THE MINERAL INDUSTRY OF NEVADA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Nevada Bureau of Mines and Geology for collecting information on all nonfuel minerals.

Nevada, the Nation's leading State in gold and silver production, ranked second in 1996 in total nonfuel mineral production value,[1] according to the U.S. Geological Survey (USGS). This was the fourth year in the past 5 in which the State ranked second; in 1993, Nevada was first in the Nation. Nevada mines provided 66% and 44% of the Nation's gold and silver, respectively, and in so doing, the "Silver State" has been first in gold production since 1981 and in silver since 1987. The State's total estimated nonfuel mineral value for 1996 was about $3.2 billion, an increase of about 3% from that of 1995. The years 1994-95 were virtually identical, about $3.11 billion each (based on final 1995 data). The State accounted for more than 8% of the U.S. total nonfuel mineral production value.

Gold accounted for 84% of Nevada's nonfuel mineral value; industrial minerals, 9%; and copper, silver, and mercury the remaining 7%. In 1996, increases of about $71 million in the estimated value of copper and $37 million in gold accounted for the major portion of the increase in the State's nonfuel mineral value. Additionally, increases of approximately $10 million each in silver and portland cement values also supported Nevada's rise in value. Other nonfuel minerals that increased in value in 1996 included lime, diatomite, crushed stone, magnesite, crude gypsum, bentonite, gemstones, and brucite. Mineral commodities that showed a decrease in value in 1996 included construction sand and gravel, lithium minerals, industrial sand and gravel, barite, fuller's earth, perlite, and salt. Based on final 1995 data, a $44-million decrease in gold value from 1994 to 1995 was mitigated by increases in the values of most all other nonfuel minerals, especially those of silver, diatomite, portland cement, barite, and lime. Other nonfuel minerals that increased by at least $1 million in 1995 included construction sand and gravel, copper, magnesite, and lithium minerals.

Based on USGS estimates of quantities produced in the 50 States during 1996, Nevada remained first in gold, silver, barite, first of three mercury-producing States, and the only State to produce magnesite and brucite. The State also retained its 1995 ranking in a number of other mineral commodities—it was second in diatomite, second of two States that produced lithium minerals, fourth in crude gypsum, fourth of four crude perlite-producing States, and sixth in kaolin. Nevada moved up in rank from eighth to fifth in copper production. In 1995, the State was fourth in zeolites; data were not yet available for 1996. In addition, significant quantities of construction and industrial sand and gravel and lime were produced in the State.

The following narrative information was provided by the Nevada Bureau of Mines and Geology (NBMG) (Nevada Bureau of Mines and Geology, 1997). Mining in Nevada in 1996 grew during the prior year in terms of quantities produced and value. From the discovery of the Comstock silver deposits in 1859 until today, mining has had a major role in the State's economy and continues to be a major economic force in the State during 1996. NBMG has projected that this should continue for many years to come. The conditions that lead to this optimism are that most currently operating Nevada mines have significant discovered reserves with good potential to add to those reserves. Recent gold exploration efforts have been successful, and new large mining projects are being developed and will be on-line within the next several years.

According to NBMG's own survey canvass, Nevada had a record production year for several mineral commodities. The State reached a gold production milestone in 1996—exceeding 218,000 kilograms (7 million troy ounces). (All NBMG data used in this publication are nonproprietary data and may differ from some production figures reported to the USGS.) This was the first time any State has reached that mark in a single year. Silver production exceeded. 622,000 kilograms (20 million ounces) for the fourth year in a row. Also according to NBMG data, copper production increased more than tenfold with the startup of BHP Copper Co.'s Robinson Mine in the Ely area. Barite production was up by 28% as a result of aggressive marketing and slightly improved demand.

Perhaps the most significant trend that has become increasingly evident during the past several years is the growing production of gold from underground operations. In 1997, nearly 20% of the State's gold production is

expected to be produced using underground mining methods. Barrick Goldstrike Mines Inc.'s Meikle Mine in Elko County is the largest new contributor to this trend. Full production began in September 1996. Annual output in 1997 is expected to be about 13,500 kilograms. Employment in underground mines is growing as well, with nearly 1,400 direct mining jobs now assigned to underground operations.

More than 14,400 workers were employed by Nevada mining operations in 1996. The average annual pay for these workers, the highest of any sector in the State, is about $47,540, compared with the average salary in Nevada of about $26,630 per year. Nevada's annual payroll for the mining industry is now more than $680 million. In addition to the direct employment in mining, an estimated 48,000 additional jobs in the State are related to providing goods and services needed by the mining industry.

The taxes paid by the mining industry to State and local governments are derived from property taxes, sales and use tax, and, unique to the minerals industry, net proceeds of mines tax. These taxes paid by the mining industry totaled about $141 million in 1995. Total taxes paid for 1996 were not available for this report, but NBMG estimated that they would approximately equal those paid in 1995.

The economic impact of mining is important for the State as a whole, but the greatest impacts are felt by local communities near the mines. Towns like Elko, Lovelock, Battle Mountain, Winnemucca, Beatty, Eureka, and Ely enjoy healthy economies because of the high-paying employment and the taxes and contributions of the industry.

In addition to the positive economic impacts, growth related to mine development presents local governments and nearby communities with both challenges and difficulties. Strains on schools, police, and fire protection as well as other public services are felt when large mines open or undergo expansions. As a partial offset, many mining companies have provided donations of money, water systems, school buildings, buses, etc., to the communities where their mines are located. For example, Homestake Mining Co. built housing for more than 100 families in Eureka and has made donations for scholarships and civic events.

Before the onset of any mining project, plans, including those of proposed reclamation, must be submitted and permits obtained from Federal and State Agencies that have requirements to protect water, air, wildlife, land, and other resources. Nevada and Federal laws and regulations require that lands that are disturbed by mining be rehabilitated (reclaimed) for other purposes when mining is complete. The goal of mine reclamation is to return mined areas to a condition capable of supporting resources and activities such as wildlife habitat, livestock grazing, recreation, or new industrial uses. To ensure that reclamation of the mine is complete, bonds posted by operators and held by government regulators, are released only after the area is stabilized and reclamation criteria are met. Post-mine uses of the reclaimed land are targeted at having a beneficial economic impact on nearby communities and on the State.

In recent years, gold reserves, deemed minable at a profit under current economic forecasts, have been reported at or near currently operating Nevada mines. While production has been increasing, the quantities of reserves have also continued to grow. Current reserves reported at these operating mines was estimated at about 3.55 million kilograms (114 million ounces). While many Nevada mining operations have been able to add to reserves each year as a result of development drilling, it is also true that mining companies do not completely drill to the furthest extent of their ore deposits if currently discovered reserves are sufficient for their current planning horizon. There are likely extensive additional gold resources at properties that are currently in various stages of development and permitting. Major new gold mines were proposed for Eureka, Elko, Lander, Pershing, and Humboldt Counties. NBMG anticipated that these properties would likely continue contributing to Nevada production within the next 1 or 2 years.

As to future mining projects, the following was stated in the Nevada Bureau of Mines and Geology Special Publication MI-1995, The Nevada Mineral Industry 1995: "At the end of the year the published gold resources in Nevada, including minable reserves and perhaps some subeconomic resources, totaled 4,510 metric tons[2] (145 million ounces) of gold, enough to sustain gold production at substantial levels for 20 to 30 years, assuming stable prices."

Exploration for new deposits, particularly gold, continued to be an ongoing effort by all of the producing companies and many others not operating mines in the State. About 300 geologists in Nevada were employed primarily to explore for mineral properties which can be developed into new mines. These geologists with their support staff and expenditures on drilling, assaying, travel, and other related costs, represent a significant additional economic impact that is due to mining activity in Nevada.

Copper mining once again has become important to the economy of the State with the opening of BHP's Robinson Mine in the Robinson district near Ely. Copper production began in February 1996 and 73,000 tons of

copper in concentrate was shipped in 1996 to Arizona for smelting

For more detailed information on mineral activity in Nevada, see the two annual NBMG reports that cover these topics. Major Mines of Nevada 1996, Mineral Industries in Nevada's Economy, NBMG Special Publication P-8 (released in May 1997), contains maps, mine-by-mine production statistics, addresses, and telephone numbers. The Nevada Mineral Industry—1996, NBMG Special Publication MI-1996, (scheduled for release in August 1997), contains a more complete directory and analysis of industry activities, including exploration and production in nonfuel mineral mining as well as for petroleum, natural gas, and geothermal energy. In addition, NBMG Special Publication 21, The U.S. Gold Industry 1996 analyzes useful production and operating information on the domestic gold industry. All three publications are available on the World Wide Web at <http://www.nbmg.unr.edu/>.

Reference Cited

Nevada Bureau of Mines and Geology, 1997, Major Mines of Nevada 1996— Mineral Industries in Nevada's Economy: Nevada Bureau of Mines and Geology Special Publication P-8, p. 22-27.

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[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 1996 USGS mineral production data published in this chapter are estimates as of February 1997. For some commodities (for example, construction sand and gravel, crushed stone, and portland cement), estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset, and request Document # 1000 for a telephone listing of all mineral commodity specialists, or call USGS information at (703) 648-4000 for the specialist's name and number. This telephone listing may also be retrieved over the Internet at http://minerals.er.usgs.gov/minerals/contacts/comdir.html

[2]All tons are metric unless otherwise specified.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEVADA 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1994 Quantity	1994 Value	1995 Quantity	1995 Value	1996 p/ Quantity	1996 p/ Value
Barite	284 3/	5,020 3/	W	W	W	W
Clays 4/	7	2,860	6	477	29	3,670
Copper 5/	6	15,800	6	19,800	W	W
Gemstones	NA	160	NA	306	NA	345
Gold 5/ kilograms	214,000	2,700,000	213,000	2,650,000	214,000	2,690,000
Sand and gravel:						
Construction	22,700	106,000	22,500	110,000	21,400	103,000
Industrial	572	W	W	W	W	W
Silver 5/ metric tons	673	115,000	766	127,000	791	135,000
Stone (crushed)	2,310	20,600	2,410	21,400	2,500	22,400
Combined value of barite, brucite, cement (portland), clays (fuller's earth, kaolin), diatomite, gypsum (crude), lime, lithium minerals, magnesite, mercury, perlite (crude), salt, and values indicated by symbol W	XX	149,000	XX	180,000	XX	282,000
Total	XX	3,110,000	XX	3,110,000	XX	3,230,000

p/ Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data.
XX Not applicable.
1/ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
2/ Data are rounded to three significant digits; may not add to totals shown.
3/ Excludes certain barites; value included with "Combined value" data.
4/ Excludes certain clays; kind and value included with "Combined value" data.
5/ Recoverable content from ores, etc.

TABLE 2
NEVADA: 1/ CRUSHED STONE 2/ SOLD OR USED BY PRODUCERS
IN 1995, BY USE 3/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Other construction materials 4/	624	$6,020	$9.65
Other miscellaneous uses 5/	1,020	11,900	11.65
Unspecified: 6/			
Actual	742	3,400	4.58
Estimated	19	89	4.68
Total	2,410	21,400	8.90

1/ To avoid disclosing company proprietary data; District tables were not produced for 1995.
2/ Includes dolomite, granite, limestone, miscellaneous stone, traprock, and volcanic cinder and scoria.
3/ Data are rounded to three significant digits; may not add to totals shown.
4/ Includes concrete aggregate (coarse), graded road base or subbase, and terrazzo and exposed aggregate.
5/ Includes agricultural limestone, flux stone, lime manufacture, mine dusting or acid water treatment, and other agricultural uses.
6/ Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 3
NEVADA: CRUSHED STONE SOLD OR USED, BY KIND 1/

	1994				1995			
Kind	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	7	1,380	$13,000	$9.37	6	1,610	$13,300	$8.30
Dolomite	6	251	1590	6.35	3	W	W	10.36
Granite	2	W	W	12.20	1	W	W	12.63
Traprock	2	W	W	4.87	1	W	W	4.26
Volcanic cinder and scoria	1	54	W	W	1	W	W	2.28
Miscellaneous stone	2	W	W	4.79	1	W	W	4.68
Total	XX	2,310	20,600	8.93	XX	2,410	21,400	8.90

W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
1/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 4
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1995,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand)	7,270	$46,400	$6.38
Plaster and gunite sands	299	1,180	3.96
Concrete products (blocks, bricks, pipe, decorative, etc.)	206	1,280	6.20
Asphaltic concrete aggregates and other bituminous mixtures	2,460	12,300	5.02
Road base and coverings 2/	5,970	22,300	3.73
Fill	1,210	4,050	3.35
Snow and ice control	58	294	5.07
Railroad ballast	14	84	6.00
Other	567	3,310	5.84
Unspecified: 3/			
Actual	930	3,290	3.54
Estimated	3,550	15,300	4.32
Total or average	22,500	110,000	4.87

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes road and other stabilization (cement).
3/ Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 5
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1995,
BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products 2/	1,270	6,750	6,500	42,100
Asphaltic-bituminous mixtures	1,000	6,050	1,460 3/	6,280 3/
Road base materials 4/	1,870	8,450	5,370 3/	18,200 3/
Other miscellaneous uses 5/	222	1,090	359	2,300
Unspecified: 6/				
Actual	114	189	816	3,110
Estimated	752	2,350	2,800	13,000
Total	5,230	24,900	17,300 3/	84,900 3/

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes plaster and gunite sands.
3/ Includes unspecified within all districts.
4/ Includes fill, road and other stabilization (cement), and snow and ice control.
5/ Includes railroad ballast.
6/ Includes production reported without a breakdown by end use and estimates for nonrespondents.