

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Reserves and Production Data for Selected Ore Deposits in the United States
Found in the Files of the Anaconda Copper Company

by

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Open-File Report 92-002

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1992

Introduction

This report summarizes data on past production and reserves for more than 120 mineral deposits in the United States found in the files of the defunct Anaconda Copper Co. held at the International Archive of Economic Geology, American Heritage Center, University of Wyoming, Laramie. These data have, for the most part, never been previously published or released to the public. The data were found in various reports indexed with titles suggestive of compilations of reserve data; additional data may likely be found elsewhere in the Anaconda collection.

The data were found in files containing numerous reports, memoranda, correspondence, and notes which often lack attributed authorship, titles, or other data required for citation according to generally accepted editorial standards. The purpose of this report is to bring together these data in a single source which can be easily cited as a reference.

The original sources of the data are indicated by numbers enclosed in square brackets ([12], for example) which are keyed to a list of files in the reference section of this report. The reference section lists the number of each file and any pertinent bibliographic data which could be found in the files. Anyone wishing to consult the source material need only know the file number in order to locate it in the Anaconda Geological Documents Collection.

The name of the company which owned the mine or deposit is given in parentheses after the name of the mine or deposit (e.g.: Payette River deposit (Abella Resources)). No company name is given if the mine or deposit was owned by Anaconda.

Any complete reference to an original source file should, according to standards set by the International Archive of Economic Geology, contain the following information, exactly as it appears:

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Abbreviations and symbols used in this report:

Ag	silver
Al ₂ O ₃	alumina
Au	gold
BaSO ₄	barite
Be	beryllium
BeO	beryllium oxide
Bi	bismuth
CaF ₂	fluorite
CaO	lime
Cd	cadmium
COG	cutoff grade
Cr ₂ O ₃	chromium oxide
Cu	copper
Fe	iron
Fe ₂ O ₃	ferric oxide
Fe ₃ O ₄	magnetite
lbs	pounds
Mg	magnesium
Mn	manganese
Mo	molybdenum
MoS ₂	molybdenite
mt	metric tons
Nb	columbium (niobium)
Nb ₂ O ₅	columbite
Ni	nickel
opt	troy ounces per short ton
Pb	lead
Sn	tin
st	short tons
Ti	titanium
TiO ₂	titanium dioxide
U ₃ O ₈	uranium-uranyl oxide (triuranium octoxide)
W	tungsten
WO ₃	tungsten trioxide (tungstic oxide)
Zn	zinc
%	weight percent

Alaska

Delta

Delta deposit reserve (1981): 8.7 million st with 1.1% Cu, 4.3% Zn, 2.4% Pb, 1.9 opt Ag, and 0.05 opt Au. [1]

Kougarok

Kougarok deposit reserve (1980): 5.7 million st with 0.39% Sn. [1]

Mount Ogden (Moly-Taku)

Mount Ogden (Omni Resources) deposit reserve (1979): 216 million st with 0.19% Mo. [1]

Arizona

Banner District, Gila Co.

Chillito deposit (Kennecott) reserve (1963): 219 million st with 0.3% Cu. [1]

Bowle, Graham Co.

Bowie deposit reserve (1985): 285 million st thin-bedded and 172 million st massive-bedded ore both with 31% chabazite. [1]

Bunker Hill District, Graham Co.

Copper Creek deposit (Exxon/Newmont) reserve (1965): 50 million st with 1.5% Cu. [1]

Casa Grande, Pinal Co.

Casa Grande deposit (Getty/Hanna) reserve (1979): 500 million st with 1.5% Cu. [1]

Cochise (Johnson Camp) District, Cochise Co.

1-10 deposit (Cyprus/Superior) reserve (1979): 150 million st with 0.52% Cu. [1]
Strong & Harris deposit (Cyprus) reserve (1979): 60 million st with 0.7% Cu. [1]

Copper Basin, Yavapai Co.

Copper Basin deposit (Phelps-Dodge) reserve (1979): 175 million st with 0.55% Cu and 0.02% Mo, or 250 million st with 0.4% Cu. [1]

Harshaw District, Santa Cruz Co.

Hardshell (Asarco) deposit reserve (1966): 10 million st with 5.0 opt Ag. [1]

Helvetia District, Plima Co.

Broadtop Butte (Helvetia) reserve (1/1/71): 23.5 million st oxide ore with 0.75% Cu at a COG of 0.40% Cu. [5]
 Broadtop Butte (Helvetia) reserve (1/1/80): 7.1 million st sulfide ore with 0.70% Cu and 0.014% Mo, and 1.6 million st oxide ore with 0.71% Cu. [13]
 East Helvetia reserve (1/1/71): 321.2 million st sulfide ore with 0.64% Cu at a COG of 0.30% Cu and 21.6 million st oxide ore with 0.55% Cu at a COG of 0.30% Cu. [5]
 East Helvetia reserve (1/1/80): 255.7 million st sulfide ore with 0.76% Cu and 0.018% Mo (or 352.3 million st sulfide ore with 0.64% Cu) and 65.92 million st oxide ore with 0.52% Cu. [13]
 Helvetia mine reserve (4/15/81): 440 million st with 0.63% Cu. [1]
 Helvetia mine reserve (1985?): 350 million st sulfide ore with 0.65% Cu. [10]
 Rosemont deposit (Banner) reserve (1967): 917 million st with 0.53% Cu. [4]
 West Helvetia (Peach-Elgin) reserve (1/1/80): 13.7 million st sulfide ore with 0.78% Cu and 9.7 million st oxide ore with 0.72% Cu. [13]

Kofa District, Yuma Co.

North Star mine (several orebodies) potential (1985): 10,000-50,000 st with 0.5 opt Au. [10]

Lakeshore, Plinal Co.

Lakeshore deposit (El Paso) reserve (1967): 1,000 million st with 0.7% Cu. [1]
 Lakeshore deposit (Newmont/Noranda) reserve 1979: 472 million st with 0.75% Cu plus Au, Ag, and 20 million st oxide ore with 1.1-1.2% Cu. [1]

Miami-Inspiration District, Gila Co.

Castle Dome deposit reserve (1940): 30 million st with 0.83% Cu (0.04% oxide). [12]
 Joe Bush (Inspiration/Cities Service) mine reserve (1979): 83.2 million st with 0.7% Cu. [11]
 Miami East deposit (Kennecott) reserve (1968): 200 million st with 1.35% Cu. [1]
 Old Reliable (Ranchers) mine reserve (1979): 4 million st with 0.80% Cu. [11]
 Oxhide (Inspiration) mine reserve (1968): 50 million st with about 0.4% Cu. [11]
 Oxhide (Inspiration) mine reserve (1979): 46.3 million st with 0.4% Cu. [11]
 Pinto Valley mine (Cities Service) reserve (1967): 350 million st with 0.45% Cu. [1]
 Van Dyke deposit (Oxymin) reserve (1979): 100 million st with 0.5% Cu. [11]

Mockingbird, Mohave Co.

Mockingbird deposit potential (1985): 10 million st with 0.05-0.10 opt Au plus Cu. [11]

Palmetto District, Santa Cruz Co.

Three R prospect (Asarco): porphyry Cu (chalcopyrite, chalcocite) deposit at 3,000 feet depth, SW of Red Mountain at corner of T22S/23S R15/16E. [11]

Plma District, Plma Co.

AIMEE deposit reserve (1/1/79): 3.394 million st oxide ore with 0.79% Cu. [13]
 Daisy deposit reserve (1/1/79): 3.535 million st sulfide ore with 0.93% Cu, and 0.9 million st oxide ore with 1.47% Cu. [13]
 Eisenhower mine reserve (1/1/71): 95.3 million st with 0.74% Cu at a COG of 0.35% Cu. [10]
 Eisenhower mine reserve (1985?): 30 million st with 0.57% Cu and 0.017% Mo. [10]
 Twin Buttes mine reserve (1/1/71): 208.5 million st sulfide ore with 0.89% Cu at a COG of 0.40% Cu, and 97.6 million st oxide ore with 0.87% Cu at a COG of 0.40% Cu. [5]
 Twin Buttes mine reserve (1/1/76): 174.3 million st sulfide ore with 0.72% Cu, and 31.7 million st oxide ore with 1.12% Cu. [6]
 Twin Buttes mine reserve (10/74): 436 million st sulfide ore with 0.63% Cu at a COG of 0.40% Cu plus Au, Ag, and Mo, and 55 million st oxide ore with 0.82% Cu at a COG of 0.40% Cu. [4]
 Twin Buttes mine reserve (1/1/80): 313.2 million st sulfide ore with 0.68% Cu and 0.029% Mo, and 49.9 million st oxide ore with 1.08% Cu and 0.00137% U_3O_8 . Reserves (1/1/79): 322 million st sulfide ore with 0.70% Cu and 0.029% Mo, 53.4 million st oxide ore with 1.09% Cu and 0.00354% U_3O_8 , and 91.369 million st underground sulfide ore with 1.40% Cu and 0.051% Mo. [13]
 Twin Buttes mine reserve (1985?): 300 million st sulfide ore with 0.63% Cu; and 30 million st oxide ore with 0.94% Cu. [10]

Pioneer District, Pinal Co.

Superior East (Asarco) deposit reserve (1976): 1,000 million st with around 0.3% Cu (also given as 0.5% Cu) plus 100 million st with 1% Cu or better (overall grade 0.5% Cu); 2000-6000 feet depth. [1]

Poston Butte, Pinal Co.

Poston Butte (Conoco/Asarco) deposit reserve: 350 million open pit st with 0.40% Cu. [1]

Red Hill

Red Hill deposit (Asarco) reserve (1958): 20 million st with 0.8% Cu. [1]

Red Mountain, Santa Cruz Co.

Red Mountain (KerrMcGee) deposit reserve: 250 million st with 0.72% Cu, 3000 feet deep. [1]

Safford (Lone Star) District, Graham Co.

Safford (Kennecott) deposit reserve (1979): 2,000 million st with 0.46% Cu [1]
 Safford Annex (Kennecott) deposit reserve (1979): 575 million st with 0.72% Cu, or 165 million st with 0.8% Cu; 2800 feet deep. [1]
 Safford (Phelps-Dodge) deposit reserve (1959): 500 million st with 0.8% Cu. [1]
 Safford (Phelps-Dodge) deposit reserve 1979: 400 million st with 0.72% Cu. [1]

San Manuel District, Pinal Co.

Houghton deposit reserve (5/1958): 4,299,000 st developed oxide ore with 0.862% total Cu (0.658% leachable Cu), and 19,414,000 st sulfide ore with 0.842% Cu (0.124% oxide Cu). Sulfide ore reserve also given as 16.8 million st with 0.84% Cu (0.07% leachable Cu), 0.014% Mo, trace Au and Ag, at a COG of 0.50% Cu. Estimated reserve additions were expected to increase oxide ore to 10 million st and sulfide ore to 30 million st. Additional drilling by 5/1961 added 16,775,000 st sulfide ore with 0.84% Cu (0.07% oxide Cu), 0.014% Mo, plus Au, Ag at a COG of 0.50% Cu. Block cave ore above 1382 feet elevation estimated at 22,475,000 st with 0.65% Cu (0.05% oxide Cu). Deposit was leased to San Manuel mine (Newmont) which planned to develop 2,622,800 st with 1.01% Cu and 0.017% Mo, and 3,055,000 st with 0.68% Cu and 0.017% Mo. [11]

Kalamazoo orebody (Quintana) reserve (1965): 500 million st with 0.75% Cu. [1]

Trigo Mountains, Yuma Co.

Red Gulch property (New Jersey Zinc) reserve (1983): 5.8 million st open pit ore (3.4:1 waste:ore) containing 18.9 million troy ounces Ag, 630,000 st BaSO_4 , and 285,750 st CaF_2 . Reserves breakdown given as 3,323,200 st with 3.92 opt Ag, and 17% BaSO_4 ; 734,300 st with 0.48 opt Ag, 8.8% BaSO_4 , and 18.9% CaF_2 ; and 1,749,400 st with 3.17 opt Ag, and 8.4% CaF_2 . [9]

Vekol, Pinal Co.

Vekol deposit (Newmont/New Jersey Zinc) reserve (1965): 100 million st with 0.6% Cu. [1]

Winkleman, Pinal Co.

Winkleman deposit reserve (1978): 32 million st with 48% chabazite. [1]

California

Ash Meadows, Inyo Co., Calif./Nye Co., Nev.

Ash Meadows deposit reserve (1985): 47 million st with 79% clinpotilolite to 600 feet depth. [1]

Darwin, Inyo Co.

Darwin mine reserve (1957): 155,000 st with 4.9 opt Ag, 6.1% Pb, and 8.5% Zn. (Probably worked out by lessees 1968-70) [4]

Past production (thru 1976?): 1,716,696 st with 9.3% Pb, 5.4% Zn, and 11.5 opt Ag.

Reserves: 100,000 st with 3-5% Pb, 6-15% Zn, and 3-4 opt Ag. [6]

Rest

Rest deposit reserve (1985): 50 million st with 76% phillipsite. [1]

Santa Rosa, Inyo Co.

Past production (thru 1976?): 80,482 st with 15.4% Pb, 6.2% Zn, and 11.6 opt Ag. [8]

Searles Lake Project, San Bernadlno Co.

As of 1985 had a target of 400 million st containing sodium and potassium salts, carbonates, and sulfates and borate compounds. (Anaconda owned rights to southern part of Searles Lake) [11]

Shoshone, Inyo Co.

Shoshone mine reserve (1/1957): 3,600 st probable with 0.07 opt Au, 5.4 opt Ag, 11.6% Pb, and 7.7% Zn. (Probably since worked out by lessees) [4]

Past production (thru 1976?): 439,126 st with 12.8% Pb, 2.0% Zn, and 6.5 opt Ag; Reserves: 300,000 st with 6.0% Pb, 6.8% Zn, and 2.5 opt Ag. [8]

Shoshone Zeollite

Shoshone deposit reserve (1985): 990 million st with 24.9% clinoptilolite. [1]

Colorado

Calico Peak, Dolores Co.

Calico Peak deposit potential (1985): 200+ million st with about 0.30% Mo. [11]

Gunnison, Gunnison Co.

Buttes Oil and Gas deposit: 1 billion st with 10% Ti. [1]

Mount Emmons, Gunnison Co.

Mount Emmons (Amax) deposit reserve (1979): 180 million st with 0.35% Mo (also given as 0.26% Mo). [1]

Rico, Dolores Co.

CHC replacement deposit: not yet drilled in 1985. [11]

NBH replacement deposit reserve (1985): 1.9 million st with 1.96% Cu, 1.69 opt Ag, and 0.03 opt Au. [11]

Siver Creek deposit reserve (3/30/83): 25 million st with 0.34% Mo. [2]

Silver Creek deposit reserve (1985): 44 million st with 0.31% Mo drilled to date, 200+ million st with 0.30% Mo potential. [11]

Summitville, Rio Grande Co.

Summitville reserve (1981): 11 million st with 0.098 opt Au and 0.140 opt Ag. [1]

Tallahassee Creek

Tallahassee Creek deposit (Cyprus) reserve (1977): 30 million lbs U_3O_8 at grade of 0.11% U_3O_8 . [1]

Idaho

Olson (Mabel Brennan Tract), Latah Co.

Olson high alumina clay deposit reserve (6/1960): 9.7 million st with 24.7% available Al_2O_3 and 3.9% available Fe_2O_3 . Average thickness 32 feet with 20 feet overburden. [8]

Payette River (Abella)

Payette River deposit (Abella Resources) reserve (1979): 200 million st with 0.042% Mo. [1]

White Cloud, Custer Co.

White Cloud (Amax) deposit reserve (1979): 200 million st with 0.20% MoS_2 . [11]

Kentucky

Burkesville, Cumberland Co.

Burkesville deposit (Asarco/Cominco) reserve (1979): 50 million st with 3.0% Pb and 3.5% Zn. [1]

Fountain Run

Fountain Run deposit (St. Joe) reserve (1979): 50 million st with 4.0% Zn. [1]

Minnesota

Ely, St. Louis Co.

Ely deposit reserve (1979): 6,500 million st with 0.21% Ni and 0.04% Cu. [11]

Missouri

Fredericktown, Madison Co.

Fredericktown mine reserve (1970): 2 million st with 0.46% Ni. [11]

Southeast Missouri District

Knopp Tract (St. Francois Co.) reserve (10/1960): 400,000 st possible with 2-2.5% Pb. [4]

Montana

Big Ben, Cascade Co.

Big Ben (Amax) deposit reserve (1979): 50 million st with 0.15-0.2% Mo, or 200 million st with 0.15% Mo. [1]

Birch Creek District, Beaverhead Co.

Indian Queen mine production (1902-1933): 22,907 st with 3.8% Cu, and 1.8 opt Ag. (Since mined out) [3]

Butte District, Silver Bow Co.

Mineral inventory (1/1/72) [5]:

<u>Area:</u>	<u>COG % Cu</u>	<u>million st ore</u>	<u>grade % Cu</u>
Open pit-underground	2.00	17.4	4.12
Inactive underground	2.00	5.0	4.20
Berkeley/E. Berkeley pit	0.36	497.5	0.68
Future deep pit	0.40	1,000	0.6
Berkely-Continental	0.35	150	0.6

Butte inventory (1/1/73) [7]:

Manganese ore: 1,642,903 st with 18.85% Mn, 2.51% Zn, 0.99% Pb, and 1.11 opt Ag; and 201,501 st with 19.37% Mn, 2.06% Zn, 0.71% Pb, and 1.58 opt Ag.

Cu Vein: 22,526,467 st with 4.13% Cu and 1.71 opt Ag; and 7,165,039 st with 4.31% Cu and 2.05 opt Ag.

Block Cave Cu: 68,820,212 st with 1.28% Cu and 0.50 opt Ag; plus 89,707,472 st of unknown grade.

Berkeley (including East Berkeley): 381,233,699 st with 0.70% Cu and 0.12 opt Ag at a COG of 0.40% Cu ; or 1,014,338,989 st with 0.18% Cu.

Continental (West, North, Central): 227,935,319 st mill ore with 0.61% Cu, and 1,340,600,708 st leach ore with 0.19% Cu.

Continental South: 25,129,128 st mill ore with 0.51% Cu, and 345,503,772 st leach ore with 0.20% Cu.

Continental East: 21,101,956 st mill ore with 0.49% Cu, and 174,736,716 st leach ore with 0.20% Cu.

Zinc: 8,721,060 st with 9.01% Zn and 3.49 opt Ag; and 5,757,076 st with 8.88% Zn and 3.03 opt Ag; plus 4,414,012 st with 3.81% Zn, 11.81 opt Ag, 0.006 opt Au, 1.94% Mn, 0.11% Cu, and 0.53% Pb. Plus 4,680,066 st at Badger mine (not sampled).

Berkeley Pit Zinc: more than 36 million st with 0.74% Zn, 0.26% Cu, and 0.4 opt Ag.

Butte inventory (1/1/75) [6]:

Kelley Zone block cave ore: 152,185,315 st gross in zones 1,3,4,5,6,8,9,10,11,12 on 1300-1400 levels of which 62,475,472 st sampled with 1.24% Cu, 0.5 opt Ag, and 0.004 opt Au.

Kelley zone ore in Berkely Pit inventory to 2,000 level: 44,237,970 st in place with 0.86% Cu and 0.19 opt Ag, plus 11,250,000 st "gobs" with 1.21% Cu (Ag not assayed).

Includes Kelly zone tonnage in Berkely Pit Plan D to 1600 level: 23,568,000 st in place with 0.87% Cu, and 5,245,000 st "gobs" with 1.22% Cu.

Cu-Mo zone block cave ore 2800-4300 levels: 1.78 billion st with 0.63% Cu and 0.025% Mo at a COG of 0.40% Cu, or 913 million st with 0.74% Cu and 0.030% Mo at a COG of 0.60% Cu.

Syndicate Vein to 1000 level: 4,052,790 st oxide-sulfide ore with 1.91% Cu, 3.25 opt Ag, and 2.91% Zn, at an average 29.5 feet mining width.

Selective Veins: 22,523,104 st with 4.11% Cu and 1.70 opt Ag, plus 7,148,134 st with 4.32% Cu and 2.04 opt Ag.

Reserves (1/1/76) [6]:

<u>Mine:</u>	<u>million st ore</u>	<u>grade % Cu</u>
Berkeley Pit	466.8	0.61
East Continental	29.2	0.40
South Continental	16.5	0.49
North Continental	441.3	0.49
Deep levels	913	0.74
Kelley ¹	68	1.23
Leonard 3800-4200 levels	16	1.90
Vein mines	22	4.11

¹Does not include 41 million st ore not assayed for Cu in Kelley mine.

Berkeley Pit reserve (10/1/78): 120,216,000 st with 0.61% Cu at a COG of 0.25% Cu. [2]

East Berkeley Pit reserve (10/1/78): 291,190,000 st with 0.57% Cu at a COG of 0.25% Cu. [2]

Southeast Berkeley reserve (10/1/78): 10,108,000 st with 0.52% Cu at a COG of 0.25% Cu.

[2]

Butte New "Discoveries" (1979) [1]:

Pittsmtont Deep deposit reserve: 828 million st with 0.41% Cu, 0.049% Mo, and 0.12 opt Ag.

Phase I Resource: 130 million st with 1.5% Cu, and 0.34 opt Ag.

Open pit reserve (7/1/80): 552 million st with 0.49% Cu in mine plan including 227,767,000 st with 0.046% Mo; Outside of mine plan: 676 million st with 0.57% Cu. [13]

Berkeley Pit zinc reserve (7/1/80): 58 million st with 0.25% Cu, 0.75% Zn, and 0.30 opt Ag. [13]

Selective Vein Cu reserve (7/1/80): 22.5 million st with 4.11% Cu and 1.70 opt Ag, plus 7.1 million st with 4.32% Cu and 2.04 opt Ag. [13]

Selective Vein Mn reserve (7/1/80): 1.6 million st with 18.85% Mn, 2.51% Zn, and 1.11 opt Ag, plus 0.2 million st with 19.37% Mn, 2.06% Zn, and 1.58 opt Ag. [13]

Selective Vein Zn reserve (7/1/80): 8.7 million st with 9.01% Zn, and 3.49 opt Ag, plus 5.8 million st with 8.88% Zn, and 3.03 opt Ag. [13]

Shallow Siver Zone reserve (7/1/80): Alice-Rainbow Vein East has 0.7 million st with 5.02 opt Ag and 0.020 opt Au; Syndicate Vein East has 0.7 million st with 5.60 opt Ag and 0.077 opt Au. [13]

Underground Phase I reserve (7/1/80): 128 million st with 0.94% Cu, 0.35 opt Ag, and 0.05 opt Au. [13]

Underground Phase II reserve (7/1/80): *block cave ore*: Deep Level has 2,231 million st with 0.60% Cu and 0.028% Mo at a COG of 0.40% Cu; Badger mine has 4.1 million st with 0.11% Cu, 3.81% Zn, and 1.76 opt Ag; Alice-Rainbow mine has 0.3 million st with 5.66% Zn and 4.32 opt Ag; *mechanized ore*: Syndicate Vein East has 4.9 million st with 1.36% Cu, 1.88% Zn, and 1.91 opt Ag; Syndicate Vein West has 12.6 million st with 0.37% Cu, 2.50% Zn, and 1.43 opt Ag; Rising Star mine has 2.3 million st with 0.53% Cu, 3.71% Zn, and 1.95 opt Ag. [13]

Central Zone reserve (1985): 500 million st with 0.5% Cu and 0.1 opt Ag. [11]

East Pit mine reserve (1985): 200 million st with 0.33% Cu, 0.05% Mo, and 0.065 opt Ag. [11]

Shallow Silver Zone reserve (1985): 10 million st with 2 opt Ag and 0.003 opt Au. [11];

Underground Phase II reserve (1985): 2,000 million st with 0.6% Cu and 0.03% Mo. [11].

Cannivan Creek (Cannivan Gulch), Beaverhead Co.

Cannivan Creek (Cyprus) deposit reserve (1979): 224 million st with 0.096% MoS₂. [11]

Daly Spur Silica, Beaverhead Co.

Daly Spur reserve (1985): 80 million st with 98% SiO₂, and 0.05% Fe₂O₃. [11]

Heddeleston, Lewis and Clark Co.

Heddeleston deposit reserve (12/31/70): 100 million st with 0.50% Cu, 0.015% Mo, and 0.2 opt Ag. [5]

Heddeleston deposit reserve (1/1/72): 60 million st with 0.52% Cu at a COG of 0.35% Cu. [5]

Heddeleston deposit reserve (10/74): 67,233,408 st open pit ore with 0.48% Cu at a COG of 0.30-0.35% Cu. [6]

Heddeleston deposit (Anaconda) reserve (1/1/76): 93 million st with 0.48% Cu, 0.01% Mo, and 0.15 opt Ag. [1]

Montana City Limestone, Jefferson Co.

Montana City Limestone reserve (1985): 9.5 million st with 53.4% CaO, low Fe and Mg. [11]

Pearl Limestone, Silver Bow Co.

Pearl Limestone reserve (1985): 55 million st limestone. [11]

Stillwater, Stillwater Co.

Benbow deposit (Chrome Products Co.): 35 million st with 28% Cr₂O₃. [1]

Mountain View/Benbow deposit (1985): 15 million st with 22.1% Cr₂O₃ (with Cr:Fe of 1.6:1); plus 44 million st added potential. [11]

Nye Basin/Mouat deposit reserve (12/31/70): 200 million st with 0.30% Cu and 0.30% Ni. [11]

Nye Basin/Mouat deposit reserve (1/1/76): 151 million st (also given as 141 million st) with 0.25% Ni and 0.25% Cu, plus Co and Ag. [11]

PGM horizon reserve (1985): 500,000 st with 0.2 opt Pt and 0.6 opt Pd after dilution; Plus 3 million st added potential. [11]

PGM (J.M. orebody extension) reserve (1967): 1 million st with 1.8 opt Pt-Pd. [1]

PGM reserves (1980): 11.2 million st with 0.14 opt Pt and 0.48 opt Pd. [1]

Thompson Falls

Goat Creek (Noranda) deposit reserve (1979): 75-100 million st with 0.12% MoS₂. [11]

Twin Bridges

Twin Bridges deposit (Copper Fields/ISO) reserve (1979): 3 million st with 1.4% Cu, 0.5 opt Ag, and 0.01 opt Au. [11]

Nevada

Ann Mason, Lyon Co.

Ann Mason deposit reserve (1/1/71): 495 million st with 0.40% Cu, 0.01% Mo, and 0.1 opt Ag at a COG of 0.30% Cu, including 110 million st with 0.51% Cu or 61.3 million st with 0.53% Cu. [1, 5]

Ash Meadows, Inyo Co., Calif./Nye Co., Nev.

Ash Meadows deposit reserve (1985): 47 million st with 79% clinpotilolite to 600 feet depth. [1]

Bear, Lyon Co.

Bear deposit reserve (7/67): about 500 million st with 0.40% Cu.; 2,000 feet depth. [1]

Comet District, Lincoln Co.

Past production (thru 1976?): 1 million st with 1.2% Pb, 2.6% Zn, and 2.5 opt Ag; Reserve: 1.6 million st with 1.3% Pb, 2.4% Zn, and 1.9 opt Ag. [6]

Comet Coalition Mng. Co. (Pan American mine) production 1955-56: about 500,000 st with 1.0% Pb, 2.45% Zn, 0.005 opt Au, and 2.2 opt Ag. Reserve (6/1967): 1.3 million st proved with 1.84 opt Ag, 1.38% Pb, and 2.36% Zn; 0.3 million st probable with 2.15 opt Ag, 1.38% Pb, and 2.36% Zn; and 1.2 million st possible with 1.90 opt Ag, 1.30% Pb, and 2.70% Zn. [4]

Eastgate, Churchill Co.

Eastgate deposit potential (1985): 11 million st with 17.7% mordenite. [1]

Gabbs, Nye Co.

Gabbs deposit (UV Industries) reserve (1979): 28 million st with 0.09% Mo. [1]

Goodsprings District, Clark Co.

Past production (1905-1926): 75,353 st with 1.4% Pb, 25.0% Zn, and 1.5 opt Ag. [8]

Potosi mine reserve (1926): 40,500 st proved and 58,000 st probable with 1.1% Pb, 16.70% Zn, and 2 opt Ag. [3] Also given as 49,000 st sulfide and 19,000 st oxide ore with 1.1% Pb, 16.7% Zn, and 2.0 opt Ag. [4] Mine closed since 1926.

Hall, Nye Co.

Mineralization inventory (6/1967): 239 million st sulfide ore with 0.11% Mo at a COG of 0.05% Mo or 107 million st sulfide ore with 0.15% Mo at a COG of 0.1% Mo, plus 17 million st oxide ore with 0.08% Mo at a COG of 0.05% Mo or 5.3 million st oxide ore

with 0.13% Mo at a COG of 0.1% Mo; plus 5.9 million st mixed ore with 0.08% Mo at a COG of 0.05% Mo or 1.3 million st mixed ore with 0.11% Mo at a COG of 0.1% Mo.

Total: 262 million st with 0.10% Mo at a COG of 0.05% Mo. [4]

Open pit reserve (4/18/68): 106.9 million st with 0.12% Mo at a COG of 0.05% Mo or 66.2 million st with 0.16% Mo at a COG of 0.1% Mo. [4]

Reserve (1/1/76): 54 million st with 0.46% Cu, and 0.033% Mo. Also 94 million st with 0.224% Mo. [1]

Reserve (1979): 54 million st with 0.51% Cu plus 94 million st with 0.224% Mo in distinct deposits. [1]

Hall mine reserve (1985): 175 million st with 0.09% Mo, and 0.76% Cu plus an additional deposit of 70 million st with 0.35% Cu east of mine. [11]

Lyon, Lyon Co.

Lyon deposit reserve (1/1/76): 25 million st with 1.49% Cu. [6]

Lyon deposit reserve (1977): 64,985,109 st with 1.01% Cu. [2]

Reserves breakdown (1/1977): [2]

E orebody: 27,352,260 st with 1.57% Cu at 1600-2000 feet depth.

SE orebody: 12,721,502 st with 0.55% Cu and 56.64% Fe_3O_4 at 400-900 feet depth.

N orebody: 25 million st with 0.97% Cu at 600-1000 feet depth (drilling in progress, 1977).

Reserve breakdown (12/77): [2]

NW orebody: 29.0 million st probable with 0.98% Cu at a COG of 0.6% Cu or 1.4 million st probable with 3.46% Cu and 0.1 opt Ag at a COG of 2.0% Cu.

E orebody: 64.8 million st probable with 0.79% Cu and 34.4% Fe_3O_4 at a COG of 0.5% Cu or 24.6 million st probable with 1.47% Cu and 23.1% Fe_3O_4 at a COG of 0.7% Cu including 4.3 million st probable with 3.53% Cu and 23.15% Fe_3O_4 at a COG of 2.0% Cu.

N orebody: 6.0 million st probable with 0.87% Cu including 1.0 million st probable with 1.53% Cu, plus 8.0 million st probable with 0.17% Cu and 48% Fe_3O_4 and 4.7 million st possible with 0.17% Cu and 30-40% Fe_3O_4 .

McArthur, Lyon Co.

McArthur deposit reserves in place (10/74): 35,327,700 st with 0.30% Cu at a COG of 0.2% Cu, or 12,865,800 st with 0.43% Cu at a COG of 0.3% Cu, or 5,874,400 st with 0.53% Cu at a COG of 0.4% Cu. [6]

McArthur deposit (Anaconda) reserve (1979): 13 million st with 0.43% Cu. [1]

McDermitt Caldera, Humboldt Co.

McDermitt Caldera deposit reserve (1977): 25-27 million lbs U_3O_8 at a grade of 0.005-0.15% U_3O_8 . [1]

Mount Hope District, Eureka Co.

Mount Hope (Exxon) deposit reserve (1979): 100 million st with 0.11% Mo. [1]

Ploche District, Lincoln Co.

District production: 5,227,586 st with 4.53 opt Ag, 3.65% Pb, and 8.57% Zn. [8]
 Prince mine reserve (5/1940): 16,000 st with 0.017 opt Au, 2.83 opt Ag, 0.53% Pb, and 10.05% Zn (since mined out). [4]
 Prince Consol. Mng. Co. past production (thru 1976?): 5,227,587 st with 3.7% Pb, 8.6% Zn, and 4.5 opt Ag; Reserve: 0.2-0.3 million st with 2.2% Pb, 3.0% Zn, and 2.6 opt Ag. [8]
 Virginia Louise Mng. Co. (2/1936) reserve: 494,000 st with 2.5% Pb, 2.6% Zn, and 2.5 opt Ag. [4]

Victoria, Elko Co.

Victoria deposit reserve (5/1956): 1,414,500 st with 2.70% Cu, 0.44 opt Ag, and 0.01% Bi, plus 1,500-2,000 st on dump and 14,462 st oxide ore with 4.30% Cu in upper levels. [4]
 Reserve (1/1/71): 3.4 million st with 2.41% Cu at a COG of 0.80% Cu. [5]
 Reserve (3/72): 4.958 million st with 2.26% Cu, 0.4 opt Ag, and 0.075% Bi above 750 level. [4]
 Reserve (1/1/76): 2.4 million st with 2.07% Cu. [6]

Yerington, Lyon Co.

Yerington mine in 1967 had 19.1 million st sulfide and 48.9 million st oxide ore with 0.15-0.29% Cu available for leaching in benches. [4]
 Yerington mine reserve (10/1/68): 28.1 million st oxide ore with 0.57% Cu and 66.6 million st sulfide ore with 0.54% Cu. [4]
 Reserve (1/1/71): 18 million st oxide ore with 0.52% Cu at a COG of 0.30% Cu and 80.7 million st sulfide ore with 0.46% Cu at a COG of 0.30% Cu. [5]
 Reserve (8/1974): 35.8 million st oxide ore with 0.34% Cu at a COG of 0.27% Cu and 42.1 million st sulfide ore with 0.50% Cu at a COG of 0.32% Cu. [4]
 Reserve (1/1/76): 24.6 million st oxide ore with 0.34% Cu and 29.9 million st sulfide ore with 0.47% Cu. [6]

New Mexico

Carpenter, Grant Co.

Carpenter deposit (Kennecott) reserve (1970): 88 million st with 0.5% Cu. [1]

Churchrock, McKinley Co.

Churchrock mine (Kerr-McGee) reserve (1968): 40 million lbs U_3O_8 at a grade of 0.2% U_3O_8 . [1]

Continental, Grant Co.

Continental deposit (UV Industries) reserve (1970): 37.7 million st with 1.42% Cu. [1]

Crown Point, McKinley Co.

Crown Point mine (Mobil) reserve (1975): 40 million lbs U_3O_8 at a grade of 0.12% U_3O_8 . [1]

Crown Point mine (Conoco) reserve (1977): 40 million lbs U_3O_8 at a grade of 0.23% U_3O_8 .

[1]

F-33, Valencia Co.

F-33 deposit reserves (6/71): 137,211 st assured with 0.346% U_3O_8 and 47,272 st possible with 0.298% U_3O_8 . Reserves (1/24/58): 201,600 st with 0.33% U_3O_8 . [4]

Gavilan Mesa, Valencia Co.

Mineral inventory (7/15/71): [4]

<u>COG % U_3O_8</u>	<u>st ore</u>	<u>grade % U_3O_8</u>
.001	3,024,290	.041
.020	1,998,877	.057
.050	715,945	.107
.100	241,384	.190
.150	125,160	.260
.200	65,484	.342

Hillsboro (Copper Flat), Sierra Co.

Hillsboro deposit (Quintana) reserve (1979): 70 million st open pit with 0.7% Cu. [1]

Jackpile, Valencia Co.

Jackpile mine reserve (4/1/68): 2.2 million st with 0.25% U_3O_8 at a COG of 0.1% U_3O_8 over 2 feet thickness. [4]

Jackpile/Paguate reserves: 28 million st with 0.16% U_3O_8 . [1]

James Hill (Jones Hill)

James Hill deposit (Conoco) reserve (1979): around 10 million st with 1.0% Cu, plus Au, Ag. [1]

L-Bar Ranch, Valencia Co.

L-Bar Ranch reserve (4/1/68): 15.7 million st with 0.06% U_3O_8 or 10.7 million st with 0.02% U_3O_8 or 2.4 million st with 0.07% U_3O_8 or 2.6 million st with 0.20% U_3O_8 . [4]

Laguna Lease, Valencia Co.

Laguna lease mineral inventory (7/15/71): [4]

<u>COG % U₃O₈</u>	<u>ore, st</u>	<u>grade % U₃O₈</u>
.001	45,407,905	.014
.020	8,158,655	.049
.050	2,365,408	.101
.100	729,386	.182
.150	323,939	.268
.200	170,925	.355

Mount Taylor, Cibola Co.

Mount Taylor mine (Gulf) reserve (1978): 140 million lbs U₃O₈ at a grade of 0.26% U₃O₈. [1]

Nogal Peak, Lincoln Co.

Nogal Peak deposit reserve (1979): 30 million st with 0.07% Mo. [11]

Nose Rock

Nose Rock deposit reserve (1974): 100 million lbs U₃O₈ at a grade of 0.15% U₃O₈. [1]

Paguate, Valencia Co.

Paguate mine reserve (4/1/68): 3.9 million st with 0.39% U₃O₈. [4]

SW Paguate Extension reserve (1971): 18.17 million st with 0.047% U₃O₈ (AEC, 1970);
470,000 st assured with 0.38% U₃O₈ and 1.4 million st indicated with 0.35% U₃O₈, or
1,814,261 st with 0.356% U₃O₈ over an average thickness 7.1 feet at a COG of 0.200% U₃O₈
over 6 feet thickness. [4]

Questa District, Taos Co.

Goat Hill deposit (Unocal) reserve (1979): 140 million st with 0.19% Mo, or 125 million st
with 0.175% Mo. [1]

Log Cabin (Unocal) deposit reserve (1979): 50 million st with 0.1% MoS₂. [11]

Oklahoma**Magnum-Paoli, Greer Co.**

Magnum-Paoli deposit (Teton Exploration) reserve (1979): 7 million+ st with 0.75% Cu. [1]

Oregon**Harney Lake, Harney Co.**

Harney Lake deposit reserve (1985): 1,200 million st with 78% clinoptilolite. [1]

Rome, Malheur Co.

Rome deposit reserve (1985): 331 million st with 61% mordenite. [1]

Pennsylvania**Gap, Lancaster Co.**

Gap mine reserve (1979): 800,000 st with 0.7% Ni. [11]

South Dakota**Golden Reward, Lawrence Co.**

Production (1877-1918): 1.64 million st with 0.62 opt Au; Reserve (1940): 30,000 st with 0.60 opt Au. [4]

Tennessee**Cumberland, Smith Co.**

Cumberland deposit (New Jersey Zinc) reserve (1970): 50 million st with 4.0% Cu. [1]

Elmwood, Smith Co.

Elmwood mine (New Jersey Zinc) reserve (4/15/81): about 70 million st with 16.5% Zn. [1]

Texas**Cave Peak, Culberson Co.**

Cave Peak deposit reserve (1970): 100 million st with 0.09% Mo; Reported reserve, Main Pipe (1981): 30.892 million st with 0.13% Mo, 0.05% Cu, and 0.01% W (35% of ore is oxide) at a COG of 0.06% Mo to 2800 feet above sea level (a very conservative estimate based on Union Carbide 1970 drilling - 26 holes 43,000 feet cumulative footage - possible Ag, Be, Nb, Sn byproducts); Ore breakdown given as 2 million st oxide ore (to 300 feet depth) with 0.272% Mo and 0.1% Nb₂O₅; 9 million st sulfide ore (300-1500 feet depth) with 0.2% Mo and 0.1% Nb₂O₅; deep target (3000-4500 feet) of 200-500 million st with 0.2-0.3% Mo and 0.1% Nb₂O₅. [1]

Kuykendall deposit, McMullen Co.

Kuykendall deposit reserve (11/76): 1 million st with 50% clinoptilolite plus heulandite.

Rhode Ranch, McMullen Co.

Rhode Ranch deposit reserve (1985): 2.2 million st open pit with 0.25% U₃O₈ plus Mo. [11] or 3.7 million st with 0.20% U₃O₈. [1]

Shafter District, Presidio Co.

Shafter deposit (Goldfields) reserve (1979): more than 10 million st with 5 opt Ag. [1]

Utah

Carr Fork, Salt Lake Co.

Past production (thru 1976?): 45.6 million st with 4.9% Pb, 2.0% Zn, 3.1 opt Ag, and 0.9% Cu. [6]

Carr Fork mine reserves (1/1959): 200 million st above 3300 level with 0.85% Cu, 0.014% Mo, 0.009 opt Au, and 0.022 opt Ag at a COG of 0.50% Cu, and 100 million st below 3300 level with 1.6% Cu at a COG of 1.00% Cu. [5]

Reserves (10/1974): 468,317,000 st with 0.95% Cu, 0.018% Mo, 0.008 opt Au, and 0.140 opt Ag. [4]

Reserves (1/1/76): 204.4 million st limestone ore with 1.50% Cu and 264.0 million st igneous ore with 0.56% Cu. [6]

Reserves (1979?): 96.415 million mt with 1.87% Cu, 0.027% Mo, 0.015 opt Au, and 0.32 opt Ag. [13]

Reserves (1979): 264 million st with 0.56% Cu, or 150 million st with 1.30% Cu, or 68 million st with 1.77% Cu. [1]

Reserves also given as 482 million st with 0.8% Cu. [1]

Reserves (1985): 100 million st with 1.87% Cu, 0.027% Mo, and 0.3 opt Ag. [11]

Dragon deposit, Juab Co.

Dragon deposit reserve (1/1/71): 412,048 st halloysite clay with less than 2.5% Fe and 1% alunite.; Reserve (1/1/68): 332,000 st halloysite clay. [4]

East Tintic District, Utah Co.

District production: 4.559 million st with 13.8 opt Ag, 10.1% Pb, and 3.0% Zn. [8]

Ophir, Tooele Co.

Past production (thru 1976?): 1,292,356 st with 6.0% Pb, 0.3% Zn, 6.5 opt Ag, and 1.0% Cu. [8]

Park City District, Summit and Wasatch Cos.

Past production for district (thru 1976?): 16,603,546 st with 7.8% Pb, 5.8% Zn, and 14.5 opt Ag. [8]

Geologic reserves (1/1/75): 1,145,786 st with 6.5 opt Ag, 8.2% Pb, and 11.7% Zn. [6]

United Park City Mines Co. reserves (1/73): 1,568,006 st with 8.2% Pb, 11.4% Zn, 0.02 opt Au, 6.5 opt Ag, and 0.05% Cd. Production 1956-66: 1,101,742 st. Reserve (1/1/68): 288,000 st with 0.02 opt Au, 5.15 opt Ag, 7.08% Pb, and 9.98% Zn. [4]

Pine Grove, Beaver Co.

Pine Grove (Phelps Dodge/Getty) deposit reserve (1979): 250 million st with 0.25% Mo (0.17-0.24 or 0.22%) plus WO₃. [1]

Rush Valley (Bauer) Mining District, Tooele Co.

Stockton-Bauer mine past production: about 2 million st with 10.0% Pb, 3.5% Zn, and 7.0 opt Ag. [8]

Calumet Mine (formerly owned by Combined Metals Reduction Co.) reserve (1956): 152,500 st with 0.04 opt Au, 7.39 opt Ag, 10.52% Pb, and 3.7% Zn (these reserves have since been mined out by lessees). [11]

Calumet mine reserve (10/74): 147,154 st with 0.05 opt Au, 7.14 opt Ag, 10.35% Pb, and 3.10% Zn plus tailings. [4]

Spor Mountain, Juab Co.

Topaz Beryllium Co. reserve (9/70): 19.71 million st with 0.8% BeO over an average thickness 8.6 feet including 3 million st with 1.20% BeO, all in an area of about 5,000 acres.

Includes: [4]

<u>orebody</u>	<u>avg. thickness (feet)</u>	<u>million st ore</u>	<u>grade % BeO</u>
Rainbow	12.2	1.4	0.80
S. Rainbow - Sundown	7.8	0.75	0.51
Monitor	10.0	2.1	0.75
Robyn	9.6	1.8	0.88
South Wind	6.5	1	1.00
T.B.C. East Group	<u>7.4</u>	<u>0.125</u>	<u>0.43</u>
	8.6	7.2	0.80

Stansbury Island, Tooele Co.

Stansbury Island deposit reserve (1985): 1.6 million st lime sand with 44.35% available CaO. [11]

Tintic District, Utah Co.

Past district production (thru 1976?): 18 million st with 6.2% Pb, 1.0% Zn, and 14.5 opt Ag. [8]

District production also given as 13.4 million st with 14.7 opt Ag, 4.8% Pb, and 0.5% Zn. [8]

North Lilly mine reserve (1/1949): 1,000 st with 0.06 opt Au, 5.0 opt Ag, 4.0% Pb, and 2.0% Zn. [4]

Tintic Bullion area reserve (1/1949): 750 st with 0.21 opt Au, 2.5 opt Ag, and 0.79% Cu. [4]

Wyoming

Green Mountain District, Fremont Co.

Green Mountain deposit (1985): 42 million lbs U_3O_8 at a grade of 0.23% U_3O_8 . [11]

Round Park (Green Mountain) deposit (1979?): 10.2 million st with 0.226% U_3O_8 . [13]

Also given as 11.7 million st with 0.23% U_3O_8 . [1]

Highland, Converse Co.

Highland mine (Exxon) reserve (1968): 20-30 million lbs U_3O_8 at a grade of 0.15% U_3O_8 . [1]

Iron Mountain, Albany Co.

Iron Mountain mine reserve (11/57): 9.8 million st with 33% Fe (20% recoverable) and about 12% TiO_2 . Chugwater Co. shipments (8/61-10/70): 621,012.70 st. Wyoming Iron Mountain Co. shipments (8/61-10/70): 116,245.02 st. Reserves in 1957 also given as 10.5 million st ore. Some 600,000 st ore were produced 1957-1968. [4]

Pathfinder, Carbon Co.

Pathfinder mine reserve (1968): 26 million lbs U_3O_8 at a grade of 0.15% U_3O_8 . [1]

Petromics, Carbon Co.

Petromics (Getty) reserve (1962): 30-40 million lbs U_3O_8 at a grade of 0.1-0.2% U_3O_8 . [1]

Round Park

Round Park deposit reserve (1977): 40 million lbs U_3O_8 at a grade of 0.23% U_3O_8 . [1]

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