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BAGDAD YAVAPAI COUNTY MILS119B FILE 4 OF 8 REPORTS FROM 1977 THOU 2000 tmm 12/05/2002

Phelps Dodge Bagdad Copper Corporation PO Box 245, Bagdad, AZ 86321, Phone (520) 633-3352

2600

May 30, 2000

Hello folks,

Hope you all had a good time at the SME meeting in Bagdad on the 13th, and a safe trip home

As promised, I have enclosed handouts for some of the presentations given at the meeting. At this point, I have been unable to obtain handouts for the Truck Maintenance and Tire Talks. If any of you have a specific interest in those two talks, let me know (<u>cschmitz@phelpsdodge.com</u>) and I will make a more diligent effort to get handouts for those talks to you.

In an effort to save a few dollars I have printed the handouts two to a page, and in black and white. If something you are interested in is indecipherable, let me know (at the preceding E-mail address, or whatever) and I can send you a CD containing the powerpoint presentations.

Here are some references for some of the slides:

- Titley, S. R., 1982, Advances in Geology of the Porphyry Copper Deposits, Southwestern United States: The University of Arizona Press, 560pp. (Base Map – Slides on page 2(bottom) & page 3 (top), Geology Presentation).
- Bogart, R.C., 1990, Some Talk About a Copper Mine A History of Bagdad, Arizona: Ralph Tanner Associates, Inc., 229pp. (Some of the background photos for the Bagdad History Presentation).

I hope you all enjoyed your visit to Bagdad, and look forward to seeing you again.

Sincerely,

Chris Schmitz Chief Engineer Phelps Dodge Bagdad

BALDAD (P) YAVARA

GEOLOGY OF THE BAGDAD MINE An Outline, June, 1994 by

P. M. Blacet, J. W. Hawley, and C. M. Schmitz

The Bagdad open pit mine is developed within and adjacent to a composite granodiorite- to quartz monzonite stock of Late Cretaceous age. Three Laramide plutons are recognized within the Bagdad pit, representing distinct magmatic pulses that intruded a predominately middle Proterozoic granitic and metamorphic terrane approximately 100 miles northwest of Phoenix, Arizona. Copper and molybdenum mineralization was spatially and genetically related to a porphyritic quartz monzonite marking the middle phase of this intrusive sequence. The hypogene Bagdad orebody is presently being mined at a rate of about 85,000 tons per day by the Cyprus Bagdad Copper Corporation, a subsidiary of Cyprus Amax Minerals Company. Mineable reserves are currently estimated at about 1.1 billion tons of sulfide ore averaging 0.37% TCu and 0.02% Mo.

In many respects, the 71 Ma Bagdad orebody is similar to other Arizona copper-molybdenum porphyry systems of Late Cretaceous age. Primary sulfide ore occurs within highly fractured rocks of Precambrian and Late Cretaceous age as an extensive stockwork of small, closely-spaced veins and veinlets consisting predominantly of quartz with variable amounts of pyrite, chalcopyrite and molybdenite. Very commonly in main-stage quartz veins molybdenite occurs as conspicuous symmetrical borders against the wallrock, with pyrite and chalcopyrite localized in irregular knots occupying the central parts of the vein. Calcite is a common gangue mineral, along with biotite, potassium feldspar and sericite. Locally, magnetite is conspicuous. Apatite is rarely intergrown with chalcopyrite and hydrothermal biotite, especially in local breccias. Nearly monomineralic fracture fillings of pyrite, chalcopyrite, and molybdenite occur widely throughout orebody. Deep drilling documents a general tendency for molybdenite to increase with depth.

Sphalerite, galena and tetrahedrite occur widely in relatively late quartz veins both within and peripheral to the Cu-Mo orebody. These polymetallic veins, often having higher than average silver values, are generally associated with phyllic alteration characterized by strong sericitic envelopes. Although of no economic significance in the Bagdad orebody, gold values tend to be elevated in these small, late-stage Zn-Pb-Ag veins. These polymetallic veins show a somewhat oval-shaped district zonal pattern, extending up to 3 miles out from the pit, and elongated slightly along a north-northwest structural trend defined by faulting and by a swarm of late quartz monzonite porphyry dikes.

From a district-wide perspective the Bagdad stock, and its cogenetic porphyry copper deposit, occupies an unique structural setting near the center of a 20 km long, east-northeast trending belt of Late Cretaceous plutons. The attached simplified geologic map, based largely on USGS (Anderson, 1955) and Cyprus

mapping, shows that the Bagdad pit is located at the site of multiple intrusives, large-scale Cu-Mo mineralization, potassic alteration, and the centroid of widespread phyllic and propylitic alteration. Cyprus geologists largely concur with Anderson's conclusion that the localization of multiple intrusions and cogenetic mineralization was structurally controlled by the intersection of the north trending Mountain Spring fault zone and the ENE-trending Laramide intrusive belt. The Mountain Spring fault appears to represent a major shear zone whose intersection with the structural elements of the intrusive belt provided a weakened conduit through the upper crust for repeated magmatic pulses during the Late Cretaceous.

Conspicuous, disseminated indigenous chalcopyrite is restricted to a relatively late intrusion of porphyritic quartz monzonite (PQM) and a finer grained, quartz monzonite porphyry (QMP). Throughout most of the hypogene orebody sulfide mineralization was overwhelmingly structurally controlled, predominantly by a vast array of joints and fractures, by steeply dipping faults generally striking east-northeast and north-northwest, and to a lesser degree within intrusive breccias spatially associated with the margins of the PQM.

Because the PQM and QMP are rather convincingly cogenetic textural varieties of the same intrusive, with the finer grained quartz monzonite porphyry commonly representing a chilled border grading inward into PQM, these rock types are treated as a single unit within the geologic block model. Both of these rock types are cut by fine- to very coarsely crystalline secondary biotite that has a K/Ar date of about 71 Ma (Damon and Mauger, 1966). At the present mining elevations, the PQM forms a large, irregular, dikelike body trending eastnortheast across the central part of the composite Bagdad stock.

The contoured perimeter of the Cu-Mo ore shell, defined by a somewhat arbitrary 0.2 % total Cu cutoff, demonstrates remarkable symmetry concentric around the PQM. The symmetrical geometry of the ore shell around a relatively low-grade core of PQM, and the restriction of truly disseminated blebs of chalcopyrite and localized concentrations of partially chalcopyrite filled miarolitic cavities to the PQM, constitutes compelling evidence that the PQM was the source of the copper bearing fluids which formed the Bagdad deposit. That the PQM represents a high level extension of a deeper stock of porphyritic quartz monzonite is documented by extensive drilling.. A well developed pyritic halo extends outward from the ore shell, as part of a well developed phyllic alteration zone concentric about the Cu-Mo orebody and the PQM.

Several lines of evidence indicate that the PQM was intruded into a subvolcanic environment and represents the upper part of a larger body of quartz monzonite that energized and introduced copper, molybdenum and other metals into a complex hydrothermal system developed in the strongly fractured rocks above and adjacent to the PQM. Supporting this genetic model is the symmetrical arrangement of the ore shell, pyritic halo, zonation of potassic, phyllic and propylitic rock alteration, as well as the district-wide distribution of polymetallic quartz veining around the PQM megadike.

Predating the PQM are two largely equigranular, fine- to medium-grained facies of the composite stock. The oldest of these intrusive units is a relatively biotitic, strongly potassically altered granodiorite. Hornblende, largely replaced by secondary biotite, is a minor but significant accessory mineral in this granodiorite facies of the Bagdad stock. For mapping and core logging purposes this more mafic facies has been informally designated QM1, and appears to represent an a slightly earlier comagmatic border facies of the main quartz monzonitic Bagdad stock. The QMI shows textural and mineralogical affinities to the Blue Mountain stock, a biotite-hornblende granodiorite and monzodiorite pluton exposed over approximately 8 square miles, centered about 5 miles east-northeast of the Bagdad pit. Hornblende is conspicuous in the Blue Mountain stock and recent K/Ar dating of biotite places its age at approximately 76 Ma (J.R. Lang, 1991), substantiating the interpretation by the authors that this stock represented the largest, most easterly, and least altered of several Late Cretaceous plutons along the 20 km long, east-northeast trending Bagdad intrusive zone. Although intense hydrothermal alteration of the granodioritic QM1 has probably reset its K/Ar clock, the texture, compositional and general age relations suggest that the hornblende-bearing QM1 is similar in age to the Blue Mountain stock. Probably because of its relatively high initial iron content and closely spaced fractures, the QM1 border facies commonly acted as an especially favorable host rock for copper mineralization.

The predominant rock type within the composite stock is a medium-grained, nearly equigranular to weakly seriate-porphyritic quartz monzonite, informally designated QM₂. Contacts between QM₁ and QM₂ are generally obscure, and it appears likely that the granodioritic QM₁ represents a broad border zone grading imperceptibly inward to QM₂. The Laramide stock intruded a complex Precambrian terrain that commonly is strongly mineralized for several hundred feet away from the outward dipping intrusive contacts.

The youngest igneous rocks recognized within the Laramide intrusive sequence is a large dike and small plug-like bodies of granite porphyry (GRP). Although the GRP is somewhat similar to some varieties of conspicuously porphyritic, quartz-phenocrystic QMP, the granite porphyry was clearly intruded after the end of main-stage copper and molybdenum mineralization. The GRP is generally unmineralized, except for minor late-stage quartz-pyrite-sphaleritegalena-tetrahedrite veins, and rare chalcopyrite veinlets. Pyrite is widely developed in the GRP, where it is associated with strong to pervasive phyllic and argillic alteration probably representing the waning stages of the hydrothermal system.

Rock alteration studies within and adjacent to the Bagdad stock indicate that Cu-Mo mineralization generally is associated with a zone characterized by overprinting of moderate to strong potassic alteration (defined by secondary biotite and K-feldspar) by a later superimposed phyllic alteration (defined by sericite). The shift from widespread potassic alteration to later phyllic alteration probably reflects an inward collapse of the temperature gradient during the declining stages of the hydrothermal system. Within the ore shell, Cu and Mo mineralization occurred during both the potassic and phyllic alteration phases, with the phyllic alteration generally diminishing in the deeper parts of the orebody. A strongly developed quartz-sericite-pyrite alteration halo surrounds the ore shell, dipping steeply away from the pit, and helping to define the geometry of the higher-grade portion of the orebody as an elliptical truncated cone increasing in diameter with depth.

Limited fluid inclusion studies of quartz in veins associated with mainstage Cu-Mo mineralization and phyllic alteration (Nash and Cunningham, 1974) indicate ore deposition from hydrothermal solutions of moderate to high salinity (8 to 35% NaCl equivalent) at temperatures ranging from 225° to 375° C. The presently exposed portion of the ore shell apparently formed at a depth of approximately 6,000 feet. Geological evidence and physical-chemical constraints indicated by fluid inclusion data suggest that the Bagdad Cu-Mo porphyry system developed beneath a Late Cretaceous volcanic center. The Grayback Mountain rhyolitic lithic tuff probably represents part of the complex volcanic edifice that once overlay the Bagdad district. Economic Cu-Mo mineralization was spatially and temporally associated with the intrusion of the 71-72 Ma porphyritic quartz monzonite (PQM), probably reflecting a complex interaction between magma-derived heat and metal-enriched hydrothermal fluids and groundwater. Widespread breccia piping and the occurrence of largely vapor filled fluid inclusions (Nash and Cunningham, 1974) suggest localized venting and boiling of this major hydrothermal system. Widespread mixedlithology intrusive breccias, with angular to rounded clasts entrained in a finely comminuted rock flour matrix, and minor pebble diking support the interpretation of violent degassing. The western part of the GRP intrusive consists largely of intensely altered tuff-matrix intrusive breccia, with clasts primarily mineralized QM series and Precambrian rocks, again indicating explosive venting.

DESCRIPTION OF GEOLOGIC MODELING UNITS

Eight lithologic units are represented on the generalized geologic map of the pit area. For simplicity of block modeling, these units commonly include two or more lithologies.

Dumps and Tailings

Mine dumps and old mill tailings occur widely in the mine area. because large tonnage's of these unconsolidated materials will have to be relocated in order to significantly expand the pit, they constitute an important modeling unit.

Sanders Basalt

A succession of Late Miocene, about 10 Ma, olivine basalt flows, up to about 100 feet thick, cap Sanders and Copper Creek Mesas, east and north of the pit. Separating the basalt from the underlying Gila Conglomerate is a conspicuous, white rhyolite tuff approximately 30 feet thick.

Gila Formation

This unit is loosely correlated with the Gila Formation elsewhere in Arizona, and consists of Middle to Late Miocene terrestrial sediments; largely tan to reddish brown, weakly to moderately consolidated alluvial gravel, and pebbly arkosic sandstone. Within the unit are several interbeds and channel fillings of rhyolitic tuff and poorly sorted tuffaceous sandstone and mudstone. The Gila Formation was deposited on an erosion surface with substantial topographic relief so that, in the mine area, its thickness varies from less than 100 feet to approximately 1,000 feet. Secondary chalcocite enrichment at Bagdad largely predates the Gila Formation, as evidenced by Gila-filled canyons dissecting the chalcocite blanket in the mine area.

Granite Porphyry (GRP)

White, generally intensely sericitized or argillically altered rhyolite or granite porphyry, with scattered K-spar phenocrysts mantled by sodic plagioclase up to more than an inch across. Bipyramidal quartz phenocrysts up to about half an inch are conspicuous.

Porphyritic Quartz Monzonite (PQM)

The PQM, together with its finer-grained equivalent QMP, represents an extremely important modeling unit. Even though this relatively late intrusive rock generally contains significant disseminated chalcopyrite, the abundance of this indigenous sulfide is highly variable and this rock largely coincides with low-grade ore and a central core of low-grade sulfide mineralization. Disseminated pyrite is ubiquitous within the PQM, but its abundance relative to chalcopyrite varies greatly; molybdenite commonly occurs as sparsely disseminated grains.

Texturally, the PQM ranges from distinctly porphyritic to seriate-porphyritic, with all gradation to finer-grained, conspicuously porphyritic QMP. Generally the PQM is light gray, but approaches white in varieties with less than 5 percent biotite.

A distinctive phenocryst population usually consists of 3-8% biotite (1-5 mm), 10-20% rounded quartz "eyes" (1-5 mm), 30-25% sodic ;plagioclase (2-10 mm), and 3-10% euhedral orthoclase (3-12 mm). These phenocrysts occur as an open mesh with a fine-grained interstitial groundmass of quartz and potassium feldspar.

Breccia Pipes

Weakly to strongly mineralized breccias are widely occurring in the mine area. The two largest, presumably pipelike bodies of breccia are shown on the generalized geologic map. These breccias consist largely of a highly mixed assortment of closely packed, angular to subrounded fragments of Pre-Cambrian and/or Laramide rock types in a strongly altered matrix of finer-grained breccia and comminuted rock. These breccias are unsorted, with fragments ranging in size from a few millimeters to more than a meter. Potassic alteration is strong to pervasive with crosscutting veinlets, alteration rims, and interstitial fillings of fine to coarsely crystalline biotite, K-feldspar, and guartz, commonly assuming an aplitic to pegmatitic aspect, with intergrown or disseminated chalcopyrite, pyrite, and minor molybdenite. Most of the sulfide mineralization occurs in quartz veinlets than crosscut both the fragments and matrix, indicating that the breccias formed prior to the culmination of the main stage of Cu-Mo mineralization. The age of the breccias is bracketed by the occurrence of rare Laramide quartz monzonite fragments and numerous crosscutting dikes and irregular stringers of PQM and QMP. A poorly defined spatial association between the breccias and the PQM suggests a genetic relationship.

Quartz Monzonite (QM)

Because vague or gradational contacts are common between the granodioritic facies of the Laramide quartz monzonite (QM1) and the more widespread less biotitic quartz monzonite (QM2), these two rock types have not been adequately delineated in the pit or subsurface. For this reason they have been combined to form a single modeling unit (QM). Both compositional and textural varieties are medium-grained, weakly seriate-porphyritic to hypidiomorphic-granular rocks. Biotite in the QM1 occurs largely or entirely as leafy secondary biotite, commonly forming prismatic aggregates that may be pseudomorphs after hornblende. In the QM2 biotite forms characteristic book-like phenocrysts or aggregates. Potassium feldspar is significantly more abundant in the QM2, where it is largely intergrown with quartz to form a fine-grained interstitial mosaic. Sparse quartz eyes (1-2 mm) are commonly present in the QM2, locally becoming conspicuous. Disseminated indigenous chalcopyrite has not been recognized in either variety of the QM.

Alaskite Porphyry (alp)

This leucocratic Precambrian rock is in contact with the composite stock along most of its western margin. This distinctive rock is composed almost entirely of quartz and feldspar. Irregular quartz phenocrysts (1-4 mm) are conspicuous, and along with twinned albite phenocrysts (1-3 mm) are set in a fine- to very fine-grained micrographic to myrmekitic ground-mass of interlocking quartz and potassium feldspar with some albite. This granophyric intrusive rock is essentially devoid of mafic minerals, and the very low initial iron content probably explains why it is an extremely poor host for copper mineralization.

Precambrian Complex

Because of the structural complexity of the Precambrian terrain adjacent to the Laramide composite stock, these intimately mixed and highly diverse rocks have been included in a single modeling unit. This complex consists predominantly of three metamorphosed Precambrian formations (Bridle Volcanics, Butte Falls Tuff, and Hillside Mica Schist) intruded by a wide assortment of igneous rocks ranging in composition from gabbro to granite, including pegmatite and aplite. Generally within the ore shell relatively high-iron rocks (Bridle Volcanics, gabbro, and quartz diorite) have acted as exceptionally favorable hosts for copper mineralization. Conversely, molybdenite mineralization seems to be independent of the host's initial iron content, and may in fact be localized in silicic rocks low in iron

NO ULTIMATE PLT LIMITY REACIPED IN ANY PART OF PIT YET.

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ULTIMPLE "JO TEAR MINE PIT







5/1/00 **Mine Operations Equipment List** Equipment Type Number of units 2 2 1 (ST Lease) 1 Shovels: P&H 4100 (56,58 cyd) P&H 2300 (25 cyd) Hitachi 3500 (23.5 cyd) Caterpillar 994 (22 cyd) Haul Trucks: Caterpillar 793 19 Drills: Ingersoll Rand DMH Ingersoll Rand DMM2 Ingersoll Rand DMM3 2 1 1 Track Dozers: Caterpillar D9 Caterpillar D10 3 3 Rubber Tired Dozers: Caterpillar 834 Caterpillar 824 2 2 Graders: Caterpillar 16G 3 Water Trucks: Caterpillar 789 Caterpillar 773 1 2

	Manpower/Schedule	
	Mine Operations	
	# of people	
	Superintendent 1	
	Planner 1	
- 18. 3839		
120.02		
	Rotating Crews: 4 Crews	
		111211
	Schedule: 23 Hrs/Day, 7 Day/Week	
	Each Crew # of people	
	Supervisors 1	
	Lead Techs /Dispatchers 2	
	Shovel Onerators 5	
	Turk Dittare 19	
	Aux Equipment Chamlers A	
	Driffere 2	
	Limers 2	
	crusher operators 2	
	Total per Crew 35	
	Special Projects: 1 Crew	
an allow	Schedule: (4 Days/Week, 10 Hrs/Day) per operat	tor
	# of people	
	Supervisor 1	
11.1.1.1.	Lead Tech. 1	
	Operators 7	
1	Total 9	
	1	
and the second sec	MineTechnical Services	
	Chadden Committee attender	
1	Schedule: 5 DaysAveek, 8 Hrs/Day	
	# of people	
	Superintendent 1	
	Engineers/Geologists 8	
Courses.	Surveryors 3	
	Blasters 3	
	Total 15	2 4 4 4 L
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L		1998	1999	2000vtd	
	Tons Mined per Day				
	0.00	81 100	03 353	75 705	
111111111		01,180	03,233	15,705	
	vvaste	90,258	97,543	134,942	
	Strip Ratio	1.11	<u>1.17</u>	<u>1.78</u>	
	Average Ore Grade (%)				
	Total Copper	0.36	0.41	0.42	
	Acid-Soluble Copper	0.01	0.02	0.02	
	Molybdenum	0.023	0.022	0.013	
	va Haul Lengths (feet) On	May			
		10 200	10.050	0.750	
	Ore	10,200	10,000	8,300	
	Waste	12,450	15,250	9,250	
	Shovel Production TPH				
	4100's	3,498	3,445	3,419	
	2300's	1,987	2,055	2,058	
	3500's	n/a	n/a	1,672	
	994	768	998	1,166	
	Truck Production TPH				
	702'0	506	404	ERE	
	1835	300	484	202	
			1		















	F	helps Do	dge Bagdad C	Copper Compa	ny		
line Depl. Production Statistics				Prepared By: Merie Schneible			8
	Month to Date		Past Week			Next Week	
	5/1/00	through	5/11/00	4/28/00	Ihrough	5/4/00	Famoad
	Porecasi	ACTUAL		578 592	547 536	(31.055)	578 592
	92 656	76 529	(60.333)	87 656	78 219	(4 437)	82 656
Arade - Total Cu	0425	0.49	0.065	0 493	0.50	0.007	0.459
Acid Sol Cu	0.015	0.02	0.005	0.014	0.01	-0.004	0.018
Mo	0.014	0.016	0.002	0.018	0.017	-0.001	0.021
Oxide	0	0	0	0	0	0	0
Waste	1,435,677	1,669,263	233,586	913,613	1,051,733	138,120	913,613
Total Tons Mined	2,342,886	2,511,073	168,187	1,492,205	1,599,269	107,064	1,492,205
Tons Per Shift	106,495	114.140	7.645	106,586	114,234	7,647	106,586
Truck Load Factor	240.0	238.7	-1.3	240.0	239.3	-0.7	240.0
Tons Per Operated Hour	551	600	49	551	599	48	551
Strip Ratio	1.50	1.98	0.40	1.58	1.92	0.34	1.58
Availability %	1				Saraansa X		
Shovels (4100)	90.0%	90.4%	0.4%	90.0%	89.3%	-0.7%	90.0%
Trucks (793)	89.0%	88.6%	-0.4%	89.0%	89.4%	0.4%	69.0%
Crush & Conveying	87.4%	87.5%	0.1%	67.4%	89.4%	2.0%	87.4%
Truck Utilization (793) %	98.0%	98.5%	0.5%	98.0%	98.1%	0.1%	98.0%
Truck Used Hours	4145	4241	96	2638	2712	75	2638
Crusher Used Hours	231	207	-23	147	136	-11	147
Average Running Trucks		16.76			16.85		
Average Idle Trucks		0.26			0.33		





























MAY 13, 2000







PHELPS DODGE BAGDAD, INC. Bucket Wheel Excavator

Bucket Wheel System

O&K Bucket Wheel Excavator

O&K Belt Wagon

Face Conveyor 36 inches wide, 3000 feet long.

Connecting Conveyor 36 inches wide, 1500 feet long.

Waste Conveyor 36 inches wide, 2000 feet long.

O&K Spreader

Capital for the bucket wheel project \$6.5 million.














Pŀ	IELPS DODG	E BAGDAD, II	NC.					
Remaining inventories after shut down of the bucket wheel in 1994.								
	Embankment	Tailings	Equipment					
West Cut	5,987,000 tons	-	P&H 2300					
South Cut	8,375,000 tons	1,610,000 tons	P&H 2250					
East Cut	1,654,000 tons	7,929,000 tons	Hitachi 3500					
East2 Cut	1,360,000 tons	12,366,000 tons						
Totals	17,376,000 tons	21,905,000 tons						
MAY 13, 2000								



















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PHELPS DODGE BAGDAD, INC. Challenges : 1. Low ground bearing pressures. Cable Shovels 45 to 51 psi Hitachi 3500 EX 25 psi Caterpillar 994 loader 18 psi 2. Slope and ground stability problems. 3. Difficulty in maintaining roads within the tailings.















































Bagdad District Geologic Units

- · Post-Laramide Units:
 - Quaternary Alluvium, Terrace Deposits & Landslide Deposits
 - Quaternary Sanders Basalt
 - Wilder Formation
 - Rhyolite Tuff
 - Gila Formation
- Laramide Units:
 - Granite Porphyry/ Rhyolite Porphyry Breccia
 - Porphyritic Quartz Monzonite, Quart Monzonite Porphyry
 - Diorite Porphyry
 - Quartz Monzonite
 - Rhyolite
 - Grayback Mountain Tuff
- Precambrian Units:
 - Various silicic through basic intrusives, meta-sediments, and metavolcanics.



Isotopic Ages From The Bagdad District And Vicinity					
Туре	Age (Ma)		Material Dated	Reference	
Pb-Pb	1790		Galena from Old Dick Mine	Livingston and Damon, 1967	
U-Pb	1760		Zircon from Butte Falls Tuff	Silver, 1966	
U-Pb	1740 +/-	15	Zircon from gneissoid rhyolite and porphyritic granodiorite	Silver, 1966	
			Anderson's King Peak Rhyolite and Granodiorite Gneiss		
Rb-Sr	1390		Muscovite from Lawler Peak Granite	Aldrich, et al 1957	
U-Pb	1375 +/-	15	Zircon from Lawler Peak Granite	Silver, 1966	
K-Ar	1360		Muscovite from Lawler Peak Granite	Aldrich, et al 1957	
FT	. 84:+/-	14	Fission track date on apatite from Grayback Mtn Tuff	Bryant	
K-Ar	78.3 +/-	1.8	Date of biotite from QM stock in Mammoth Prospect Area	Lang, 1991	
K-Ar	76.2 +/-	1.7	Date on biotite from Blue Mountain Stock	Lang, 1991	
К-АГ	/5.2 +/-	1.7	Late on biotite from diorite porphyry dike, Copper King Mine area.	Lang, 1991	
	73		Quartz Monzonite	Rose and Cook, 1965	
	72:		Hydrothermal biotite	Creasey, 1965	
K-Ar	70.9 +/-	0.7	Date on hydrothermal(?) biotite, Bagdad pit	Damon and Mauger, 1966	
K-Ar	72.6 +/-	2.3	Same sample, recalculated w/ 1982 constants		
FT	71.2 +/-	12	Fission track date on apatite from Grayback Mtn Tuff	Bryant	
Re-Os	70.8 +/-	0.4	Molybdenite from coarse Mo/Qtz Vein in pit	McCandless and Ruiz, 1993	
K-Ar	10.02 +/-	0.35	Whole rock from olivine basalt cap at north end of	Shafiquillah, et al 1980	
			Malpais Mesa (near Santa Maria Bridge on US 93)		
K-Ar	8.60 +/-	0.36	Whole rock basalt from lowest exposed flow on Burro Creek bridge on US 93	Shafiquillah, et al 1980	
















































































.











Historic Bagdad Production Through 1999

- 5.2 Billion Pounds of Copper
- 145.5 Million Pounds of Molybdenum
- 12.8 Million Ounces of Silver
- 545 Million Tons of Mill Feed Ore
 Averaging 0.492% Total Copper
- 184.2 Million Tons of Oxide Leach
 - Averaging 0.463% Total Copper
- 1.36 Billion Total Tons Mined

Bagdad Reserves As of 1/1/2000

- 775 Million Tons of Mill Feed Ore Averaging:
 - 0.373% Total Copper
 - 0.022% Molybdenum
- 16.5 Million Tons of Oxide Leach Averaging:
 - 0.297% Total Copper
 - 0.177% Acid Soluble Copper
- 676 Million Tons Waste
- 0.87:1 Strip Ratio
- Based on \$0.90/lb copper, and \$3.50/lb molybdenum

Bagdad Geologic Resources

- At an 0.20% total copper cutoff, proven and probable resources of 2.4 billion tons averaging:
 - 0.361% Total Copper
 - 0.021% Molybdenum
- Proven, probable and possible resource is much larger. Interpolation of blocks to the limits of the variograms suggests a resource exceeding 5 billion tons at an 0.20% total copper cutoff.



FEATURES OF THE

UPPER BURRO CREEK WILDERNESS STUDY AREA

NOT recommended by the ELM for wilderness designation.

• Eighteen miles of historically and continually used roads in the heart of the wilderness area. Additional miles of roads along the borders of the wilderness study area.

e Eight large cattle watering stations ranging in size from one acres. These require heavy equipment to

• Four stock corrals with several hundred feet of fence per side.

One windmill cattle watering station.

• One United States Weather Service solar modular weather station with dish antenna for satellite up-link.

• Ten miles of fencing.

 One and one-half miles of exposed water pipe starting from Francis Creek and going into the central area.

Diggings from previous mining areas.

 Sights and sounds of Wayco trucks, tailings ponds, concentrators, separators, grinding lines, and other mine activity from the lower one-third to one-half of the area.

• Northeastern boundary of area is bordered by major water pipe and related operations for water supply for town and mine at Bagdad. Electric power line will be placed above this water line along boundary for additional power supply.

FEATURES OF THE

LOWER BURRO CREEK WILDERNESS STUDY AREA

(From the Bureau of Land Management Report, Mineral Potential by WSA and Alternative, Phoenix, District)

 4.5 miles of Parker-Bagdad 69kV powerline bisect the northwest section of the WSA. p. 113

© 17.2 miles of dirt roads and 18 miles of fencing exist in the WSA. p. 113

• Two corrals, one reservoir and six developed Springs are located throughout the WSA. p. 213

 "Solitude opportunities along the southern and southwestern portions of the WSA are not as good as elsewhere because of the sights and sounds of traffic along Highway 93." p. 113

 Highway 93 is joined by the 345kV Mead/Liberty powerline which shares the southwest boundary of the WSA.

• Even if wilderness designation occurs, potential development of one mine in existing mining claims with proven discoveries will create two miles of roads and a mining operation impairing wilderness values on 1,200 acres. p. 185

• "The designated wilderness area would include 11,110 acres of high mineral potential..." p. 185. Area has produced gold, silver, molybdenum, copper, and lead. Helium, tungsten, beryllium, lithium, magnesium, and geothermal resources have been identified.

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• An active ranching operation in 9,800 acres of the eastern section of the WSA.

 Active high value specialty clay mining operation with haulage roads used by 24-ton haul trucks in eastern section of the area.

Natural gas pipeline bisects the Northwestern sector of the

• Sights and sounds of Wavco trucks, tailings ponds, concentrators, separators, grinding lines and other mine activity from the eastern one-third to one-half of the area.

Northwestern boundary of area is bordered by major water pipe

CYPRUS BAGDAD COPPER COMPANY

- Directly employs 600 people
- Annual average wage is \$35,000
- Total annual payroll is \$21,000,000
- #1 taxpayer in Yavapai County -- \$7,000,000 in 1988
- Economic base for the 2400 people of Bagdad, Arizona
- Presently produces 175,000,000 pounds of copper annually--5.5% of all new U.S. production
- 50% of copper production shipped to Cyprus smelter at Miami, Arizona
- Presently produces 8,000,000 pounds of molybdenum annually--4% of the free world's production
- Virtually continuous operation since 1917

DURING THE NEXT 30 YEARS. IF PERMITTED TO OPERATE. CYPRUS BAGDAD WILL:

FUI

- Produce 6 billion pounds of copper and other metals
 valued at \$7 billion (1989 dollars)
- Pay \$650,000,000 in wages
- Furchase directly from Arizona businesses \$500,000,000
 worth of products
- Provide \$230,000,000 in local tax revenue.

1989 PRODUCTION:

- Present production on 4 grinding lines is 60,000 tons of ore daily
- From this, 8 10 pounds of copper are recovered from each ton
- To obtain each day's 60,000 tons of ore, an additional
 60,000 tons of overburden must be moved
- At present production rates, the tailings pond presently available has less than 11 years of capacity.

P.7/26

1990 PLANNED EXPANSION:

- Engineering work is presently underway to install a 5th grinding line by mid 1990
- This expansion project will cost \$21,000,000
- Production will then be increased to 75,000 tons of ore per day
- 40 more people will be employed
- At this expanded rate of production the tailings pond presently available has less than 9 years of capacity.

In order to accommodate the continuous orderly operation of the mine over the next 30 years and prevent its premature closing, the permitting process will begin in the next year to construct a third major tailings pond down the slope from the two existing ponds.

The designation of Lower Burro Creek or Upper Burro Creek as a wilderness area may create virtually insurmountable impediments to the timely successful permitting of the tailings pond.

ECONOMIC IMPACT OF CYPRUS BAGDAD COPPER COMPANY ON THE COUNTY OF YAVAPAI AND THE SURROUNDING REGION

September 26, 1989

Prepared for:

Cyprus Copper Company 9100 East Mineral Circle Englewood, CO 80112 (303) 643-5000

Prepared by: Mountain West Research 432 N. 44th Street, Suite 400 Phoenix, AZ 85008 (602) 273-1088

PR #78-1114

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1.0	Regional Context
2.0 [.]	Description of Cyprus' Existing and Planned Operations
3.0	Direct Impacts on the Regional Economy
4.0	Indirect Impacts on the Regional Economy 15

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1.0 Regional Context

This report presents the economic impact of the Cyprus Bagdad Mine, a large copper and molybdenum mine and concentrating operation in central Arizona.

Cyprus Bagdad Copper Company is a division of the Cyprus Minerals Company. It operates the Bagdad Copper Mine, a 100-year-old open pit mine, which primarily produces copper and molybdenum concentrates and silver co-product. Copper cathodes are produced using a solvent extraction-electrowinning operation. This method of producing copper does not require the smelting and refining of copper concentrate.

The Bagdad Mine contains a rich ore body with estimated reserves of over 1.4 billion tons. Given today's prices and production capacity, the mine life is estimated at over 60 years. The solvent extraction process could extend the productive life even further. The current tailings pond has a life expectancy of up to 10 years.

The Bagdad Mine has been contributing to the Arizona's and Yavapai County's economy since its was first developed in the late nineteenth century. Operating almost continuously since 1917, the mine has completed six major expansions of its mining and milling operations.





2.0 Description of Cyprus' Existing and Planned Operations

The Bagdad Mine owns, leases or has allotments to about 200,000 acres of western Yavapai and southeastern Mohave Counties. Of this, the Mine-Concentrator-Township complex and related facilities are distributed throughout 8 square miles, encompassing over 5,000 acres. Approximately 7 acres of building floor space are included in the mine-concentrator complex.

The Bagdad Mine consists of a large open pit mine, an ore concentrator and milling operation, a solvent extraction-electrowinning plant and tailings and waste rock disposal system. Approximately 120,000 tons of ore and waste rock are mined per day, half of which contains economic ore. The milling plant produced 60,000 tons of copper and molybdenum concentrate products per day in 1988. The copper concentrates contain marketable silver.

An additional 50,000 pounds of high purity copper cathodes are produced from the mine's mineralized waste dumps using the low cost solvent extraction-electrowinning process. Bagdad's mineral products are sent to other Cyprus units (in Pima, Gila and Pinal Counties), Magma Copper in San Manuel, Arizona, and Japan for further processing. The annual mine production currently exceeds 200 million pounds of copper.

In 1988, the value of Cyprus Bagdad's mineral production was \$236 million. Of this, copper contributed \$211 million and molybdenum another \$20 million. Strong copper prices and the mining of a richer molybdenum ore should increase the mine's output value to over \$250 million for 1989.

Bob Cummuncham.

TABLE 1

SUMMARY DESCRIPTION CYPRUS BAGDAD COPPER COMPANY

	1988	Estimate 1990	d
Value of Production (mil \$)		-	
Copper	\$211.3	\$258.7	
Molybdenum	20.6	29.1	
Silver	4.1	3.9	æ
Mineral Production			
Copper (mil pounds)	<i>n</i> .		
Concentrate	188.7	217.4	
Cathode	19.1	23.9	
Molybdenum (mil pounds)	6.4	7.0	
Silver ((mil Troy Oz.)	0.8	0.9	
Facility Size (acres)	700,000	700,000	
Bagdad Township Population	2,200	2,450	
Direct Purchases			
t in Yavapai County	6.6	6.6	
% in Arizona	95.0	95.0	
Payroll (mil \$)	19.5	21.8	
Workforce (year-end)	598	659	
Hourly	455	504	
Salaried	143	155	
State and Local Taxes (mil \$)	\$7,646	\$11,675	
Property	2,336	4,100	
Severance	2,625	3,250	
Other	2,685	4,325	

Source: Cyprus Minerals.

Recently, Cyprus Bagdad has undergone one major expansion and currently has a second major expansion nearing the construction stage. First, the mine expanded its solvent extraction-electrowinning plant by 33 percent during 1989. This will increase annual cathode production to 24 million pounds and the value of production by over \$6. million at today's prices.

Second, the mine and mill have a planned \$21 million expansion, increasing the concentrator's rated daily output capacity to 71,000 tons per day of ore production by June of 1990. This can increase annual copper production by over 40 million pounds. Upon completion of the expansion, the value of the mine's output will be over \$330 million a year.

Current plans call for a mine life of 31 years (at the increased mill capacity) mining a total of 866.6 million tons of ore. During the period, 5,500 million pounds of copper, 220 million pounds of molybdenum, and 20 million ounces of silver will be produced.

The plan required tailings pond capacity of more than 600 millions tons. Existing tailing ponds have a life expectancy of 8 to 10 years, requiring the permitting of a new major tailings area to start within the next 5 years. A suitable location (adjacent to existing ponds and mining operations) has been identified for a new tailings area. It located within 1.5 miles of the Lower Burro Creek Wilderness Study Area. Without new tailings pond capacity, the mine would have to close.

FIGURE 2

MINE FACILITIES EXISTING AND PLANNED TAILINGS PONDS



3.0 Direct Impacts on the Regional Economy

Cyprus Bagdad's impact on the regional economy is caused by the amount of money it spends locally. There are three local sources: its local vendors (including smelting contracts), its work force, and taxes paid to local governments.

The largest source of direct spending in the regional economy is Cyprus' vendor purchases. There are three major types of expenditures: goods and services, smelting and refining, and utilities. Over 85 percent of the purchases are made in Arizona. Goods and services account for 41.3 percent of total vendor spending. Most of the purchases occur in the Arizona, with 15 percent in Yavapai County. The remainder occur in the United States.

Most smelting and power purchases occur in Arizona. Local expenditures on smelting and refining accounts for 37.5 percent of total spending and are mostly contracted with Cyprus Miami (formerly Inspiration Copper) and Magma Copper, both in Arizona. Copper concentrates are shipped to the smelter via truck and railroads. Power is purchased from the Arizona Public Service under an interruptible service contract.

· . ·	Yavapai County	Rest of Arizona	Total for Arizona
Labor Costs			
Payroll Employee Benefits	\$21,300,000 5,325,000	\$0 0	\$ 21,300,000 5,325,000
Total Labor Costs	\$26,625,000	\$ 0	\$ 26,625,000 -
Purchases			× .
Goods Services Utilities Smelting/Refining	\$ 4,090,000 910,000 850,000 0	\$13,460,000 2,990,000 16,150,000 28,000,000	\$ 17,550,000 3,900,000 17,000,000 28,000,000
Total Purchases	\$ 5,850,000	\$60,600,000	\$ 66,450,000 -
State and Local Taxes	\$ 3,148,000	\$ 7,669,000	\$ 10,817,000 -
GRAND TOTAL	\$35,623,000	\$68,269,000	\$103,892,000 -

TABLE 2

SUMMARY OF ANNUAL DIRECT COSTS OF CYPRUS BAGDAD COPPER COMPANY (1989\$)

FIGURE 3 DIRECT PURCHASES









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The second direct impact on Yavapai County is through the its work force. The exhibits show that the Bagdad Mine is the largest private sector employer in the area and pays the highest average weekly earnings of all employment sectors. Seventy percent of the mine's employees are hourly, the rest are salaried. The average wage paid at the mine is \$33,000, among the highest in the area. Ninety percent are hired from within Yavapai County. Most of the mine's employees (95 percent) live in Bagdad.

TABLE 3

DIRECT EMPLOYMENT & PAYROLL

	1988	1990
Payroll (mil \$)	\$19.5	\$21.8
Work Force Hourly Salaried	598 455 143	659 504 155

Source: Cyprus Bagdad Copper Company.

TABLE 4

AVERAGE EARNINGS BY SECTOR YAVAPAI COUNTY, 1987

	Average Weekly Earnings
Agriculture, Forestry, Fishing	\$177.52
Mining	740.95
Construction	267.52
Manufacturing	318.38
Transportation, Communications, Public Utilities	394.16
Wholesale Trade	287.41
Retail Trade	175.80
Finance Insurance Real Estate	316.13
Services	256.66

Source: Arizona Department of Economic Security.

TABLE 5

TOP FIFTEEN EMPLOYERS YAVAPAI COUNTY 1987

Employer	Sector	Employment
Better-Bilt Aluminum Corp.	Mfg/Alum. Products	570 —
City of Prescott	Local Government	410
CTI	Trucking	130
CYPRUS BAGDAD COPPER CO.	COPPER MINE	574 ¹ —
Embry-Riddle University	Public Education	260
General Semiconductor	High Tech	250
Global-Wulsberg, Inc.	Mfg/VLF Radio	280
Humboldt Unified School District	Fublic Education	213
Marcus J. Lawrence Hospital	Hospital	265
Phoenix Cement Company	Mfg/Cement	166
Prescott Unified School District	Public Education	505
Safeway	Retail Grocery	125
Veterans Hospital	Hospital	678
Yavapai College	Public Education	204
Yavapai County	Local Government	696

¹Cyprus Bagdad employment will reach 659 by 1990.

Source: Arizona Department of Commerce.

Cyprus Bagdad employs a highly skilled work force; many requiring extensive training. The number of employees has been steadily increasing since 1984. Most of the increase has been in skilled labor due to the installation of a solvent extractionelectrowinning plant and concentrator expansion around 1984. Twenty percent of its work force are minorities. The planned mill expansion should employ 30 new people, increasing the direct payments nearly \$1.0 million.



FIGURE 6 OCCUPATIONAL MIX









The third source of direct spending in the local economy is Cyprus' state and local taxes. In addition to the State corporate income and property taxes, the mining industry is responsible for paying a mineral severance tax for mining ore. The distribution of the tax revenue is difficult to track, because the State collects most of the taxes and is responsible for its redistribution. Local governments do levy property taxes. Should the Cyprus Bagdad mine close permanently, all direct and most indirect taxes would be lost by the county and other local communities, since the township of Bagdad is a company owned town.

The three largest taxes paid directly by Cyprus are the property, severance and corporate income taxes, respectively. The property tax is the best measure of the direct impact of the mine on the local economy. In addition, Cyprus employees pay income and property taxes to local and State governments.

FIGURE 8 TAX MIX PAID DIRECTLY BY CYPRUS BAGDAD



TABLE 6

ANNUAL TAX REVENUE IMPACTS OF CYPRUS BAGDAD COPPER COMPANY (1989 \$)

	Paid Cypru	by 1s	Paid by Cyprus Workers	Indirect & Nonbasic Taxes	Total Taxes Paid
State of Arizona					n
Severance Sales, Use, and Energ Property Tax Income Tax - Corpora Income Tax - Individu Payroll Taxes Land Rent/Royalties Miscellaneous Taxes	\$ 3,250,(y 1,242,(131,5 te 2,500,(al 330,(155,(60,(000 500 500 000 000 000 000	\$ 0 613,523 1,235 0 339,741 0 0 0	\$0 2,270,534 53,084 0 1,075,618 1,080,936 0 0	3,250,000 4,126,058 185,819 2,500,000 1,415,358 1,410,936 155,000 60,000
Total .	\$ 7,668,5	500	\$ 954,499	\$4,480,173	\$13,103,172
Yavapal County					
Sales Tax Property Tax	\$ 3,148,5	0	\$ 61,352 52,560	\$ 80,635 1,381,588	\$ 141,987 4,582,648
Total	\$ 3,148,5	i00 ·	\$ 113,913	\$1,462,222	\$ 4,724,635
Gila County					
Sales Tax Property Tax	\$	0 .	\$0 0	\$ 71,931 964,233	\$ 71,931 964,233
Total	\$	0 9	\$0	\$1,036,164	\$ 1,036,164
Maricopa County					
Sales Tax Property Tax	\$	0 5	6 O 0	\$ 74,488 1,124,516	\$ 74,488 <u>1,124,516</u>
Total	\$	0 \$	\$ O	\$1,199,004	\$ 1,199,004
GRAND TOTAL	\$10,817,0	00 \$	51,068,412	\$8,177,563	\$20,062,975

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As indicated by the exhibits, the school districts are the greatest beneficiary of locally paid taxes. Yavapai County comes second in total revenue paid by Cyprus. Not accounted for here is the increased taxes paid by Cyprus and its subcontractors for the planned construction. In addition to the salaries being paid to temporary construction workers, the expansion will increase Cyprus' taxable base.

TABLE 7PROPERTY TAX PAYMENT

1988

Tax District	Taxes Paid
Yavapai County County Government School District #20 Community College Other (Fire, Flood, etc.)	\$ 555,496 1,394,692 291,479 <u>49,842</u>
Subtotal Arizona	\$2,291,509 95,680
TOTAL	\$2,387,189

FIGURE 9 PROPERTY TAX MIX



4.0 Indirect Impacts on the Regional Economy

Cyprus Bagdad causes three types of indirect impacts on the regional economy: employment; population, and personal income. Indirect impacts occur because additional goods and services are provided to the local community that are not directly related to the mine's operation. The high employment and population multipliers are caused by Bagdad being a community solely developed to provide the mine and its employees with all necessary basic services. Closing of the mine would cause (for all practical purposes) the township of Bagdad to close down. The exhibit shows the indirect impacts of Cyprus Bagdad on the region.

TABLE 8

EMPLOYMENT	IMPACTS,	DIRECT	AND	INDIRECT
CYPRUS	BAGDAD	COPPER	COMP.	ANY

	County			
	Arizona	Gila	Maricopa	Yavapai
Direct Employment Indirect Employment	630 554	0 <u>309</u>	0 203	630 42
Total Basic	1,184	309	203	672
Non-Basic	1,485	174	525	786
Total Employment	2,669	483	728	1,458

TABLE 9

POPULATION IMPACTS, DIRECT AND INDIRECT CYPRUS BAGDAD COPPER COMPANY

	County				
μ	Arizona	Gila	Maricopa	Yavapai	
Direct Indirect	1,412 1,285	0 818	0 <u>372</u>	1,412 94	
Total Basic	2,696	818	372	1,506	
Non-Basic	3,185	461	963	1,761	
Total Population	5,881	1,279	1,335	3,267	

.

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CYPRUS BAGDAD COPPER COMPANY						
·	County					
	Arizona	Yavapai				
Direct Income Indirect Income	\$21,300,000 13,377,524	\$ 0 	\$ 0 4,829,150	\$21,300,000 776,113		
Total Basic	\$34,677,524	\$ 7,772,261	\$ 4,829,150	\$22,076,113		
Non-Basic Income	\$56,392,007	\$ 5,624,736	\$15,978,477	\$34,788,795		
Total Income	\$91,069,531	\$13,396,996	\$20,807,627	\$56,864,908		

TABLE 10

PERSONAL INCOME IMPACTS, DIRECT AND INDIRECT CYPRUS BAGDAD COPPER COMPANY



United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS INTERIOR BOARD OF LAND APPEALS 4015 WILSON BOULEVARD ARLINGTON, VIRGINIA 22203

ASAROO, INC., ET AL.

Decided May 6, 1982

IBLA 81-802, 81-804, 81-805, 81-806, 81-807

Appeals from decisions of the Arizona State Director, Bureau of Land Management, denying in substantial part the protests of wilderness study area designations. 8500 (931).

Reversed in part; remanded in part; affirmed in part.

1. Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act

> BIM does not violate the terms of sec. 603(a), Federal Land Policy and Management Act of 1976, 43 U.S.C. § 1782 (1976), directing the Secretary to review those roadless areas of 5,000 acres or more of the public lands, identified during the inventory required by sec. 201(a) as having wilderness characteristics, where BIM undertakes a review of the public lands for wilderness characteristics prior to a multi-resource inventory of the public lands.

2. Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act

> BLM's practice of designating lands occupied by roads or other intrusions as nonwilderness corridors (cherrystems), thereby excluding such lands from wilderness review and permitting adjacent lands, otherwise possessing wilderness characteristics, to be studied for their uses, values, and resources, is not an unlawful practice or contrary to any established Department policy.

INDEX CODE: None
Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act--Words and Phrases

"Roadless." H.R. Rep. No. 94-1163, 94th Cong., 2d Sess. 17 (1976), provides a definition of "roadless" adopted by the Bureau of Land Management in its Wilderness Inventory Handbook. The word "roadless" refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

4. Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act

Where the record evidences BLM's firsthand knowledge of the lands within an inventory unit and contains comments from the public as to the area's fitness for wilderness preservation, BLM's subjective judgments of the area's naturalness qualities are entitled to considerable deference.

Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act

An inventory unit must qualify as having wilderness characteristics without considering rehabilitation potential, <u>i.e.</u>, rehabilitation should not be the basis for concluding that wilderness values exist in a unit. Rehabilitation potential should be considered only for those imprints of man that exist within a unit but are not so significant as to automatically disqualify the unit or portion of a unit.

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Federal Land Policy and Management Act of 1976: Wilderness-Wilderness Act

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