of deposits, such as epithermal-vein gold deposits (Figure 3; Wilkins and others, 1986).

Origin

The following characteristics of the Copperstone deposit suggest that it originated from the same processes that formed mineral deposits along numerous other Miocene detachment faults: (1) fluid-inclusion salinities and temperatures of entrapment; (2) abundant specular hematite with less abundant copper minerals such as chrysocolla, malachite, and chalcopyrite; (3) geographic proximity to a detachment fault; and (4) probable Miocene age. Two characteristics of the Copperstone deposit, however, differ from those of other detachment-fault deposits: abundance of quartz-amethyst veins and abundance of gold. These authors believe that most evidence at the Copperstone deposit supports a relationship between mineralization and detachment faulting.

A working model for the origin of the Copperstone deposit is as follows: hot, saline, aqueous fluids containing dissolved gold, copper, iron, and other elements moved up-dip along the north- to northeast-dipping Moon Mountain detachment fault. These fluids encountered highly porous and permeable sedimentary breccias in the hanging wall of the detachment fault and began ascending through the breccia zone. As a result of cooling or mixing with more oxygen-rich, shallow-level ground water, largely within the sedimentary breccias, gold and

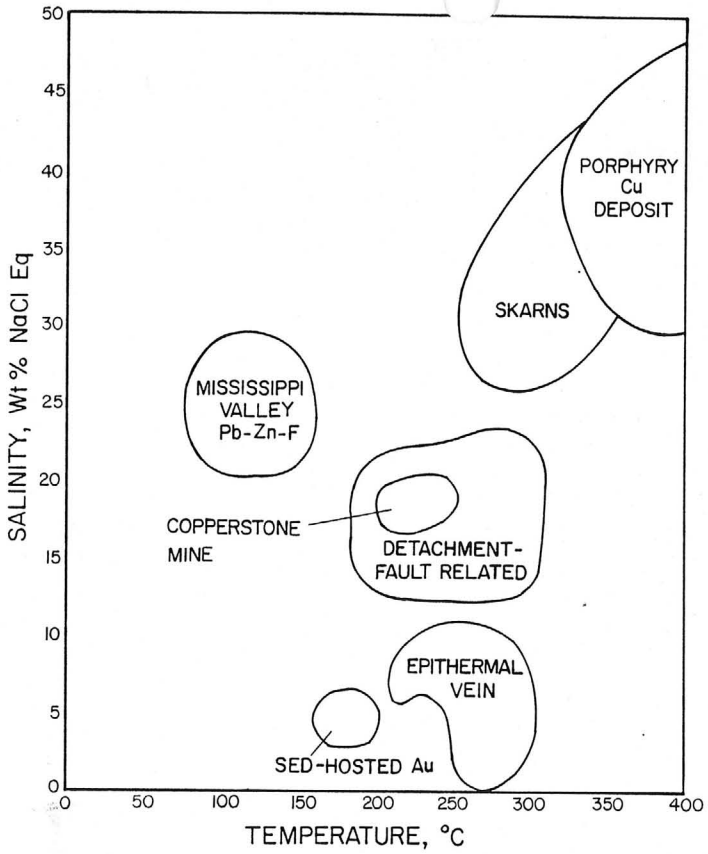

Figure 3. Diagram of salinity and homogenization temperature fields for fluid inclusions from several major mineral deposits, including those associated with detachment faults. Fluid inclusions from the Copperstone deposit clearly fall within the field of other detachment-fault-related deposits. Many geologists suspected that the Copperstone deposit was an epithermal-vein deposit, as are many other gold deposits in the Southwest; fluid-inclusion data, however, strongly suggest otherwise. Modified from Wilkins and others (1986), with additional data from the Copperstone mine.

Table 1. Value of production for commodities from mineral districts in west-central Arizona that are known or suspected to be related to detachment faults. Manganese mineral deposits, although not clearly understood, are suspected to be related to detachment faults. District locations are shown on Figure 1.

District	Commodities*	1986 Value**
1. Copperstone	Au (reserves)	$189,306,900
2. Alamo	Cu, Pb, Ag, Au	72,303
3. Cienega	Cu, Ag, Au	5,571,167
4. Clara	Cu, Ag, Au	3,066,661
5. Lincoln Ranch	Mn	18,960,000
6. Mammon	Cu, Ag, Au	93,913
7. Midway	Cu, Ag, Au	43,743
8. Planet	Cu, Ag, Au	12,771,828
9. Pride	Cu, Ag, Au	37,679
10. Swansea	Cu, Ag, Au	17,471,085
11. Black Burro	Mn	261,490
12. Cleopatra	Cu, Pb, Ag, Au	1,118,459
13. Lead Pill	Cu, Pb, Ag, Au	303,365
14. Mesa	Mn	47,400
15. Owen	Cu, Pb, Zn, Ag	107,561
16. Rawhide	Cu, Pb, Zn, Ag	116,573
17. Bullard	Cu, Ag, Au	1,763,481
18. Burnt Well	(unknown)	(minor)
19. Harris	Mn	79,395
20. Northern Plomosa	Cu, Pb, Ag, Au	2,123,413
21. Artillery	Mn	75,135,320
22. Whipple	Cu, Pb, Zn, Ag, Au	683,550
TOTAL		$329,135,287

* Ag = silver; Au = gold; Cu = copper; Mn = manganese; Pb = lead; Zn = zinc.
** Values do not add to total because of rounding.

other elements precipitated from the fluids to form the Copperstone deposit.

Implications for Land-Use Planning and Management

The presence of the Copperstone gold deposit in a geologic setting that is characteristic of large areas of west-central Arizona indicates that the mineral-resource potential of this area in the State is greater than previously suspected.

The Copperstone deposit was probably not discovered until recently because it was almost entirely concealed by young surficial deposits. Undiscovered mineral deposits similar to Copperstone may also be concealed beneath other surficial deposits, such as those covering nearby Cactus Plain (Figure 1). Application of more sophisticated geophysical techniques may eventually result in discovery of such deposits. Many areas in west-central Arizona, such as the Cactus Plain and Cactus Plain East Wilderness Study Areas, are presently under consideration for Federal wilderness-area status. If designated to be managed as wilderness, these areas would no longer be open to mineral exploration or mining activity.

Mineral deposits associated with detachment faults have only been recognized as a distinct deposit type during the past 10 years. The recent discovery of the Copperstone deposit and recognition of its association with a detachment fault are generating renewed interest in detachment-fault-related deposits and in areas where such deposits might be located. Future improvements in our understanding of Arizona geology and future mineral-deposit discoveries will undoubtedly lead to renewed interest in areas that presently receive little attention from research or exploration geologists.

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GSA Centennial Field Guides

The Geological Society of America (GSA) has published two Centennial Field Guides that include areas in Arizona: the Cordilleran Section and the Rocky Mountain Section (volumes 1 and 2, respectively). The first volume contains field-guide articles and maps to 100 outstanding geologic locations in Alaska, British Columbia, California, Hawaii, Nevada, Oregon, and Washington, as well as Arizona. The second volume contains 100 guides for Alberta, Arizona, Colorado, Idaho, Montana, New Mexico, South Dakota, Utah, and Wyoming. These two volumes are part of the 71-item GSA publishing project, the Decade of North American Geology (DNAG). To obtain copies, send $43.50 for each volume to The Geological Society of America, Publication Sales, P.O. Box 9140, Boulder, CO 80301; tel: (800) 472-1988.

Cyprus Copperstone Gold Mine
AIME 1990 Open Pit Geology Spring Field Trip
May 26, 1990

Information from Graham Kelsey, Geologist and Mike Schroder, Mine Superintendent

Introduction

The mine opened in 1987 with stripping beginning in July and production beginning in November. There presently are about 1.5 to 2 years of reserves left. Mine plans estimate mining of ore will cease in September of 1991. The present strip ratio is 7 to 1 (waste to ore). It has been as high as 21 to 1 and for the entire mine project will average 10.2 to 1. At the present time the production rate is 3,000 TPD of .1 oz/ton Au. Production has been averaging 9,000 - 11,000 ounces of Au a month. Due to the present low price of gold, $360/ounce, Cyprus has an inventory of 30,000 ounces in Los Angeles at a major (Engelhard?) refinery waiting to be sold.

Geology

The deposit was first known from three small outcrops. One was the high angle structure composed of banded quartz, amethyst and specular hematite. The other two were the low angle structure composed of hematite altered breccia. The first 30 exploration holes hit an interval of greater than .04 oz/ton Au. The footwall is a Jurassic quartz latite, 160 million years old, massive to welded volcanic tuff, showing some foliation from metamorphism. The hangingwall is generally a monolithic breccia of the quartz latite laminated fragments but the matrix is not metamorphosed. It is possibly a talus breccia associated with low angle faulting. The Copperstone fault strikes northwest and dips northeast, and is considered a listric fault that localizes mineralization above a detachment fault. The detachment fault is suspected to be 800′ deep at the pit. The gold mineralization appears where the Copperstone fault is intersected by a series of high angle faults and amethystine veins. All are offset by later northeast faults. The best ore occurs where the amethyst veins intersect the breccia and there is more hematite in the gold zone. The deposit is considered to be epithermal. Mineralogy of the deposit is: specular hematite, hematite, chlorite and kaolin as alteration, chrysocolla, barite, amethyst, fluorite, some carbonates and manganese oxide minerals. Barite and fluorite appear to be late stage minerals. No arsenic or mercury anomaly is associated with the deposit. The southern part of the pit shows more silica while the northern portion is higher in iron.

Some of the exploration holes for the first underground effort hit wide veins. When they were reached underground within 20′ they often pinched to a few feet. The decision to go underground was made by the Cyprus people in headquarters with too little information. The on-sight engineers quickly shut the effort down.

Mining

The mining contractor, Morris Knudsen, has been moving an average of 800,000 yards a month including stripping. Now that stripping of overburden is ending, only 350,000 yards a month of waste and ore will be moved making the mine profitable for the rest of its life. Material grading .01 to .02 has been

stockpiled, material grading .02 to .04 has been placed on a leach stockpile, material of .04 and better has gone to the mill. They have had weeks of .2 and individual days of even better grades. The leach stockpile will probably be leached in 91 or milled in 92. Leach tests are currently being performed. If a 60% heap leach recovery can be obtained that will beat a 80% mill recovery in 92 as the milling operation would have to carry all overhead while leaching in 91 can share overhead with the mine and mill. Tailings have averaged .005 but the milling of the low grade, if done, will not be that good.

It appears that a large block of approximately 1 million tons of about .1 oz/ton Au will be left behind in the northeast corner of the pit. It was not known when the pit plan was developed and was discovered too late to allow economical stripping of about 500′ of overburden by the contractor. Mining of 150,000 to 200,000 tons of .1 to .15 oz/ton Au material will be attempted from underground workings developed from within the pit if further drilling confirms the resource. An underground contractor is currently driving a drift, collared in the pit, to allow long hole drilling. One of the problems of the mine has been misinterpretation of the ore zones. This has been due to the surface exploration drilling pattern of 100′ centers. When the dip is considered the resulting drill spacing was 140′ which is now known to have been insufficient. The engineering and geological data now indicates a spacing of 50′ would be necessary. Last year $300,000 was spent drilling to determine waste and ore.

Milling

Cyanide is added to the ore in the first two leach tanks. The next five tanks are CIP. When the gold is stripped from the carbon it is plated twice to increase purity. The dore poured averages 97% Au and a typical cone weighs 600 ounces. Current cash costs are $160 and total costs are now $240. The mill's capital cost was $13 million and has operating costs of $7/ton.

Environmental Considerations

All 67 acres of tailings have been covered with polyethylene netting to prevent cyanide poisoning of migratory birds of the Colorado River flyway. $700,000 has been spent on netting, 50 miles of coated steel aircraft cable, and 800,000 zip ties. The A pond was done by raising posts as the tailings pond grew. The B pond uses a system of floating barrels. The cost on pond B is $.27/ton. To continue to operate before the tailings ponds were covered $1.5 million was spent on neutralizer for a period of 5 months.

Cyprus has worked with the BLM in developing an abandonment plan. The tailings and dumps have been designed to be different heights to provide an interesting mesa landform appearance. The BLM wanted the tops contoured to have runoff drain into the pit. Instead the tops will be single dumped so there is no runoff. The top of the tailings will be covered with a sand slurry from the mill running three months or so with neutralizer. This is more economic than waiting for the tailings to dry sufficiently to support trucks. When the above is all completed the property will be returned to the BLM.

Compiled by Nyal J. Niemuth

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Copperstone Mine

Date December 5, 1985

District

Engineer Richard R. Beard

Subject: Mine Visit

Information from: Jim Matlock, geologist, Cyprus Minerals.

Mr. Matlock reports that the gold mineralization occurs in a low angle fault breccia zone dipping about 45° to the northeast. The overall grade is .09 oz/ton with the higher concentration being in the specular hematite and the silicified zone to the southeast. He reports that the silicified zone was mistakenly thought to be a high angle vein deposit. The mineralization is structure related rather than rock type related. The ore is overlain by about 10 feet of caliche and increasing amount of valley fill as it is followed down dip.

Tentative plans are to mine 4500 tons per day to be treated by heap leaching with a 10 year mine life. Since the mineralization continues down dip, the stripping ratio is the controlling factor on pit limits and an increase in the price of gold would result in an increase in minable reserves. The stripping will be accomplished by scrapers.

Copperstone (F)

IN REPLY REFER TO:

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Dick,

Fore your info.

Uncle Bottom
Geologist

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COPPERSTONE
GEOLOGIC SUMMARY

The Copperstone gold deposit is located in an area of flat, dry, sandy terrain with several small knolls about 40 feet high and prominent longitudinal sand dunes. Only 17 outcrops with a total surface area of approximately one acre are exposed. At the southern end of the Copperstone claim block and beyond is exposed an igneous and metamorphic outlier of the Dome Rock Mountains. These rocks include granite, gneiss, schist, quartzite and amphibolite of uncertain age - Precambrian to Jurassic. A low angle fault (detachment?) separates these rocks from an upper plate consisting of a thick sequence of Jurassic age quartz latite welded tuffs (qlt). The upper plate sequence has been affected by weak green schist facics metamorphism in Cretaceous time. This fault probably extends beneath the Copperstone gold deposit, but drilling failed to confirm its presence.

No early prospect pits, shafts or adits were found at Copperstone. Prospecting began in 1968 with bulldozer trenching by a prospector to better expose weak copper mineralization. The property was submitted to Cyprus in 1980, and a lease was signed after initial field evaluation and sampling indicated 0.02 to 0.09 ounce per ton gold in a few small breccia outcrops. During 1981 through 1983 conventional percussion drilling in a 140 foot grid by Cyprus (Amoco Mineral Company) tested the limits of the Copperstone mineralization. Extensive induced polarization and ground magnetic surveys were run. Anomalous frequency effects outlined the gold deposit with considerable accuracy. Drilling from 1984 through 1986 further defined the deposit.

The Copperstone gold deposit is hosted by a thick sequence of foliated to massive and brecciated quartz latite tuffs. These rocks are correlated regionally with the Jurassic volcanics exposed in the Dome Rock Mountains to the south and throughout west-central Arizona. In the deposit area the quartz latite tuffs are at least 900 feet thick based on drilling formation. The tuffs are characterized by variable degrees of foliation defined by segregated bands of quartz - feldspar and sericite, probably developed along original primary laminations in the tuff. The foliations exposed in surface outcrops in the deposit area all dip 30-50° to the southwest. The indurated breccia dike that hosts the main gold zone within the deposit strikes approximately N45W and dips on an average of 30° to the northeast. These breccias continue along strike at least 2,500 feet and down-dip 1,500 feet. The breccias range in thickness from 50 to 200 feet and contain variably altered fragments of quartz latite in a hematite matrix. The main ore zone within the deposit generally occurs along the basal contact of these breccias with the underlying foliated quartz latite tuff. This mineralized zone is defined by an extensive multi-stage hydrothermal breccia zone. Fragments of quartz vein material, quartz latite tuff and earlier developed breccia are contained within a hematite - specularite matrix. Gold mineralization occurs primarily within this hydrothermal breccia zone and in quartz - amethyst veins cutting through the adjacent latite tuffs. Specular hematite, chrysocolla, minor malachite, and barite are the most common accessory minerals with lesser amounts of calcite, siderite, manganese oxide, flourite, adularia, magnetite,

chalcopyrite and pyrite. Multiple episodes of mineralizing hydrothermal events and brecciation occurred at Copperstone.

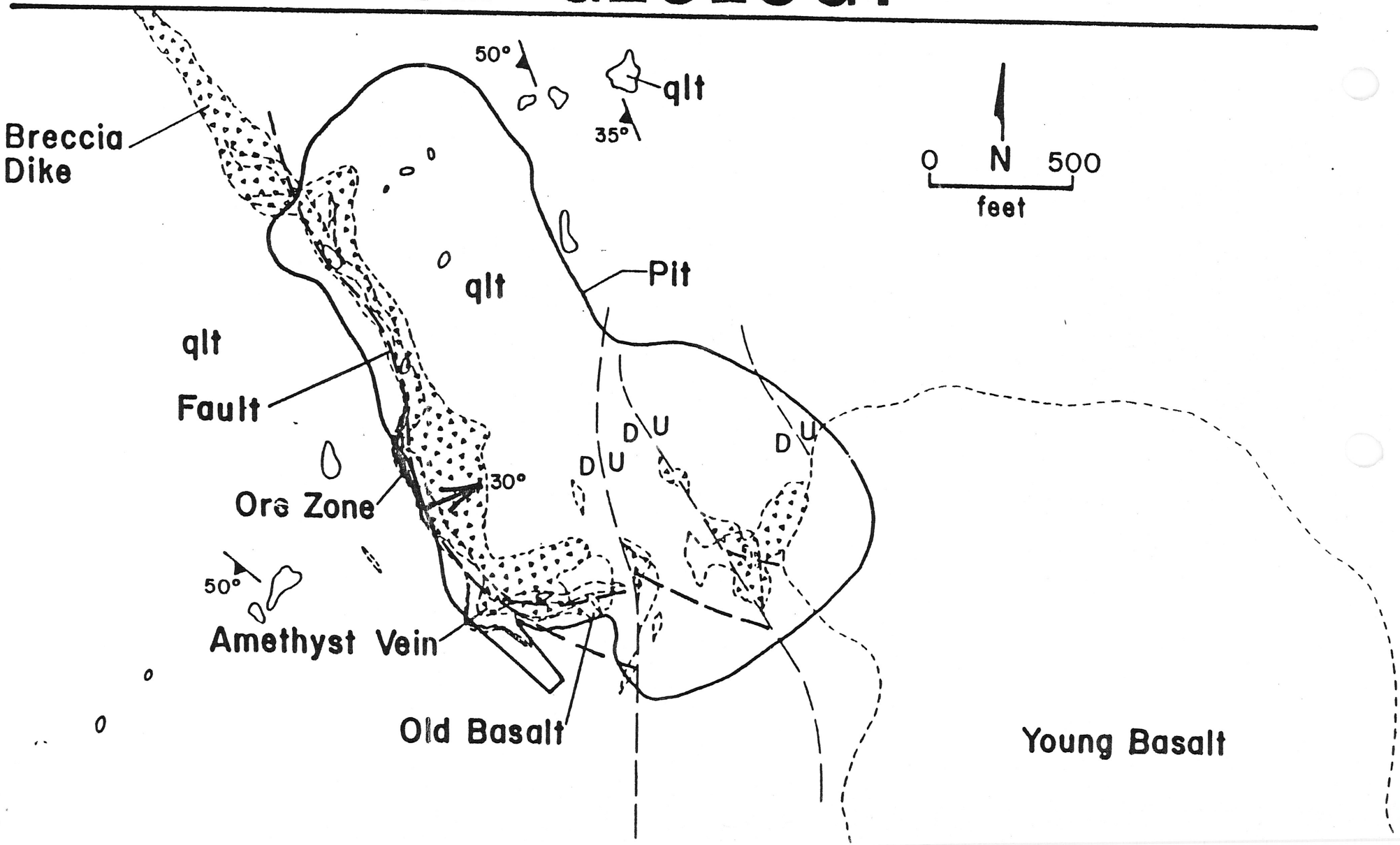
Mineralizing solutions also formed local zones of alteration in and near the ore zones. Bleaching effects are caused by argillization and sericitization. Local secondary gray-green chlorite as wispy veining and minor chalcedonic silicification with small patches of chalcopyrite, pyrite and native gold have been seen. Microscopic examination of a gravity concentrate was made from a floatation concentrate of the ore. About 80 percent of the gold occurs in small flakes ranging between 4 and 40 microns. Coarse gold plates range from 50 to 150 microns. Most gold is free, but a small amount is locked within quartz and iron hydroxides.

The few mineralized outcrops at Copperstone contain highly anomalous gold, silver and copper. Initial sampling found subore and ore grade gold values that led directly to drilling. Several early core holes and a large suite of surface samples were analyzed for a broad spectrum of trace elements in an effort to characterize the deposit.

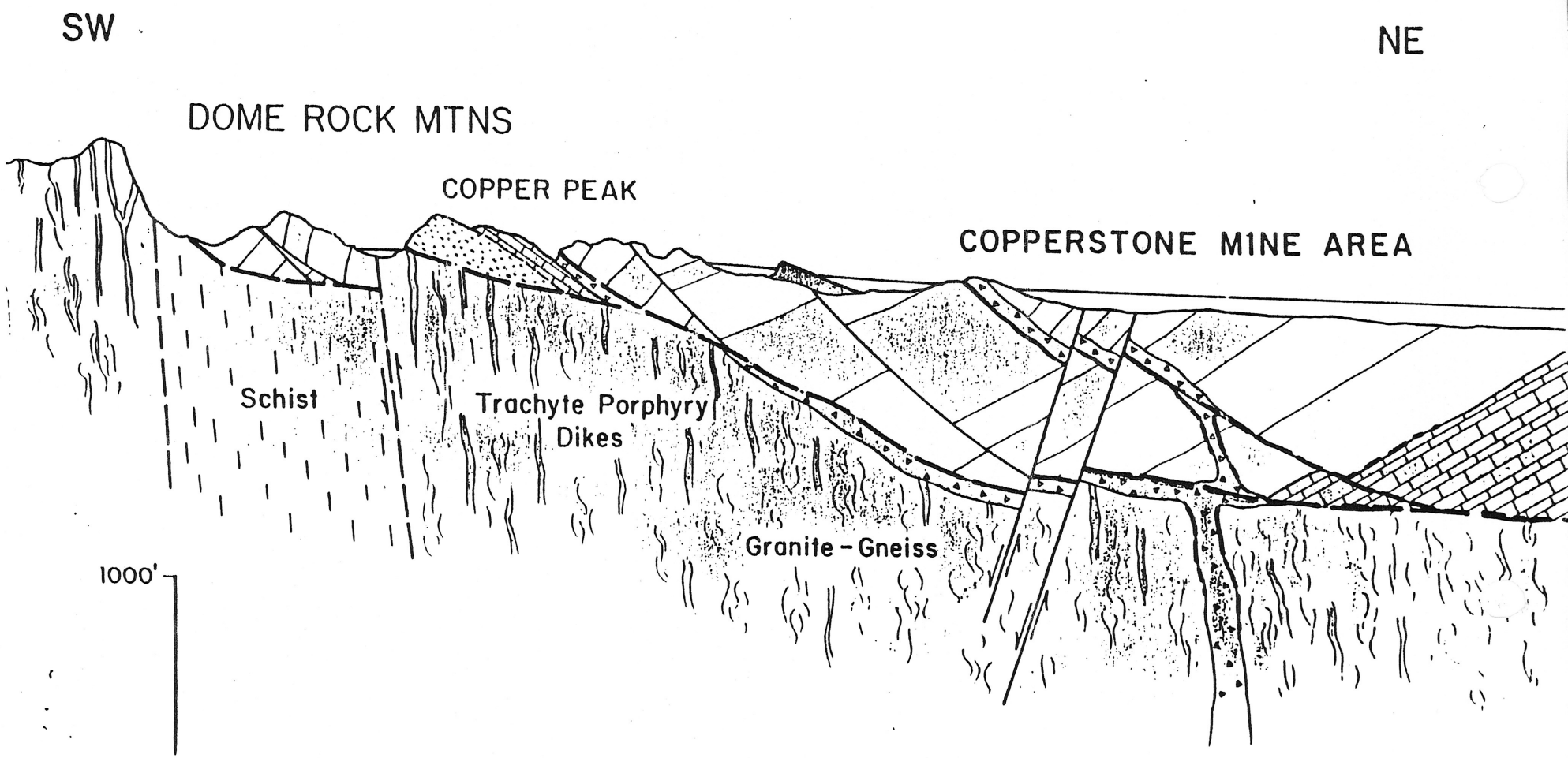
Copperstone is characterized by high barium, manganese, uranium and low arsenic, antimony, thallium and mercury. Barite and flourite are most abundant in the extreme southeastern end of the deposit where they occur in massive 4-5 foot veins.

Generally, gold mineralization is sharply defined within the mineralized breccia zone. It markedly decreases over a few tens of feet into hanging wall and footwall rocks where often no gold is detected by atomic absorption analysis. In higher gold grade zones within the deposit, silver values are higher and may provide some recoverable value. Copper ranges up to several percent within the gold zone, mostly as chrysocolla.

SUBSURFACE GEOLOGY



SCHEMATIC GEOLOGIC SECTION



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Royal Oak Mines

PRESS RELEASE

FOR IMMEDIATE RELEASE FROM KIRKLAND

January 17, 1996

Royal Oak Announces 420,000 Ounce Gold Resource at its Copperstone Project in Arizona

Royal Oak Mines Inc. (TSE and AMEX: RYO) announced today that its wholly-owned subsidiary, Royal Oak Mines (U.S.A.) Inc., has reported promising drill results and a 420,000 ounce gold resource from a drilling program on its Copperstone gold property located in La Paz County, southwestern Arizona.

The drill program was designed to investigate the underground potential of a former open pit operation where in excess of 500,000 ounces of gold were extracted between 1987 and 1992. The down dip extension of this mineralization was drilled to delineate high grade shoots suitable for underground mining.

In June 1995, Royal Oak Mines (U.S.A.) Inc. entered into a lease agreement with the owner of the Copperstone property which consists of 264 unpatented mining claims totalling 5,680 acres and two state leases totalling 1,300 acres.

The Phase I drill program consisted of 13 holes totalling 10,800 feet at a cost of US$225,000. Gold mineralization is controlled along a series of north-plunging shoots related to the Copperstone Fault, hosted within quartz latite porphyry and limestone. The shoots have been traced up to 1,000 feet along the 45 degree dip of the structure below the pit floor. Mineralization remains open in all directions.

Previous drilling encountered high gold values over significant widths: 0.225 ounces of gold per ton over a core length of 50 feet (0.225 opt/50'); and 0.458 opt/40'.

The results of the 1995 drill program were very positive, indicating good continuity of the Main Zone, and resulted in an increase in the geologic resource.

Several high grade gold values were intersected including 21.0 opt/10' at the intersection of a high angle quartz vein structure containing visible gold and the Main Zone; 0.334 opt/25' related to a prospective limestone unit which has been identified as the ore host at the north extremity of the pit; 0.22 opt/31'; 0.191 opt/15'; and 0.22 opt/10'.

The Company has generated a drill indicated mineral resource totalling 2,423,514 tons with a gold content of approximately 420,000 ounces using a cut-off grade of 0.10 opt

gold.

A US$250,000 Phase II follow-up exploration program is planned for 1996. The objective of the program will be to further delineate the underground potential of the Copperstone deposit.

For further information, contact:

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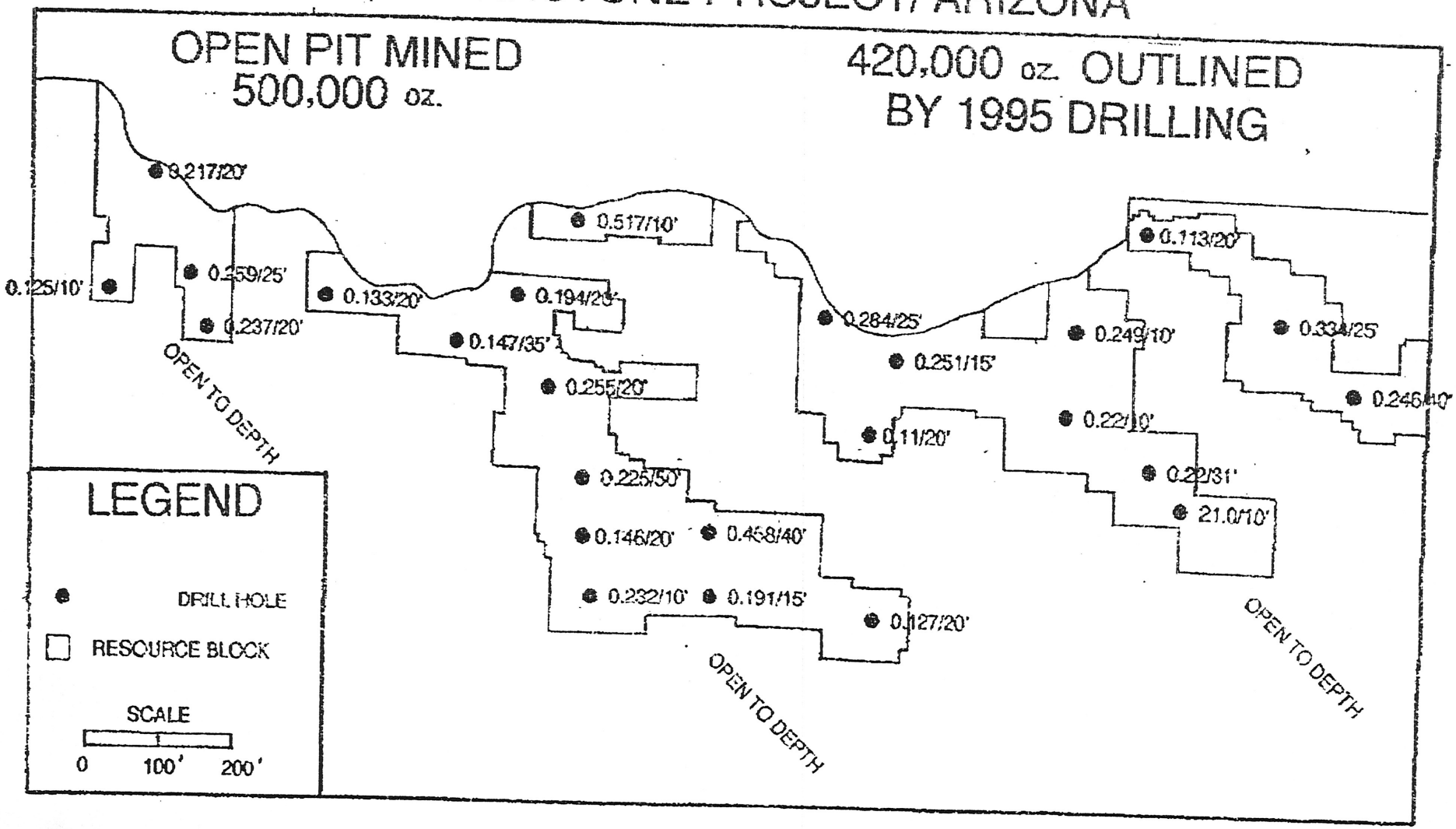
Vice President, Investor Relations
Royal Oak Mines
6501 Lakeview Drive
Kirkland, WA 98033
Telephone (206)822-8992
Facsimile (206)822-3552

or in Europe contact:

Mr. David Williamson
David Williamson Associates
International Investor Relations
78 Old Broad Street, 3rd Floor
London, England EC2M 1QP
Telephone 011-44-171-628-3989
Facsimile 011-44-171-920-0563

INCLINED LONGSECTION LOOKING WEST
COPPERSTONE PROJECT/ ARIZONA



Royal Oak Mines

JAN-17-1996 12:37 royal oak mines usa P.04/04

SUBJECT: Copperstone Gold Mine (f) La Paz

FROM: Nyal J. Niemuth

DATE: September 17, 1987

Maggie McGee, mine manager of Cyprus Gold's Copperstone Mine (f) La Paz Co., was program speaker at the September meeting of the Maricopa AIME Section. He provided a summary of the mine development, plant construction and planned operational details. Attending with Mr. McGee was Blaine Wiseman, consulting geologist for Cyprus who provided some geologic information. Provided below is some information not previously in the file.

The mine was designed and a production decision based on a $350/oz gold price. Capitol cost for construction of the CIP agitation cyanide leach plant was approximately $14 million. This cost was held down by use of used mill equipment and not erecting buildings to house most of the mill equipment. Overburden stripping costs of $6 million will be capitalized over the first two years of operation. During the life of the mine, the strip ratio will average about 5.5:1 waste to ore. Anticipated mill recovery is 92%. Estimated recovery for heap leaching at -5/8" was less than 70%. A set of plans for the mine plant were received by the Department. These include: 1) mass balance flow sheet (normal) 2) mass balance flow sheet (maximum) 3) mass balance flow sheet (#3) 4) process plant services flow sheet and 5) plant layout.

Official reserves for the deposit are 317,000 ounces of gold contained in approximately 4,500,000 tons grading .07 oz/ton. Additional ounces and tons are available underground if the gold price cooperates. Mineralogically the ore is micron gold associated with quartz with or without specular hematite. The ore body is hosted in a quartz latite tuff in the upper detachment plate. Although the detachment fault was not intersected in any of the drilling for the deposit, it does out crop to west just inside the Colorado River Indian Reservation boundary. There it dips 20 degrees to the east. The orebody strikes northwest and dips northeast at 35 degrees. It is this down dip extension where underground mining could take place.

Cyprus' current land position consists of 9 square miles of claims. Additional exploration is planned to be based on information learned from the geology of the open pit.

MORRISON KNUDSEN

CONTRACTORS
ENGINEERS
DEVELOPERS

ONE MORRISON-KNUDSEN PLAZA / P.O. BOX 7808
BOISE, IDAHO 83729 / U.S.A.
TELEX: 368439
PHONE: (208) 345-5000

NEWS RELEASE

FOR FURTHER INFORMATION CONTACT: Public Relations Office

COPPERSTONE (1)

FOR RELEASE: June 29, 1987

'M-K' AWARDED $18 MILLION MINING CONTRACT FOR CYPRUS COPPERSTONE GOLD MINE IN ARIZONA

BOISE, JUNE 29 -- Morrison-Knudsen Company, Inc., of Boise, Idaho, announced today receipt of a contract totaling approximately $18 million for contract mining of a gold mine in Arizona.

D. L. Finger, senior vice-president of M-K's Mining Division, said the contract was awarded by Cyprus Copperstone Gold Corporation, an affiliate of Cyprus Minerals Company, Englewood, Colorado, and covers a period of 2-1/2 years. The Copperstone gold mine is located near Quartzsite, Arizona.

Under terms of the contract, M-K's Mining Division will provide contract mining services which include removal of overburden and mining of the ore.

Morrison-Knudsen Company, Inc. is a wholly-owned subsidiary of Morrison Knudsen Corporation, of Boise.

# # # # #

2212H/1

MINE VISIT REPORT

Mine: **COPPERSTONE**
District: La Paz
County: La Paz

Date: March 18, 1987
Engineers: Ken A. Phillips
Michael N. Greeley

Location: SW 1/4, Sec. 12, T.6N.,R.20W. (deposit location)
: Portions of Secs. 12 & 13, T.6N.,R.20W. and of Sec. 18,T.6N.,R.19W.
(total operation including plant and tailings disposal)

ADMMR File: Copperstone

U.S.G.S. Topographic Maps: Moon Mtn. SE 7.5'
Moon Mtn. NE 7.5'

On the above date and in the company of Allen Rabinoff of the BLM, the above engineers visited the site of the Copperstone gold deposit and planned development by Cyprus Minerals. We were accompanied by Minden "Maggie" McGee who is project manager and will be mine manager.

The property is in the early stages of development. When developed the operation will consist of an open pit gold mine, a mill consisting of crushing and grinding circuits, a carbon in pulp cyanide circuit and dore bullion melting furnace. Original proposed operating capacity was to have been 2,300 tons per day, but that has been increased to 3,000 tons per day because of the capacity of the used milling equipment being moved from Cyprus's (previously Duval's) Esperanza Mine in Pima County.

Current development activity consists of drilling a third water well and constructing the access road. Two water wells have been completed by Venture Drilling and the third is nearly complete. All three will be connected by pipeline to the water storage tanks at the mill site. The mill is projected to need about 500 gallons per minute of make-up water. The well system is expected to make about 600 gallons per minute. Water is drawn from the Bouse Formation and the wells are around 600 feet deep.

The access road which is currently under construction is about 5 miles long. It will leave Arizona Highway 95 at mile post 121.8, go nearly due west for 4 miles and then turn northwest for a distance of about 1 mile to the mine and mill site.

So called exploratory drilling is continuing to the immediate north of the proposed pit. In actuality it is more properly described as condemnation drilling at the site of part of the planned tailings pond to make sure the tailings pond is not placed over future pit expansion area.

Cyprus plans to use a contract mining firm to do the actual open pit mining. They do not currently have any excess mining equipment and feel the use of a

contract miner would keep down done start up costs. Also there is thought to be a large number of contract mining services currently available. As of yet bids from contractors have not been solicited. It is expected a contractor will have about 25 employees.

Mill construction will begin as soon as final design is completed and an air quality permit is received from the State Health Department. Mill operation will require about 35 employees. Total employment at the property (contractor and direct) is expected to be about 80 - 100.

A number of prospect pits expose the western edge of the ore deposit. In those examined the ore was noted to be highly siliceous, with multiple silica banding. Amethyst was present in most exposures. A limited amount of oxide copper mineralization was noted, but Mr. McGee explained that the metallurgists feel it is far too rare to be a problem for cyanide consumption. The deposit dips northeast and will eventually be too deep for open pit mining. The initial mine plan is based on a gold price of $300 per ounce. But the mill location and layout has already been changed to accommodate a "$400 pit" and a "$500 pit" design is being laid out. When asked about a higher gold price it was explained that the dipping nature of the ore deposit would preclude further open pit mining. The possibility of underground mining down dip from the bottom of the pit might one day be considered. The current pit design calls for a final depth of 300 feet. The stripping ratio will be about 6.5 to 1.

Mr. McGee said he has already been approached by commercial mineral dealers/miners for a contract to produce specimens. The company has no plans for such an arrangement. They do however plan to have a visitor's observation and picnic area and will probably dump any specimen material nearby for the public to take home.

Although initial plans call for the mine to be on stream by fall of 1987, early winter now appears to be a more realistic time.

Although there has been some discussion as to changing the name of the mine to something more appropriate for a gold mine than Copperstone, the name has apparently stuck and been decided upon. Other names recently considered and momentarily applied to the property have been Goldstone, La Paz and Chesterstone (after a corporate executive in the company).

P. 6 + cover in copperstone file

K 9

ARIZONA DEPT. OF MINES & MINERAL RESOURCES
STATE OFFICE BUILDING
416 W. CONGRESS, ROOM 161
TUCSON, ARIZONA 85701

Cyprus Minerals Company

John C. Duncan

December 6, 1986

American Mining Hall of Fame

Mining Club of the Southwest

CYPRUS IN ARIZONA

I am highly honored to be considered this year's candidate for the American Mining Hall of Fame. My predecessors, such as George Munroe of Phelps Dodge and Charles Barber of Asarco, are more deserving, having served the industry and particularly the state of Arizona for many more years than I have. In the future, your committee should, in my opinion, concentrate its attention for future candidates on the real miners who have discovered and developed the great ore bodies which dominate the southwestern section of our great country.

I could be more appropriately termed a "Park Avenue Miner". It is ironic that our Secretary of State, George Schultz, and others, have sometimes categorized the cables under the streets of the City of New York as the largest single potential copper reserve in the U.S., not that we Park Avenue Miners would know how to recover the mineral, without tearing up the streets and creating even worse traffic jams than already exist.

The truth of Secretary Schultz's affirmation underlines one of the problems facing the copper industry. The substitution of copper by other cheaper and more effective materials, such as aluminum and glass used for communications in the form of fiber optics. The Copper Development Association and INCRA (The International Copper Research Association) have worked for years and spent large sums of money to find alternate uses for copper. They have also been analyzing the competitive advantages of our metal compared with aluminum and glass and other materials, but the results to date in developing real tonnage have been minimal. All of us in the industry have to work hard and spend money, and take a marketing approach, to find new uses for copper.

the No. 2 molybdenum producer in the United States after Amax, as we have in Idaho the Thompson Creek molybdenum mine as a sole producer of moly which was built by AMOCO at the height of the boom for $400 million. Like Phelps Dodge, our copper mines in Arizona are profitable, even at today's prices.

In addition to Cyprus' copper production, wholly in the state of Arizona, our company is a major producer of coal, both in the West and the East, with 1986 production of approximately 13 million tons.

We also are a major factor in the industrial minerals business, producing talc, calcium carbonate, clay, barite, and limestone, with plants and mines both in the West and the East. Last but not least, we have started production at another property in Arizona, out to the west near the border with California, which is called Copperstone. The name Copperstone is a misnomer and we are considering organizing a contest to rename the property since it is a gold mine which will be producing 50,000-60,000 ounces of gold per year, beginning the third quarter of 1987, and will be one of the largest gold mines in Arizona. This will be the first major production of gold by the present Cyprus Minerals Company, although under AMOCO they had developed gold properties in Canada and in Papua, New Guinea, which were not spun off to the stockholders.

Therefore, you can see how important the state of Arizona is to our company, not only in copper, but also for our new gold property.

In closing, I would not like to leave with the audience any impression that the U.S. copper industry is on easy street again. Despite all the efforts taken by the major U.S. producers, reducing their manpower by nearly 50% and restructuring their corporate and physical facilities, countries like Chile in South America, with ore bodies three times the grade in ore and with lower labor costs, can still produce copper at costs of 40-50 cents a pound. The best U.S. mine costs range between 50 and 60 cents a pound. In addition, the low-cost producers in Chile can continue to increase their production through electrowinning of vast

COPPERSTONE (F) LA PAZ CO.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fife Symington, Governor Edward Z. Fox, Director

NOTICE OF THE PRELIMINARY DECISION TO ISSUE AN INDIVIDUAL AQUIFER PROTECTION PERMIT

Pursuant to Arizona Administrative Code, Title 18, Chapter 9, Article 1, the Director of the Arizona Department of Environmental Quality intends to issue an individual Aquifer Protection Permit to the following applicant(s):

Public Notice No. 4-94AZAP On or about February 9, 1994

Cyprus Copperstone Gold Corporation
P.O. Box A1
Parker, AZ 85344

Aquifer Protection Permit No. P-100229

The Cyprus Copperstone Mine is located 13 miles North of Quartzsite, Arizona, over the Parker Groundwater Basin. The property contains a truck wash rack located in Township 6 North, Range 20 West, Section 13, NW 1/4, NW 1/4, NW 1/4- Gila and Salt River Base Line and Meridian, Latitude 33° 51' 54" North and Longitude 114° 17' 55" West.

The facility was a truck wash rack that was located at the mine contractors compound at the Cyprus Copperstone mine. The facility consisted of a portable high pressure steam system with scaffolding, a concrete slab, oil and grease catching sump and an overflow pond.

The steam system and scaffolding were dismantled and removed from the site and the oil and grease from the sump was collected and disposed of as waste oil at an approved disposal facility. Water remaining in the overflow pond was evaporated and the concrete slab was broken up and placed in the tailings impoundment area. During a visual inspection of the site, it was determined that a significant amount of soil contained petroleum contamination and would require remediation.

Petroleum contaminated soil was identified by its characteristic odor and discoloration. A soil sampling grid was set up across the contaminated area to assess the amount of horizontal and vertical contamination. Soil samples were collected and analyzed for Total Petroleum Hydrocarbons (TPH) with the soils being removed until the sample representing that area had a TPH value below ADEQ's Suggested Soil Cleanup Levels

of 100 mg/kg. Confirmation samples were then collected at each sample site and soil that had TPH values above 100 mg/kg was removed to a process area where it was bioremediated to TPH values below 100 mg/kg. A total of ten soil samples was collected across the grid.

The draft permit for clean-closure of the drywells and related materials is available for public review at the Arizona Department of Environmental Quality, Aquifer Protection Section, 3033 N. Central Avenue, 4th Floor, Phoenix, Arizona, from Monday through Friday, 8:00 a.m. to 5:00 p.m.

Persons may submit written comments or request a public hearing, in writing, to Mining APP Unit, ADEQ, 3033 North Central Ave., Phoenix, AZ 85012 within thirty (30) days from the date of this notice. Public hearing requests must include the reason for such a request.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Rose Mofford, Governor
Randolph Wood, Director

NOTICE OF INTENT TO ISSUE A MODIFIED GROUNDWATER QUALITY PROTECTION PERMIT(S)

Pursuant to Arizona Administrative Code, Title 9, Chapter 20, Article 2, the Director of the Arizona Department of Environmental Quality intends to issue a Modified Groundwater Quality Protection Permit(s) to the following applicant(s), subject to certain special and general conditions.

Public Notice No. 23-89AZGW — On or about
Copperstone Project — February 15, 1989
Cyprus Minerals Company (file)
7200 South Alton Way
Englewood, Colorado 80155
Modification to Groundwater Quality Protection Permit No. G-0011-15

The Copperstone Project is currently permitted by the Arizona Department of Environmental Quality (ADEQ), Groundwater Quality Protection Permit No. G-0011-15. The facility is located in Township 6 North, Range 20 West, Section 12; approximately 18 miles south of Parker, Arizona in La Paz County. It is a hydrometalurgical, precious metal, recovery facility utilizing a closed circuit cyanide vat leach method and carbon-in-pulp absorption. The operator has made application for a major modification, which shall include expansion of the tailings facility, incorporation of a decantation system, relocation and expansion of the process solution channel and reclaim pond. The tailings facility, solution channel, reclaim pond and associated components shall be designed to contain all process solution and a 100-year, 24-hour storm event. The process solution reclaim pond shall have a double-liner system with leak detection. Depth to groundwater is in excess of 500 feet.

The permit and related material are available for public review Monday through Friday, 8:00 a.m. to 5:00 p.m. at Arizona Department of Environmental Quality, Water Permits Unit, 2005 North Central Avenue, Phoenix, Arizona 85004.

Persons may submit comments or request a public hearing on the proposed action, in writing, to ADEQ at the above address within thirty (30) days from the date of this notice. Public hearing request must include the reason for such request.

RECEIVED
FEB 15 1989

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer

CHK
Copperstone Mine
file
La Paz County

ARIZONA GOLD MINES

And Other Minerals

DAN AND ANGIE PATCH
Owners
PHONE/FAX# (602)937-6577
Phone/FAX# (602)483 8367

6850 N. 86th St.
Scottsdale, Az 85250

December 15, 1993

Mason Coggin, Director
Az. Dept. of Mineral Resources
1502 West Washington Street
Phoenix, Arizona 85007

Dear Mason:

Congratulations on your appointment. I know that you are well qualified for the job.

I am enclosing data that pertains to Arizona Gold Mines, Inc. holdings in La Paz County. This is reliable data and you may wish to put it in your files at the Dept. of Mineral Resources.

At present these properties are for lease or purchase. As to the Copperstone Mine, the Cyprus Lease is terminated and I have leased the properties to Santa Fe Pacific Mining Inc. They are doing an in depth study of data now and may begin drillng before long, as you may or may not know an underground reserve is known to exist at present.

Most geologists that I know that have been on the property believe another large ore body is possible - for everyone's sake lets hope so.

Thank you for your consideration and good luck.

Sincerely,

Dan Patch

Dan Patch

Arizona State Office

ILDERNESS IMPACT EVALUATIC

EA. NO. EA-050-7-14
Job: Cypress-Copperstone Project
Location: La Paz County, Arizona

Reviewing Specialist

12/29/86
Date

A. [X] 1. The proposed project is located in an area of public land that has been eliminated from wilderness review.

[ ] 2. The proposed project is located in Wilderness Study Area _____. Based upon Wilderness Interim Management Policy and Guidelines:

[ ] a. The project will not impair the wilderness suitability of the area, provided that the following modification measures are taken:

[ ] b. The project will impair the wilderness suitability of the area.

B. Recommendation

[X] 1. The project be approved as proposed.

[ ] 2. The project be approved with the modification measures described above.

[ ] 3. The project be deferred.

[ ] 4. The project not be approved.

C. Additional Comments (continue on back):

CYPRUS COPPERSTONE PROJECT
EA-050-7-14

Wilderness Resource Inventory

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Appendix C

87800001

DRAFT

ENVIRONMENTAL ASSESSMENT

AZ-050-7-14

FOR

PLAN OF OPERATIONS FOR THE CYPRUS COPPERSTONE PROJECT

Bureau of Land Management
Yuma District Office

see page IV-30 for cyanide statement

RECEIVED
JAN 12 1987

SUMMARY

Cyprus Mines Corporation has submitted a mining plan of operations (MPO) to the Yuma District for its proposed Copperstone Project. The operations would be located on public land approximately 15 miles northwest of Quartzsite.

As proposed, the Copperstone Project would involve a small open-pit mine extending to a depth of approximately 300 feet and having an eventual open area of about 84 acres. A mill would be constructed at hte site to process approximately 2,300 tons per day (tpd) of ore. Processing of ore would incorporate crushing and gridning followed by cyanide leaching and carbon-in-~~place~~ pulp (CIP) adsorption.

The primary adverse impacts from teh Copperstone Project would be surface disturbances at the mine pit and the overburden, waste rock, and tailings disposal piles. These disturbances woud cover an area of approximately 800 acres. Related adverse impacts would also occur to soils, vegetation, wildlife habitat, cultural resources, and visual resources at the site. Many of these impacts would be short-term, however.

Adverse impacts from operations at the Copperstone Project site would be mitigated by the reclamation plan included in the MPO and additional stipulations prescribed by BLM.

Because of the nature of the mineral resources at the site, alternative operations for ~~hte~~ the project are limited. The only economically feasible alternative is the heap leach process -- this process would be less efficient in gold recovery than the proposal, however, and would result in additional surface disturbances at the site.

ENVIRONMENTAL ASSESSMENT AZ-050-7-14
PLAN OF OPERATIONS FOR THE CYPRUS COPPERSTONE PROJECT
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Appendix A: Mining Claim Recordation Information
Appendix B: Cultural Resources Inventory
Appendix C: Wilderness Impact Evaluation

I. PURPOSE OF AND NEED FOR ACTION

A. Cyprus Mines Corporation Plan of Operations

Cyprus Mines Corporation has submitted a Mining Plan of Operations (MPO) for its Copperstone Project to the Yuma District Office. The plan was delivered on November 6, 1986. A letter of formal transmittal of the MPO was received by the District on November 13, 1986.

The Cyprus Copperstone Project mine plan includes all of the plan requirements in Surface Management Regulations 43 CFR 3809.1-5 and BLM Manual 3809, including an Arizona State Office supplement dated July 10, 1986. Additions and revisions of the plan to meet Arizona Department of Health Services' (ADHS) application requirements for Notice of Discharge have also been incorporated.

The Copperstone Project area encompasses 290 lode claims totalling over 5,000 acres. The claim block is located 18 miles south of Parker, Arizona (see Map I-1). The claim name and recordation information are included in Appendix A.

B. Project Description

The plan proposes disturbance of approximately 800 acres. Activity would occur within T. 6 N., R. 20 W., sections 11 through 14, with an access road occupying parts of sections 19 through 23 of T. 6 N., R. 19 W., Gila and Salt River Meridians, Arizona (see Map I-2).

The proposed mining activity would involve a small open-pit mine, extending to a depth of approximately 300 feet and having an eventual open area at the surface of about 84 acres. A mill would be constructed to process approximately 2,300 tons per day (tpd) of ore. Processing of ore would incorporate crushing and grinding followed by cyanide leaching and carbon-in-place (CIP) adsorption. Mine economics would be based upon an ore reserve from which 60,000 ounces of gold per year will be produced.

The mine activity is proposed to be relatively short lived, with mining operations terminating about 6 years after initiation and mill processing completed within another year. During this final phase, closure of the mine and processing plant and final reclamation would be performed.

There is a possibility that additional recoverable gold-bearing ore may be discovered as the operation progresses. Should this be the case, the applicant could delay facility closure and site reclamation and extend the operational life of the mine and plant. This extension would be subject to additional regulatory requirements and procedures including an amendment of the plan of operations. Environmental review of subsequent mining activities would also be necessary.

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Site specific detailed plans for the open-pit mine were commenced on November 23. While minor rearrangement of the Plan could result, there would not be significant changes in any of the components or technology.

C. BLM Action Under Consideration

The BLM action under consideration is approval of the MPO submitted for the Copperstone Project, a wholly owned Cyprus gold project. This operator is Cyprus Mines Corporation, 7200 South Way, Englewood, Colorado 80155. The project manager is Mr. Thomas J. O'Neil.

The approval of any plan of operations by BLM is not a proof of the claim validity. Validity examinations are authorized by the Act of July 1955: 69 Stat. 367.

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Proposed Action

The proposed action is approval of the plan of operations submitted by Cyprus Mines Corporation, with additional mitigation as required by the Bureau of Land Management.

Environmental impacts resulting from approval of this plan of operations are described in Chapter IV of this report.

1. Proposed Activities and Facilities

The following is a description of the Copperstone Project's activities and facilities, as proposed in the plan of operations by Cyprus Mines Corporation.

The proposed location of the project facilities at the site is shown on Map II-1.

a. Mining

Mining operations at Copperstone would be performed by a contract mining firm under Cyprus direction. The contractor would be responsible for all overburden removal, waste rock mining and ore mining.

Waste rock would be mined in 20-foot lifts and ore would be mined in 10-foot lifts. The overburden and waste rock will be transported to waste dump sites or to the tailings disposal area for construction purposes. The contractor would deliver ore to either the primary crusher or to an adjacent stockpile area.

Major mobile mining equipment that is proposed for use in the project is listed in Table II-1.

It is anticipated that roughly 40 percent of the waste material at Copperstone would be mined with scrapers, with no drilling or blasting required. The other 60 percent would be mined using conventional drill, blast, load, haul and dump methods. Blast holes for overburden and ore would be drilled using an airtrack or crawler-mounted hydraulic rig. Blast holes for waste rock would be drilled using a large rotary blast hole drill.

To expose sufficient ore to sustain a 2,300 tpd ore production, mining would commence roughly 2 months before mill start up and waste mining would continue at an accelerated level for the first 24 months.

b. Crushing

Ore would be delivered from the mine to the plant area by truck and dumped into a 75-ton holding bin that is equipped with a 24-inch

grizzly. (See Figure II-1.) Ore that is too large to pass the grizzly would be broken by a hydraulic rock pick. The ore would then pass from the bin to the crushing circuit.

TABLE II-1
Cyprus Copperstone Project:
Major Mobile Mining Equipment

Equipment	Typical Model/Size	Number Operated
Scraper	Cat 633	4
Ore Loader	Cat 988 - 7 cy	1
Waste Loader	Cat 988 - 7 cy	1.5
Ore Haul Truck	Cat 773 - 50-ton	1
Waste Haul Truck	Cat 773 - 50-ton	5
Water Truck	8,000-gallon	1
Grader	Cat 14G	1
Dozer	Cat D9 & D8	2
Waste Drill	DM25 - 6-inch	1
Ore Drill	Airtrack - 3-inch	1.5
Drill Truck	Bulk Truck	1
Plant Loader	Cat 980 hi-lift	1
Backhoe	JD 630	1
Mobile Crane	18-ton	1
Mech. Truck	2-ton	1
Pickup Truck	$\frac{1}{4}$ & $\frac{3}{4}$-ton	10
Fuel/Lube Truck	IMTC	1

Source: Plan of Operations for the Copperstone Project, 1986

The crushing circuit would be portable, trailer mounted, quarry style equipment intended to be placed on-site and cribbed with timber for operations. It would include a dust suppression system.

The primary crusher would be a 32-inch by 40-inch jaw crusher mounted on a trailer which is equipped with a vibrating grizzly feeder and a conveyor belt to transport crushed ore. The vibrating feeder would draw ore from the 75-ton bin at a predetermined rate and pass the ore over a grizzly section with 4-inch openings. Undersized ore from the grizzly section would be delivered via conveyor belts to a trailer-mounted screening section.

The secondary crusher would be a $5\frac{1}{2}$-foot short-head cone crusher, trailer mounted. Oversized ore would be transported to the secondary crusher and then passed to the feed conveyor for screening.

c. Milling

Screened ore would be weighed and delivered by a feed conveyor to a pug mill, where lime, cement, and water would be added in a

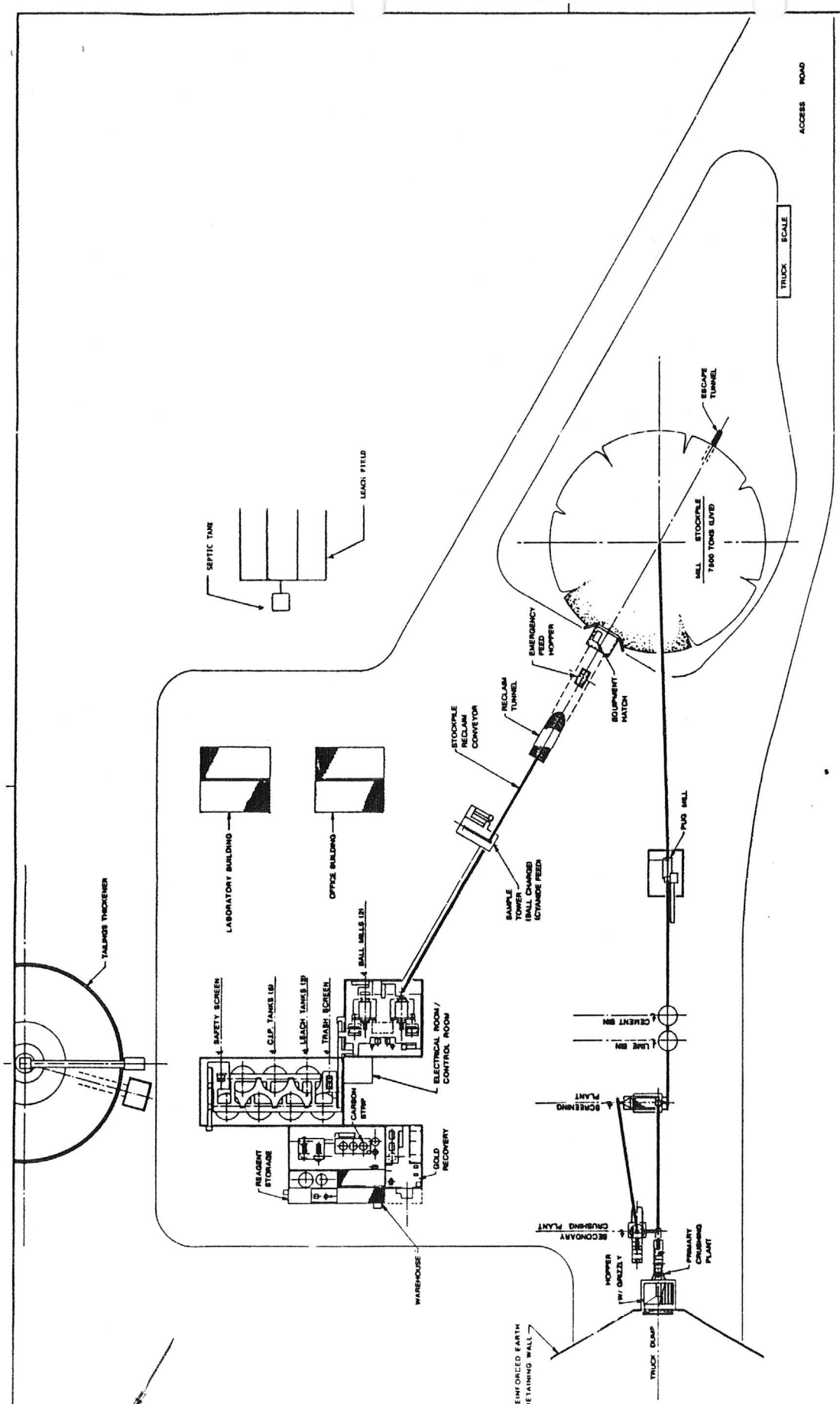

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FIGURE 4
REVISED 12/8/86

CYPRUS METALS COMPANY
COPPERSTONE PROJECT
QUARTZSITE, ARIZONA

PLOT PLAN

MORRISON-KNUDSEN ENGINEERS, INC.

CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Proposed Facilities

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Figure II-1

02-34-002