Nevada Bureau of
Mines and Geology

Special Publication MI-2001

The Nevada Mineral Industry 2001

Metals

Industrial Minerals

Oil and Gas

Geothermal

Exploration

Development

Mining

Processing

This report, twenty-third of an annual series, describes mineral, oil and gas, and geothermal activities and accomplishments in Nevada in 2001: production statistics, exploration and development including drilling for petroleum and geothermal resources, discoveries of orebodies, new mines opened, and expansion and other activities of existing mines. Statistics of known gold and silver deposits, and directories of mines and mills are included.

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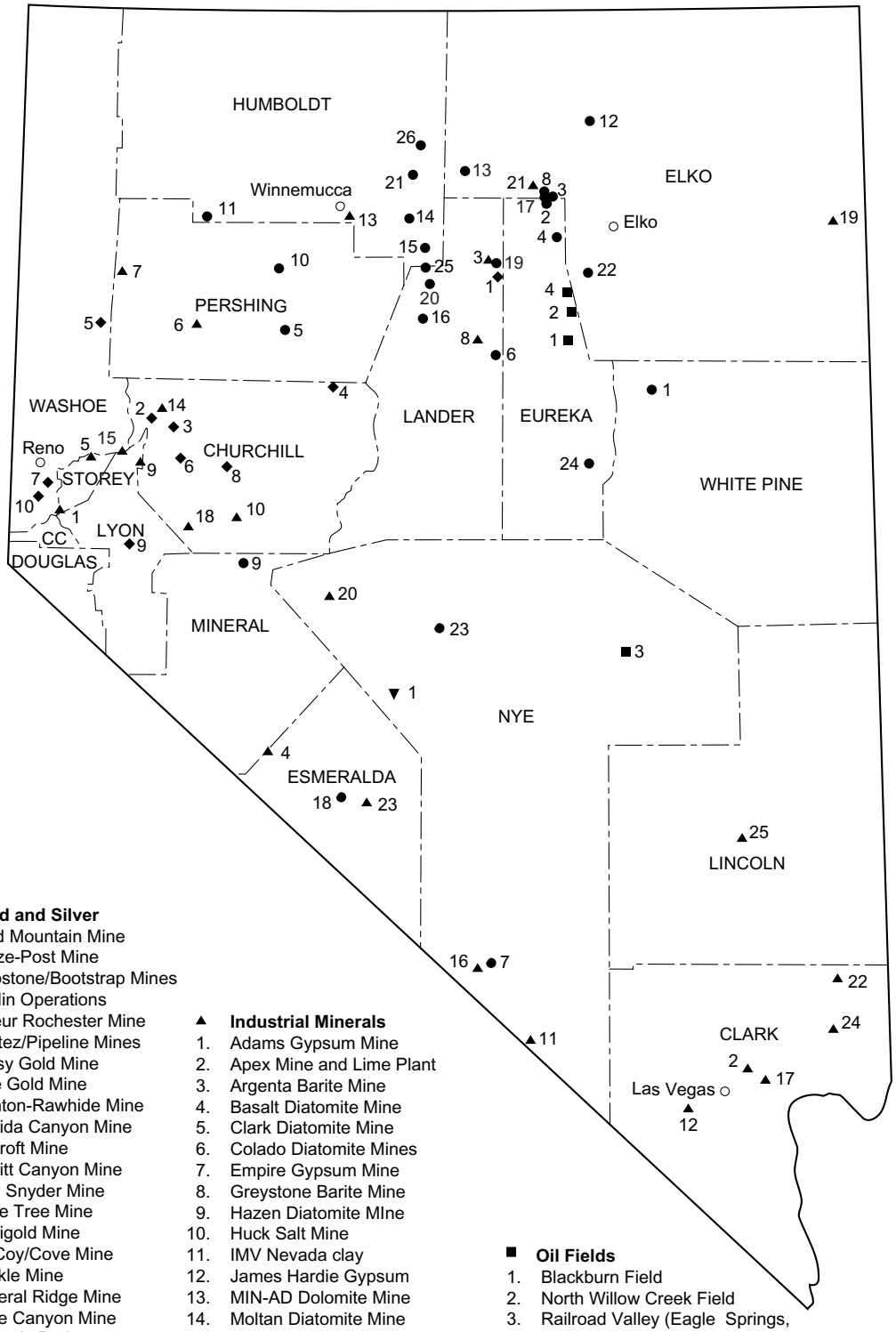

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Major mines, oil fields, and geothermal plants, 2001.

Overview

by Jonathan G. Price and Richard O. Meeuwig

This report highlights activities through 2001 in metals, industrial minerals, geothermal energy, and petroleum. Numerous graphs and charts are incorporated for rapid inspection of trends in production and price. Overall mineral and energy production in Nevada in 2001, valued at $2.9 billion, dropped slightly from the previous year. Gold production decreased from 8.6 million ounces in 2000 to 8.1 million ounces in 2001, the fourth highest level in history. Nevada led the nation in the production of gold, silver, and barite and was the only state that produced magnesite, lithium, and the specialty clays, sepiolite and saponite. Other commodities produced in Nevada in 2001 included construction aggregate (sand, gravel, and crushed stone), geothermal energy, lime, diatomite, gypsum, cement, silica (industrial sand), dimension stone, semiprecious gemstones, perlite, salt, and petroleum.

Nevada ranked second in the United States in terms of value of overall nonfuel (excluding oil, gas, coal, and geothermal) mineral production in 2001 (according to the U.S. Geological Survey, Mineral Commodity Summaries 2001, http://minerals.usgs.gov/minerals/pubs/mcs/). California, with its large population and commensurate demands for construction raw materials, was first; Texas, also a populous state and major producer of construction raw materials, was third; and Arizona, the nation's leading copper producer, was fourth.

Nevada's production of gold, valued at nearly $2.3 billion, was 76% of the U.S. total and helped make the U.S. the second leading gold producer in the world in 2001. Nevada alone accounted for 10% of world production of gold. Only the countries of South Africa and Australia produced more gold than the State of Nevada in 2001. Second to gold in terms of Nevada's mineral value in 2001 was construction aggregate, $158 million. Electrical power from geothermal energy production in Nevada in 2001 was valued at $87 million. Silver, chiefly a by-product or co-product of gold production, ranked as the fourth leading mineral commodity in 2001, with a value of $86 million.

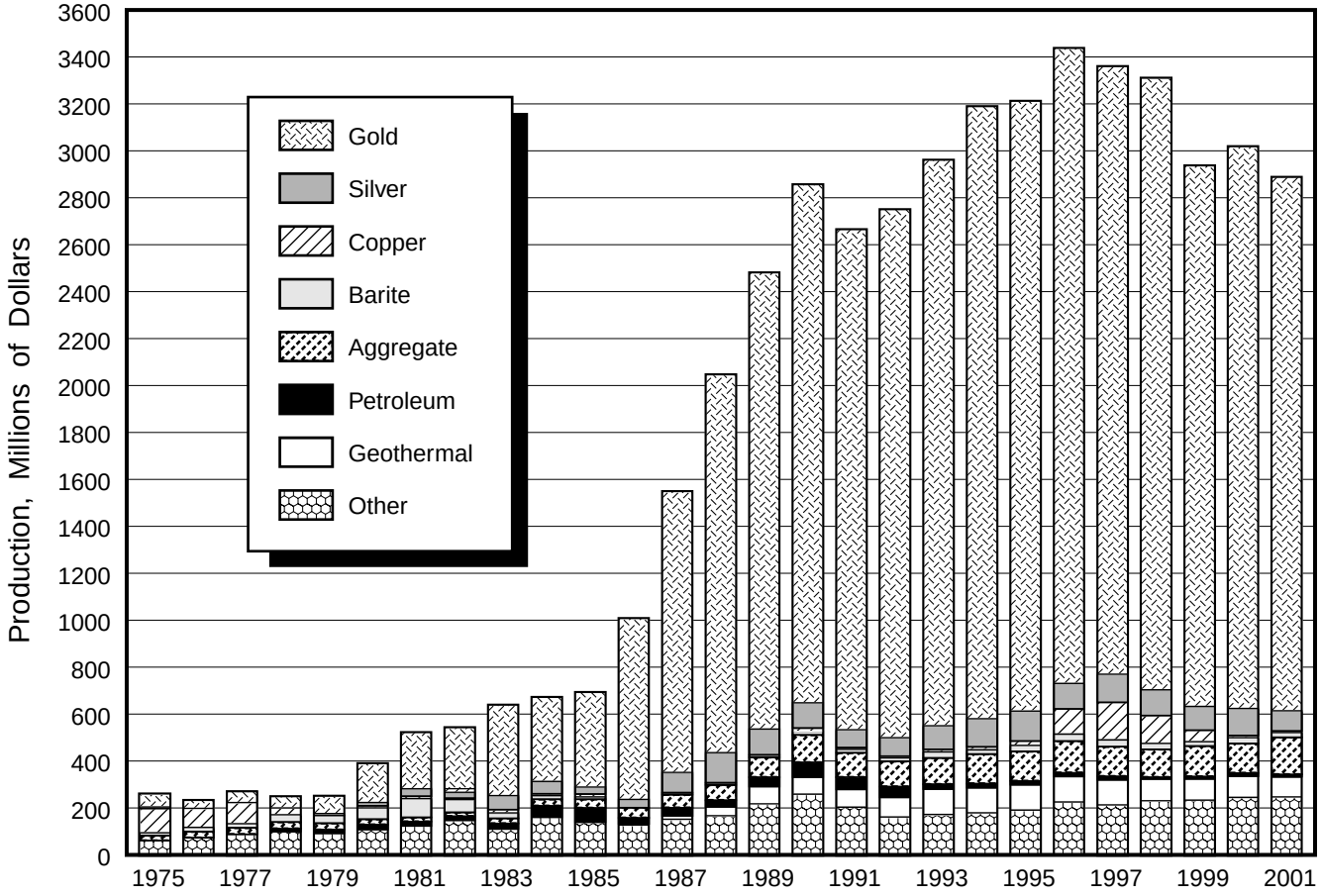
The contributions that mining makes to the economies of Nevada and the U.S. are significant in terms of jobs, commerce, taxes, improvements to the infrastructure, and lowering of the U.S. trade deficit. Because of Nevada's production, the U.S. is a net exporter of gold, most of which is sold on the international market for jewelry and arts and some of which is sold for its superior qualities in computers and other electronics. The U.S. is a net exporter of few mined commodities and a net importer of many. Among the major mined products in Nevada, the U.S. relies upon imports for barite (87% of total U.S. consumption from imports, according to the U.S. Geological Survey, used primarily to prevent blowouts in oil and gas drilling), silver (44%, used in photographic and other applications), copper (31%, used primarily to conduct electricity), and gypsum (25%, used in wallboard). Our exports of gold help offset the staggering U.S. trade deficit (difference between imports and exports of goods and services), which amounted to $344 billion in 2001 (according to the Department of Commerce, Bureau of Economic Analysis, www.bea.doc.gov/bea/).

MINERAL, GEOTHERMAL POWER, AND PETROLEUM PRODUCTION IN NEVADA[1]

Minerals	2000		2001		% change from 2000 to 2001	
	Quantity	Value (millions)	Quantity	Value (millions)	Quantity	Value
Gold (thousand troy ounces)	8,585	$2,395.2	8,125	$2,275.0	-5	-5
Silver (thousand troy ounces)	23,205	115.1	17,452	85.6	-25	-26
Copper (thousand pounds)	11,670	10.4	7,131	5.4	-39	-48
Aggregate (thousand short tons)	28,000	126.0	35,000	157.5	+25	+25
Gypsum (thousand short tons)	1,800	29.7	2,220	35.5	+23	+20
Barite (thousand short tons)	480	24.0	478	22.2	0	-8
Geothermal energy (thousand megawatt-hours)	1,260	90.0	1,247	87.2	-1	-3
Petroleum (thousand 42-gallon barrels)	621	14.1	571	9.8	-8	-30
Other minerals[2]	—	215.6	—	210.0	—	-3
Total	—	$3,020.1	—	$2,888.2	—	-4

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers); compiled by the Nevada Division of Minerals and the Nevada Bureau of Mines and Geology. Products milled or processed in Nevada but mined from deposits in California are excluded. Specifically, colemanite from a mill in Amargosa Valley in Nye County and zeolite from the Ash Meadows plant in Nye County are not included in these totals.

[2] Building stone, cement, clay, diatomite, lime, lithium carbonate, magnesite, mercury, perlite, salt, and silica sand.



Nevada mineral, geothermal power, and petroleum production, 1975–2001.

The local economy also benefits from mining. Construction of new homes, casinos, other businesses, schools, and roads continues the strong demand for local sources of sand, gravel, crushed stone, gypsum, and raw materials for cement, all of which are abundant in Nevada. The mining industry directly employed approximately 10,270 people in 2001, and the industry is responsible for another 37,000 jobs related to providing the goods and services needed by the industry and its employees (Driesner and Coyner, 2002).

Nevada and the U.S. make significant contributions to the world's production of several mineral commodities. Thanks in part to Nevada's production, the U.S. is the world's leading producer, as well as consumer, of gypsum (with the U.S. accounting for 17% of world production in 2001) and industrial sand (30% of world production). In addition to gold, the U.S. is a leading silver producer (9% of world production; only Mexico, Peru, and Australia outpaced the U.S. in 2001) and copper (10% of world production; Chile first with 35%). The U.S. is essentially self sufficient, as are most countries, in construction aggregate, largely because of the high expense of transportation. Total U.S. production of construction sand, gravel, and crushed stone in 2001 was approximately 2.74 billion metric tons, according to the U.S. Geological Survey. Net imports of aggregate account for less than 1% of consumption. The U.S. is also self sufficient in the other major mined material, coal. According to the U.S. Energy Information Agency (www.eia.doe.gov/), the U.S. produced and consumed approximately 1.0 billion metric tons of coal in 2001, an all-time record for production. Although no coal is produced in Nevada, coal is the primary source of energy for generation of electricity in Nevada.

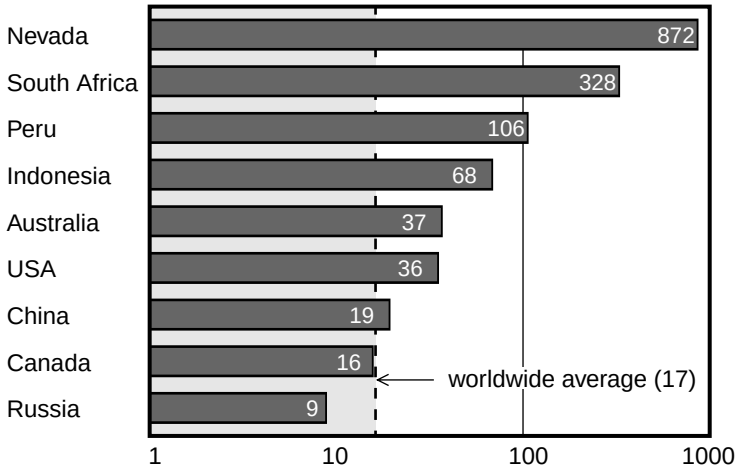
As a result of its favorable geology, Nevada has tremendous potential for the discovery of additional mineral deposits. Areas where prospective rocks are beneath cover of young, valley-filling sediments and volcanic rocks have only been explored to a limited extent, and ore deposits continue to be discovered in and near Nevada's 526 historical mining districts. Like the Transvaal, the most productive region of South Africa, Nevada is a world leader in terms of gold production per unit area.

Through a survey conducted early in 2002, the Nevada Division of Minerals collected data for Nevada Bureau of Mines and Geology Special Publication P-13, Major Mines of Nevada 2001. This publication includes, in handbook form, location maps, names and telephone numbers of operators, numbers of employees, and preliminary, nonproprietary production figures for most mines in Nevada. It also contains a section on economic impacts of the industry. The full contents of this 28-page publication are available for free on the World Wide Web

WORLD PRODUCTION OF SELECTED MINERAL COMMODITIES (metric tons) in 2001*

Country/State	Area (10^6 km^2)	Gold	Silver	Copper	Gypsum	Barite	Industrial Sand
Algeria	2.38	—	—	—	—	50,000	
Australia	7.68	285	2,060	869,000	4,000,000	—	2,500,000
Austria	0.08	—	—	—	—	—	5,800,000
Belgium	0.03	—	—	—	—	—	2,400,000
Brazil	8.51	—	—	32,000	—	—	2,700,000
Bulgaria	0.11	—	—	95,000	—	120,000	—
Canada	9.96	160	1,200	633,000	9,000,000	—	2,000,000
Chile	0.76	—	1,300	4,740,000	—	—	—
China	9.57	185	1,800	588,000	6,800,000	3,800,000	—
Egypt	1.00	—	—	—	2,200,000	—	—
France	0.57	—	—	—	4,500,000	75,000	6,600,000
Germany	0.36	—	—	—	—	120,000	6,800,000
India	3.28	—	—	31,000	2,220,000	650,000	1,400,000
Indonesia	1.90	130	—	50,000	—	—	—
Iran	1.65	—	—	140,000	11,000,000	190,000	—
Italy	0.30	—	—	—	1,300,000	—	3,000,000
Japan	0.38	—	—	0.7	6,000,000	—	2,700,000
Kazakhstan	2.72	—	980	470,000	—	14,000	—
Korea, North	0.12	—	—	13,000	—	70,000	—
Mexico	1.97	—	2,760	367,000	7,600,000	120,000	1,900,000
Morocco	0.45	—	—	7,000	—	320,000	—
Netherlands	0.04	—	—	—	—	—	3,000,000
Peru	1.29	138	2,400	722,000	—	—	—
Poland	0.31	—	—	474,000	1,300,000	—	—
Russia	17.07	152	380	620,000	—	60,000	—
South Africa	1.22	402	110	142,000	—	—	2,100,000
Spain	0.50	—	—	79,000	7,500,000	—	6,000,000
Thailand	0.51	—	—	—	6,000,000	50,000	—
Turkey	2.59	—	—	64,000	—	120,000	—
United Kingdom	2.44	—	—	—	1,400,000	70,000	4,000,000
United States	9.37	335	1,740	1,340,000	18,800,000	450,000	28,800,000
Nevada	**0.29**	**253**	**543**	**3,235**	**2,000,000**	**433,000**	**609,000**
Alaska	1.53	17	—	—	—	—	—
Arizona	0.30	—	—	879,000	242,000	—	—
California	0.41	14	—	—	1,210,000	—	—
Idaho	0.22	—	41	—	—	—	—
Zambia	0.75	—	—	299,000	10,000	—	—
WORLD	149.90	2,570	18,700	13,700,000	110,000,000	6,650,000	97,000,000

* Production data for all areas except Nevada are from the U.S. Geological Survey (USGS) minerals information publications (http://minerals.usgs.gov/minerals/), with revisions for some data from USGS mineral commodity specialists; production data for Nevada are from Driesner and Coyner (2002); USGS statistics are adjusted to be consistent with Nevada data; data for areas are from The World Almanac and Book of Facts, 1992, Pharos Books, New York, 960 p. There are some discrepancies between the Nevada and USGS data, particularly for barite (USGS reports 400,000 metric tons total for USA), for which the USGS reports quantity sold and used rather than quantity produced in the year.



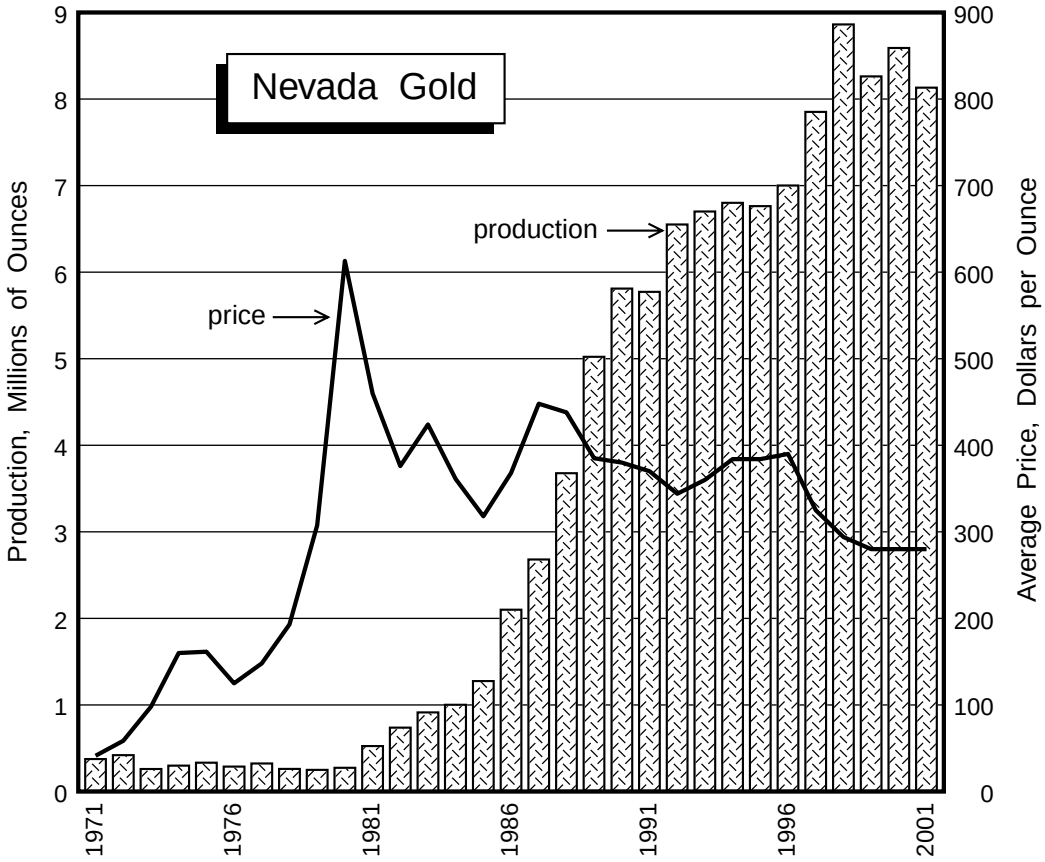
Gold production in 2001
(metric tons per million square kilometers, log scale).

(www.nbmg.unr.edu/), as are the contents of this report. The data from this survey are used, along with information from other sources, in this publication and will be used to update, revise, and check preliminary statistics collected and released by the U.S. Geological Survey.

The section on **Metals** and the table of **Major Precious-Metal Deposits** provide details on new deposit discoveries, new mine openings, mine closures, additions to reserves, and mine expansions. As has been the case in recent years, gold has been the leading commodity produced in Nevada. Production of gold in 2001 came from 26 major mining operations. The Carlin trend in northeastern Nevada accounted for 47% of the total production. Ten additional mining operations, not on the Carlin trend, each produced over 100,000 ounces of gold from mostly multimillion-ounce deposits. Underground operations accounted for approximately 20% of total production.

In April, 2002, the Carlin trend produced its 50 millionth ounce of gold, making it one of the four most productive gold-mining districts in the world. The Nevada Bureau of Mines and Geology Special Publication 30 is a poster highlighting this milestone in production. A commemorative gold coin, officially designated as the 50 millionth ounce of production, was donated by the mines of the trend, operated by Newmont Mining Corporation, Barrick Goldstrike Mines, and Glamis Gold, and is on display at the W.M. Keck Museum at the Mackay School of Mines on the University of Nevada, Reno campus.

Nevada and the U.S. have produced a significant portion of world gold. The U.S. Geological Survey estimates that total world gold production, since the beginning of civilization, has been 140,000 metric tons (4.5 billion troy ounces). Interestingly, about 85% of that gold is still in use (in bullion, coins, jewelery, electronics, etc.), and most gold currently being mined will be recycled. Total U.S. production, primarily since 1835, is approximately 15,000 metric tons (480 million ounces or nearly 11% of total world gold production), and total Nevada production, since 1859, is 4,262 metric tons (137 million ounces or 3% of total world production). The Carlin trend alone accounts for one percent of all the gold ever mined in the world.



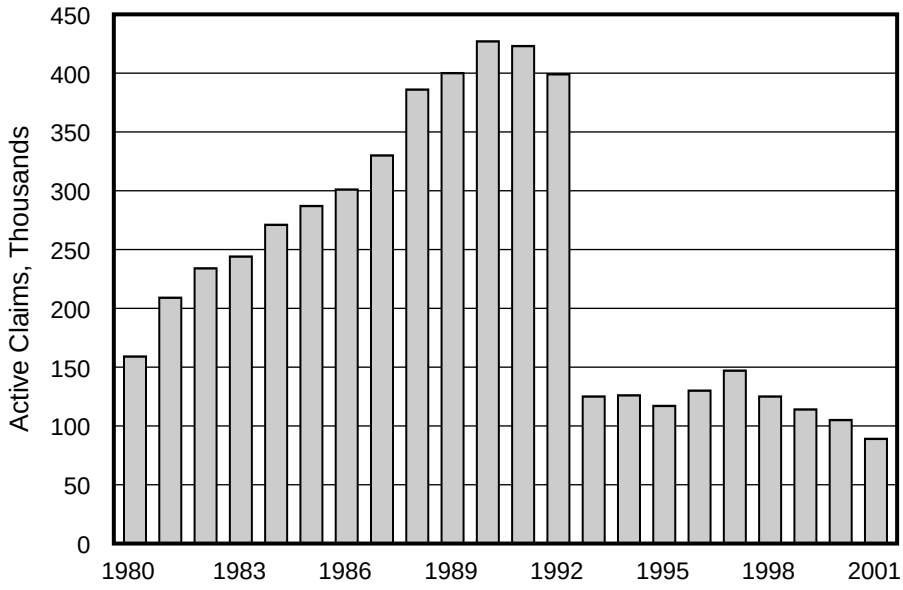
Barrick's Betze-Post Mine in Eureka County produced 1.5 million ounces, making it the largest producer in the state, and Barrick's Meikle Mine in Elko County produced nearly 713,000 ounces, making it the largest underground producer in 2001. Newmont's overall production from several mines on the Carlin trend, including its Carlin operations and Capstone/Bootstrap and Rain Mines, totaled 1,547,247 ounces. Placer Dome's Cortez operation (Pipeline and nearby deposits in Crescent Valley, Lander County) produced nearly 1.2 million ounces of gold in 2001.

Three new mines came into production in 2001: Newmont's Deep Post Underground Mine and Barrick's Rodeo Mine on the Carlin trend and Anglo Gold's and Meridian's Lee Smith Mine at Jerritt Canyon in Elko County. Placer Dome decided not to resume production at Getchell in Humboldt County, and Barrick announced plans to shut down its Ruby Hill Mine in Eureka County in 2002. The latter mine produced nearly 135 thousand ounces in 2001. Using the Ken Snyder Mine in Elko County as an example, some companies are focusing exploration on high-grade veins, while others continue to search for sedimentary rock-hosted (Carlin-type) ores and volcanic rock-hosted ores that have yielded most of the modern production. Exploration, including grass roots activity, work in known mining districts, and development of extensions to known deposits, added to the Nevada resource base in 2001. New mineable deposits continue to be discovered. Exploration activities are summarized in the section on Metals. Most exploration efforts focused on gold and silver. As measured by the numbers of active claims on public lands, grass-roots exploration activity dropped to a level not seen in over a two decades, below 100,000 active claims.

According to a survey of exploration activities by the Nevada Division of Minerals (D. Driesner, 2002, Nevada Exploration Survey 2001, available at http://minerals.state.nv.us/), exploration activity has been steadily declining since 1997. The 24 companies responding to the survey reported spending $51.2 million on exploration in Nevada in 2001, down from $76.9 million in 2000, and well below the level of $140.8 million in 1995. They project spending $46.3 million in Nevada in 2002. Another measure of exploration activity is the number of exploration geologists employed by these companies: 107 in 2001, which is down sharply from 309 in 1997. These companies project employing about the same number of exploration geologists in 2002.

The decline in exploration is largely the result of low metal prices. These companies report similar (and in many areas, greater) declines in metal exploration activity in other parts of the U.S. and internationally. Because of its favorable geology and regulatory climate, Nevada continues to attract a large portion of the worldwide exploration expenditures of the companies actively exploring in Nevada. The recent rise in the price of gold and global declines in production have spurred additional exploration in Nevada during the 2002 field season.

We continue to be in the midst of the biggest gold boom in U.S. history, as the graph of historical U.S. gold production illustrates. The recent surge in production in the U.S. is largely the result of discoveries of Carlin-type gold deposits and other deposits in which fine-grained gold is widely disseminated in the ore. These deposits are primarily in Nevada. The U.S. production so far in the current boom, the period from 1980 to 2001, has been 161 million ounces. This is significantly greater than the total production during the era of the California gold rush (1849 to 1859, with 29 million ounces), the Comstock (Nevada) era from 1860 to 1875 (with 34 million ounces), and the period from 1897 to 1920, when Goldfield (Nevada), the Black Hills (South Dakota), Cripple Creek (Colorado), and by-product production from copper mines in Arizona and Utah contributed to cumulative production of 95 million ounces. U.S. production in the decade from 1992 to 2001 alone was 108 million ounces.



Number of active claims in Nevada as of October 1, 1980 through 2001. Data from the Nevada State Office of the U.S. Bureau of Land Management.

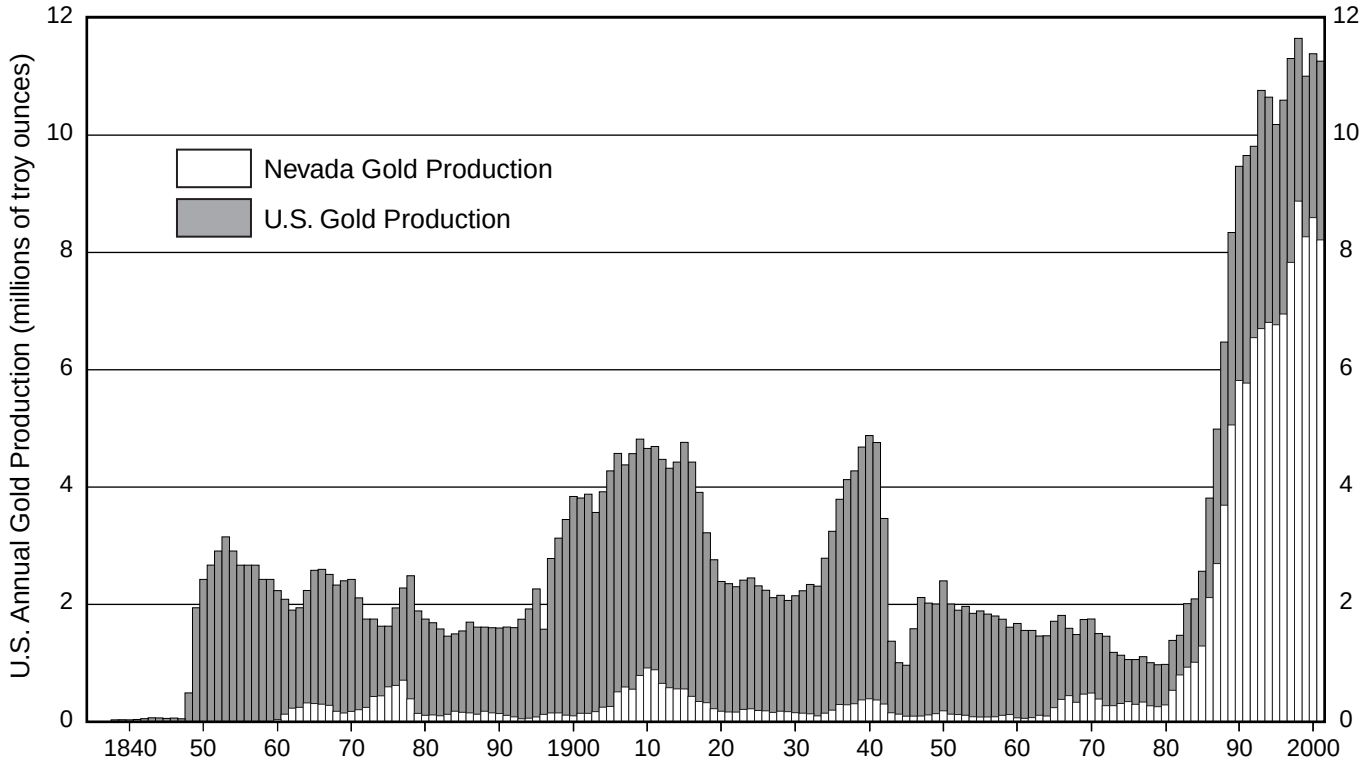
The announced gold resources in Nevada, including mineable reserves and perhaps some subeconomic resources (as reported in announcements by companies and compiled by the Nevada Bureau of Mines and Geology, with deductions for production), totaled approximately 134 million ounces of gold, enough to sustain gold production at substantial levels for 15 to 20 years, assuming stable prices. The term "reserve" has special meaning with regard to U.S. securities laws. To be called a reserve, the deposit must be able to be mined profitably. With relatively low gold prices, some of the reserves of previous years have been downgraded to subeconomic resources. When prices rise or when new technologies allow mining and gold processing costs to be lower, subeconomic resources can become reserves.

Productivity of Nevada mining operations is exceptionally high. Measured simply by the value of the commodities produced divided by the number of employees, productivity of Nevada miners is outstanding. On the average, each person in the nonfuel mineral industry in Nevada produced approximately $272,000 in mined products in 2001, an all-time high figure. This year's increase in productivity resulted largely from cutbacks in the labor force.

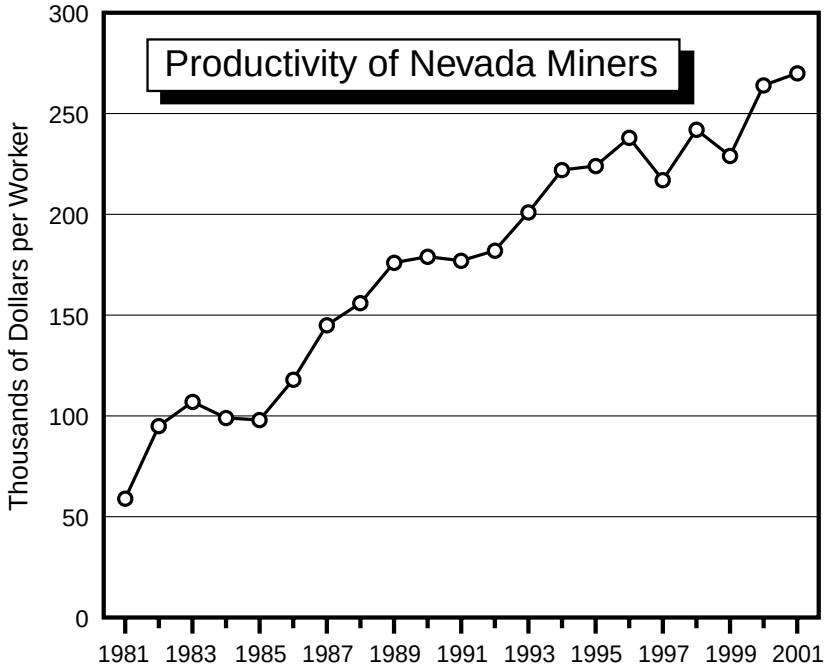
Challenges that face the precious metal mines in Nevada include:

- economic, safety, and environmental concerns, particularly depressed metal prices;
- obtaining financial assurances (bonds) for reclamation and closure;
- hazards of underground mining;
- regulatory changes;
- treating refractory (iron sulfide and/or carbon-bearing) ores, including innovative ways to oxidize these ores and to recover gold-bearing pyrite by flotation;
- dewatering mines;
- predicting the ultimate chemical compositions of pit lakes;
- procedures for closure of heaps used for leaching gold and silver from ore; and
- treatment and disposal of large volumes of water, some of which may contain potentially toxic elements that need to be removed or may be too warm to introduce directly into streams.

Through research on new technologies and engineering approaches, industry is responding well to these challenges.

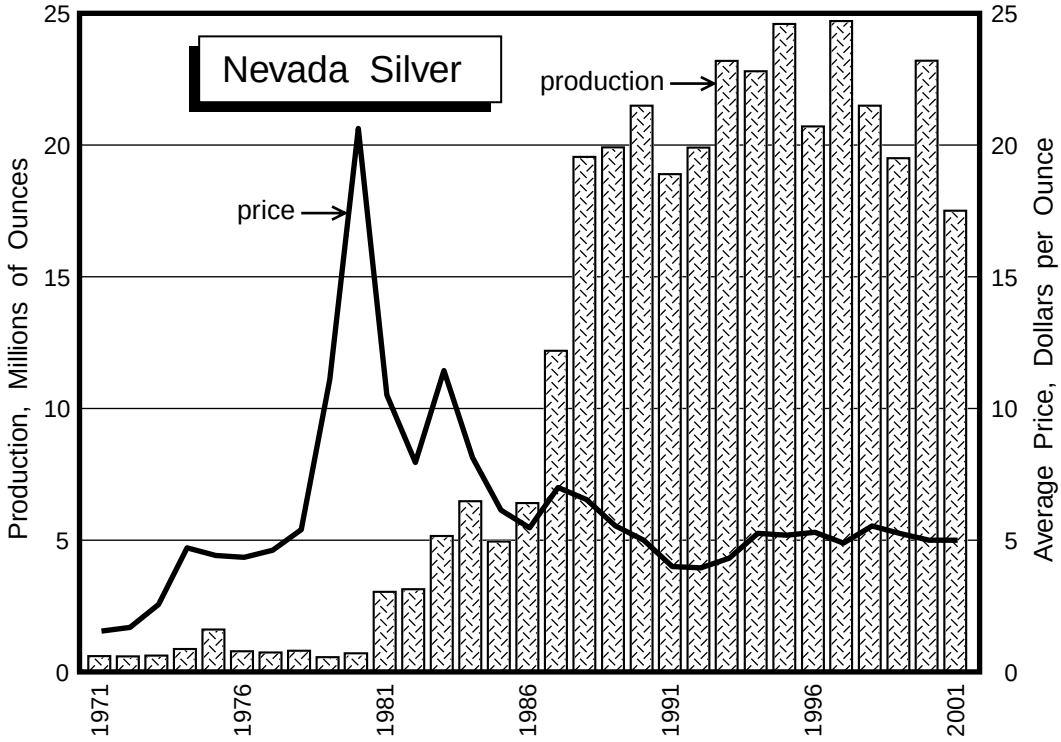


U.S. and Nevada gold production from 1835 through 2001. Data from The U.S. Gold Industry 1998 (NBMG Special Publication 25) by J.L. Dobra and from the U.S. Geological Survey.



Total value of mined product per worker in Nevada (exclusive of petroleum and geothermal energy)

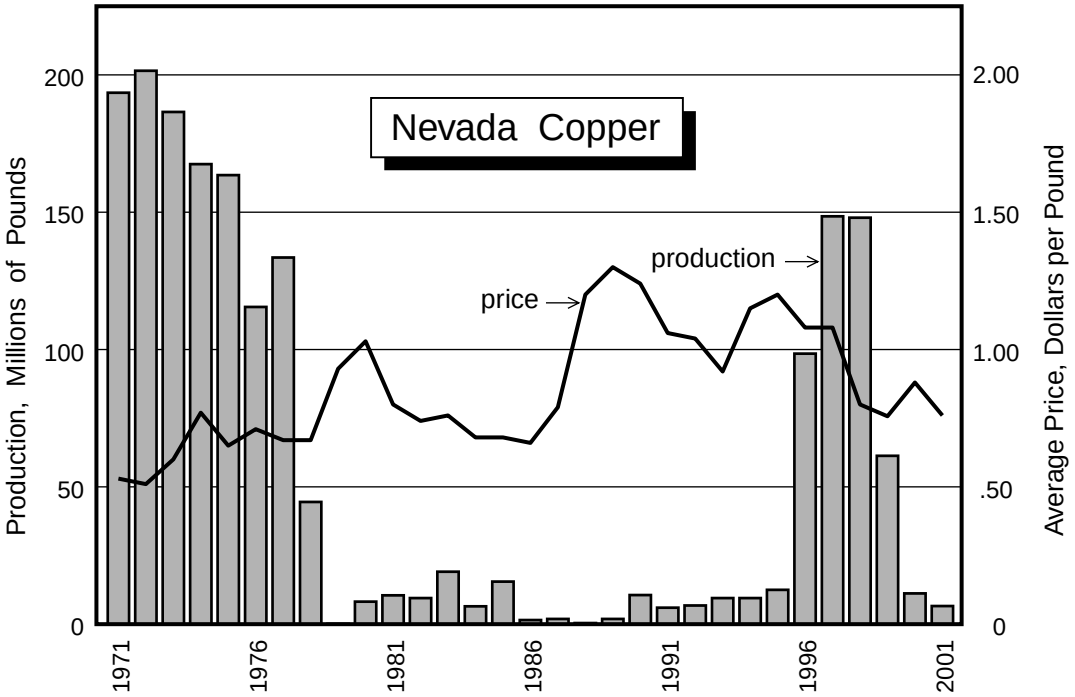
Much of Nevada's silver production in 2001, which totaled 17 million ounces, was a co-product or by-product of gold mining. With a ratio of value (average price of gold to average price of silver) of 57:1 in 2001, only those deposits with more than 57 times more silver than gold can be considered primary silver deposits. Two such deposits operated in Nevada in 2001—the Coeur Rochester Mine in Pershing County (with a silver to gold production ratio of 80:1 and total silver production of nearly 6.48 million ounces) and the McCoy/Cove operation in Lander County (with a silver to gold production ratio of 68:1 and total silver production of 6.45 million ounces). These largest two silver operations produced 74% of Nevada's silver in 2001. Mining at the McCoy/Cove operation has now ceased. Nevada's production in 2001 accounted for 34% of the U.S. total and 3% of the world total. Depending on price, Nevada is likely to retain the present-day distinction of its nickname, the "Silver State."

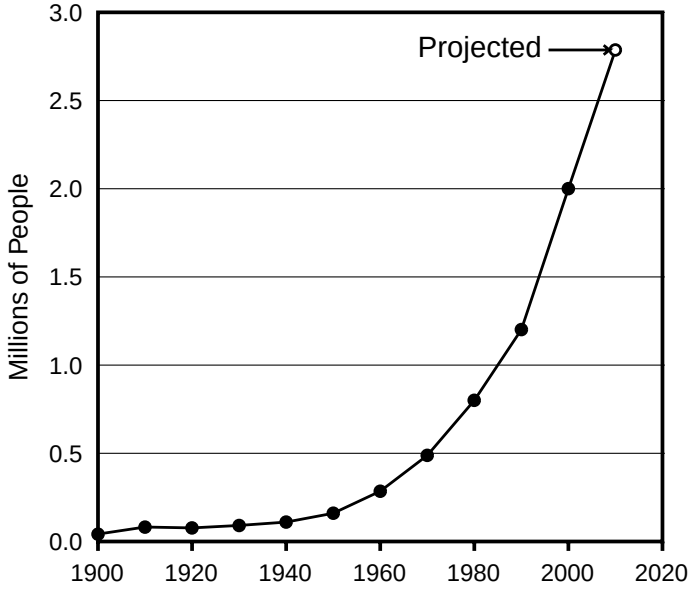


Equatorial Tonopah, Inc.'s heap-leach, solvent-extraction-electrowinning copper operation near the Hall molybdenum mine in Nye County closed in 2001 and is undergoing reclamation. Efforts are being made to use some of the facilities at the site for renewable energy production (solar and wind).

The section on **Industrial Minerals** covers developments during 2001 and gives details on important commodities produced from or processed in Nevada, such as aggregate, barite, cement, clays, diatomite, dimension stone, dolomite, gypsum, lime, limestone, lithium, magnesite and brucite, perlite, salt, semiprecious gemstones (opal and turquoise), silica, and zeolites (clinoptilolite and mordenite). In 2001 Nevada ranked second in the nation in the production of diatomite (behind California) and third in gypsum (behind Oklahoma and Iowa). The Silver Peak lithium operation in Clayton Valley, Esmeralda County, where subsurface brines are evaporated on the floor of the playa, is the only domestic lithium producer, and the Gabbs Mine in Nye County is currently the nation's only producer of magnesite.

Aggregate and gypsum production reached all-time highs in 2001 as a result of Nevada's expanding population and needs for construction materials for homes, schools, streets, highways, airports, resort hotels, and other businesses. Demand for construction raw materials is likely to remain strong owing to Nevada's booming population.





Nevada population. Data from the U.S. Census Bureau <www.census.gov>. Projection to 2010 by Nevada State Demographer

An interesting trend that is occurring nationwide as well as in the Las Vegas area is the combination of aggregate quarries with landfill operations. Planning for the eventual uses of quarries is vital in areas where urban expansion encroaches on the mineral resources that must be mined locally to reduce transportation costs and related concerns regarding highway safety. Gypsum mines near the urban growth areas of Las Vegas are now being considered as sites for housing developments.

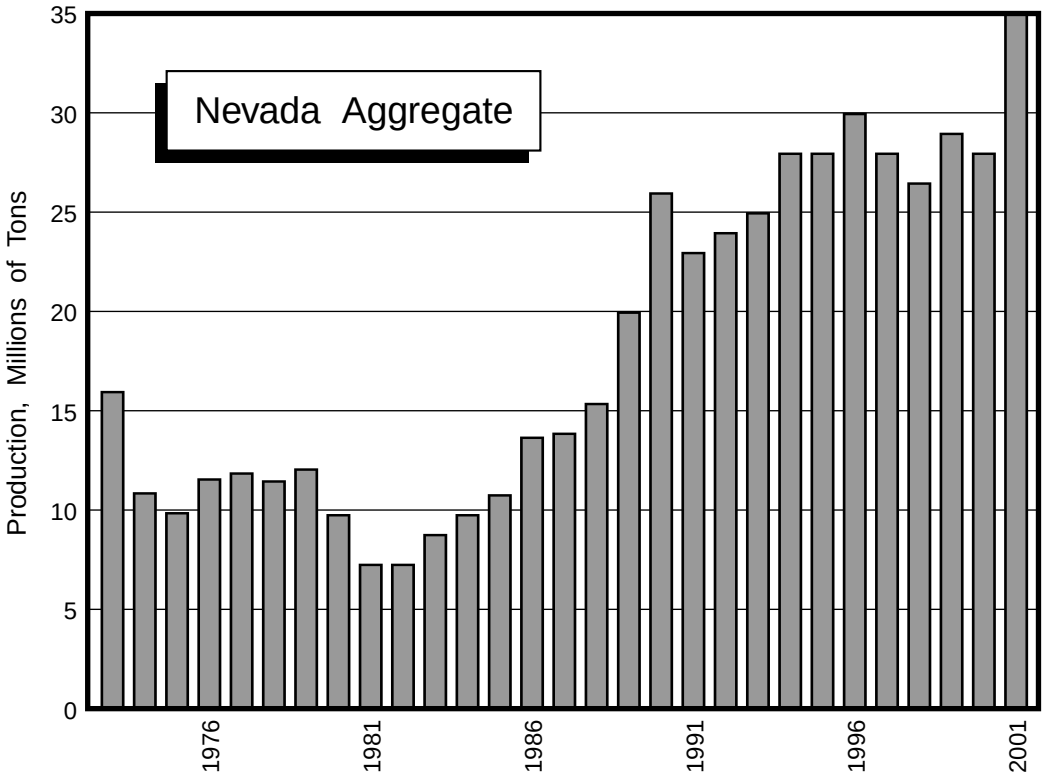
Developments in the geothermal industry are covered in the section on **Geothermal Energy**. Electric power production in 2001 was about the same as in the previous year. Plants operating at ten sites sold $87 million in electricity, far surpassing the value of petroleum production. Additionally, geothermal energy is used at numerous places in Nevada for space heating, warm water, recreation, and dehydrating vegetables, particularly onions and garlic. New programs in the U.S. Department of Energy, energy bills passed by the Nevada and California legislatures, and activities of the Great Basin Center for Geothermal Energy at the University of Nevada, Reno are stimulating geothermal development in Nevada. Nevada Bureau of Mines and Geology Map 126, Nevada Geothermal Resources, shows the locations of geothermal plants, direct-use locations, hot and warm springs and wells; it demonstrates the fact that Nevada has considerable potential for geothermal development.

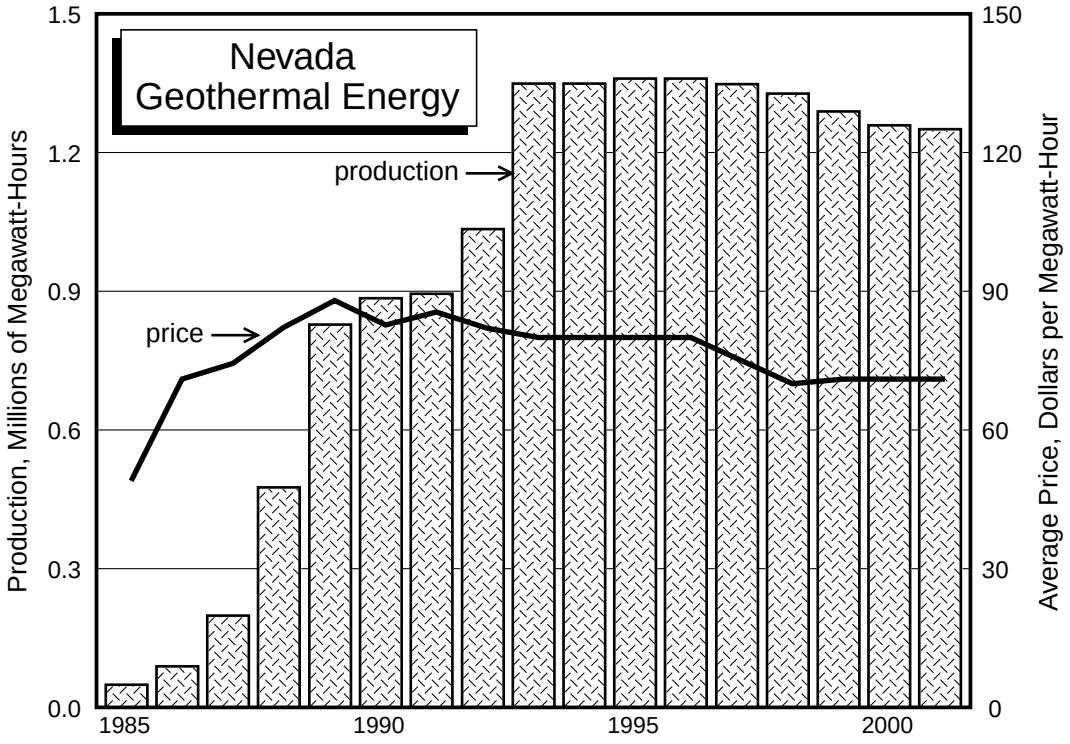
Nevada has great potential for renewable energy (particularly geothermal, wind, and solar energy for electricity). Approximately 85% of Nevada's electricity currently is generated by power plants that burn fossil fuels, with 58.6% from coal and 26.5% from natural gas.

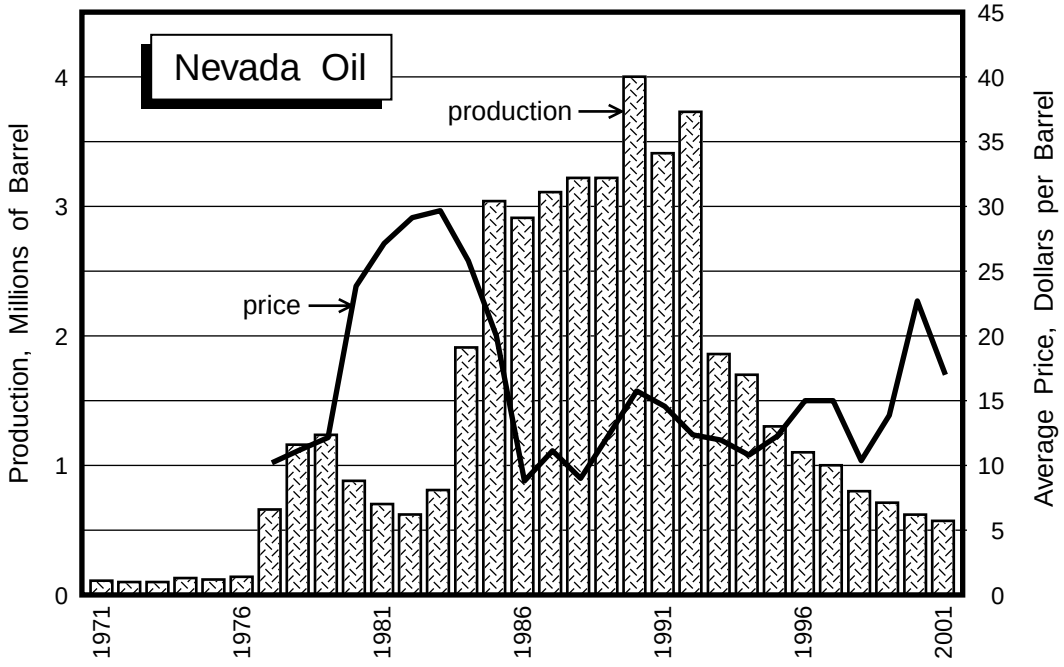
Developments in the Nevada petroleum industry are covered in the section on **Oil and Gas**. Oil is produced primarily in two areas—Railroad Valley in Nye County and Pine Valley in Eureka County. Total annual oil production from Nevada (valued at $9.8 million in 2001) is a minor part of U.S. production. The amount of oil production declined for the ninth consecutive year, and no new fields were discovered in 2001. Small amounts of natural gas are used to fuel equipment needed for oil production.

Exploration for oil in Nevada is encouraged by the cumulative production from the two premier fields in Railroad Valley, Grant Canyon and Trap Spring (21 million and 13 million barrels, respectively). Historically, few exploration wells have been drilled in the state (less than 1,000 wells, or fewer than one well per 111 square miles or 286 square kilometers). With so much area unexplored, even discounting areas underlain by high-grade metamorphic and granitic rocks, the potential for finding more multimillion-barrel fields remains high.

Additional information about the Nevada mineral industry and the U.S. gold industry, including the contents of selected publications, is readily available on line through the World Wide Web from the Nevada Bureau of Mines and Geology (www.nbmg.unr.edu/) and the Nevada Division of Minerals (http://minerals.state.nv.us/). Useful national and international data on nonfuel minerals can be obtained from the U.S. Geological Survey (http://minerals.usgs.gov/minerals/), and the U.S. Energy Information Administration (www.eia.doe.gov/) provides data on oil and gas, geothermal, and other energy sources.




Nevada
Geothermal Energy
production
price
Production, Millions of Megawatt-Hours
Average Price, Dollars per Megawatt-Hour
1.5
1.2
0.9
0.6
0.3
0.0
150
120
90
60
30
0
1985
1990
1995
2000


Nevada Oil
production
price
Production, Millions of Barrel
Average Price, Dollars per Barrel
4
3
2
1
0
45
40
35
30
25
20
15
10
5
0
1971
1976
1981
1986
1991
1996
2001

Metals

by Joseph V. Tingley and Daphne D. LaPointe

Nevada produced 8.13 million oz (troy ounces) of gold in 2001, exceeding 8 million oz for the fourth year in a row, but falling below year 2000 production by 410,000 oz. Silver production was 17.5 million oz, 5.7 million oz lower than 2000. The decline in silver production reflects the progression of Echo Bay's McCoy/Cove Mine in Lander County toward eventual closure due to depleted reserves. Even with the production decreases, Nevada maintained its place as the leading gold and silver producing state in the United States with 29 mines reporting gold production and 25 mines producing silver during 2001.

Newmont Mining Corp.'s Nevada operations, which include all of Newmont's Carlin trend mines, the Rain, Twin Creeks, Lone Tree, Mule Canyon, and Trenton Canyon Mines, and the Phoenix Property at Battle Mountain, reported a total production of 2,703,212 oz gold in 2001. With this production, Newmont maintained its place as the Nevada's largest gold producer. Barrick Gold Corp., with production of 2,262,663 oz gold remained in second place. However, Barrick's production total exceeds Newmont's if Homestake Mining Co.'s 2001 Nevada gold is added (for a combined total of 2,799,136 oz gold). Homestake was acquired by Barrick on December 14, 2001.

For the second consecutive year, Barrick Gold's Betze-Post Mine was the largest Nevada gold mine, producing 1,549,975 oz in 2001. Placer Dome's Cortez operation (Pipeline Mine) remained in second place in 2001 with 1,184,732 oz. Barrick's Meikle underground mine reported 2001 production of 712,688 oz and Newmont's Twin Creeks Mine produced 831,962 oz, up from 779,075 oz in 2000. Other major gold producers in 2001 included Smoky Valley Common Operation's Round Mountain Mine, 746,949 oz; AngloGold/Meridian's Jerritt Canyon Mine, 295,328 oz; Normandy Mining Ltd.'s Ken Snyder Mine, 198,518 oz; Homestake Mining Co.'s (now Barrick Gold's) Ruby Hill Mine, 134,737 oz; Florida Canyon Mining Co.'s Florida Canyon Mine, 121,206 oz; and Placer Dome's Bald Mountain Mine, 108,392 oz.

The Rochester Mine, operated by Coeur d'Alene Mines Corp., was Nevada's largest silver producer in 2001, producing 6,478,916 oz; Echo Bay's McCoy/Cove Mine produced 6,451,425 oz, down from over 12 million oz in 2000; and Normandy Ltd.'s Ken Snyder Mine produced 2,393,246 oz, a substantial increase over 2000's 1,938,470 oz. Other large silver-producing operations included the Denton-Rawhide Mine, 727,095 oz; the Round Mountain Mine, 509,121 oz; and Barrick Gold Corp.'s Meikle Mine, 213,370 oz. Newmont Mining Corp.'s Carlin operations produced a total of 261,261 oz.

Equatorial Tonopah, Inc., produced 7,131,500 pounds of copper in 2001 from the Tonopah Copper Mine in Nye County. This mine, which closed in July 2001, was Nevada's sole producer of copper.

Underground mines dominated startups in Nevada in 2001; Newmont's Deep Post Mine began production in March 2001, the new Lee Smith Mine at Jerritt Canyon was dedicated in September 2001, and Barrick Gold's Rodeo Mine was moving into full production in December 2001. Newmont plans an annual production of 400,000 oz gold at Deep Post, and Rodeo will produce 350,000 oz of gold per year.

On the closure side, Barrick Gold Corp. announced late in 2001 that it will close the Ruby Hill Mine near Eureka in Eureka County by the end of 2002. Placer Dome announced it would write off its Getchell Property in Humboldt County. Placer will maintain the property, but production plans have been suspended.

EXPLORATION

Mineral exploration in Nevada continued to decline in 2001. Newmont and Barrick carried out property exploration and development along the Carlin trend, with emphasis being placed on underground targets such as Newmont's Leeville Project and Barrick's Rodeo Project. To the south, Placer Dome continued exploration at its Crossroads and Pediment deposits within the Cortez Joint Venture lands in the Bullion and Cortez districts of Lander and Eureka Counties. In 2001, very little exploration within Nevada was aimed at targets other than gold and silver. However, early in the year some exploration activity was reported for platinum group elements in the Bunkerville district of Clark County and, throughout the year, a gallium play at the old Cordero mercury property in the Opalite district of Humboldt County received a lot of attention in the press. Figure 1 shows the location of Nevada mining districts and areas in which exploration activity was reported during 2001. Specific 2001 exploration and development projects are summarized by county and mining district in the following section.

Claim staking activity in Nevada in 2001 was at a moderate level with more than 4,500 claims recorded. Placer Dome (Cortez Joint Venture) staked large claim blocks in the Bullion and Mountain Springs districts of Lander County. Newmont acquired a large claim block in the Maverick Springs area on the Elko-White Pine County line as well as claims in the Rochester district of Pershing County. Barrick staked ground in the Rock Creek district of Elko County and in the Goldbanks district of Pershing County. Homestake Mining Co. staked an area in Buffalo Valley west of the Battle Mountain district, and AngloGold staked claim blocks in the Birch Creek district of Lander

Figure 1. Mining districts with reported exploration activity in 2001.

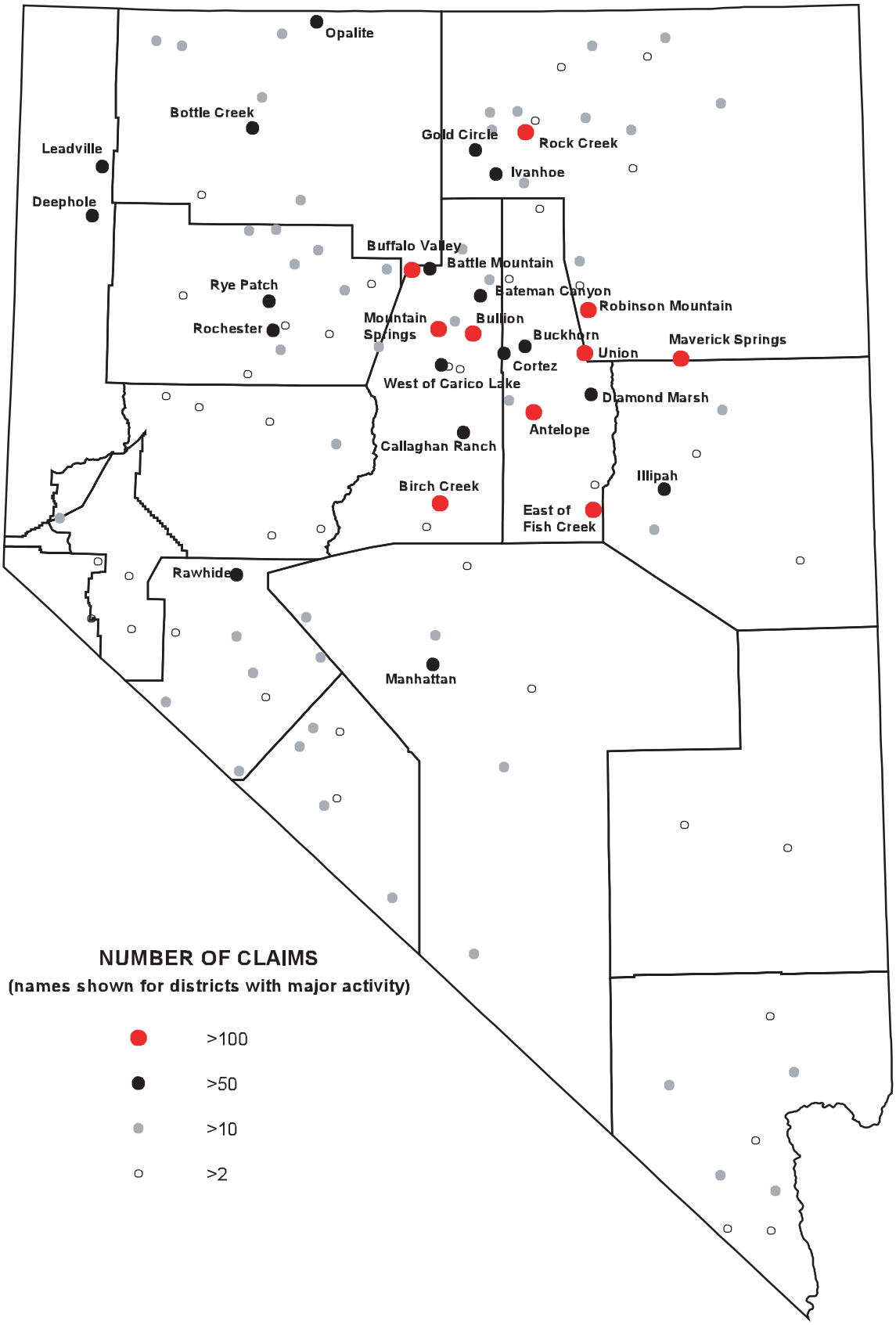


Figure 2. Mining claims staked in Nevada in 2001, by mining district or area (U.S. Bureau of Land Management)

County and the Buckhorn district of Eureka County. The largest claim blocks were concentrated in the major gold-producing counties, but claim staking activity was fairly well scattered across the state (fig. 2).

CLARK COUNTY

Bunkerville

In 2001, this district continued to receive attention from companies focusing on platinum exploration. Conquistador Mines Ltd. granted an option to Consolidated Epix Technologies Ltd. to earn a 50% interest in Conquistador's Key West platinum project. This project includes the Key West Mine and Great Eastern Mine properties as well as 198 claims staked by Conquistador. The Great Eastern Mine is a former underground producer of complex nickel-copper-platinum-palladium ore. Between 1900 and 1919, the average grade of the production ore was 2.55% Cu, 3.29% Ni, and 0.183 opt (troy ounces per short ton) Pt. In order to earn its 50% interest, Consolidated Epix Technologies will pay $150,000 to cover some of the land costs incurred by Conquistador. Consolidated Epix will also advance $25,000 to start the exploration program, and will fund a minimum additional exploration program of $500,000 prior to March 15, 2002. Conquistador will be the operator of the exploration program until such time as Consolidated Epix has earned its 50% and has entered into a joint venture agreement with Conquistador Mines Ltd. (Conquistador Mines Ltd. press release, 3/5/2001)

ELKO COUNTY

Aura

Western Exploration, Inc. released plans for continuing exploration on its Wood Gulch Project. Approximately 13 miles of exploration roads and 223 drill pads will be constructed, from which 223 reverse circulation and/or core holes will be drilled. (U.S. Forest Service Plan of Operations 791963-02, 8/20/2001)

Bootstrap

Trio Gold announced that King Midas (US) Inc. will explore and develop Trio's Rodeo Creek property located approximately one mile north of the Dee Mine. Previous drilling on the property encountered a number of gold mineralized zones which require further drill testing to evaluate. (Trio Gold press release, 8/2/2001)

In the same district, Barrick Gold Corp. drilled five deep exploration holes on Meridian Gold's Rossi property late in the year. Although no significant new mineralization was encountered, Barrick is planning a substantially larger drilling program on the property for 2002. (Meridian Gold Fourth Quarter 2001 Report, February 6, 2002)

Gold Circle

In April 2001, Toronto-based Franco-Nevada Mining Corp. Ltd. entered into an agreement to exchange its Ken Snyder Mine and Australian assets in return for a major strategic interest in Normandy Mining Ltd., Australia's largest gold producer. Normandy assumed control of operations at Ken Snyder for the remainder of 2001 (Franco-Nevada Mining Corp. Ltd. press release, 4/2/2001). Early in 2002, Newmont acquired both Normandy Mining Ltd. and Franco-Nevada Mining Corp.

Independence Mountains

At the Jerritt Canyon property, 70% owned by AngloGold and 30% owned by Meridian Gold, the new Lee Smith Mine was dedicated in mid-September 2001. With production from this mine, Anglo and Merdian hope to reach production of 40,000 oz gold per month from their four Jerritt Canyon underground operations in 2002. (Adella Harding, Elko Daily Free Press Mining Quarterly, Winter 2001)

Ivanhoe

Great Basin Gold Ltd. has discovered a second major structural trend at its Ivanhoe property. Detailed relogging of previous drill holes and interpretive work revealed a number of blind, north-northwest trending faults with large scale displacements associated with the Hollister disseminated gold deposit and its underlying Clementine, Gwenivere and South Gwenivere high-grade gold-silver feeder veins. These faults appear to be master shears that controlled the development of the east-trending vein systems which are known to host a resource in excess of one million gold equivalent ounces. The inferred resource, based on drilling of 105 holes, totals 719,000 tons at 1.29 opt Au and 7.0 opt Ag. Great Basin says the system remains open and a major drilling program to confirm this trend is planned.

Great Basin Gold also announced results from the first deep hole drilled beneath the Hollister deposit. The hole, drilled to test for lower plate carbonate rocks, was completed at 6,946 feet and cut a 74-foot mineralized interval immediately above the Roberts Mountains Formation. While not economic, this intersection is significant in that it opens up the Ivanhoe property for exploration for carbonate-hosted, Carlin-type gold deposits. (Great Basin Gold Ltd. press releases, 1/17/2002; 8/2/2001)

Jarbidge

San Antonios Resources acquired the Pavlak Mine Claims, the Bluster Mine and Big Ledge Claims, and the Pick and Shovel Claims, all historical mining properties located within the Jarbidge district. The Company has also acquired an additional 160 claims in the north part of the district, surrounding the Big Ledge vein, and 110

claims in the south part of the district, south of the Pavlak Mine Claims and west of the Bluster property. Gold-silver mineralization in the Jarbidge district occurs in epithermal quartz-adularia veins hosted by a thick sequence of middle Tertiary rhyolitic volcanic rocks. The veins are grouped into two distinct systems within the district, one to the west and one to the east. Most of the past production came from the west system which includes the Pavlak and Bluster veins. The east system, which includes the Big Ledge vein, occurs about 2,000 feet stratigraphically higher in the volcanic sequence than the west system. These veins were not extensively developed in the past and may have considerable exploration potential at depth. Based on the Company's work on its properties to date, a number of targets for a two-phase, 28-hole shallow drilling program have been recommended. (www.sanantoniosresources.com, 11/1/2001)

Railroad

Newmont Mining Corp. plans to develop a new open-pit mine on its Emigrant property. An Environmental Assessment is in preparation and was projected to be completed in January 2002. (U.S. BLM, Elko Field Office Project and Planning Schedule, 1/1/2002)

A new phase of exploration is underway at Nevada Pacific Gold's South Carlin gold project. Exploration will be funded by Placer Dome U.S. Inc. and Nevada Pacific is the operator with the first work program budgeted at $670,000. The 17-square-mile South Carlin gold project is located northwest of Newmont's Rain Mine. Detailed mapping over selected areas of the project is underway and Nevada Pacific is currently reinterpreting and updating all project area geophysical, with geologic and geochemical data to assist in defining gold targets for drilling. The initial drill testing of the targets will consist of 6,000 to 8,000 feet of core and reverse circulation drilling. Placer Dome can earn a 60% interest in the South Carlin gold project by expending $4.6 million on exploration over a five-year period, and can earn an additional 10% interest by producing a complete feasibility study. (Nevada Pacific Gold Ltd. press release, 1/24/2002)

ESMERALDA COUNTY

Buena Vista

Hecla Mining Co. submitted plans to the U.S. Forest Service to complete exploration drilling at up to 16 possible sites at the Tip Top Mine. The purpose of the exploration drilling is to evaluate the mineral potential of the Tip Top vein at depth. A total of 5,000 feet of drilling could be completed with the maximum depth of any one hole being approximately 1,000 feet. (U.S. Forest Service Plan of Operations notice, 7/19/2001)

Fish Lake Valley

Victoria Resource Corp. completed a 7-hole, 4,426-foot, reverse circulation drill program on Romarco Minerals Inc.'s Red Rock Property in early July 2001. The 140-claim Red Rock property is within the Walker Lane, and covers 3.5 miles of a northwest-trending structure containing gold-silver quartz adularia veins and cinnabar-bearing chalcedony veins. The drill program was designed to evaluate the continuity of three structurally controlled zones of mineralization under pediment cover that were identified during previous drill campaigns. Information obtained from the new drilling confirmed that within the veins, gold mineralization occurs in irregular-shaped bodies controlled by intersecting structures. One hole, VRR-008, intersected 20 feet grading 0.38 opt Au and 0.69 opt Ag from a zone that was tested 115 feet down-plunge from a high-grade intersection cut by a previous drill hole. Victoria has fulfilled its 2001 exploration expenditure obligation to the joint venture with Romarco Minerals and is presently reviewing data for future exploration considerations. (Victoria Resource Corp. press release, 9/26/2001)

Goldfield

Romarco Minerals Inc. sold its Goldfield Project to Metallic Ventures Inc., subject to satisfactory due diligence by Metallic Ventures. Metallic Ventures is a private Canadian company engaged in mineral exploration, the principals of which are Jeff Ward and Richard McNeely. (Romarco Minerals Inc. press releases, 3/12/2001; 6/29/2001)

Silver Peak

Golden Phoenix Minerals, Inc.'s Revised Reclamation Plan and Permit for the Mineral Ridge Mine has been approved by the U.S. Bureau of Land Management and the Nevada Division of Environmental Protection. Maintenance and repairs continue to ready the mine for full-scale gold production. Golden Phoenix also continues to capture about 5 oz of gold per day from the solutions circulating through the leach pad. The Mineral Ridge Mine has a mineable reserve of 2,658,000 tons averaging 0.079 opt Au. (Golden Phoenix Minerals, Inc., press releases, 3/14/2001; 10/9/2001)

EUREKA COUNTY

Antelope

Chapleau Resources and White Knight Resources have reached an agreement with Kennecott Exploration on the Indian Ranch gold property. Kennecott can earn 60% interest in the property for exploration expenditures of $4 million by the end of 2005 plus option payments of $100,000 per year until the exploration requirement is fulfilled. (The Daily Prospector, 4/25/2001)

Also in the Antelope district, U.S. Gold Corp. is developing plans to resume gold production at its Tonkin Springs Mine, and has signed an agreement with Newmont Technologies Ltd., a subsidiary of Newmont Mining Corp., that will allow U.S. Gold to use Newmont's proprietary N2TEC(r) Flotation Technology at the Tonkin Springs Mine. Tests using the process have proven successful in concentrating the mine's sulfide gold ores. U.S. Gold plans to use this technology to make flotation concentrates, which would then be sold. The existing oxide gold ore could be put into production first at the rate of approximately 30,000 oz Au per year. The sulfide gold ore, using the N2TEC(r) Flotation Technology, would then be placed into production adding 50,000 oz annually for an overall production rate of 80,000 oz Au per year. U.S. Gold is presently evaluating such a program prior to amending its regulatory permits. Early in 2001, exploration drilling was carried out at Tonkin Springs by Sudbury Contact Mines, a subsidiary of Agnico-Eagle Mines, under an agreement to earn 60% interest in the property. Although the drilling was successful in expanding several known areas of gold mineralization, in October Sudbury withdrew from the agreement. U.S. Gold will continue to evaluate placing the property into production themselves and will also evaluate the advantages of seeking a partner. Any production would be subject to receiving appropriate operating permits as well as obtaining necessary funding. (U.S. Gold Corp. press releases, 3/1/2001; 9/18/2001; 1/7/2002)

Cortez

Exploration work continued on the Cortez Pediment Deposit located about 3 miles south-southeast of Cortez. A resource of 49.4 million tons of 0.028 opt Au has been defined, within which is a reserve of 37.3 million tons of 0.029 opt Au. Apparently most of the deposit is oxidized. Mineralization is hosted in a slide block or debris flow that contains mineralized Silurian Roberts Mountains Formation clasts that are part of a Tertiary conglomerate. The interpretation is that mineralization is from an eroded deposit that once was near the crest of Mount Tenabo. Cortez Gold Mines is proceeding with the permitting process to develop an open pit, heap-leach mine at the site, and will begin work on an Environmental Impact Statement in 2002. (Society of Economic Geologists Newsletter, 7/1/2001; U.S. BLM, Battle Mountain Field Office Project and Planning Schedule, 1/1/2002)

Eureka

Homestake Mining Co. began drilling the Prospect Mountain Joint Venture property during the second week of July 2001. This is the second year of Homestake's joint venture agreement with European American Resources Inc. on the property, and the drilling is a follow-up to last year's surface dump rock and chip sampling program. Homestake's first hole was located on the east side of Prospect Mountain not far from the portal of the historical Diamond Mine underground workings. The workings connect with a series of old mines that explore a north-south mineralized structure for a length in excess of 6,000 feet. The mines historically produced gold, silver, lead, zinc and copper from multiple, narrow vein systems. The second hole of the program intersected three gold-mineralized zones in the upper 1,326 feet of the hole. The first zone, at 565.4 feet, returned 0.29 opt Au over 5 feet; the second, at 1165.8 feet, returned 65 feet of up to 0.13 opt Au and 6.0 opt Ag; and the third, at 1,310.9 feet, returned up to 0.54 opt Au and 5.0 opt Ag. The Prospect Mountain Joint Venture property is located immediately south of Homestake's Ruby Hill-Archimedes mining operation. (European American Resources, Inc. press release, 7/24/2001; The Daily Prospector, 9/25/2001)

Barrick Gold Corp. acquired all of Homestake's properties when its purchase of Homestake Mining Co. was finalized on Dec. 14, 2001. The Ruby Hill Mine is one of five mining operations worldwide slated for closure in 2002 by Barrick Gold Corp. (Barrick Gold Corp. press release, 2/14/2002)

Barrick Goldstrike Betze-Post Mine.
Photo by Christopher Ross, 2001

Lynn

Barrick Gold Corp.'s Rodeo Project is moving into full production and will be part of the Meikle underground mine operations. Crews have completed a drift connecting Rodeo and Meikle and, starting in 2002, Rodeo and Meikle will be one operation. (Adella Harding, Elko Daily Free Press Mining Quarterly, Winter 2001)

Newmont Mining Corp.'s new Deep Post underground mine will soon encompass its Deep Star Mine. Deep Post and Deep Star crews joined their two mines when they broke through on Oct. 26, 2001 and the operation will now be one mine. Deep Post's two portals are in a wall of Barrick Gold Corp.'s Betze-Post open-pit mine. Deep Star, which was developed in 1994, was accessed through a portal in the Genesis open pit. Production came to a halt at Deep Post early on August 29, 2001 following slope movement on the south wall of the Betze-Post pit. The entry portal to the Deep Post Mine was not affected by the movement, but the mine was closed as a safety precaution. The Deep Post Mine reopened on September 5 following inspections by the federal Mine Safety and Health Administration (MSHA) and the Nevada State Mine Inspector's office. There were no injuries and no damage to the underground mine workings and facilities at Deep Post. (Newmont Mining Corp. press release, 9/5/2001; Adella Harding, Elko Daily Free Press Mining Quarterly, Winter 2001)

Newmont Mining Corp. has submitted a proposed Plan of Operations to the BLM for its Leeville Project, located northwest of the original Carlin Mine. The plan includes an underground mine and all support facilities. Proposed mining operations and dewatering would last for approximately 18 years. The ore deposits range between 1,000 and 2,500 feet below the surface and would be accessed by the Leeville production shaft and up to four ventilation shafts. (U.S. BLM, Elko Field Office Project and Planning Schedule, 1/1/2002)

In the southern part of the Lynn district, Newmont Mining Corp. plans to construct facilities needed to mine from three proposed open pits, Pete, Castle Reef, and Crow, at its Pete project area, which is located about $1\frac{1}{2}$ miles east-southeast of the original Carlin Mine (U.S. BLM, Pete Project proposal, 11/20/2001)

Maggie Creek

Newmont Mining Corp. is about ready to begin the planned Chukar Footwall Mine inside the Gold Quarry open pit. Access to the mine will be through three portals located in the southwest corner of the current Gold Quarry open pit. Production from this mine could begin by the second quarter of 2003 after roughly a year of development work. Plans call for mining about 200,000 oz of gold from the deposit at a rate of roughly 80,000 oz per year. (Adella Harding, Elko Daily Free Press Mining Quarterly, Winter 2001)

HUMBOLDT COUNTY

Awakening

X-Cal Resources Ltd. and Kinross Gold Corp. have signed an agreement extending X-Cal's option on the Kinross portion of the Sleeper Gold Project for two years (to December 30, 2003). The two year option term will allow X-Cal to drill or reach a development agreement with a third party. X-Cal holds 50% interest in 15,000 acres of the Sleeper gold property and the other 50% is held by Kinross. X-Cal holds an additional 5,000 acres independently, for a total land package of 20,000 acres or 30 square miles. (X-Cal Resources Ltd. press release, 12/18/2001)

Battle Mountain

In November 2001, Glamis Gold Ltd. completed a final feasibility study for its Marigold/Millennium Project. The project incorporates the existing Marigold operations, as well as the new Millennium area that includes the Terry Zone and the Section 31 and Section 30 orebodies to the south. With the addition of the Millennium resources, the mineable resource at Marigold has more than doubled. According to the study, all ore will be processed by the run-of-mine heap leach method. The entire mineable resource is located above the water table, is well oxidized, and metallurgical test-work indicates recoveries similar to ongoing operations. The mining rate of approximately 25 million tons of ore and waste in 2002 will escalate to nearly 40 million by 2003 and annual gold production is expected to increase from 82,000 oz in 2002 to over 200,000 oz by 2008. The company has permits for the first phase of the project (the Terry Zone expansion now underway), and work has commenced on a revised plan of operations for the southern expansion covering the Section 31 and Section 30 deposits. The company expects to receive final permits for these areas within eighteen months.

Results from over 1,995 drill holes and 824,000 feet of drilling through September 20, 2001 were utilized in the preparation of the final feasibility study. Drilling has continued since that time, and it is expected that in-fill drilling will convert much of the inferred in-pit resources to proven and probable reserves. Funding for 2002 exploration and development drilling at Marigold has been budgeted at $1.5 million. In addition to in-fill drilling, target areas include testing along strike in sections 30 and 31, to the west in Section 31, and condemnation drilling for waste dumps and leach pads. A portion of the planned exploration for 2002 is targeted on other unexplored areas within the large Marigold land package. (Glamis Gold Ltd. press release, 11/19/2001)

Opalite

In April 2001, Gold Canyon Resources Inc. announced that it had optioned the old Cordero mercury property from Tech Industries Ltd. Gold Canyon acquired Tech's interest in the Cordero property with respect to all minerals

except gold and silver (retained by Tech Industries Ltd.), and Gold Canyon is pursuing exploration of gallium on the property. The Cordero property consists of 17 unpatented mining claims which cover a northeast-trending, mineralized fault zone in the southern part of the Opalite mining district. The district is the site of the idle McDermitt Mine, once North America's largest mercury mine. Gold Canyon Resources Inc. also has leased the contiguous 70-claim Caley property from Tech Industries.

Geochemical sampling of the Cordero property by a previous operator identified two significant gallium anomalies that occur along the northeast-trending fault zone. Surface samples from this zone yielded values up to 222.6 ppm over an area at least 5,260 feet long and 425 feet wide. Limited sampling of deeper, sulfide-rich zones, intersected in historical mine workings yielded samples ranging from 25 to nearly 30 ppm gallium. Also located within the Cordero property is a large calcine pile (waste from earlier mercury mining) estimated to contain 220,000 to 330,000 tons of crushed rock. Sampling of this material indicates an average gallium content of 32 ppm.

According to Gold Canyon Resources, samples collected during Phase I of the work program on the Cordero project have verified and expanded the area of gallium mineralization. Mapping and sampling to date indicate the gallium mineralization occurs as part of a large blanket-replacement deposit cut by high angle feeder structures. The unweighted average of 115 samples collected is 64 ppm, including those samples with no detectable gallium.

During the Phase I drill campaign, 9,085 feet of reverse circulation drilling was completed in 30 vertical and angle drill holes which ranged in depth from 85 to 545 feet. The drilling identified relatively high-grade gallium mineralization in the hanging wall of the northeast-trending fault zone. Three holes drilled in this zone all had individual samples exceeding 400 ppm and all three bottomed in mineralization exceeding 30 ppm. The final eight holes of the Phase I drill program encountered significant gallium mineralization, and seven of the eight bottomed in mineralization. Encouraged by the results of the drilling to date, the Gold Canyon has staked 17 additional claims contiguous with its existing holdings, bringing the Company's total holding in the district to approximately three square miles. (Gold Canyon Resources Inc. press releases, 4/6/2001; 5/16/2001; 6/22/2001; 6/27/2001; 8/2/2001; 8/21/2001; 8/28/2001; 9/11/2001; 10/22/2001; 12/4/2001; 12/28/2001; 1/7/2002)

Potosi

In the third quarter of 2001, Placer Dome took a non-cash write-off of its Getchell Mine property, totaling $292 million, after extensive analysis failed to identify a mine plan that would recover the carrying value of the asset and provide a satisfactory return to shareholders. Although the large gold system on the Getchell property contains 15 million oz of identified resources, the ground conditions are difficult and the mine's economics at current gold prices do not meet Placer's criteria for further investment. The mine has been put onto care and maintenance with a remaining crew of 37 employees. Surface stockpiled ore has been sold to Newmont Mining Corp. for processing at their nearby Twin Creeks facility. In addition to the ore sales agreement, Newmont has agreed to purchase the eastern half of the Section 13 property from Getchell Gold. Newmont will pay $1 million for the property, which is located northwest of Newmont's Twin Creeks pit. (Placer Dome Inc. press releases, 10/24/2001; 10/25/2001; 2/14/2002)

Sulphur

Vista Gold's Hycroft Mine continues to produce gold from the rinsing of the existing leach pads. At the mine, relogging of core, and reassaying and reevaluation of existing data have identified some higher-grade gold and silver zones beneath the Albert and Brimstone areas. These zones are continuous and have not been considered in earlier evaluations of the deposits. Vista Gold has also been conducting a preliminary evaluation of the large bulk sulfide mineralized zone that underlies both the Crofoot and Brimstone oxide deposits and preliminary metallurgical work indicates that the sulfide material is amenable to concentration by flotation. Exploitation of these bulk sulfides, although not economical at today's gold prices, could add significant potential to the Hycroft property if gold prices improve in the future. These prospects will be the subject of additional drilling and sampling programs as funds become available to the company. (Vista Gold Corp. press release, 8/9/2001)

Ten Mile

Golden Cycle Gold Corp. has acquired the Table Top gold prospect 10 miles west of Winnemucca. The Table Top claims cover a silicified, hydrothermal breccia in sedimentary rock. The breccia, containing anomalous gold, arsenic, antimony, and mercury, is poorly exposed and has only been partially explored and drill tested in the past. Goldfields Mining Corp., the first to stake the Table Top property, conducted a limited rock chip sampling and reverse circulation drilling program on the ground in 1986. Golden Cycle Gold will conduct a phased exploration program on the property, searching for a high-grade mineralized gold vein system at depth. (Golden Cycle Gold Corp. press release, 10/3/2001)

Vicksburg

Win-Eldrich Mines Ltd. completed a sampling program for gallium and other rare metals on its Painted Hills property located on the east slope of McGhee Mountain about 8 miles west of the old Ashdown gold-molybdenum mine. Exploration within the 30-claim property is focused on a 500-acre area of hydrothermally altered rock

containing trace amounts of gallium, germanium, hafnium, lanthanum, tantalum, titanium, yttrium, zirconium, and possibly other rare metals. Three separate sets of rock chip samples collected from outcrops and pits within the property averaged 17.2 ppm gallium, 22.8 ppm gallium, and 19.4 ppm gallium respectively. The company believes that the results obtained from the program are sufficient to justify preliminary metallurgical work. If metallurgical data are sufficiently encouraging, a drilling program will be conducted to determine reserves. (Win-Eldrich Mines Ltd. press release, 11/19/2001)

LANDER COUNTY

Battle Mountain

Newmont Mining Corp. has submitted an exploration plan for its Antler Peak Exploration Project proposing a disturbance of up to 74 acres of public and private lands. Permitting process is expected to be completed in 2002. (U.S. BLM, Battle Mountain Field Office Project and Planning Schedule, 1/1/2002)

Bullion

As of August 10, a total of 69 holes were completed at Placer Dome Inc.'s Crossroads deposit during the 2001 drilling program. Most holes were completed to depths of 1,200 to 2,000 feet. This drilling expanded the Crossroads area of mineralization to dimensions of approximately 2,200 feet east-west by 1,900 feet north-south. The 2001 drilling program has not fully defined the extent of mineralization, particularly to the east and south, and additional drilling will be required before a new resource estimate for the deposit can be defined. The Crossroads deposit is immediately southeast of the South Pipeline deposit, and has a similar geologic setting. The deposit is covered by 300 to 375 feet of alluvium. Mineralization increases in thickness and grade toward the southeast. The present reserves, 12.6 million tons at 0.044 opt Au with 0.01 opt Au cutoff, are oxide material, but there is an unoxidized component to the deposit. (Society of Economic Geologists Newsletter, 1/1/2001; Royal Gold, Inc. press release, 8/21/2001)

Placer Dome's share of production from the Cortez Mine in 2001 was 18% higher than 2000 due to heap leach production from South Pipeline coming on stream in the second quarter and higher contribution from the sale of carbonaceous ore. In October 2001, the Cortez Joint Venture entered into an agreement with Barrick Goldstrike Mines Inc. to sell 298,000 tons of carbonaceous ore grading approximately 0.23 opt Au, with an option for Barrick to purchase an additional 182,000 tons of ore. Ore delivery commenced in the fourth quarter of 2001. (Placer Dome Inc. press release, 2/14/2002)

An initial $720,000 has been budgeted for additional drilling on the gold exploration project on Coral Gold's Robinson Property adjoining the Pipeline Mine. Coral Gold has a 39% carried interest in the ground being drilled under a joint venture agreement with Placer Dome and Kennecott. (Coral Gold Corp. press release, 6/1/2001)

LYON COUNTY

Talapoosa

American Gold Capital Corp. announced that it has signed an agreement with Miramar Mining Corp. and Miramar's wholly owned subsidiary, Talapoosa Mining Inc., to acquire Talapoosa Mining's interest in the Talapoosa mineral property located about 30 miles east of Reno. The Talapoosa property consists of approximately 9,500 acres of fee land and 155 unpatented lode mining claims. The property contains a low grade, stockwork, epithermal precious metal deposit within a zone of hydrothermal breccia hosted by the late Miocene Kate Peak Formation. The mineralization incurs in both a near surface oxide zone known as the Main Zone and a deep sulfide zone known as the Bear Creek Zone. The property has been reported (1996) to contain a measured resource of 33,733,000 tons grading 0.026 opt gold and 0.36 opt silver and an indicated resource of 8,924,000 tons grading 0.022 opt gold and 0.28 opt silver. The property is currently permitted by the BLM to operate as an open-pit mine with a heap leach processing facility. (American Gold Capital Corp. press release, 1/14/2002)

MINERAL COUNTY

Bell

Valerie Gold Resources Ltd. signed an option agreement to acquire the Walker Lane gold property from Nevada Minerals Recon Co. The property consists of the Ron-Don-Terri-Pat claim blocks in the Mina Gold and Omco Mine areas of the Bell district, Mineral County, and the Pat 5 claims near the Warrior Mine in the adjacent Athens district of Nye County. The Ron claims are located in the western part of Section 31, T9N, R37E, and extend into Section 36, T9N, R36E. The main target on the Ron claims is the intersection zone of north-dipping, sheeted, adularia-veined ledges with vertical veins of what is known as the Gully zone. This target appears to be undrilled, with the possible exception of what appear to be three shallow angle holes drilled from sites on the Ron 4 claim. The Don claims are mostly in the western part of Section 30, T9N, R37E, but extend into Section 25, T9N, R36E. The Don target is at the old Trafalgar Hill prospect on Trafalgar Hill in the east-center of the claim block. The hill is cut by at least three major zones of west-dipping breccia and sheeted veins. The Don target has never been drilled. (The Daily Prospector, 7/23/01; www.valeriegold.com, 3/6/02)

Candelaria

Silver Standard Resources announced that a review of its Candelaria silver property, undertaken by Pincock Allen & Holt, has resulted in a modest reduction in the overall resource. The resources are now stated as: 15.1 million oz Ag, measured; 29.0 million oz Ag, indicated; and 82.9 million oz Ag, inferred. Gold resources are 10,000 oz measured and 30,000 oz indicated. In October 2001, Silver Standard exercised its option to purchase the Candelaria Mine from Kinross Gold Corp. Under revised terms for the purchase agreement, Silver Standard made a C$100,000 cash payment, issued 600,000 units to Kinross and delivered a C$300,000 note payable in cash or stock that matures in 12 months. Silver Standard has pledged the property as collateral pending completion of reclamation work by Kinross and Silver Standard's arrangement of reclamation bonding. (Silver Standard Resources press releases, 5/10/2001; 10/2/2001)

Rawhide

In 2001, Dayton Mining Corp. incurred exploration expenditures of $100,000 at its Denton-Rawhide Mine. Exploration at Rawhide is now complete and no additions to the ore reserves are expected. Mining in the open pits will cease in July, 2002 and stockpiled ore will be crushed and stacked for the following 6-8 months. This will be followed by an additional two years of residual leaching from the heaps. (Dayton Mining Corp. press release, 2/22/2002)

NYE COUNTY

Athens

Valerie Gold Resources Ltd. signed an option agreement to acquire the Walker Lane gold property from Nevada Minerals Recon Co. The property consists of the Pat 5 claims at the Warrior Mine, Athens district, Nye County, and the Ron-Don-Terri-Pat claim blocks in the Mina Gold and Omco Mine areas of the adjacent Bell district of Mineral County. The Pat 5 claims, located in the center of Section 26, T9N, R37E, cover several large, east-west trending quartz veins. These veins are 3- to 6-feet-thick, are generally south-dipping, and are exposed by numerous old mine workings and prospects. The veins are multi-phase, with separate phases of drusy quartz and pyrite, chalcedony and pyrite, and chalcedony, alunite, and jarosite. (The Daily Prospector, 7/23/01; www.valeriegold.com, 3/6/02)

Barcelona

New Centennial Mining Inc. is planning 7 trenches and 7 to 8 drill holes during the second stage of its Antone Canyon project in Section 5, T9N, R45E, and Section 32, T10N, R45E. (U.S. Forest Service Plan of Operations 04-02-001, 11/17/2001)

Bare Mountain

Imperial Metals Corp. has discovered deep, high-grade gold mineralization at its Sterling gold property, located near Beatty. Historically, mining and exploration at Sterling have been concentrated on a gently dipping horizon, the Sterling thrust, from which approximately 200,000 oz of gold have been produced from underground and open pit ore grading on average 0.22 opt Au. Recent exploration efforts have focused on the 144 Zone, situated at the southeastern limit of the known Sterling deposit along the north-northeast-trending Reudy fault. A deep hole was drilled in 1989 along the Reudy fault. This hole intersected 225 feet of low grade gold mineralization, drawing attention to the Reudy fault as a possible branch of the Sterling feeder system. Five reverse circulation holes were drilled in this zone. Two of these holes intersected significant gold mineralization, well below the Sterling thrust, in a north-dipping band of silty carbonates near the Reudy fault. Further drilling will be focused on expanding the mineralized zone down dip to the north, and testing its width perpendicular to the Reudy fault. Due to the presence of nearby underground workings, the mineralized zone can be rapidly accessed from underground should results from the next round of drilling be positive. (Imperial Metals Corp. press release, 5/28/2001)

Ellendale

On its South Monitor Project, Golconda Resources Ltd. drilled a 1,640-foot reverse circulation hole about 330 feet west of the East Ridge gold mineralized zone where past drilling by Amax Gold Inc. intersected 115 feet of 0.110 opt gold in near surface epithermal mineralization. Golconda's hole was collared in Tertiary tuff. The hole encountered a hydrothermal breccia from 1,020 feet to 1,200 feet followed by a zone of strong quartz-adularia alteration with highly elevated trace element geochemistry to a depth of 1,360 feet. A Paleozoic limestone sequence underlies the Tertiary tuff and could contain Carlin-type gold mineralization. Golconda plans to drill an offset hole to about 2,000 feet depth to test this possibility. (Golconda Resources Ltd. press release, 3/2/2001)

Manhattan

In June, 2001, Manhattan Mining Co., a wholly owned subsidiary of Royal Standard Minerals Inc., acquired the Gold Wedge deposit in the main part of the Manhattan district. An ore reserve evaluation is nearly completed on the most intensively drilled (central) portion of the deposit. Drilling and geologic evidence indicate that the deposit has a strike length of at least 2,000 feet and is open along strike. Current drilling results, based on 57 drill holes, indicates that high-grade gold (0.5 opt Au) occurs within a vertical extent of 80 feet to 700 feet below

the surface. The deposit has not been tested below 700 feet vertical depth. The data acquired from this project will be employed to develop the deposit as an underground mine. The metallurgical analysis indicates that more than 70% of the gold can be recovered from a coarse crush, washing, and table recovery of the finer fraction. This effort will require a fairly simple mill design plan that may include cyanide treatment to increase the recoveries to approximately 90%.

Manhattan Mining Co. has also acquired the Keystone and Jumbo properties, the Fortune claims, and the Manhattan Millsite claims, all in the Manhattan district. The millsite contains a 100-tons-per-day pilot mill and includes a water source and a current millsite permit. (Royal Standard Minerals, Inc. press releases, 8/22/2001; 2/6/2002)

Round Mountain

Round Mountain Gold Corp. is planning additional exploration at Gold Hill, north of Round Mountain. This property has undergone sporadic exploration since the early 1970s when Copper Range Co. held both Gold Hill and the Round Mountain properties. Approval of the exploration plan by the U.S. Forest Service is expected in early 2002. (U.S. BLM, Battle Mountain Field Office Project and Planning Schedule, 1/1/2002)

Rye Patch

In August 2001, Red Emerald Resource Corp. entered into an agreement with Rex Exploration Corp., a British Columbia company, to acquire 65% interest in the Midway Prospect located approximately 25 miles north of Tonopah. In order to earn its 65% interest, Red Emerald will be required to expend a total of $1,200,000 on property option payments and exploration work conducted on the property by August 15, 2004.

The initial claim block at Midway was staked in October 1987 and consists of 135 unpatented mining claims. Since 1987, approximately $2 million has been spent to explore the property by Coeur d' Alene Mines, Rio Algom Exploration, Kennecott Exploration and Tombstone Explorations. Seven significant areas or zones of mineralization have been identified in a belt over 2 miles long and up to 3/4 mile wide. A total of 195 holes have been drilled at Midway (4 core, 191 rotary), but Red Emerald believes much of the drilling to have been mostly random and widely spaced. Strongly mineralized holes have not been offset, nor has there been systematic in-fill drilling.

Red Emerald's present intention is to commission Global Geological Services Inc. of Vancouver, B.C., to prepare an engineering report on the property and recommend an exploration and development program. (Red Emerald Resource Corp. press release, 8/8/2001)

PERSHING COUNTY

Imlay

Three drill rigs were reported to have drilled around the margins of the Florida Canyon Mine and immediately south on the Standard property. (Society of Economic Geologists Newsletter, 1/1/2002)

Rochester

Operations at the Rochester Mine for much of the year were carried out as planned in a gold-rich section of the Rochester pit that accounts for the higher gold production and slightly lower silver production than during the previous year. Coeur continued with its exploration drilling program to develop new reserves and resources at Rochester and the Nevada Packard satellite deposit located one and a half miles to the south. Approximately 54,265 feet of reverse circulation drilling in 145 holes was completed during the past year. Most of the drilling was confined to areas within and along the south and west boundaries of the Rochester pit and the East zone of Nevada Packard. Mining at Nevada Packard is scheduled to commence in the second half of 2002. (Coeur d'Alene Mines Corp. press release, 2/22/2002)

Apollo Gold Florida Canyon Mine.
Photo by Christopher Ross, 2002.

Scossa

Romios Gold Resources Inc. intends to resume drilling on its Scossa Gold Property. The Company will drill a number of deep holes to test known gold-bearing structures at depth and, in addition is considering carrying out ground geophysical and geochemical surveys together with structural mapping over the entire property. In 2000, 14 holes aggregating 3,633 feet were completed to test a number of gold-bearing, epithermal quartz breccia veins on the property and a number of high-grade gold intersections (i.e., 6.0 feet of 10.63 opt Au, 6.5 feet of 8.62 opt Au, and 4.8 feet of 2.01 opt Au) were encountered during that program. (Romios Gold Resources Inc. press release, 10/16/2001)

WASHOE COUNTY

Leadville

Seabridge Resources Inc. completed an eight hole diamond drill program totaling approximately 3,000 feet at its Hog Ranch gold project. Seabridge's drill program at Hog Ranch, designed to test for the potential of a high-grade underground gold deposit, confirmed that the necessary conditions for a deposit of that type are present. High-grade gold intercepts from two different structures intersected in the drilling may represent the upper levels of such a deposit. Additional drilling has been recommended to test for the higher grade 'boiling' zone, which evidence suggests should be below the intercepts from the current program. Observations of the core have enabled Seabridge geologists to reinterpret previous data and conclude that: (1) alteration has a scale and intensity similar to other major deposits in northern Nevada; (2) the gold has been concentrated in specific, identifiable structures which have significant strike and dip potential; and (3) previous open pit mining was in the very top of the mineralized system leaving the higher-grade potential intact and below the level of previous workings. (Seabridge Resources Inc. press release, 4/17/2001)

WHITE PINE COUNTY

Butte Valley

Newmont Mining Corp. completed a 15-hole, 7,640-foot Phase III drilling program at Nevada Pacific Gold Ltd.'s Limousine Butte Joint Venture. The drill program was designed to test six widely spaced target areas over a strike length of four miles. The Limousine Butte project hosts a district-sized corridor of gold mineralization and alteration. Within this corridor multiple exploration targets have been identified along a zone of continuous alteration measuring 7 miles in extent, and Newmont and Nevada Pacific have expanded the Limousine Butte Project by 4 square miles through claim staking. Exploration work, conducted by Newmont, has identified several new drill targets based on a high-definition airborne magnetic/radiometric geophysical survey, ground-based gravity geophysics, detailed geologic mapping, and over 800 rock chip and stream sediment samples. Newmont is in the process of permitting additional drill sites. (Nevada Pacific Gold Ltd. press release, 11/9/2001)

Illipah

Golden Cycle Gold Corp. has acquired the Illipah gold prospect in western White Pine County. A small near-surface deposit at Illipah (1.9 million tons at 0.048 opt Au) produced about 37,000 oz of gold between 1987 and 1989.

The gold deposit at Illipah formed at the contact of the Chainman Shale and the underlying Joana Limestone. The main structural feature of the deposit is a north-trending anticline, overturned to the east, that forms a prominent ridge bounded by faults parallel to the axis of the anticline. Jasperoid formed along the structures and in the crest of the anticline can be traced for a strike length of more than 6 miles.

Previous exploration on this property focused on developing near-surface, bulk-mineable gold ore reserves. The target of Golden Cycle Gold's planned exploration program, however, is a high-grade mineralized gold vein system at depth. (Golden Cycle Gold Corp. press release, 11/8/2001)

Major Precious-Metal Deposits

by Joseph V. Tingley

The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company annual reports and press releases. Locations of most of these deposits are shown on NBMG Map 120, and most active mines are shown on page 2 of this publication.
opt = troy ounces per short ton.

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
CHURCHILL COUNTY				
Bell Mountain (Bell Mountain district)	1982: 1 million tons, 0.055 opt Au, 1.4 opt Ag 1989: *reserves*—30,000 oz Au, 125,000 oz Ag 1997: 2.5 million tons, 0.059 opt Au equiv. oz		rhyolitic tuff	Miocene
Buffalo Valley gold property (Eastgate district)	1996: 96,000 oz Au		rhyolitic ash-flow tuff	Tertiary
Dixie Comstock (Dixie Valley district)	1991: 2.4 million tons, 0.049 opt Au 1995: 100,000 oz Au		Tertiary rhyolite	Miocene?
Fondaway Canyon (Shady Run district)	1988: 400,000 tons, 0.06 opt Au 1990: 400,000 tons, 0.06 opt Au	1989: 1,065 oz Au, 87 oz Ag 1990: 12,000 oz Au	Triassic slate and phyllite	Cretaceous
New Pass property (New Pass district)	1994: 3.4 million tons, 0.042 opt Au 1997: 3.1 million tons, 0.055 opt Au		Triassic siltstone	
CLARK COUNTY				
Crescent property (Crescent district)	1992: 390,000 tons, 0.05 opt Au; 3.3 million tons, 0.022 opt Au			
Keystone (Goodsprings district)	1990: *estimated geologic resource* 64 million tons, 0.05 opt Au 1992: 110,000 tons, 0.11 opt Au	1990: ~1,000 oz Au 1993: idle	lower Paleozoic carbonate rocks	Triassic
ELKO COUNTY				
Big Springs (Independence Mountains district)	1987: 3.76 million tons, 0.148 opt Au 1989: 1.55 million tons, 0.172 opt Au	1987–88: ~106,000 oz Au 1989–92: 274,000 oz Au, 48,000 oz Ag 1993: 52,752 oz Au 1994–95: 30,095 oz Au, 2,877 oz Ag	Mississippian to Permian overlap assemblage clastic and carbonate rocks	Eocene
Bootstrap/Capstone/ Tara (Bootstrap district)	1989: *geologic resource*—25.1 million tons, 0.039 opt Au 1996: 20.2 million tons, 0.046 opt Au proven and probable reserves; 1 million tons, 0.086 opt Au mineralized material	1988–90: included in Newmont Gold production, page 36 1996: 19,800 oz Au 1999: 147,088 oz Au, 28,395 oz Ag 2000: 131,979 oz Au, 13,402 oz Ag 2001: 92,775 oz Au, 21,093 oz Au	dacitic dikes, Paleozoic siltstone and laminated limestone/chert	Eocene
Cobb Creek (Mountain City district)	1988: *geologic resource*—3.2 million tons, 0.045 opt Au			
Cord Ranch (Robinson Mountain district)	1991: 3.5 million tons, 0.037 opt Au 1994: 350,000 oz Au in 3 deposits (*see* Piñon)		Webb Formation Devils Gate Formation Tomera Formation Diamond Peak Formation	
Dee (Bootstrap district)	1982: 2.5 million tons, 0.12 opt Au 1990: 4.5 million tons, 0.059 opt Au 1999: 1.4 million tons, 0.157 opt Au, proven and probable reserves	1985–88: 189,983 oz Au 1989–92: 172,745 oz Au, 142,000 oz Ag 1993–95: 97,860 oz Au 1996: 45,070 oz Au, 50,322 oz Ag 1997–98: 72,595 oz Au 1999: 36,329 oz Au, 68,400 oz Ag 2000: 61,171 oz Au, 110,900 oz Ag 2001: 2,351 oz Au, 6,028 oz Ag	Vinini Formation Devonian carbonates, dacitic dikes	Eocene

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
ELKO COUNTY (continued)				
Doby George (Aura district)	1995: 3.7 million tons, 0.060 opt Au 1997: 250,000 oz Au		Schoonover Formation	
Jerritt Canyon (includes Saval Canyon and Burns Basin) (Independence Mountains district)	1981: 12.5 million tons 0.231 opt Au 1989: 21.6 million tons, 0.143 opt Au mill ore; 6.5 million tons, 0.043 opt Au leachable 1999: 1.5 million oz Au, proven and probable reserves; 3.8 million oz Au other 2000: 1.3 million oz Au proven and probable; 3.7 million oz Au other mineralized material 2001: 2.058 million oz Au proven and probable; 893,000 oz Au other	1981–90: ~2.6 million oz Au 1991–94: 1,380,000 oz Au, 25,000 oz Ag 1995–98: 1,296,492 oz Au 1999: 363,000 oz Au 2000: 334,747 oz Au 2001: 295,328 oz Au, 7,752 Ag	Hanson Creek and Roberts Mountains Formations	~40 Ma
Ken Snyder Mine (Gold Circle district)	1995: 13 million tons, 0.16 opt Au, 2.7 opt Ag, announced resource, proven Au reserve <500,000 oz 1996: 1.1 million tons, 1.324 opt Au, 14.95 opt Ag 1999: 3.0 million tons, 0.816 opt Au, 9.835 opt Ag proven and probable reserves 2000: 3.4 million tons, 0.63 opt Au, 7.77 opt Ag proven and probable reserves	1998: 4,357 oz Au, 55,329 oz Ag 1999: 189,081 oz Au, 1,938,470 oz Ag 2000: 197,800 oz Au, 1,941,989 oz Ag 2001: 198,518 oz Au, 2,393,246 oz Ag	Tertiary volcanic rocks	15.3 Ma
Kinsley Mountain (Kinsley district)	1988: 2.1 million tons, 0.048 opt Au 1996: 3.4 million tons, 0.032 opt Au	1993: evaluation 1995–97: 127,065 oz Au, 24,452 oz Ag 1998: 9,543 oz Au 1999: 1,543 oz Au	upper Paleozoic carbonate rocks	Oligocene?
Meikle (Lynn district)	1992: *geologic resource*—7.9 million tons, 0.613 opt Au 1999: 5.9 million tons, 0.647 opt Au proven and probable reserves; 3.3 million tons, 0.457 opt Au mineralized material 2000: 4.9 million tons, 0.540 opt Au proven and probable reserves; 2.9 million tons, 0.450 opt Au mineral resource 2001: 9 million tons, 0.439 opt Au proven and probable reserves; 13.5 million tons, 0.433 opt Au mineral resource	1996: 78,442 oz Au 1997–98: 1,421,621 oz Au, 426,030 oz Ag 1999: 977,356 oz Au, 263,225 oz Ag 2000: 805,718 oz Au, 205,000 oz Ag 2001: 712,688 oz Au, 213,370 oz Ag	Popovich and Roberts Mountains Formations	Eocene
Piñon (South Bullion and Dark Star) (Robinson Mountain district)	1996: 38.3 million tons, 0.026 opt Au geologic mineral inventory		Webb Formation siltstone Devils Gate Limestone	
Pony Creek (Carlin district)	1994: *geologic resource*—1.1 million tons, 0.057 opt Au			
Railroad Property (POD zone) (Railroad district)	1997: 1.5 million tons, 0.085 opt Au drill-indicated resource			
Rain Property (Carlin district)	1982: 3.4 million tons, 0.147 opt Au and 8.3 million tons, 0.083 opt Au			
Gnome deposit	1988: 2.7 million tons, 0.048 opt Au		Webb Formation	Eocene
Rain Emigrant	1989: 30.3 million tons, 0.021 opt Au	1994–96: 160,000 oz Au	Webb Formation	36–37 Ma
Springs deposits	1996: 16 million tons, 0.028 opt Au proven and probable reserves; 10.4 million tons, 0.021 opt Au mineralized material	1997–98: included in Newmont Gold production, page 39		
Rain deposit	1999: 13,467,000 tons, 0.026 opt Au proven and probable open-pit ore, 411,000 tons, 0.316 proven and probable underground ore	1999: 23,477 oz Au 2000: 25,004 oz Au, 2,539 oz Ag 2001: 43,488 oz Au, 9,887 oz Ag		
SMZ deposit	1989: *geologic resource*—1.6 million tons, 0.019 opt Au			
Rain district	2000: 13.5 million tons, 0.026 opt Au proven and probable open-pit ore; 308,000 tons, 0.267 opt Au proven and probable underground ore 2001: 13.5 million tons, 0.026 opt Au proven and probable open-pit ore; 21,000 tons, 0.024 opt Au proven and probable underground ore; 1.3 million tons, 0.048 opt Au mineralized material			

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
ELKO COUNTY (continued)				
Rossi Mine (Storm resource) (Bootstrap district)	1998: 3.1 million tons, 0.371 opt Au resource 2000: 2.7 million tons, 0.345 opt Au resource		Popovich Formation	Eocene
Trout Creek (Contact district)	1988: 1.5 million tons, 0.04 opt Au	1988: exploration	Miocene sedimentary rocks	
Tuscarora (Dexter) (Tuscarora district)	1987: 2 million tons, 0.039 opt Au, 1.9 opt Ag 1988: 1.8 million tons, 0.037 opt Au, 0.74 opt Ag	1896–1902: 29,940 oz Au, 28,543 oz Ag 1987–90: 34,163 oz Au, 189,865 oz Ag	Eocene rhyolitic ignimbrite and andesite	39 Ma
Winters Creek (Independence Mountains district)	1986: 1.4 million tons, 0.146 opt Au		lower Paleozoic carbonate rocks	Eocene
Wright Window (Independence Mountains district)	1986: 1.3 million tons, 0.095 opt Au	1992: 3,500 oz Au	lower Paleozoic carbonate rocks	Eocene
ESMERALDA COUNTY				
Boss (Gilbert district)	1987: 500,000 tons, 0.07 opt Au 1990: *reserves*—637,500 tons, 0.023 opt Au *geologic resource*—31,000 oz Au 1996: *see* Castle		Ordovician sedimentary rocks	Miocene?
Castle (includes Boss) (Gilbert district)	1996: 3.7 million tons, 0.03 opt Au 1997: 10 million tons, 0.03 opt Au resource 2000: 215,000 oz Au indicated resource and 93,000 oz Au inferred resource		Ordovician Palmetto Formation	
Gemfield (Goldfield district)	1996: 9.5 million tons, 0.04 opt Au 1998: 500,000 oz, 0.04 opt Au		Oligocene Sandstorm Rhyolite	21 Ma?
Goldfield Project (Goldfield district)	1983: 1.75 million tons, 0.087 opt Au 1994: 3.48 million tons, 0.071 opt Au	1903–45: 4.19 million oz Au, 1.45 million oz Ag 1989–97: 28,373 oz Au	andesite, rhyodacite, rhyolite	21 Ma
Hasbrouck (Divide district)	1982: 5 million tons 0.06 opt Au, 1.5 opt Ag 1986: 12.9 million tons, 0.0291 opt Au, 0.59 opt Ag 1998: 7.7 million tons, 0.036 opt Au, 0.7 opt Ag	1986–92: exploration	Siebert Formation tuff and volcaniclastic rocks	16 Ma
Hill of Gold deposit (Divide district)	1988: 500,000 tons, 0.04 opt Au, 0.40 opt Ag 1996: 1.6 million tons, 0.026 opt Au		Miocene silicic tuff	16 Ma
Mary-Drinkwater (Silver Peak district)	1991: 531,300 tons, 0.124 opt Au	1991: 25,000 oz Au, 8,000 oz Ag	Wyman Formation	Mesozoic?
Mineral Ridge (Silver Peak district)	1995: 5.2 million tons, 0.068 opt Au proven and probable reserves (includes Mary-Drinkwater) 1998: 4 million tons, 0.06 opt Au; 241,000 oz Au 2000: 2.84 million tons, 0.074 opt Au minable reserve	1997: 13,793 oz Au, 7,907 oz Ag 1998: 8,582 oz Au, 4,877 oz Ag 1999: 27,145 oz Au, 19,915 oz Ag 2000: 2,200 oz Au, 1,000 oz Ag 2001: 1,399 oz Au, 424 oz Ag	Wyman Formation	Mesozoic?
Tip Top (Fish Lake Valley district)	1997: 109,000 tons, 0.103 opt Au, 0.88 opt Ag indicated resource 1998: 168,000 tons, 0.088 opt Au inferred geologic resource	1997: exploration 2001: exploration	Tertiary quartz latite	
Three Hills (Tonopah district)	1996: 3.2 million tons, 0.036 opt Au 1997: 6.3 million tons, 0.023 opt Au		Miocene Siebert Formation and Oddie Rhyolite	
Weepah (Weepah district)	1986: 200,000 tons, 0.1 opt Au, 0.4 opt Ag	1986–87: 58,000 oz Au	Wyman Formation	Cretaceous

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
EUREKA COUNTY				
Afgan (Antelope district)	1996: 80,000 oz Au drill indicated resource 1999: 2.8 million tons, 0.037 opt Au oxide resource		Webb Formation	
Betze-Post (Lynn district)	1988: 128.4 million tons, 0.095 opt Au 1999: 135.6 million tons, 0.153 opt Au proven and probable reserves; 23.3 million tons, 0.099 opt Au mineralized material 2000: 116.4 million tons, 0.155 opt Au proven and probable; 55.9 million tons, 0.063 opt Au mineral resource 2001: 108.9 million tons, 0.151 opt Au proven and probable; 49.9 million tons, 0.069 opt Au mineral resource	1974: 302,807 oz Au 1980–88: 440,000 oz Au 1989–92: 2,214,508 oz Au, 92,347 oz Ag 1993: 1,439,929 oz Au 1994–98: 8,920,871 oz Au, 372,403 oz Ag 1999: 1,130,094 oz Au, 65,804 oz Ag 2000: 1,646,640 oz Au, 52,000 oz Ag 2001: 1,549,975 oz Au, 261,261 oz Ag	Ordovician to Devonian chert, shale, sltstone, and impure carbonates; in part, Vinini Formation	Eocene
Blue Star (Lynn district)	1987: 1.95 million tons, 0.066 opt Au 1989: *geologic resource*—22.2 million tons, 0.030 opt Au	1974–84: intermittent 1988–2001: included in Newmont Gold production, page 39	lower Paleozoic sandy siltstone and carbonate rocks, granodiorite	Eocene
Bobcat (Lynn district)	1988: *geologic resource*—17.7 million tons, 0.029 opt Au		lower Paleozoic rocks	Eocene
Buckhorn property (Buckhorn district)	1984: 5 million tons, 0.044 opt Au, 0.585 opt Ag 1990: 700,000 tons, 0.05 opt Au; *geologic resource*—200,350 oz Au 1993: *geologic resource*—1.1 million tons, 0.11 opt Au	1988–93: 109,422 oz Au, 409,887 oz Ag	basaltic andesite, sinter, silicified sedimentary rocks	14.6 Ma
Buckhorn South/ Zeke deposit (Buckhorn district)	1989: 2 million tons, 0.056 opt Au, 0.224 opt Ag 1998: 2.4 million tons, 0.046 opt Au		lower Paleozoic rocks	
Bullion Monarch (Lynn district)	1987: 1 million tons, 0.10 opt Au	1977–84: 17,779 oz Au	lower Paleozoic sedimentary rocks	Eocene
Carlin North (Lynn district)				
Deep Star	1996: 1.4 million tons, 0.8765 opt Au proven and probable reserves	1995: 2,800 oz Au 1996: 93,400 oz Au 1997–2001: included in Newmont Gold production, page 39	Popovich Formation	Eocene
Genesis	1989: *geologic resource*—35.8 million tons, 0.044 opt Au 1990: 32 million tons, 0.047 opt (includes Blue Star)	1986: production commenced 1988–2000: included in Newmont Gold production, page 39	Ordovician-Devonian limestone, argillite chert	Eocene
Genesis/North Star/ Sold	1996: 22.7 million tons, 0.034 opt Au proven and probable reserves; 11 million	1994–95: 684,600 oz Au 1996–2001: included in Newmont Gold production, page 39	Ordovician-Devonian limestone, argillite chert	Eocene
Genesis Complex	2000: 14.1 million tons, 0.026 opt Au proven and probable open-pit reserves			
Post/Goldbug	1996: 25.6 million tons, 0.190 opt Au proven and probable reserves; 43.6 million tons, 0.079 opt Au mineralized material	1999–2001: included in Newmont Gold production, page 39	lower Paleozoic sedimentary rocks	Eocene
Deep Post	2000: 3.1 million tons, 0.814 opt Au proven and probable underground reserves			
Carlin Mine	1965: 11 million tons, 0.32 opt Au 1965–86: 3.8 million oz Au			
Carlin/Pete/Lantern	1995: 14.8 million tons, 0.031 opt Au 1996: 13.7 million tons, 0.046 opt Au proven and probable reserves; 14.7 million tons, 0.046 opt Au mineralized material	1994–96: 68,700 oz Au 1997–2001: included in Newmont Gold production, page 39	Roberts Mountains	Eocene Formation
Carlin North-other	2000: 19.8 million tons, 0.052 opt Au, proven and probable open-pit reserves			
Carlin North area	2000: 8.2 million tons, 0.495 opt Au, proven and probable underground reserves			
Carlin North area, open-pit	2001: 32.6 million tons, 0.044 opt Au, proven and probable reserves; 13.0 million tons, 0.039 opt Au mineralized material			
Carlin North area, underground (including Deep Post)	2001: 10.9 million tons, 0.56 opt Au, proven and probable reserves; 2.1 million tons, 0.55 opt Au mineralized material			

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
EUREKA COUNTY (continued)				
Carlin South (Maggie Creek district)				
Gold Quarry/Mac/Tusc	1982: 25.1 million tons, 0.106 opt Au and 150 million tons, 0.036 opt Au 1987: 197.8 million tons, 0.042 opt Au 1990: 212.6 million tons, 0.042 opt Au, *geologic resource*—534.3 million tons, 0.037 opt Au 1996: 174.8 million tons, 0.046 opt Au proven and probable reserves; 51.9 million tons, 0.058 opt Au mineralized material	1981: 6,000 oz Au, 1982: 19,000 oz Au 1983: 74,000 oz Au, 1984: 68,200 oz Au 1985: 136,200 oz Au, 1986: 309,800 oz Au 1987: 446,600 oz Au 1988–93: included in Newmont Gold production, page 39 1994–96: 2,978,000 oz Au 1997–2001: included in Newmont Gold production, page 39	Ordovician to Devonian chert, shale, siltstone, and impure carbonates; in part, Vinini Formation	Eocene
Carlin South area	2000: 75.2 million tons, 0.059 opt Au proven and probable open-pit reserves			
Carlin South open-pit	2001: 61.3 million tons, 0.062 opt Au proven and probable reserves; 24.6 million tons, 0.028 opt Au mineralized material			
Chukar Footwall underground	2001: 278,000 tons, 0.49 opt Au proven and probable reserves; 115,000 tons, 0.46 opt Au mineralized material			
Genesis (see Carlin North-Genesis)				
Genesis/North Star/Sold (see Carlin North-Genesis)				
Gold Bar (Antelope district)	1984: 2.8 million tons, 0.09 opt Au 1990: mined out in December 1994: 240,000 oz Au 1995: 190,000 oz Au 2001: 473,000 oz Au in 6 deposits	1987–90: 238,262 oz Au 1991: 80,727 oz Au, 3,000 oz Ag 1992–94: 155,080 oz Au	Devonian Nevada Formation	Eocene?
Gold Canyon (Antelope district)	1992: *reserves*—86,500 oz Au, *geologic resource*—131,000 oz Au 1993: 770,000 tons, 0.080 opt Au 2001: see Gold Bar	(reported with Gold Bar)	Paleozoic sedimentary rocks	Eocene?
Gold Pick (Antelope district)	1988: 10 million tons, 0.06 opt Au 1993: 1.4 million tons, 0.079 opt Au 2001: see Gold Bar	(reported with Gold Bar)	Paleozoic sedimentary rocks	Eocene?
Gold Quarry/Mac/Tusc (see Carlin South)				
Gold Ridge (Antelope district)	1988: 4 million tons, 0.06 opt Au 1993: 426,000 tons, 0.059 opt Au 2001: see Gold Bar	(reported with Gold Bar)	Paleozoic sedimentary rocks	Eocene?
Goldstone (Antelope district)	1988: 1.7 million tons, 0.08 opt Au 1993: 130,928 tons, 0.104 opt Au 2001: see Gold Bar	(reported with Gold Bar)	Paleozoic sedimentary rocks	Eocene?
Horse Canyon (Cortez district)	1984: 3.94 million tons, 0.055 opt Au 1988: included in Cortez Joint Venture figures	1984: 40,000 oz Au 1988–93: included with Cortez Joint Venture	Vinini Formation, Wenban Limestone	≤35 Ma?
Maggie Creek (Maggie Creek district)	1977: 4.5 million tons, 0.09 opt Au 1988: *geologic resource*—303,000 tons, 0.092 opt Au	to 1986: est. 400,000 oz Au operation transferred to Gold Quarry Mine	Ordovician to Devonian siltstone, chert, sandstone, impure limestone	Eocene
North Star (Lynn district)	1989: *geologic resource*—6.9 million tons, 0.052 opt Au 1990: 3.9 million tons, 0.052 opt Au	1988: 4,250 oz Au 1989–2001: included in Newmont Gold production, page 39	lower Paleozoic sedimentary rocks	Eocene
Post/Goldbug (see Carlin North-Post)				
Ratto Canyon (Eureka district)	1984: ~200,000 oz Au		Dunderberg Shale, Hamburg Dolomite	Oligocene
Rock Creek (Eureka-Lander Co. line)	1997: 800,000 tons, 0.045 opt Au	1997: exploration	Tertiary latite tuff	

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
EUREKA COUNTY (continued)				
Rodeo Projects (Rodeo, Griffin, Goldbug, North Betze) (Lynn district)	1998: 2.9 million tons, 0.487 opt Au proven and probable reserves; 5.8 million tons, 0.302 opt Au mineralized material 1999: 5.8 million tons, 0.466 opt Au, proven and probable reserves; 13.0 million tons, 0.270 opt Au mineralized material 2000: 9.2 million tons, 0.414 opt Au proven and probable; 7.4 million tons, 0.333 opt Au mineral resource			Eocene
Ruby Hill (Eureka district)	1994: *geologic resource*—20 million tons, 0.08 opt Au 1995: 7.62 million tons, 0.099 opt Au 1999: 3.77 million tons, 0.110 opt Au proven and probable; 7.33 million tons, 0.072 opt Au mineralized material 2000: 2.7 million tons, 0.105 opt Au proven and probable reserves; 7.3 million tons, 0.072 opt Au mineralized material	1997–98: 133,100 oz Au, 8,686 oz Ag 1999: 123,841 oz Au, 7,688 oz Ag 2000: 125,193 oz Au, 7,984 oz Ag 2001: 134,737 oz Au, 9,315 oz Ag	Goodwin Limestone	Cretaceous? or Oligocene?
Tonkin Springs (Antelope district)	1983: 1.84 million tons, 0.089 opt Au, 0.204 opt Ag 1987: *oxide*—1.5 million tons, 0.05 opt Au; *sulfide*—2.5 million tons, 0.09 opt Au 1991: 9 million tons, 0.05 opt Au 1999: 30.7 million tons, 0.045 opt Au resource	1987–88: 10,265 oz Au 1989–90: 3,821 oz Au, 1,872 oz Ag	Vinini Formation, dacitic dikes	Oligocene?
Turf (Lynn district)	1996: 2.5 million tons, 0.367 opt Au mineralized material	included in Newmont Gold production, page 39	Roberts Mountains Formation	Eocene
Tusc (Maggie Creek district)	1988: *geologic resource*—15.8 million tons, 0.059 opt Au 1990: 13.3 million tons, 0.062 opt Au	included in Newmont Gold production, page 39	lower Paleozoic sedimentary rocks	Eocene
West Leeville (Newmont) (Lynn district)	1996: 2 million tons, 0.377 opt Au proven and probable reserves; 581,000 tons 0.354 opt Au mineralized material	1995–96: 272,000 oz Au 1997–2000: included in Newmont Gold production, page 39	Roberts Mountains Formation	Eocene
West Leeville (Newmont-Barrick) (Lynn district)	1996: 7.1 million tons, 0.425 opt Au proven and probable reserves; 500,000 tons 0.328 opt Au mineralized material		Roberts Mountains Formation	Eocene
Windfall (Eureka district)	1988: 3 million tons, 0.03 opt Au 1995: mined out	1908–16: 24,000 oz Au 1975–84: 90,000 oz Au 1988: 6,380 oz Au, 59 oz Ag	Hamburg Dolomite	Eocene or Oligocene
HUMBOLDT COUNTY				
Adelaide Crown (Gold Run district)	1989: *south pit*—585,000 tons, 1.313 opt Ag, 0.043 opt Au; *additional area*: 165,000 tons, 0.015 opt Au, 1.10 opt Ag	1990–91: 4,917 oz Au, 53,474 oz Ag	Preble Formation	Tertiary
Ashdown (Vicksburg district)	1987: 1.16 million tons, 0.125 opt Au 1992: 1.1 million tons, 0.12 opt Au		Mesozoic granite	Mesozoic
Buckskin (National district)	1997: 50,221 oz Au, 466,243 oz Ag estimated resource		Miocene rhyolite flows and flow breccias	15 Ma
Chimney Creek (Potosi district)	1988: *proven, probable*—26.9 million tons, 0.068 opt Au; *inferred in south pit*—2.1 million oz Au 1993: *see* Twin Creeks	1987–88: 300,000 oz Au 1989: 222,556 oz Au, 55,953 oz Ag 1990: 220,000 oz Au 1991–92: 476,034 oz Au, 213,463 oz Ag 1993: *see* Twin Creeks	upper Paleozoic sedimentary rocks	41.9 Ma
Getchell (Potosi district)	1989: 8.1 million tons, 0.154 opt Au mill grade and 1.43 million tons, 0.049 opt Au heap-leach ore; *additional geologic resource*: 5.7 million tons, 0.092 opt Au sulfide and 2.6 million tons, 0.055 opt Au oxide 1999: 18.1 million tons, 0.359 opt Au 2000: 2.8 million oz Au measured resources, 5.5 million oz Au indicated resources, and 6.7 million oz inferred resources	1938–50, 1962–67: 788,875 oz Au 1987–88: ~35,000 oz Au 1989: 120,730 oz Au, 9,407 oz Ag 1990–91: 372,987 oz Au 1992–95: 790,600 oz Au, 258,700 oz Ag 1996–97: 348,517 oz Au 1998: 175,302 oz Au, 52,490 oz Ag 1999: 111,000 oz Au	Comus and Preble Formations, granodiorite dikes, granodiorite	42–41 Ma

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
HUMBOLDT COUNTY (continued)				
Hycroft (formerly Crofoot/Lewis) (Sulphur district)	1988: 25 million tons, 0.025 opt Au 1999: 23.8 million tons, 0.0204 opt Au proven and probable reserves; 2.3 million tons, 0.0177 opt Au indicated reserves 2000: 41.9 million tons, 0.0196 opt Au measured and indicated; 14.1 million tons, 0.0152 opt Au inferred reserves	1988: 75,800 oz Au 1989–98: 868,544 oz Au, 2,717,170 oz Ag 1999: 40,075 oz Au, 183,190 oz Ag 2000: 13,493 oz Au, 38,418 oz Ag 2001: 3,232 oz Au, 2,000 Ag	Camel conglomerate, rhyolite dikes	1–2 Ma
Lone Tree (Buffalo Mountain district)	1990: 5.4 million tons oxide mill ore, 0.159 opt Au, 5.7 million tons heap-leach ore, 0.025 opt Au and 1.2 million oz Au in sulfide ore 1994: 4 million oz Au 2000: 40.8 million tons, 0.060 opt Au proven and probable reserves (Lone Tree Complex) 2001: 29.2 million tons, 0.065 opt Au proven and probable reserves; 7.9 million tons, 0.032 opt Au mineralized material	1991–99: 546,335 oz Au 1995: 240,000 oz Au, 11,000 oz Ag 1996–97: 536,820 oz Au 1998: 257,702 oz Au, 27,484 oz Ag 1999: 191,975 oz Au, 35,617 oz Ag 2000: 281,022 oz Au, 38,346 oz Ag 2001: 260,518 oz Au, 29,974 oz Ag	Havallah Formation and dacite porphyry	38 Ma
Marigold (Battle Mountain district)	1987: 8 million tons, 0.0935 opt Au 1990: 4.3 million tons, 0.105 opt Au mill ore, 7.6 million tons, 0.026 opt Au heap-leach ore 1999: 19.09 million tons, 0.032 opt Au 2000: 30.2 million tons, 0.035 opt Au proven and probable reserves; 20.7 million tons, 0.029 opt Au measured and indicated resources 2001: 75.5 million tons, 0.027 opt Au proven and probable reserves; 109.9 million tons, 0.014 opt Au measured and indicated resources	1989–93: 322,219 oz Au, 9,784 oz Ag 1994–98: 363,771 oz Au 1999: 74,000 oz Au 2000: 68,000 oz Au 2001: 84,784 oz Au, 401 oz Ag	Paleozoic chert, argillite, and carbonate rocks	early Oligocene
North Stonehouse (Buffalo Mountain district)	1991: 2.5 million tons, 0.103 oz Au mill ore		Havallah Formation and porphyry dikes	39 Ma
Pinson (includes Mag pit) (Potosi district)	1980: 3.245 million tons, 0.119 opt Au 1989: 480,000 oz Au 1996: 2.6 million tons, 0.072 opt Au	1980: 56,000 oz Au 1986–88: 189,864 oz Au 1989: 72,489 oz Au (includes Preble) 1990–91: 112,022 oz Au 1992–94: 145,210 oz Au, 12,700 oz Ag 1995: 44,854 oz Au 1996–98: 128,935 oz Au, 7,990 oz Ag 1999: 11,975 oz Au, 442 oz Ag 2000: 1,116 oz Au, 31 oz Ag 2001: 679 oz Au	Comus Formation	Eocene?
Preble (Potosi district)	1985: 1.8 million tons, 0.062 opt Au 1986: 3.16 million tons, 0.093 opt Au heap leach, 80,000 tons, 0.242 opt Au mill grade 1989: 15,110 oz Au	1985: 17,000 oz Au 1987: 28,000 oz Au 1988: 18,828 oz Au 1989: included with Pinson 1990: 1,161 oz Au	Preble Formation	Eocene?
Rabbit Creek (Potosi district)	1989: 4.1 million oz Au; additional geologic *resource*—1 million Au in refractory material 1992: *reserves*—3.26 million oz Au 1993: *see* Twin Creeks	1990–92: 296,000 oz Au 1993: *see* Twin Creeks	Ordovician	Eocene?
Sleeper (Awakening district)	1985: 4.2 million tons, 0.13 opt Au, 0.73 opt Ag 1989: 1,975,000 oz Au 1990: 44.1 million tons, 0.038 opt Au, 0.152 opt Ag 1999: 2.1 million oz Au at average grade of 0.025 opt Au; 18.1 million oz Ag at average grade of 0.208 opt Ag	1986: 128,000 oz Au, 94,000 oz Ag 1987–88: 389,106 oz Au 1989–96: 1,149,054 oz Au, 1,838,791 oz Ag 2001: 90 oz Au, 197 oz Ag	Miocene “latite” flows and dikes, silicic ash-flow tuff, Triassic slate and phyllite	16.1 Ma
Trenton Canyon (Buffalo Valley district)	1994: *oxide resource*—14.6 million tons, 0.035 opt Au, (517,000 oz Au) 1999: 995,000 tons, 0.021 opt Au (North Peak); 10.8 million tons, 0.022 opt Au (Valmy)	2000: included with Lone Tree 2001: 24,228 oz Au, 2,996 oz Ag	Vinini Formation	
Trout Creek (Battle Mountain district)	1989: 50,000 oz Au			

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
HUMBOLDT COUNTY (continued)				
Twin Creeks (Chimney and Rabbit Creeks) (Potosi district)	1993: 5.7 million oz Au 1999: 87.1 million tons, 0.079 opt Au proven and probable 2000: 75.2 million tons, 0.086 opt Au proven and probable	1993–98: 3,338,026 oz Au, 1,317,456 oz Ag 1999: 879,453 oz Au, 119,191 oz Ag 2000: 779,075 oz Au, 103,909 oz Ag 2001: 831,962 oz Au, 95,721 oz Ag	Paleozoic	Eocene?
Winnemucca Gold property (Winnemucca district)	1998: 130,000 to 140,000 oz Au proven, 300,000 oz Au indicated			
LANDER COUNTY				
Austin Gold Venture (Birch Creek district)	1986: 1.75 million tons, 0.16 opt Au 1989: mined out 1999: 154,000 oz Au resource	1986–88: 141,000 oz Au 1989: 50,000 oz Au	Antelope Valley Limestone	Cretaceous or Tertiary
Battle Mountain Complex (Battle Mountain district)	1992: 500,000 oz Au 1995: *resource* (overall Battle Mountain complex)—60.2 million tons, 0.036 opt Au, including *reserves*—46.6 million tons, 0.040 opt Au 1999 (Phoenix): 5,680,000 oz Au proven and probable; 1.5 million oz Au additional mineralization 2000: 175.2 million tons, 0.034 opt Au proven and probable reserves	1994–98: 274,741 oz Au, 632,739 oz Ag 1999: 8,322 oz Au, 19,526 oz Ag 2000: 1,509 oz Au, 1,756 oz Ag 2001: see Phoenix		Eocene
Buffalo Valley Gold Project (Buffalo Valley district)	1988: 1.5 million tons, 0.05 opt Au 1994: 4.8 million tons, 0.07 opt Au 1997: 600,106 oz Au resource; 100,797 oz Au, other mineralized material	1988–90: 39,668 oz Au		Eocene?
Cortez Joint Venture (Bullion district) CJV includes original Cortez Mine, Pipeline, and South Pipeline	1968: 3.6 million tons, 0.279 opt Au (Cortez deposit) 1987: 4.8 million tons, 0.105 opt Au 1999: 189.4 million tons, 0.050 opt Au proven and probable; 119.1 million tons, 0.035 opt Au mineralized material 2000: 151.3 million tons, 0.047 opt Au proven and probable; 60.0 million tons, 0.047 opt Au mineralized material 2001: 191.1 million tons, 0.044 opt Au proven and probable; 76.6 million tons, 0.040 opt Au resources	1942–84: 2.4 million tons, 0.13 oz Au/ton; 2 million tons, 0.041 opt Au leached. Little Gold Acres: 800,000 tons, 0.124 opt Au 1988: 42,322 oz Au (includes Horse Canyon) 1989: 39,993 oz Au, 12,234 oz Ag (includes Horse Canyon) 1990–91: 107,445 oz Au, 16,750 oz Ag 1992–93: 141,850 oz Au 1995–98: 1,817,273 oz Au, 31,332 oz Ag 1999: 1,328,525 oz Au 2000: 1,009,992 oz Au 2001: 1,184,732 oz Au	Roberts Mountains Formation, Wenban Limestone, Valmy Formation, quartz porphyry dikes	92.8–94 Ma and 36 Ma
Crescent Pit (Bullion district)	1994: 1.97 million tons mill grade, 0.125 opt Au, 2.2 million tons heap-leach, 0.029 opt Au 1997: included in Cortez Joint Venture			
Crescent Valley (Bullion district)	1994: *placer reserve*—8 million cu yd, 0.031 oz Au/cu yd 1995: *placer resource*—6 million cu yd, 0.03 oz Au/cu yd			
Dean (Lewis district)	1995: *proven reserve*—11,000 oz Au *possible to probable resource*—240,000 oz Au			
Elder Creek Project/Shoshone (Lewis district)	1989: 91,500 oz Au 1990: 1.5 million tons, 0.041 opt Au	1990–91: 20,102 oz Au	Valmy Formation	Cretaceous or Eocene
Fire Creek (northeast of Bullion district)	1982: 350,000 tons, 0.06 opt Au	1983–84: 767 oz Au	basaltic andesite	Miocene
Fortitude Complex (Battle Mountain district)	1984: 16 million tons, 0.15 opt Au, 0.57 opt Ag	1986: 253,000 oz Au, 902,000 oz Ag 1987: 255,000 oz Au 1988–93: 985,616 oz Au, 1,707,992 oz Ag (includes Surprise) 1994: 50,000 oz Au, 95,000 Ag (Reona Mine) 1995: see Battle Mountain Complex 2001: see Phoenix	Battle Formation Antler Peak Limestone Pumpernickel Formation	37 Ma

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
LANDER COUNTY (continued)				
Fortitude Extension (Battle Mountain district)	1992: 500,000 oz Au 1993: *geologic resource*—900,000 oz Au 1996: included in Battle Mountain Complex			
Hilltop (Hilltop district)	1984: 10.3 million tons, 0.073 opt Au 1989: 10 million tons, 0.049 opt Au		Valmy Formation	Oligocene?
Klondike property	1989: 100,000 oz Au equivalent			
McCoy/Cove (McCoy district)	1981: 2.5 million tons, 0.08 opt Au, 1 opt Ag (McCoy) 1987: 14 million tons, 0.05 opt Au (McCoy); 4 million oz Au, 250 million oz Ag (Cove) 1989: *proven and probable reserves* 2.9 million oz Au, 128 million oz Ag *geologic resource*—3.5 million oz Au, 1.50 million oz Ag 1999: 11.8 million tons, 0.043 opt Au, 2.387 opt Ag proven and probable reserves; 100,000 tons, 0.350 opt Au, 2.0 opt Ag other mineralization 2000: 4.7 million tons, 0.034 opt Au, 2.309 opt Ag proven and probable reserves 2001: 430,000 tons, 0.031 opt Au, 2.624 opt Ag proven and probable reserves	1986: 50,000 oz Au 1987–98: 3,046,660 oz Au, 85.79 million oz Ag 1999: 124,500 oz Au, 8.43 million oz Ag 2000: 162,784 oz Au, 12,328,297 oz Ag 2001: 94,633 oz Au 6,451,425 oz Ag	Panther Canyon Formation (conglomerate, sandstone), Augusta Mountain Formation (limestone), granodiorite	39.5 Ma
Mud Springs (Bald Mtn. Zone) (Bullion district)	1993: *geologic resource*—42,000 oz Au			
Mule Canyon (Argenta district)	1992: 8.5 million tons, 0.136 opt Au 1996: 9 million tons, 0.112 opt Au	1996: 6,743 oz Au 1999: 55,392 oz Au, 10,022 oz Ag 2000: 40,027 oz Au, 5,856 oz Ag 2001: 33,616 oz Au, 3,100 oz Ag	basalt and basaltic andesite	15–16 Ma
Phoenix (Battle Mountain district)	2001: 174.2 million tons, 0.034 opt Au proven and probable reserves; 156.3 million tons, 0.17% Cu proven and probable reserves; 73.8 million tons, 0.026 opt Au mineralized material; 99.6 million tons, 0.14% Cu mineralized material	2001: 5,641 oz Au, 6,468 oz Ag		Eocene
Pipeline (Bullion district)	1991: *geologic resource*—11.3 million tons, 0.237 opt Au 1996: 136.7 million tons, 8.7 million oz Au measured resource, includes South Pipeline 1997: included in Cortez Joint Venture	included in Cortez Joint Venture	Roberts Mountains Formation	Eocene?
Robertson (Bullion district)	1988: 11 million tons, 0.04 opt Au 1999: Porphyry zone, 254,678 oz Au proven and probable reserves; Lucky Boy, 33,000 oz Au measured; Altenburg Hill, 21,300 oz Au measured; Widows Mine, 37,300 oz Au inferred; Gold Pan, 91,400 oz Au measured	1989: 3,700 oz Au	Valmy Formation	early Oligocene
Slaven Canyon property (Bateman Canyon district)	1994: 50,000 oz Au			
South Pipeline (Bullion district)	1992: 9 million tons, 0.082 opt Au 1994: *geologic resource*—76.5 million tons, 0.048 opt Au 1996: *see* Pipeline 1997: included in Cortez Joint Venture		Roberts Mountains Formation	Eocene?
Surprise (Battle Mountain district)	1987: 225,000 oz Au 1988–91: production and reserve included in Fortitude figures 1994: mined out	1987: 2,000 oz Au	skarn	37 Ma
Toiyabe	1988: 813,400 tons, 0.066 opt Au	1988: 32,000 oz Au, 10,300 oz Ag 1990–91: 20,480 oz Au, 15,125 oz Ag	lower Paleozoic calcareous siltstone	Eocene?

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
LANDER COUNTY (continued)				
Victorine (Kingston district)	1992: 915,000 tons, 0.304 opt Au 1995: *proven and probable reserves*—256,000 tons, 0.36 opt Au, plus *additional geologic resource*—31,160 oz Au 2000: 120,000 oz Au proven and probable reserves; 200,000 oz Au possible reserves		Cambrian to Ordovician Broad Canyon sequence	
LINCOLN COUNTY				
Atlanta gold property (Atlanta district)	1980: 1.1 million tons, 0.08 opt Au, 1.6 opt Ag 1996: 300,000 oz Au, 3 million oz Ag	1980: 88,000 oz Au, 1,710,000 oz Ag	Pogonip Group, Ely Springs and Laketown Dolomites, Oligocene silicic tuff, dacite dikes	early Miocene
Caliente property (Pennsylvania district)	1997: *geologic reserves*—50,000 tons, 0.03 opt Au, 0.80 opt Ag; *geologic resource*—700,000 tons, 0.039 opt Au		Tertiary diorite Tertiary andesite	
Easter and Delamar Project (Delamar district)	1994: *geologic resource*—3.36 million tons, 0.069 opt Au 1995: 1.5 million tons, 0.069 opt Au	1994: exploration	Cambrian quartzite	Miocene
LYON COUNTY				
Fire Angel (Como district)	1989: 5,600 oz Au, *geologic resource*—148,500 oz Au			
Hydra-Hercules (Como district)	1997: 259,329 oz Au, 1,956,511 oz Ag	1997: exploration	Tertiary andesite	
Pine Grove (Pine Grove district)	1994: 2.5 million tons, 0.061 opt Au		Cretaceous granodiorite	
South Comstock Joint Venture (Silver City district)	1994: 3 million tons, 0.05 opt Au 1995: 100,000 oz Au			
Talapoosa (Talapoosa district)	1988: 2.5 million tons, 0.041 opt Au, 0.53 opt Ag *oxide* 14.9 million tons, 0.03 opt Au, 0.49 opt Ag *sulfide* 1995: *geologic resource*—45 million tons, 0.025 opt Au and 0.33 opt Ag, including *proven and probable reserves* of 29.9 million tons, 0.026 opt Au and 0.4 opt Ag		Kate Peak Formation	Miocene
MINERAL COUNTY				
Aurora Mine (Aurora district)	1989: 347,000 tons, 0.253 opt Au 1996: 900,000 tons, 0.1 opt Au	1989–90: 25,656 oz Au, 34,562 oz Ag 1991: 15,000 oz Au 1992–93: 23,600 oz Au, 52,200 oz Ag 1995: 15,000 oz Au, 35,000 oz Ag 1996: 10,374 oz Au 1997–98: 15,414 oz Au, 7,287 oz Ag	andesite, rhyolite	10 Ma
Aurora Partnership (Aurora district)	1983: 1.5 million tons, 0.129 opt Au, 0.3 opt Ag 1995: 230,000 tons, 0.208 opt Au (in portion of Humboldt vein system)	1930s: 100,000 oz Au 1983: 10,000 oz Au 1988: 10,302 oz Au 1989: 27,825 oz Au, 26,000 oz Ag 1991–96: 157,796 oz Au, 318,933 oz Ag	andesite, rhyolite	10 Ma
Borealis (Borealis district)	1981: 2.1 million tons, 0.08 opt Au, 0.5 opt Ag 1988: 1.792 million tons, 0.046 oz Au/ton 2000: 33.4 million tons, 0.044 opt Au, 0.22 opt Ag cumulative resource	1981–84: 170,000 oz Au 1986–88: 116,256 oz Au 1989–90: 107,495 oz Au 52,401 oz Ag	rhyolite flow dome, andesite flows, breccias, volcaniclastic rocks	5 Ma

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
MINERAL COUNTY (continued)				
Candelaria Mine (Candelaria district)	1982: 18.5 million tons, 1.09 opt Ag, 0.009 opt Au 1988: 24 million tons, 1.267 opt Ag, 0.011 opt Au 1999: 27.3 million tons, 3.4 opt Ag unmined resource; additional 8 million oz Ag in low-grade stockpile 2000: 48,000 oz Au and 45.4 million oz Ag indicated reserves	1982: 1.7 million oz Ag, 9,000 oz Au 1987: total production was 10 million oz Ag as of June 1987 1988–98: 30.67 million oz Ag, 95,218 oz Au 1999: 96,896 oz Ag, 237 oz Au	Candelaria Formation serpentinite, granitic dikes	Cretaceous
Denton-Rawhide (Rawhide district)	1986: 24.1 million tons 0.045 opt Au, 0.47 opt Ag 1989: *reserves*—29.4 million tons, 0.040 oz Au and 0.368 opt Ag; *geologic resource*—59.3 million tons, 0.0274 opt Au, 0.298 opt Ag 1997: 447,000 oz Au, 3.9 million oz Ag	1990–98: 916,800 oz Au, 7,438,000 oz Ag 1999: 115,900 oz Au, 665,000 oz Ag 2000: 104,349 oz Au, 817,787 oz Ag 2001: 100,747 oz Au, 727,095 oz Ag	rhyolite plugs, flows, tuffs, breccias	16 Ma
Mina Gold (Bell district)	1997: 1.77 million tons, 0.055 opt Au geologic resource	1997: exploration	Tertiary feldspar porphyry	
Mindora (Garfield district)	1988: 1.0 million tons, 0.037 opt Au and 1.78 opt Ag	1988: exploration		
Santa Fe (Santa Fe district)	1984: 8 million tons, 0.032 opt Au, 0.26 opt Ag 1990: 6.8 million tons, 0.035 opt Au and 0.241 opt Ag	1989–95: 345,499 oz Au, 710,629 oz Ag	Luning Formation	Miocene
NYE COUNTY				
Baxter Springs (Manhattan district)	1988: 1 million tons, 0.050 opt Au 1990: *geologic resource*—5 million tons 0.050 opt Au			
Bruner property, Duluth zone (Bruner district)	1992: *geologic resource*—15 million tons, 0.026 opt Au	1993: exploration	Tertiary volcanic rocks	Miocene
Bullfrog (Bullfrog district)	1989: 18.6 million tons, 0.097 opt Au 1996: 10.2 million tons, 0.062 opt Au proven and probable reserves; 3.7 million tons, 0.040 opt Au mineralized material	1989–98: 2,237,484 oz Au, 2,935,484 oz Ag 1999: 76,159 oz Au, 90,967 oz Ag	rhyolitic ash-flow tuff	9.5 Ma
Daisy (Bare Mountain district)	1993: 4.7 million tons, 0.024 opt Au *geologic resource*—430,000 oz Au 1998: 4.2 million tons, 0.033 opt Au proven and probable reserves	1997–98: 64,504 oz Au 1999: 30,660 oz Au 2000: 8,740 oz Au 2001: 347 oz Au	Cambrian Bonanza King, Nopah, and Carrara Formations	11–13 Ma(?)
Gold Bar (Bullfrog district)	1987: 1.23 million tons Au ore 1993: idle		silicic volcanic rocks	Miocene
Golden Arrow (Golden Arrow district)	1997: 12.4 million tons, 0.039 opt Au resource		Tertiary rhyolite tuff	
Gold Hill property (Round Mt. district)	1998: 306,620 oz Au, 4,871,890 oz Ag potential resource		rhyolite ash-flow tuff	26 Ma(?)
Longstreet property (Longstreet district)	1989: 4 million tons, 0.024 opt Au, *geologic resource*—9.6 million tons, 0.024 opt Au		rhyolitic volcanic rocks	Oligocene
Manhattan property (Manhattan district)	1989: *geologic resource*—100,000 tons, 0.50 opt Au 1997: 1.7 million tons, 0.13 opt Au proven and probable		Cambrian Gold Hill Formation	
Midway (Rye Patch district)	1997: 270,000 oz Au preliminary resource		Ordovician Palmetto Formation	
Montgomery Shoshone (Bullfrog district)	1988: 3.1 million tons, 0.072 opt Au, 0.240 opt Ag		rhyolitic ash-flow tuff	9.5 Ma
Nevada Mercury (Bare Mountain district)	1994: *geologic resource*—50,000 oz Au			

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
NYE COUNTY (continued)				
Northumberland (Northumberland district)	1988: 12 million tons, 0.06 opt Au	1939–42: 327,000 oz Au 1981–84: 950,000 tons/year 1988: 29,667 oz Au, 130,394 oz Ag	Roberts Mountains and Hanson Creek Formations, granodiorite, tonalite, quartz porphyry dikes	
Paradise Peak/ Ketchup Flats pit (Fairplay district)	1984: 10 million tons, 0.1 opt Au, 3 opt Ag 1989: 5.22 million tons, 0.09 opt Au, 3.62 opt Ag, mill ore; 11.52 million tons, 0.036 opt Au, 0.445 opt Ag, leachable 1996: 5 million tons, 0.022 opt Au, 0.2 opt Ag (Ketchup Flats)	1986–88: 560,000 oz Au, 8.5 million oz Ag 1989–94: 1,054,084 oz Au, 15.6 million oz Ag	rhyolite and andesite flows, ash-flow and air-fall tuffs	Miocene
Reward property (Bare Mountain district)	1998: 77,500 oz Au		Cambrian Wood Canyon Formation	
Round Mountain (Smoky Valley) (Round Mountain district)	1977: 12 million tons, 0.061 opt Au, 0.07 opt Ag 1989: *geologic resource*—271 million tons, 0.032 opt Au 1999: 320 million tons, 0.018 opt Au proven and probable reserves; 126 million tons, 0.016 opt Au mineralized material 2000: 273.2 million tons, 0.019 opt Au proven and probable reserves; 18.7 million tons, 0.022 opt Au mineralized material	1977–84: 313,480 oz Au, 160,419 oz Ag 1987–88: 424,300 oz Au 1989: 386,227 oz Au, 211,297 oz Ag 1990: 483,192 oz Au, 236,600 oz Ag (includes Manhattan) 1991–98: 3,248,946 oz Au, 2,607,892 oz Ag 1999: 541,808 oz Au, 464,415 oz Ag 2000: 640,133 oz Au, 424,530 oz Ag 2001: 746,949 oz Au, 509,121 oz Ag	rhyolite ash-flow tuff	26 Ma
Sterling (Bare Mountain district)	1983: 200,000 tons, 0.20 opt Au 1989: 469,000 tons, 0.21 opt Au 1996: 129,000 tons, 0.245 opt Au	1983–88: 75,900 oz Au 1990–91: 24,841 oz Au 1995–98: 36,811 oz Au 1999: 3,093 oz Au	Wood Canyon and Bonanza King Formations	14 Ma
South Monitor (west of Ellendale district)	1996: 250,000 oz Au 1997: 14 million tons, 0.026 opt Au, 0.12 opt Ag		Tertiary volcanic rock	
Sullivan (Fairplay district)	1987: 10.2 million tons, 0.039 opt Au, 0.086 opt Ag and 0.37% Cu 1995: *proven and possible*—17 million tons of 0.34% Cu, 0.0255 opt Au, + 8.5 million tons of 0.32% Cu		Mesozoic granodiorite and metavolcanic rocks	Mesozoic
PERSHING COUNTY				
Bunce (Velvet district)	1989: *geologic reserve* - 600,000 tons, 0.04 opt Au 1990: 500,000 tons, 0.04 opt Au		rhyolite	
Colado Gold (Willard district)	1997: 15 million tons, 0.022 opt Au resource		Triassic-Jurassic metasedimentary rocks	
Florida Canyon (Imlay district)	1987: 22 million tons, 0.023 opt Au 1988: 37 million tons, 0.023 opt Au 1997: *reserves*— 45.5 million tons, 0.024 opt Au proven and probable mineralized material, 122.8 million tons, 0.022 opt Au	1987–88: 109,300 oz Au 1989–98: 1,146,148 oz Au, 610,326 oz Ag 1999: 139,590 oz Au, 111,232 oz Ag 2000: 173,623 oz Au, 129,361 oz Ag 2001: 121,206 oz Au, 98,645 oz Ag	Grass Valley Formation	Late Tertiary?
Goldbanks Project (Goldbanks district)	1994: 900,000 oz Au 1996: 80.8 million tons, 0.019 opt Au proven and probable reserves; 7.4 million tons, 0.014 opt Au possible reserves; 106.8 million tons, 0.028 opt Au drill indicated resources 2000: 569,000 oz Au and 1.7 million oz Ag indicated reserves			
Relief Canyon (Antelope Springs district)	1983: 9 million tons, 0.032 opt Au 1988: ~ 1.3 million tons, 0.03 opt Au 1996: 8.6 million tons, 0.022 opt Au	1984: 24,500 oz Au 1987–88: 82,000 oz Au 1989–90: 34,266 oz Au, 39,235 oz Ag	Natchez Pass Limestone, Grass Valley Formation	Cretaceous?

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
PERSHING COUNTY (continued)				
Rochester (Rochester district)	1981: 75 million tons, 1.5 opt Ag 1989: *geologic resource*—94.5 million tons, 0.012 opt Au, 1.40 opt Ag 1997: 74.2 million oz Ag, 603,000 oz Au 2000: 50 million oz Ag, 410,000 oz Au (includes Nevada Packard) 2001: 51.4 million tons, 0.85 opt Ag, 0.007 opt Au proven and probable reserves; 61.8 million tons, 0.75 opt Ag, 0.005 opt Au mineralized material	1986–98: 810,329 oz Au, 59.3 million oz Ag 1999: 70,396 oz Au, 6.2 million oz Ag 2000: 75,886 Au, 6,678,274 oz Ag 2001: 81,200 oz Au, 6,478,916 oz Ag	Koipato Group, Weaver Rhyolite	Late Cretaceous
Rosebud Project (Rosebud district)	1992: 570,000 oz Au (0.362 opt), 5.5 million oz Ag (5.5 opt) 1999: 216,000 tons, 0.323 opt Au	1997–98: 225,651 oz Au, 815,123 oz Ag 1999: 112,652 oz Au, 247,900 oz Ag 2000: 47,944 oz Au, 191,919 oz Ag	Tertiary volcanic rocks	Miocene
Tag-Wildcat (Farrel district)	1989: *geologic resource*—1.5 million tons, 0.043 opt Au; *reserves*—416,000 tons, 0.076 opt Au		Tertiary volcanic rocks	Miocene
Trinity (Trinity district)	1987: 1 million tons, 5.25 opt Ag	1988: active, production not reported 1989: 718,714 oz Ag, 70 oz Au	rhyolite plugs	Miocene
STOREY COUNTY				
Comstock heap leach project (Comstock district)	1992: 475,000 tons, 0.072 opt Au, 0.60 opt Ag 1996: 100,000 oz Au, 1.2 million oz Ag			
Flowery (Golden Eagle) (Comstock district)	1989: 1 million tons, 0.037 opt Au 1993: 362,000 tons, 0.064 opt Au, 0.97 opt Ag, *geologic resource*—88,128 oz Au and 1 million oz Ag	1988: 836 oz Au, 9,473 oz Ag 1990: 6,000 oz Au, 70,000 oz Ag 1992–97: 16,949 oz Au, 195,701 oz Ag	Alta Formation	12 Ma
Oliver Hills (Comstock district)	1990: 3.37 million tons, 0.054 opt Au, 1.2 opt Ag 1993: 4 million tons, 0.05 opt Au, 0.5 opt Ag, *geologic resource*—225,000 oz Au and 2.25 million oz Ag	1991: 573 oz Au, 6,947 oz Ag		
WASHOE COUNTY				
Mountain View Gold Project (Deephole district)	1995: 19.5 million tons, 0.027 opt Au 1998: 10.7 million tons, 0.055 opt Au		rhyolite	Miocene
Olinghouse (Olinghouse district)	1994: *geologic resource*—500,000 opt Au, 0.057 opt Au 1997: 512,800 oz Au proven and probable reserves, 0.042 opt Au	1998: 2,912 oz Au, 1,879 oz Ag 1999: 28,655 oz Au, 17,598 oz Ag	Miocene andesite	Miocene
Hog Ranch (Leadville district)	1984: 2.5 million tons, 0.085 opt Au 1988: 5.5 million tons, 0.064 opt Au proven and probable reserves; 20.1 million tons, 0.029 opt Au geologic resource	1986–87: 80,000 oz Au 1988–95: 118,045 oz Au, 25,400 oz Ag	rhyolite, explosion breccia sinter	15–16 Ma

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
WHITE PINE COUNTY				
Alligator Ridge (Bald Mountain district)	1983: 5 million tons, 0.09 opt Au 1989: 1 million tons, 0.064 opt Au 1992: 11.5 million tons, 0.046 opt Au; *geologic resource*—661,888 oz Au, includes Casino/Winrock	1981–90: 632,057 oz Au, 84,188 oz Ag 1991–92: 27,450 oz Au 1993: included with Bald Mountain 1994: 40,000 oz Au 1995: idle 1996: included with Bald Mountain	Pilot Shale	Mesozoic or early Tertiary
Bald Mountain (Top) (Bald Mountain district)	1989: 6.7 million tons, 0.069 opt Au 1999: 32.6 million tons, 0.041 opt Au, proven and probable reserves; 31.7 million tons, 0.044 opt Au, mineralized material 2000: 509,000 oz Au proven and probable; 2.03 million oz Au measured and indicated resources	1986: 50,000 oz Au 1988–89: 103,731 oz Au 1990–93: 287,110 oz Au, 76,745 oz Ag 1994: 80,000 oz Au 1995–96: 221,908 oz Au, 62,460 oz Ag 1997–98: 243,500 oz Au, 63,416 oz Ag 1999: 105,475 oz Au, 18,058 oz Ag 2000: 134,469 oz Au, 14,400 oz Ag 2001: 108,392 oz Au, 18,321 oz Ag	quartz porphyry, Cambrian shale and limestone	Jurassic?
Bellview (White Pine district)	1988: 277,000 tons, 0.04 opt Au, *geologic resource*—1 million tons, 0.036 opt Au			
Casino/Winrock (Bald Mountain district)	1989: **Casino** - 804,000 tons, 0.054 opt Au; **Winrock** 1.3 millon tons, 0.037 opt Au 1990: **Winrock** - 993,000 tons, 39,000 oz Au 1992: *see* Alligator Ridge	1990–92: 46,800 oz Au	late Paleozoic sedimentary rocks	Eocene
Easy Junior (Nighthawk Ridge) (White Pine district)	1989: 5.68 million tons, 0.031 opt Au 1991: 137,000 oz Au	1990: 11,500 oz Au, 900 oz Ag 1997: 510 oz Au, 76 oz Ag	Devonian and Mississippian rocks	Eocene
Golden Butte (Cherry Creek district)	1989: 4.23 million tons, 0.031 opt Au	1989–91: 43,519 oz Au, 16,911 oz Ag	Chainman Shale	Cretaceous or Eocene
Griffon Gold property (White Pine district)	1993: *geologic resource*—60,000 oz Au 1994: *geologic resource*—50,454 oz Au, 0.039 opt Au 1995: *proven and probable reserves*—2,737,000 tons, 0.025 opt Au 1997: 100,000 oz Au	1998: 37,921 oz Au, 269 oz Ag 1999: 24,740 oz Au	upper Joana Limestone	
Horseshoe (Bald Mountain district)	1991: 1.5 million tons, 0.039 opt Au		Pilot Shale and intrusive quartz porphyry	36–38 Ma
Illipah (Illipah district)	1987: 57,000 oz Au	1987: ~25,000 oz Au/year 1988: 25,324 oz Au, mining ended 1989: 3,874 oz Au, heap-leached	Paleozoic sedimentary rocks	Eocene?
Little Bald Mtn. (Bald Mountain district)	1986: 1 million tons, 0.10 opt Au 1989: 200,000 tons, 0.13 opt Au; *geologic resource*—260,000 tons, 0.127 opt Au 1993: 140,000 tons, 0.13 opt Au, *geologic resource*—21,800 oz Au	1985–88: 21,700 oz Au 1989: 5,500 oz Au, 1,500 oz Ag	Antelope Valley Formation	35–38 Ma
Mt. Hamilton (White Pine district)	1988: 7.7 million tons, 0.05 opt Au, 0.5 opt Ag 1994: *reserve*—9.04 million tons, 0.052 opt Au, 0.38 opt Ag 1996: 10.8 million tons, 0.038 opt Au, 0.24 opt Ag 1997: 7.72 million tons, 0.035 opt Au	1995–97: 99,500 oz Au, 207,500 oz Ag	Dunderberg Shale	Cretaceous
Pan (White Pine district)	1989: 241,000 oz Au 1998: 10.86 million tons, 0.022 opt Au drill indicated and inferred		Mississippian rocks	

continued

MAJOR PRECIOUS-METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
WHITE PINE COUNTY (continued)				
Robinson (Robinson district)	1989: 46.0 million tons, 0.019 opt Au; *geologic resource*—1 million oz Au 1991: *geologic resource*—200 million tons 0.012 opt Au 1999: 194 million tons, 0.59% Cu, 0.007opt Au, proven and probable reserves	1986: 48,000 oz Au, 96,000 oz Ag 1987–88: 88,957 oz Au 1989–90: 153,828 oz Au, 121,340 oz Ag 1991: 21,674 oz Au 1992: 35,581 oz Au, 55,000 oz Ag 1993: 13,432 oz Au 1996–98: 196,000 oz Au, 783,500 oz Ag, 370 million pounds Cu 1999: 26,250 oz Au, 153,104 oz Ag, 62 million pounds Cu	Rib Hill Sandstone Riepe Spring Limestone intrusions	Cretaceous
Taylor (Taylor district)	1980: 10 million tons, 3 opt Ag	1980: 1,200 tons/day	Guilmette and Joana Limestones, rhyolite dikes	Eocene or Oligocene
White Pine (White Pine district)	1989: 63,000 oz Au, 0.04 opt Au	1989: 20,654 oz Au	Pilot Shale	Oligocene?
Yankee (Bald Mountain district)	1992: 683,000 oz Au	1990: ~15,000 oz Au 1992: 10,800 oz Au 1993: *see* Bald Mountain	Pilot Shale	36–38 Ma?

Newmont Gold Production in Carlin Trend

Production data for individual mines owned by Newmont Gold Co. in the Carlin trend are not available in many cases. Total production of Newmont operations in the Carlin trend is as follows:

Year	Gold (oz)	Silver (oz)
1988	895,500	NA
1989	1,467,800	117,400
1990	1,676,000	NA
1991	1,575,700	NA
1992	1,588,000	98,000
1993	1,666,400	175,000
1994	1,554,000	158,000
1995	1,634,500	188,000
1996	1,700,000	322,000
1997	1,819,000	118,000
1998	1,575,391	150,400
1999	1,365,866	255,011
2000	1,708,665	108,111
2001	1,410,984	261,261

NA= not available

Industrial Minerals

by Stephen B. Castor and David A. Davis

The total value of industrial minerals produced in Nevada in 2001, an estimated $424 million, was about 7% above the 2000 value. In order of estimated value, the most important Nevada industrial minerals in 2001 were construction aggregate, lime, diatomite, cement, gypsum, barite, lithium, clay, magnesia, and silica, each valued at more than $10 million. Commodities with values of less than $10 million were dolomite, limestone, perlite, dimension stone, salt, and gemstones. Borate and zeolite minerals were processed in Nevada but mined in California, and were not included in the estimate of total industrial mineral value. Data used for these estimates, and data reported for individual commodities below, were obtained from the Nevada Division of Minerals, the U.S. Bureau of Land Management, or directly from companies that produced the industrial minerals.

AGGREGATE (SAND, GRAVEL, AND CRUSHED STONE) According to the U.S. Geological Survey, in 2001 the United States produced about 1.23 billion tons of construction sand and gravel, about the same as in 2000, and about 1.79 billion tons of crushed stone, up about 4% from 2000. The average price for construction sand and gravel was about $4.45 per ton, up about 1.9% from 2000, and the average price of crushed stone as about $5.02 per ton, up about 2.6% from 2000. Some of the crushed stone reported by the U.S. Geological Survey is used in the manufacture of commodities such as cement and lime; this is not included in our aggregate figures because the processed commodities are.

For the year 2001, Nevada's statewide construction aggregate production is estimated at 35 million tons, 25% higher than in 2000. This large increase is due to addition of substantial production in the Las Vegas area that has not been part of earlier estimates as noted below. In 2001, construction aggregate production in Nevada had an approximate value of $158 million, well below of that of gold but higher than that of any other of the state's mined commodities. Aggregate production from sand and gravel deposits accounted for about 80% of aggregate production statewide, with crushed stone and lightweight aggregate making up the balance.

Construction aggregate produced in the Las Vegas area, estimated at 26 million tons, was up about 35% from 2000. This includes an estimated 8 million tons, largely of base aggregate produced by portable crushers in Las Vegas in 2001, that were not part of the data compiled in earlier years. Continued growth in the Las Vegas area will likely maintain demand and production, and the planned new Ivanpah Valley airport and attendant urbanization south of Las Vegas constitute major future markets.

Companies in the Las Vegas area that produced more than a million tons of aggregate in 2001 were Las Vegas Paving Corp., Rinker Materials, Nevada Ready Mix Corp., and Frehner Construction. Other important producers were Wells Cargo Inc., CTC Crushing LLC, Hollywood Gravel Co., and Diamond Construction.

Las Vegas Paving produced sand and gravel from the Las Vegas landfill, its Lone Mountain pit, and portable crushing operations. Rinker Materials (formerly known as CSR and still a subsidiary of the CSR Group) produced sand and gravel from the Buffalo Road and Blue Diamond pits, and from granite mined at the El Dorado pit near Railroad Pass, all formerly owned by Hanson Aggregates West. In December, 2001, Las Vegas Paving purchased the Blue Diamond pit from Rinker. Nevada Ready Mix mined all of its aggregate from an open pit in an alluvial fan in the Lone Mountain area. Frehner Construction mined and crushed limestone from the Sloan property originally acquired from Chemical Lime. Community pits and other aggregate mining facilities administered by the U.S. Bureau of Land Management and operated by several companies provided about 2.5 million tons to the Las Vegas area total in 2001.

Sand and gravel operations accounted for about 89% of the aggregate used in the Las Vegas metropolitan area in 2001, with crushed stone and lightweight aggregate making up the balance. The most important source of sand and gravel aggregate for Las Vegas is the Lone Mountain area northwest of Las Vegas, which accounted for about 5 million tons in 2001. Significant production comes from sand and gravel pits in the long productive Buffalo Road area in the southwest part of Las Vegas, and the Las Vegas landfill in Apex northeast of Las Vegas has recently become an important site. Since about 1994, portable crushers operating at construction sites have become increasingly important producers of base aggregate; recent estimates by industry personnel put portable crusher production at as much as 30% of the total aggregate production for Las Vegas. The most important crushed stone producers in the Las Vegas area were Rinker Materials near Railroad Pass and Frehner Construction Co. at Sloan. The Southern Nevada Lightweight operation near Jean mainly produced aggregate for lightweight cement block and sand for use in stucco. Lightweight aggregate was also shipped from Nye County into the Las Vegas market by Cind-R-Lite Block Co. from a cinder cone near Amargosa Valley that has been mined since 1946. In 2001, D & H Mining filed a notice of intent to produce rhyolitic lightweight near Beatty. The company plans to mine "spicerite," a strong, bright white hydrothermally altered tuff that will be marketed in southern Nevada and southern California for use in block.

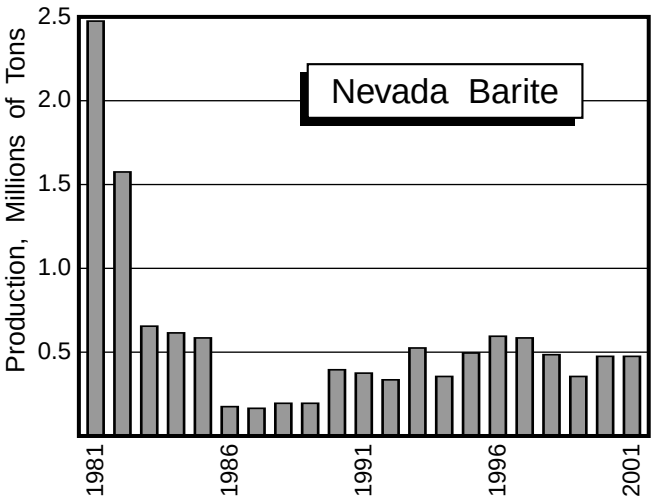
Production of construction aggregate in the Reno-Sparks-Carson City area, at about 6 million tons, was about the same as in 2000. Two companies in the area produced more than a million tons of aggregate in 2001: Martin Marietta Materials Inc., and Granite Construction Co. In 2001, Martin Marietta Materials, which is headquartered in North Carolina, acquired Rocky Ridge Inc. and Sha-Neva Inc., related companies that operated a major crushed stone operation and smaller sand and gravel pits north of Reno. Granite Construction continued to produce aggregate from four pits in the area. All-Lite Aggregate, Rilite Aggregate Co., Paiute Pit Aggregates, Frehner Construction, and A & K Earthmovers, Inc., were also important producers. All-Lite Aggregate and Paiute Pit Aggregates are now part of RMC Industries, a U.S. holding company that is wholly owned by U.K.-based RMC Group PLC. Crushed rock, which accounted for about 60% of the aggregate used in 2001 in the Reno-Sparks-Carson City area, included material from Martin Marietta Materials, Granite Construction, and Frehner operations and lightweight rhyolite aggregate from All-Lite, Rilite, and Naturalite Aggregate Corp.

Aggregate was also produced outside of the major metropolitan areas in 2001. Operators in Nye County together produced an estimated 500,000 tons of aggregate in 2001. Over 90% of this material was produced and used in the Pahrump area. Churchill, Elko, Lander, Lyon, and White Pine Counties each produced more than 200,000 tons of aggregate. However, some of this material was sold into the major metropolitan areas, particularly sand and gravel from Lyon County. Douglas, Eureka, Lincoln, Mineral, and Pershing Counties are estimated to have produced less than 150,000 tons of aggregate each in 2001.

BARITE Nevada produced about 478,000 tons of barite in 2001, down slightly from 2000. According to the U.S. Geological Survey, the country imported 2.98 million tons of barite in 2001, almost 90% of it from China, up 29% from 2000. About 95% of the barite sold in the U.S. is used as a weighting agent in oil and gas well drilling fluids. Rises in oil and natural gas prices resulted in an increase in the number of domestic operating drilling rigs from 360 in 1999 to 1,270 in mid 2001, mostly for gas exploration. Although this has stimulated the demand for barite, prices remained about steady from 2000 to 2001 at about $23 per ton at the mine.

M.I. Drilling Fluids, which is jointly owned by Smith International and Schlumberger, was again the largest Nevada barite producer in 2001, with combined production of about 270,000 tons of screened and crushed high-grade ore from the Greystone Mine and ground and bagged barite from its Battle Mountain plant, both in Lander County.

Baroid Drilling Fluids, a subsidiary of Halliburton Co., mined barite from the Rossi Mine about 40 miles northwest of Elko in Elko County and processed it at the Dunphy Mill in Eureka County. Baker Hughes INTEQ produced barite from its Argenta property near Battle Mountain in Lander County. Standard Industrial Minerals shipped a small amount of barite stockpiled from a deposit of white, paint-grade barite at the P and S Mine in Nye County to a processing plant in Bishop, California.



BORATE In 2001, American Borate Co. mined the borate minerals colemanite, ulexite, and probertite from the Billie underground operation in Death Valley, California. The ore is processed in Nevada at the Lathrop Wells mill in Nye County which has a 22,000-ton annual capacity (B_2O_3 basis), but because the ore is from out of state this production is not included in the estimate of total value of Nevada minerals.

CEMENT Based on U.S. Geological Survey data, the U.S. produced about 99.7 million tons of cement in 2001, up about 1% from 2000. The average mill price was about $69 per ton, up slightly from 2000.

The Nevada Cement Co., a subsidiary of Centex Construction Products, Inc., produces portland cement at a plant at Fernley in Lyon County, where annual production exceeds 500,000 tons of cement. Limestone is mined from Cenozoic lacustrine deposits south of Fernley, and other ingredients come mostly from northern Nevada. In 1999, Royal Cement Co. restarted an idle plant near Logandale in Clark County. Limestone is mined at a site near the plant, and other raw materials are purchased from regional suppliers. According to the operator, production from this plant in 2000 was about 120,000 tons, but no data are available for 2001.

CLAY Nevada clay production was about 6% lower in 2001 than in 2000. According to the U.S. Geological Survey, overall clay production in the U.S. remained about the same in 2001 as in 2000 at about 44.7 million short tons. Nevada is reportedly fifth in production of non-swelling bentonite and seventh in the production of swelling bentonite in the U.S. Nevada is the only domestic producer of sepiolite, which is included in production estimates for fuller's earth by the U.S. Geological Survey.

IMV Nevada, owned by Mud Camp Mining Co., LLC, produced about 32,000 tons of sepiolite, saponite, and bentonite from deposits in lacustrine sediments in the Ash Meadows area of Nye County. The company has a processing plant in Amargosa Valley, and exports a variety of clay products worldwide. It is the only producer of sepiolite and saponite in the United States.

Moltan Co. mined no clay from its clay deposit near Empire in northern Washoe County in 2001. Moltan uses clay with diatomite in clumping cat litter that is produced at their plant near Fernley; in 2001 stockpiled clay was utilized. In 2001, the Art Wilson Co. sold about 150 tons of montmorillonite from the Jupiter Mine in Lyon County and mined about 35,000 tons of halloysite from a deposit near Flannigan in Washoe County. The halloysite is not included as clay in the NBMG mineral production figures because it is used in portland cement manufactured by Nevada Cement.

Two companies campaign mine and ship relatively minor amounts of Nevada clay from several sites for use in high-cost specialty products. At its White Caps Mill near Beatty in Nye County, Vanderbilt Minerals Co. processes small amounts of clay stockpiled from several Nevada, Arizona, and California deposits. The clay, which is used in pharmaceutical and cosmetic products, is shipped to a plant in Kentucky. It includes white bentonite from the New Discovery Mine near Beatty and clay from other Nevada sites such as the Blanco Mine in Esmeralda County and the Buff Mine in Pershing County.

In 2001 the American Colloid Co. mined some white bentonite from Coal Canyon in Pershing County; however, the company's Disaster Peak hectorite mine in Humboldt County was idle. Both clays are stockpiled and shipped from Lovelock to the company's plant in South Dakota, where they are blended into specialty clay products.

In 2001, Oil-Dri, the world's largest manufacturer of cat litter, proceeded with the development of a montmorillonite deposit with 300 million tons of proven reserves in Hungry Valley north of Reno. In 2000, the U.S. Bureau of Land Management ruled that the clay is a locatable mineral, and the final environmental impact statement (EIS) was issued in September 2001. The clay, considered to be excellent for making clumping cat litter, is mainly calcium montmorillonite. According to the EIS, the deposit consists of clay-rich lacustrine strata as much as 98 feet thick, is areally extensive, and is near the surface. The company, which will employ about 100 people at the Hungry Valley mine and plant, plans to mine about 270,000 tons of raw clay material annually and to process it into 135,000 tons of industrial and consumer absorbents and 67,500 tons of fine-grained material to be used as a flow enhancer for agricultural grain handling operations. The project will consist of two small open pits on BLM land, and a processing plant on company-owned land. At the end of 2001, despite local opposition, the company was in the process of getting federal, state, and local approvals to operate with start-up production predicted for late 2002. Early in 2002, however, Washoe County denied permits, and the company is reconsidering its plans.

DIATOMITE Diatomite production in Nevada decreased slightly from 2000 to 2001, but still accounted for about 33% of domestic production. Nationally, Nevada ranked only behind California in diatomite production. About two-thirds of the diatomite produced is used in filtration with the remainder largely used in absorbents, fillers, and cement. Emerging small scale uses include pharmaceutical processing and nontoxic insecticides. According to the U.S. Geological Survey, the average price was slightly higher (at $246 per short ton f.o.b. plant) in 2001 than in 2000.

Eagle-Picher Minerals, Inc., a division of Eagle-Picher Industries, Inc., a wholly owned subsidiary of Granaria Holdings Ltd. of The Netherlands, is the second largest diatomite producer in the U.S. It produces most of Nevada's diatomite at three different operations that have an estimated combined production of about 200,000 tons. The most productive is the Colado operation in Pershing County, which consists of a plant at Lovelock that makes diatomaceous earth filtration products from diatomite mined about 15 miles northwest of Lovelock. The company also produces diatomite that is mainly used in fillers and absorbents at its Clark plant and mine in Storey County about 20 miles east of Reno, and diatomite used in insulation from a pit near Hazen in Lyon County.

Moltan Co. of Tennessee is the second largest diatomite producer in Nevada, producing absorbent products, cat litter, and soil conditioner at a mine and plant complex in Churchill County about 20 miles northeast of Fernley. Moltan, a family-owned Tennessee company, ships diatomaceous earth absorbents under several labels. The company produces two cat litter types in Nevada, a non-clumping diatomite product and a clumping product composed of diatomite and clay.

Other companies that mined diatomite in Nevada in 2001 were the Celite Corp. at Hazen in Lyon County and Grefco Inc. at Basalt near the Esmeralda/Mineral County line. Celite, a subsidiary of World Minerals Inc., part of the Alleghany Group, has a large diatomite facility in California, and recently acquired the CR Minerals mine at Hazen and plant in Fernley which produces functional filler.

DIMENSION STONE Based on U.S. Geological Survey figures, domestic dimension stone production in 2001 was about 1.43 million tons valued at $235 million (as compared to $1.03 billion for imported stone). Increased residential use of dimension stone in addition to improved quarrying, finishing, and handling technology, greater stone variety, and rising costs of alternative construction materials suggest that demand will increase in the future.

Las Vegas Rock produces flagstone, ashlar, boulders, and crushed landscape rock from its Rainbow Quarries near Goodsprings, about 20 miles southwest of Las Vegas. The stone is quartz-cemented sandstone that is part of the Jurassic Aztec Sandstone, which crops out extensively in Clark County, but is too friable at most localities for building stone. The company also markets

some cut stone and is planning to produce polished slabs and custom stone shapes.

Mt. Moriah Stone quarries flaggy, light-gray quartzite from the Cambrian Prospect Mountain Quartzite at a quarry about 15 miles north of Baker in White Pine County. This material, which naturally splits into slabs up to 5 feet by 8 feet by 4 inches thick, is used for flagstone and other types of uncut building stone. The company typically operates from April to December each year.

Building Stone Associates quarried purplish to greenish gray and locally blue mottled slate from the Precambrian McCoy Creek Group rocks in Egan Canyon west of Cherry Creek in White Pine County. In 2001, the operation was small, covering only a couple of acres, and mining consisted of ripping the highly fissile slate, sorting by size, and placing on pallets for shipping.

In 2001, the Nevada Bureau of Mines and Geology in conjunction with Geomapping Associates Ltd. of Vermont and Converse Consultants of Reno, issued Open-File Report 01-6, "Dimension Stone Study, Great Basin Development Association Area, Humboldt, Lander, Eureka, and White Pine Counties." This report describes dimension stone potential for various deposits in those counties.

GEMSTONES Small amounts of precious opal were recovered from deposits in Virgin Valley, Humboldt County, where much of the opal is mined by amateurs from pay-to-dig operations and is unreported. Minor amounts of chalcedony were mined from a locality in the Double H Mountains, also in Humboldt County. Small amounts of turquoise were produced near Cortez in Lander County and Tonopah in Nye County. Crystalline amethyst and citrine are recovered from Peterson Mountain near Hallelujah Junction in Washoe County, mostly as unreported stones from pay-to-dig activity. In addition, thulite has been produced from Douglas County under the trade name "Lapis Nevada."

GYPSUM Gypsum production in Nevada increased from about 1.9 million tons in 2000 to 2.2 million tons in 2001 and accounted for about 11% of the national production. Nationally, Nevada ranked third behind Oklahoma and Iowa in gypsum production. According to the Gypsum Association, a domestic gypsum production increase in 2001 was largely due to a 13% rebound in wallboard sales, which had declined 9% between 1999 and 2000. On the basis of U.S. Geological Survey data, the average price of gypsum changed little between 2000 and 2001.

PABCO Gypsum in Clark County northeast of Las Vegas mined and processed nearly a million tons of gypsum ore in 2001. Although processing yields only about 70% by weight gypsum from the ore, the company still ranks as the largest producer in Nevada. PABCO processes most of the gypsum into wallboard in a plant adjacent to the mine, but also makes plaster.

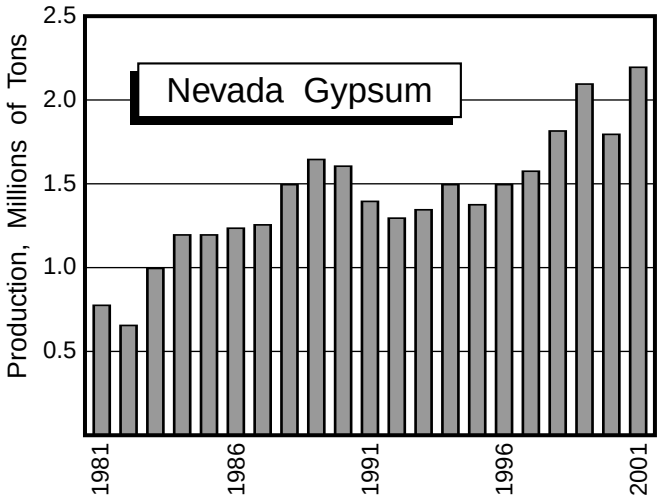
The Blue Diamond operation of James Hardie Gypsum, southwest of Las Vegas in Clark County, was the second largest producer at about 576,000 tons. The Blue Diamond area has been the site of gypsum mining since 1925, but is now in the path of residential growth around Las Vegas. In 2001, James Hardie Gypsum agreed to sell 2,200 acres of mined-out land near Blue Diamond for $50 million to W.L. Homes, a unit of the London-based home builder John Laing PLC, which plans to build up-scale housing there. At the end of 2001, James Hardie Gypsum was also negotiating the sale of its U.S. wallboard business, which includes the Blue Diamond operation, to Britain's BPB PLC.

U.S. Gypsum, the nation's largest wallboard producer, was the third largest Nevada producer at about 447,000 tons. The company mines gypsum in far western Pershing County and processes it into wallboard and plaster in Washoe County at Empire about 6 miles south of Gerlach. In 2001, the company was forced into Chapter 11 bankruptcy by asbestos litigation (at least eight other U.S. companies have recently filed for the same reason). However, the company's day-to-day operations were largely unaffected by the filing.

The Art Wilson Co. of Carson City shipped about 116,000 tons of gypsum and anhydrite in 2001 from the Adams Mine in Lyon County for use in cement and agricultural markets. The company's sales of agricultural gypsum fell off strongly in the fourth quarter of 2000 due to abnormally dry weather in California which continued into 2001.

The D.L. Denman Construction Co. mined and sold gypsum from the Pioneer Gypsum Mine about 10 miles east of Las Vegas for use in agriculture and cement manufacture.

Georgia-Pacific Corp., which operates a wallboard plant about 20 miles northeast of Las Vegas at Apex, stopped mining gypsum in Nevada in 1995 and now buys gypsum from a mine in St. George, Utah. In 2001, due to low wallboard prices, Georgia-Pacific shut down a number of plants and cut back production at its remaining plants.



LIME, LIMESTONE, AND DOLOMITE In 2001 U.S. production of lime fell about 5% from 2000 and lime production in Nevada fell about 9% from year 2000 levels. The national drop in production largely resulted from a 10% drop in steel production and an increase in natural gas prices. Despite the downturn, the domestic price of quicklime increased in 2001 compared with 2000 on the basis of U.S. Geological Survey data.

In Nevada, the Pilot Peak high-calcium lime operation of Graymont Western US, Inc. (formerly Continental Lime, Inc.,) about 10 miles northwest of Wendover in Elko County shipped the most lime in 2001, mainly to gold-mining operations for use in cyanide-solution pH control. The Pilot Peak plant has three kilns with a combined capacity of more than 700,000 tons of quicklime per year and a hydrated lime plant capable of producing 350 tons per day. In 2000, the Pilot Peak plant was rated the ninth largest producer in the country.

Chemical Lime Co. produces lime at Apex about 20 miles northeast of Las Vegas. The operation produces high-calcium quicklime used in metallurgical processing, paper manufacturing, and environmental markets. The company also produces dolomitic lime and hydrated high calcium lime at Apex, mainly for construction uses. The Chemical Lime dolomite quarry at Sloan ceased operating in 1997, but in 2001, their Henderson plant processed Type S lime for building and home construction. In addition to lime, both Graymont Western U.S. and Chemical Lime ship crushed limestone.

Other carbonate producers in Nevada are Min-Ad, Inc., and Nutritional Additives Corp., producers of agricultural dolomite near Winnemucca. Both companies had slightly lower 2001 production than for 2000.

LITHIUM Chemetall Foote Co., a subsidiary of Chemetall GmbH, produces lithium carbonate, lithium hydroxide monohydrate, and lithium hydroxide anhydrite at Silver Peak in Esmeralda County. This operation, which is the only lithium producer in the United States, produces these chemicals from brine that is pumped from beneath Clayton Valley playa and evaporated in nearby ponds. Production figures are confidential; the latest public information available, from 1998 Securities Exchange data, shows production of about 12 million lbs. of lithium carbonate and 5 million lbs. of lithium hydroxide. U.S. prices have remained steady at about $2.00 per lb. for lithium carbonate and $2.60 per lb. for lithium hydroxide monohydrate since 1997, but since 1998 large shipments of lithium carbonate sell at about half list price due to competitive pricing by South American brine operations. Since 1998, U.S. lithium imports have increased more than 250% and exports have fallen by more than 30%.

MAGNESIA U.S. production of magnesium compounds fell about 3% in 2001 from 2000 and imports fell about 11%, in large part due to a decline in steel production and a resulting decline in the use of magnesia refractories. However, shipments of magnesia from the Premier Chemicals LLC plant at Gabbs in Nye County was slightly higher in 2001 than in 2000, probably because the light-burned magnesia produced at Gabbs is not a refractory commodity. In 1999, the Gabbs operation, as part of Premier Refractories Inc., was acquired by Cookson Group PLC, an international materials technology company. In March of 2001, Cookson announced the sale of its magnesia chemicals business to Premier Chemicals LLC, which is headquartered in Cleveland, Ohio.

About 60% of U.S. magnesia production comes from seawater and natural brines, and the remainder from magnesite, brucite, and imported olivine. The mine at Gabbs is the only place in the United States where magnesite is mined, and domestic brucite is only mined at Gabbs and one place in Texas. Magnesium minerals have been mined in the Gabbs area since the 1940s when they were used to make magnesium metal. From the 1950s to the 1980s, mining and processing was by Basic Industries, a major producer of refractory magnesia. In the 1990s, the availability of cheap Chinese refractory magnesia imports caused production at Gabbs to be switched to light-burned (caustic) magnesia, which is mainly marketed for wastewater treatment and agricultural uses.

PERLITE Based on U.S. Geological Survey figures, the average price of crude perlite declined from nearly $34 per ton in 2000 to less than $32 in 2001. Although the U.S. is the world's largest producer of perlite, domestic perlite suffered transportation cost disadvantages in some areas of the eastern U.S. compared to Greek perlite, resulting in a domestic production decrease of about 3% in 2001.

Although Nevada has abundant resources, only small amounts of perlite are currently produced from two deposits. Wilkin Mining and Trucking Inc., mines perlite from the Tenacity Perlite Mine about 25 miles west of Caliente in Lincoln County. In the past, most of the perlite was shipped as crude; however, the company has a small popping plant, the Tenacity Perlite Mill, in Caliente, and present sales are almost exclusively of expanded perlite that is mainly used for horticultural purposes.

Eagle-Picher Minerals Inc. produces expanded perlite at its Colado diatomite plant in Pershing County from perlite mined about 15 miles south of Fallon in Churchill County. The perlite is marketed as a filter aid, and plant capacity is reportedly about 8,000 tons per year.

SALT The Huck Salt Co. produced about 15,700 tons of salt in 2001, up 20% from 2000. The salt, mined from a playa in Fourmile Flat about 25 miles southeast of Fallon in Churchill County, is now mainly used for deicing roads. Salt has been harvested from this deposit almost continuously since the 1860s when it was hauled to the mills that processed Comstock silver and gold ore.

SILICA In 2001, the U.S. produced about 31.7 million tons of industrial sand and gravel, which includes silica sand, a slight increase over 2000 production. About 60% of this production is used as glassmaking and foundry sand. The average price in 2000 and 2001 was about $17.70 per ton.

Simplot Silica Products in Clark County shipped 671,000 tons of silica sand in 2001, about the same as in 2000. The sand is mined from an open pit in the relatively friable Cretaceous Baseline Sandstone, washed in the pit, and transported via a slurry pipeline to a plant near Overton where it is screened and bagged.

In 2001 Silica LLC submitted a Plan of Operations to the BLM to mine as much as 80,000 tons of quartzite per year from the Sugar mining claims about 3 miles southeast of Mercury in Nye County. The quartzite is strongly brecciated and fractured and could be mined without blasting. A three-stage screening plant, three storage silos, a bagging silo, and a truck scale are also proposed for this operation, which could employ as many as eight people.

Caithness Operating Co. of Reno, in collaboration with the U.S. Department of Energy, has developed a method for production of 99.9% pure silica from geothermal fluids and has set up a pilot plant in Nevada to evaluate the process. The company is reportedly targeting production of silica products that bring prices in excess of $20/lb. for use in nano-scale materials. Estimated annual production of such material from a 50-megawatt geothermal power plant is about 6,000 tons.

VERMICULITE Vermiculite deposits occur in the Gold Butte area in Clark County about 50 miles east of Las Vegas. The deposits are of interest because they contain high-quality vermiculite and are near potential markets in southern California. According to NBMG Bulletin 65, these deposits formed from ultramafic rocks which are part of a Precambrian complex.

Stansbury Holdings Corp., which mines vermiculite in Montana and exfoliates it in California, explored for vermiculite near the Oglebay Norton Co. Mica Peak deposit in the Gold Butte area in 2000. However, the drilling did not intersect vermiculite and Stansbury is presently concentrating on deposits in Montana. Environmental groups are lobbying for the area that contains the Gold Butte vermiculite deposits to be designated as wilderness.

WOLLASTONITE Wollastonite deposits in the Gilbert district in Esmeralda County were considered for development in the mid 1990s by the American Wollastonite Mining Corp. of Vancouver, Canada. In 2000, Previa Resources Ltd, current owner of American Wollastonite Mining, won a judgment in a dispute over ownership of leases at the Gilbert property. However, development of the Gilbert wollastonite in the near future is considered unlikely in a market dominated by long-term production from deposits in New York, China, and India, and by production from a new mine in Mexico.

ZEOLITES Ash Meadows Zeolite LLC, a subsidiary of Badger Mining Corp., ships 1,000 to 2,000 tons annually of clinoptilolite used in water filtration, odor control, and nuclear clean-up from a plant in Amargosa Valley in Nye County. The clinoptilolite is mined from a large deposit in California that extends into Nevada. In 2001, the company was evaluating plans to mine green clinoptilolite for use in cat litter from the Nevada portion of the deposit.

Moltan Co. mined no mordenite from its zeolite deposit in the Trinity Range in Churchill County about 40 miles northeast of Fernley in 2001; however, the company did ship stockpiled mordenite from its Fernley absorbents and cat litter plant.

Geothermal Energy

by Ronald H. Hess

Three geothermal well permits were issued during 2001 by the Nevada Division of Minerals: they include one industrial production well, one domestic well, and two gradient/observation wells. (Nevada Division of Minerals, 2002)

During 2001 there were a total of 77 federal geothermal noncompetitive leases covering 111,836 acres and 40 competitive federal leases covering 44,227 acres in Nevada. Lease activity during the year included the issuance of 11 noncompetitive leases for 15,774 acres and 6 competitive leases for 10,068 acres. Lease rental fees for 2001 totaled $200,292 and the competitive lease sale generated an additional $240,159 for a total $440,451 in lease revenue for 2001. Total lease rental revenue for the year 2000 was $164,380. (Lowman, W. oral commun., 2002, Bureau of Land Management)

The Bureau of Land Management held a competitive lease sale in September 2001. Bids were received for tracts in the Rye Patch and Gerlach Known Geothermal Resource Areas (KGRA). The total of high bids for the sale exceeded $240,000. Individual tracts received bids of $35 to $51 per acre, which are bid amounts not seen since the early 1980s. (R. Hoops oral commun., 2002, Bureau of Land Management)

Total gross electrical production during 2001 from geothermal resources on public lands was 1.02 million megawatt-hours (MWh); net production was approximately 875,000 MWh. Gross electrical sales from federal lands was $61.1 million. Production royalties on that amount equaled $2,340,000. Total gross electrical production data for the year 2000 were not available by the publication date for MI-2000 but are included here for completeness. Total gross electrical production during 2000 from geothermal resources on public lands was 1.13 million MWh; net production was approximately 921,000 MWh. Gross electrical sales from federal lands was $58.2 million. Production royalties on that amount equaled $2,219,000.

By regulation, half of all Federal geothermal lease rental fees and production royalties are returned to the state. For 2001, $1,170,000 in royalty production fees and $220,226 in lease rental fees and bonus bid fees should be returned to Nevada. (R. Hoops and W. Lowman, Bureau of Land Management, oral commun., 2002)

Total Nevada geothermal electrical production from both federal and fee lands combined in 2001 was 1,539,878 MWh gross; net production was 1,247,651 MWh (Nevada Division of Minerals, 2002) with an approximate sales value of $87.2 million. Production capacity from the currently developed geothermal resources at ten existing geothermal power production sites in Nevada is 216.5 megawatts (MW). The table of Nevada geothermal power plants lists operators, plant locations, and energy production for individual Nevada geothermal power producers. Nevada is second only to California in total installed geothermal generating capacity.

Nevada State Legislature

The 2001 State Legislature passed and the Governor signed into law Senate Bill (SB) 372, which pertains to renewable energy resources. It requires, based on an escalating scale over time, that a certain percentage of electricity sold to customers in Nevada be generated from renewable resources. This bill represents a significant move forward in requiring utilities to obtain and distribute electricity generated from renewable resources.

The minimum required renewable energy portion of an electrical provider's portfolio starts at 5% for the years 2003 and 2004. The minimum required increases in steps until 2013 when it reaches 15%. Section 10, number 1 and 2, concerning the portfolio standard, from SB 372 are presented here:

NONDOMESTIC GEOTHERMAL WELLS REPORTED AS DRILLED OR COMPLETED IN NEVADA 2000–2001

Area	Company	Well name	Permit#	Location	Type
Churchill County					
Stillwater	Terra Thermal Power LLC	Commercial Production Well SF 62-30	495	NW^{1}_{4} NE^{1}_{4}, S30, T20N, R31E	Production
Pershing County					
Rye Patch	Mt. Wheeler Power	Thermal Gradient MW5	488	SW^{1}_{4}, NW^{1}_{4}, S28, T31N, R33E	Gradient
Rye Patch	Mt. Wheeler Power	Industrial Production Well 72-28	490	NE^{1}_{4}, NE^{1}_{4}, S28, T31N, R33E	Production
Washoe County					
Steamboat Hot Springs	Yankee Caithness	Industrial Production Well 24-5	178	SW^{1}_{4} NW^{1}_{4}, S5, T17N, R20E	Production

SB 372 - Sec. 10. 1. For each provider of electric service, the commission shall establish a portfolio standard for renewable energy. The portfolio standard must require each provider to generate or acquire electricity from renewable energy systems in an amount that is:

(a) For calendar years 2003 and 2004, not less than 5 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

(b) For calendar years 2005 and 2006, not less than 7 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

(c) For calendar years 2007 and 2008, not less than 9 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

(d) For calendar years 2009 and 2010, not less than 11 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

(e) For calendar years 2011 and 2012, not less than 13 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

(f) For calendar year 2013 and for each calendar year thereafter, not less than 15 percent of the total amount of electricity sold by the provider to its retail customers in this state during that calendar year.

2. In addition to the requirements set forth in 1, the portfolio standard for each provider must require that:

(a) Of the total amount of electricity that the provider is required to generate or acquire from renewable energy systems during each calendar year, not less than 5 percent of that amount must be generated or acquired from solar renewable energy systems.

(b) If the provider acquires electricity from a renewable energy system pursuant to a renewable energy contract with another party:

(1) The term of the renewable energy contract must be not less than 10 years, unless the other party agrees to a renewable energy contract with a shorter term; and

(2) The terms and conditions of the renewable energy contract must be just and reasonable, as determined by the commission. If the provider is a public utility and the commission approves the terms and conditions of the renewable energy contract between the provider and the other party, the renewable energy contract and its terms and conditions shall be deemed to be a prudent investment and the provider may recover all just and reasonable costs associated with the renewable energy contract.

3. If, for the benefit of one or more of its retail customers in this state, the provider has subsidized, in whole or in part, the acquisition or installation of a solar thermal energy system which qualifies as a renewable energy system and which reduces the consumption of electricity, the total reduction in the consumption of electricity during each calendar year that results from the solar thermal energy system shall be deemed to be electricity that the provider generated or acquired from a renewable energy system for the purposes of complying with its portfolio standard.

In Section 4 and Section 13 number 3, allowable renewable energy sources are listed:

Section. 4. "Biomass" means any organic matter that is available on a renewable basis, including, without limitation:

1. *Agricultural crops and agricultural wastes and residues;*
2. *Wood and wood wastes and residues;*
3. *Animal wastes;*
4. *Municipal wastes; and*
5. *Aquatic plants.*

Section 13, number 3. As used in this section:

(a) "Biomass" has the meaning ascribed to it in section 4 of this act.

(b) "Renewable energy" means a source of energy that occurs naturally or is regenerated naturally, including, without limitation:

(1) Wind;
(2) Solar energy;
(3) Geothermal energy; and
(4) Biomass.

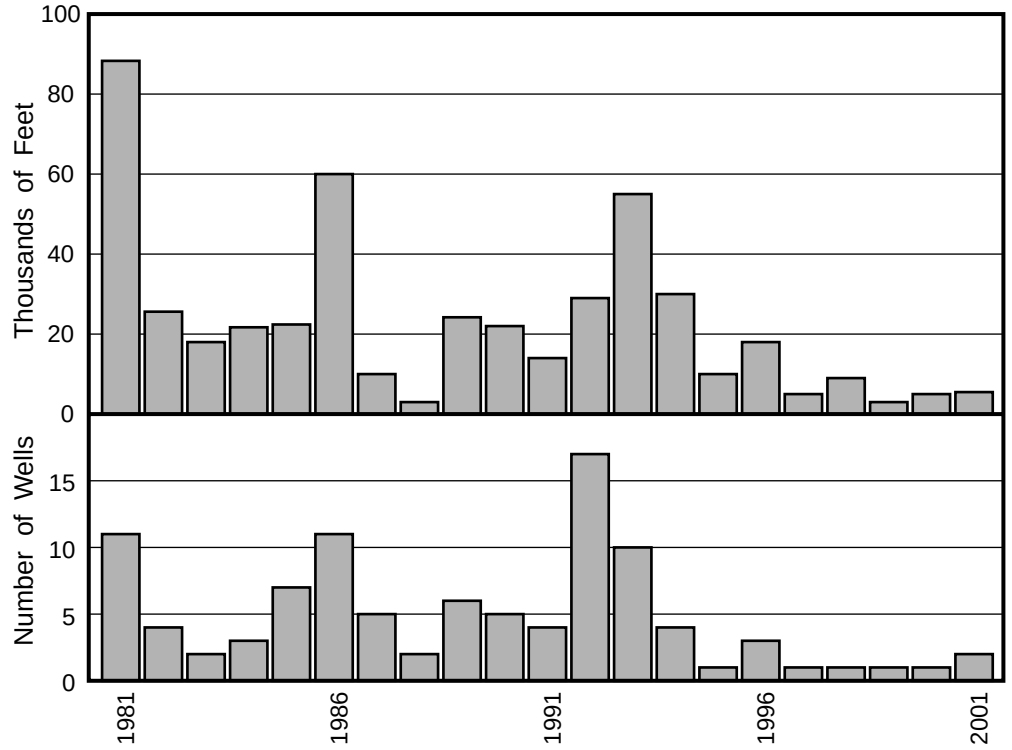
The term does not include coal, natural gas, oil, propane or any other fossil fuel, or nuclear energy.

The complete text of this bill can be viewed on the Web at "http://www.leg.state.nv.us/71st/Reports/history.cfm?ID=4214."

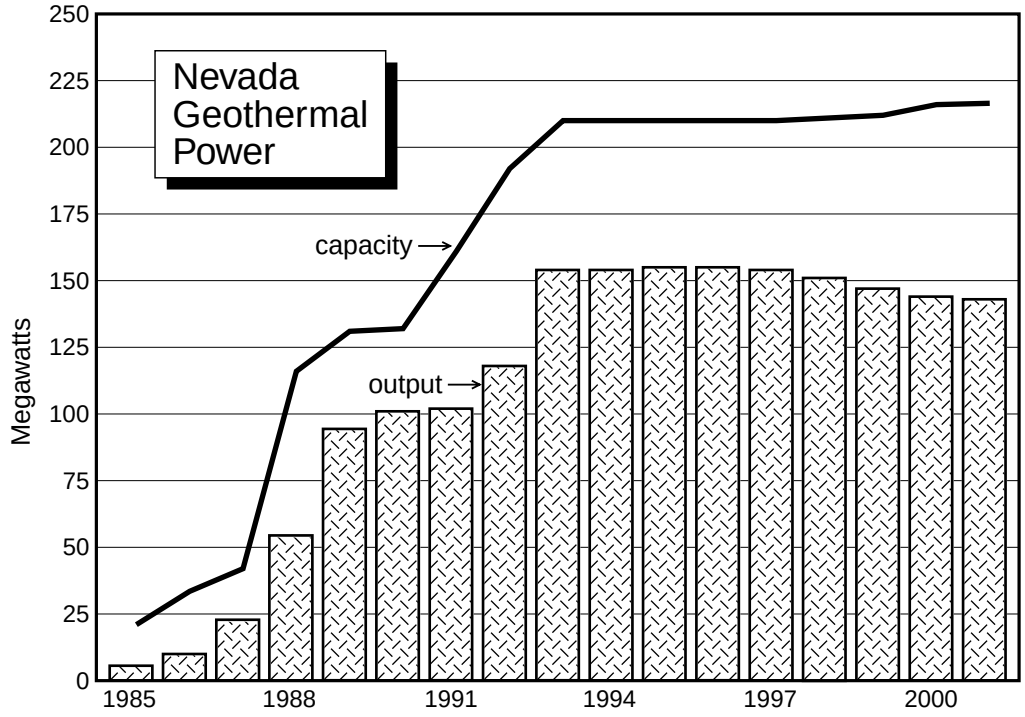
GeoPowering the West

The Department of Energy initiative, **GeoPowering the West**, is picking up momentum. Its goals are to assist the public and private sector to ensure that geothermal energy sources will provide 10% of the electricity needs of Western States by 2020, provide the electrical or heat energy needs of at least 7 million U.S. homes by 2010, and double the number of states with geothermal electrical power production to eight by 2006.

This initiative, through various outreach activities, will provide technical, legislative, and funding assistance to help ensure that federal programs for efficient energy and clean power technologies are implemented at regional, State, and local levels. Implementation of this program will incorporate a broad education and outreach program, increased federal geothermal energy use,



Industrial-class (power-generation) wells drilled in Nevada, 1981–2001. Depth taken from original drilling permit.



Currently developed resource capacity and average net output of Nevada geothermal plants, 1985–2001. Average net output is annual sales in megawatt-hours divided by the number of hours in a year (8,760). No commercial geothermal power was produced in Nevada before 1985.

technology advancement and deployment initiatives, expanded exploration and resource development program, policy incentives, and institutional regulatory improvements. A large part of this program will be carried out through use of cooperative cost-share partnership projects between DOE, various research entities, and the geothermal industry. More information on this program can be found at "http://www.eren.doe.gov/geopoweringthewest/." (Framel, C., Geothermal Resources Council Workshop, Reno, NV, April 2002)

Bradys Hot Springs and Desert Peak

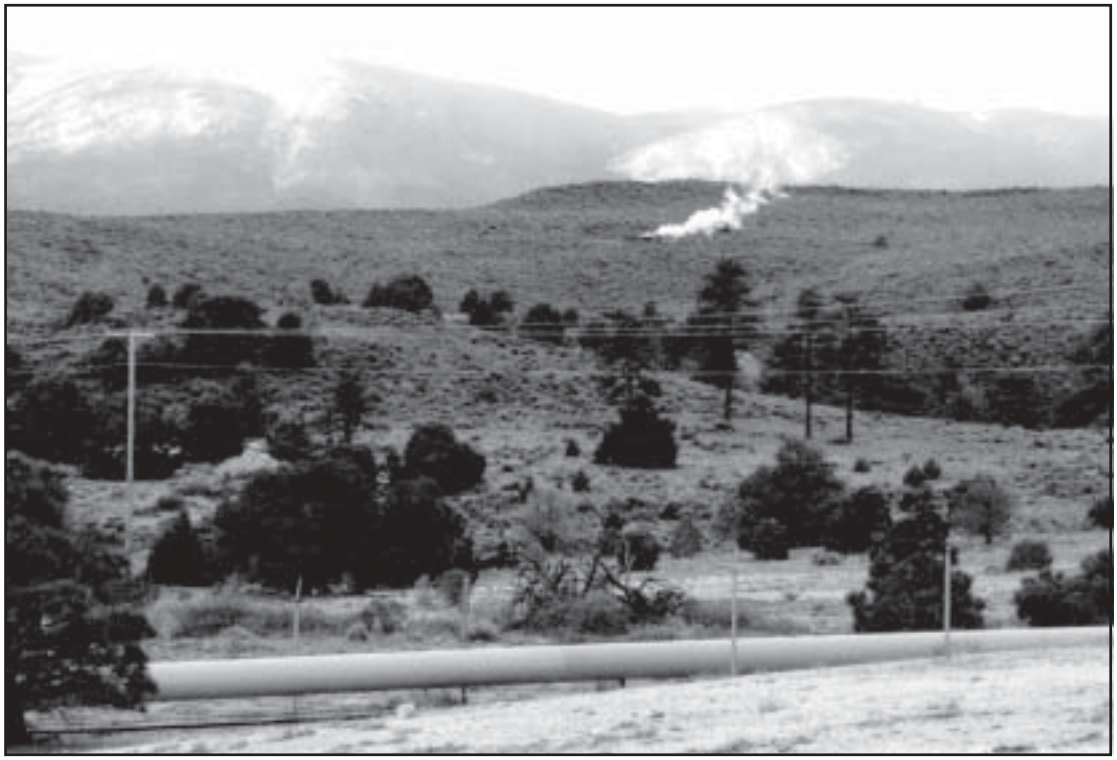
Western States Geothermal Company has sold the **Brady Hot Springs Geothermal Power Plant** to **ORMAT International, Inc.** for $20.5 million. ORMAT International, Inc., has also obtained the lease for the **Desert Peak** Geothermal Power Plant which is owned by **Florida Power and Light Company**. The Brady Hot Springs Geothermal Power Plant has a long-term sales contract with Sierra Pacific Power Company that runs until 2022. The Desert Peak plant does not have a long-term contract but has an intertie line to the Brady power plant allowing it to sell its production under the Brady long-term sales agreement. This is possible because both plants are located within the same Known Geothermal Resource Area (KGRA). An expansion project at Brady Hot Springs is currently being planned for 2002. (Bulletin Geothermal Resources Council, March/April 2001, Vol. 30, Number 2, and Snow, J., Nevada Division of Minerals, 2002)

The Brady 21.1-MW dual-flash geothermal plant produces from 6 production wells with an average depth of 3,057 feet and average fluid temperature of 312ºF. The plant has eight injection wells with an average injection fluid temperature of 238ºF. The Brady plant also supplies geothermal fluid to the Brady Hot Springs onion dehydration plant operated by **Gilroy Foods,** a subsidiary of **U.S.F.I.** The Desert Peak 9.9-MW dual-flash geothermal plant produces from two production wells with an average depth of 3,683 feet and fluid temperature of 312ºF. Desert Peak has two injection wells with an average depth of 4,000 feet and injection temperature of 198ºF. (Snow, J., Nevada Division of Minerals, 2002)

During 2001, Brady Hot Springs Geothermal Power Plant produced a gross output of 120,768 MWh with a net production of 77,725 Mwh. The Desert Peak Geothermal Power Plant produced a gross output of 57,609 MWh with a net production of 48,201 MWh. (Nevada Division of Minerals, 2002)

Fallon Naval Air Station

Since the 1970s, the U.S. Navy has conducted a series of studies aimed at better defining the geothermal resource of the Naval Air Station located south of Fallon,



Steam plume in center of photo is the new exploration core hole MTH 24-33 at Steamboat Hot Springs. View is to the south from the Steamboat I geothermal power plant area. ***Photo by R. Hess, 2001.***

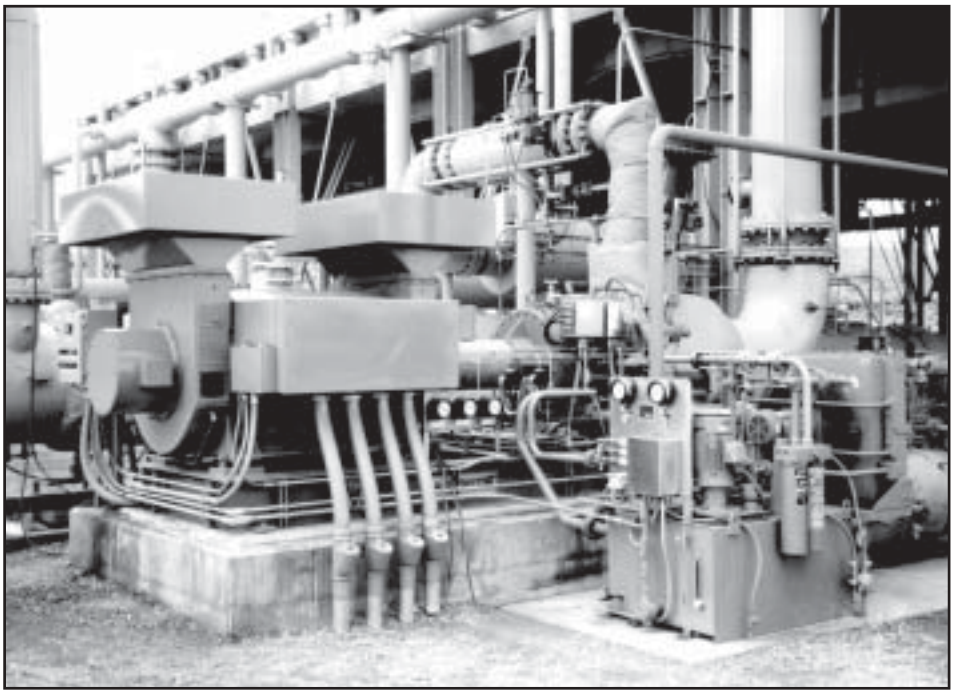
Nevada. The Navy drilled a 6,952 foot well in August of 1993, which had a maximum high temperature reading of 376ºF during a successful flow test. Geothermal fluid is believed to exist below an area of 10 km^2 or more. Current minimum estimated power potential of the Fallon geothermal resource is 30 MW. In 2001, the Navy requested pre-qualification information from interested geothermal developers and circulated a request for proposals from qualified firms. The Navy is proceeding to develop a public/private venture agreement for the purpose of efficiently utilizing the Fallon geothermal resource to produce electricity for the benefit of the Navy and the public. (Bulletin Geothermal Resources Council, July/August 2001, vol. 30, no. 4; and Garside, L.J. and others, *Status of Nevada Geothermal Resource Development - Spring 2002* - GRC Proceedings - in press)

Steamboat Hot Springs - S.B. Geo, Inc.

S.B. Geo, Inc. is developing a 30-MW expansion of its existing power production capacity at **Steamboat Hot Springs**. (Burch, R.C., Nevada Petroleum Society presentation, Feb. 1, 2001)

A new exploration core hole MTH 24-33 (State geothermal well permit #493) was completed during 2001 by S.B. Geo, Inc., as part of a cost share program with the Department of Energy (DOE). This 2000-foot core hole has a recorded temperature of 324ºF and will help to better define the subsurface structure and available geothermal resource. This is a cooperative program in which DOE funded 75% and S.B.Geo, Inc. funded 25% of the drilling cost. This project was developed and funded under the DOE GeoPowering the West Initiative. DOE funding in this cooperative project is projected to be $269,792 over 3 years with a private funding match of $67,448. (Price, W., Geothermal Resources Council Workshop, Reno, NV., April 2002, and Bulletin Geothermal Resources Council, March/April 2001, vol. 30, no. 2 and July/August 2000, vol. 29, no. 4)

Other activities at SB Geo include ongoing development and application of new submersible geothermal production pump technology. Advantages of submersible pumps include increased efficiency and flow rates, no ancillary pumps needed, no down-hole lube string, and reduced visual impact. New designs using advanced technology and materials are extending the expected pump life, reducing pump generated heat which reduces wear on pump components and improves pump efficiency. A new GE rotoflow expansion turbine was put on line as a replacement for a failed turbine on one of the original binary generation units. The new turbine increased unit production efficiency by 18%. Improvements to this unit include a higher efficiency reduction gear assembly, improved monitoring and protection equipment, updated control system, and precise speed control technology. The cost effectiveness, improved performance, and overall success of this turbine upgrade will help justify future similar turbine upgrades to existing older equipment. (Price, W., Geothermal Resources Council Workshop, Reno, NV., April 2002)



New GE rotoflow expansion turbine, center right in photo, installed by S.B. Geo, Inc. at Steamboat Hot Springs. *Photo by R. Hess, 2001.*

The **S.B. Geo Steamboat Hot Springs geothermal power plant** had a gross output of 403,852 MWh and a net production of 299,705 MWh during 2001. (Nevada Division of Minerals, 2002)

Steamboat Hot Springs-Yankee Caithness

Also located in the **Steamboat Hot Springs** KGRA is the **Yankee Caithness Geothermal Power Plant,** which completed work on production well number 24-5 this year. Caithness is actively looking at potential ways to develop more of the existing geothermal resource in the area and increase their long term electrical production. (Geothermal Resources Council Workshop, Reno, Nv., April 2002)

The Caithness plant is a 14.4-MW dual-flash geothermal power plant which operates on 317ºF fluids from three production wells with an average depth of 2,588 feet. Injection is accomplished with one well at a depth of 3,115 feet with a fluid injection temperature of 273ºF. (J. Snow, Nevada Division of Minerals, 2002). During 2001 the **Yankee Caithness Geothermal Power Plant** had a gross output of 96,875 MWh and a net production of 88,000 MWh. (Nevada Division of Minerals, 2002)

For further information on geothermal resources in Nevada check the following Web sites or contact Ron Hess at 775-784-6691 Ext. 121 or via email at rhess@unr.edu:

- Great Basin Center for Geothermal Energy at the University of Nevada, Reno: www.unr.edu/geothermal/index.html,
- Oregon Institute of Technology, Klamath Falls, Oregon, Geo-Heat Center: http://geoheat.oit.edu,
- Geothermal biz.com: http://www.geothermal-biz.com,
- Geothermal information at the Nevada Bureau of Mines and Geology Web site: ftp://ftp.nbmg.unr.edu/pub/geotherm/readme.htm and ftp://ftp.nbmg.unr.edu/pub/web/nvgeowel.txt,
- Nevada Commission on Mineral Resources, Division of Minerals: http://minerals.state.nv.us/programs/ogg.htm,
- Southern Methodist University Geothermal Lab: www.smu.edu/geothermal,
- Geothermal Industry Temperature Profiles from the Great Basin, by John H. Sass, Susan S. Priest, Arnold J. Blanton, Penelope C. Sackett, Stephanie L. Welch, and Mark A. Walters; USGS Open-File Report 99-425 online version 1.0 on the Web at http://wrgis.wr.usgs.gov/open-file/of99-425/webmaps/home.html.

NEVADA GEOTHERMAL POWER PLANTS 2001

Plant name (year on line)	Production capacity[1] (MW)	2001 Production (MWh) Gross	Net (sales)	Location	Operator
Beowawe (1985)	16.7 (16.6)	128,871	105,886	S13,T31N,R47E	Beowawe Power, LLC 9790 Gateway Dr., Suite 220 Reno, NV 89511
Bradys Hot Springs (1992)	21.1 (26.0)	120,768	77,725	S12,T22N,R26E	Brady Power Partners 980 Greg Street Sparks, NV 89431
Desert Peak (1985)	9.9 (11.0)	57,609	48,201	S21,T22N,R27E	Western States Geothermal Co. c/o Brady Power Partners 980 Greg Street Sparks, NV 89431
Dixie Valley (1988)	66.0 (62.0)	512,313	459,699	S7,T24N,R37E S33,T25N,R37E	Caithness Dixie Valley, LLC 9790 Gateway Dr. Suite 220 Reno, NV 89511
Empire (1987)	4.6 (4.8)	37,443	30,690	S21,T29N,R23E	Empire Energy, LLC P.O. Box 40 Empire, NV 89405
Soda Lake No. 1 (1987) and Soda Lake No. 2 (1991)	16.6 (26.1)	96,746	75,633	S33,T20N,R28E	Constellation Operating Services 5500 Soda Lake Road Fallon, NV 89406
Steamboat I, I-A (1986) and Steamboat II, III (1992)	53.0 (58.7)	403,852	299,705	S29,T18N,R20E	S.B. Geo, Inc. P.O. Box 18199 1010 Power Plant Dr. Reno, NV 89511
Stillwater (1989)	13.0 (21.0)	79,287	56,462	S1,T19N,R30E S6,T19N,R31E	Constellation Operating Services 5500 Soda Lake Road Fallon, NV 89406
Wabuska (1984)	1.2 (1.45)	6,114	5,650	S15,16,T15N, R25E	Homestretch Geothermal P.O. Box 1150 Leeds, UT 84746
Yankee Caithness (1988)	14.44 (14.44)	96,875	88,000	S5,6,T17N,R20E	Yankee Caithness J.V.L.P. 9790 Gateway Drive, Suite 220 Reno, NV 89511
TOTAL	216.5 (242.0)	1,539,878	1,247,651		

1. Production capacity from currently developed geothermal resources (equipment capacity in parentheses).
Sources: Plant operators, Nevada Division of Minerals, and NBMG files.

Oil and Gas

by David A. Davis

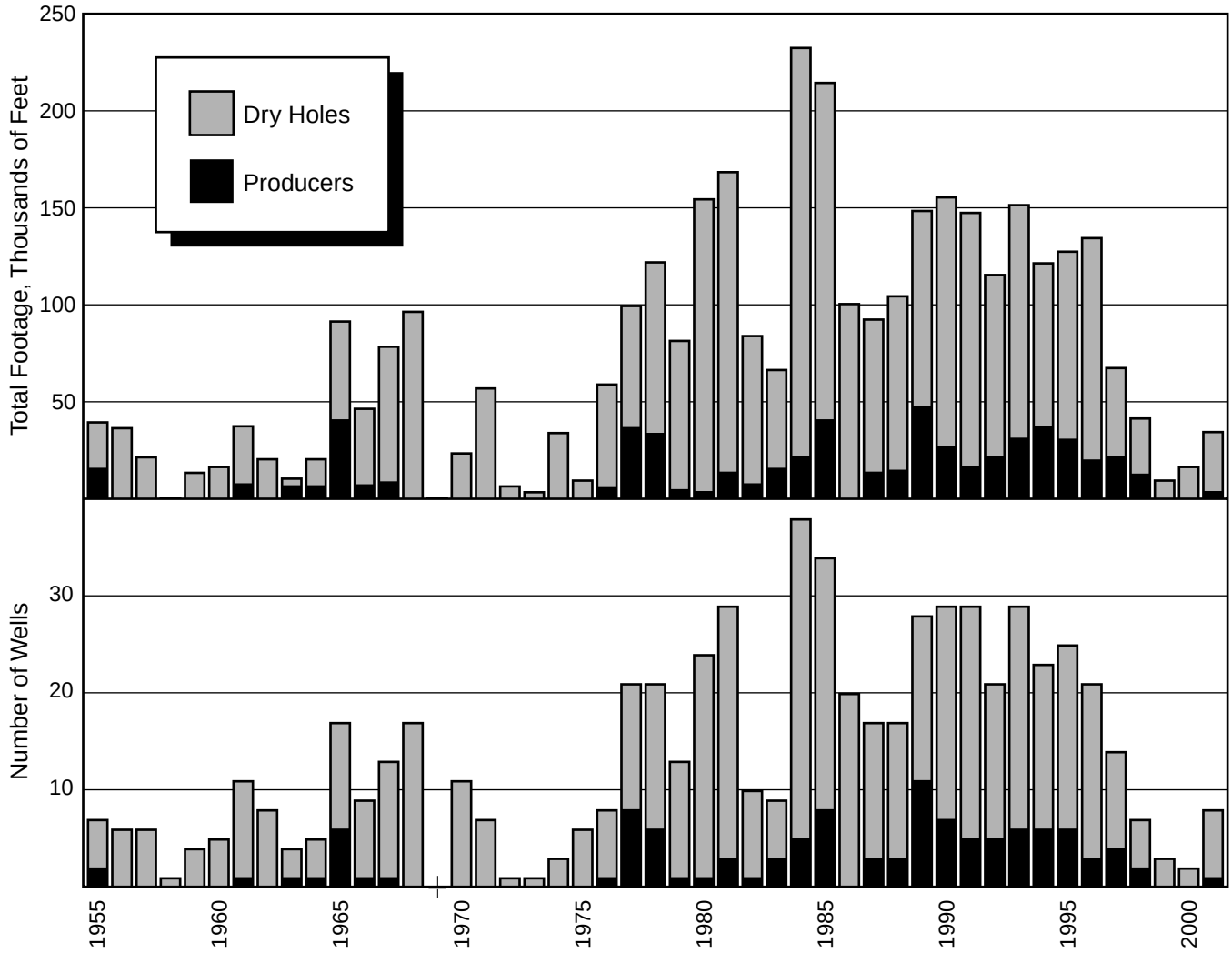
Production

According to the Nevada Division of Minerals, Nevada's net oil production in 2001 was 571,252 barrels (0.03% of total U.S. production) from 69 actively producing wells (including one new one) in 12 fields in Nye and Eureka Counties, 8% less than in 2000. One other minor field is plugged and abandoned, and two other minor fields were shut in throughout 2001. The average net wellhead price for Nevada crude oil decreased 24.5% to $17.13 per barrel in 2001, and the sales volume decreased 30.6% to $9,781,230.

Ninety-eight wells in 14 fields were listed as producers in 2001. Of these, 37 wells were shut in for at least 6 months during 2001, and 29 of these were shut in for the entire year. At year's end, one well had been shut in for 1 to 2 years, one well had been shut in for 2 to 3 years, five wells had been shut-in for 3 to 4 years, and 22 wells had been shut in for more than 4 years. No new wells were completed as producers in 2001.

Nevada's highest volume producer was Grant Canyon No. 9, which averaged 219 barrels of oil and 532 barrels of water per day during 2001. Grant Canyon No. 9 has held this ranking since 1996, Nevada's second highest volume producer was Trap Spring No. 9, which averaged 114 barrels of oil and 1,686 barrels of water per day in 2001. Trap Spring No. 9 has held this ranking since 1999.

The Trap Spring Field averaged 598 barrels of oil and 7,255 barrels of water per day in 2001 and accounted for 38.2% of Nevada's total oil production. Oil production



Number and total footage of Nevada oil wells completed as producers or as plugged and abandoned dry holes, 1955–2001.

decreased 11.6%, and water production decreased 7.1%. Of the 33 active producers, oil production increased in six wells and decreased in 27. Two wells were shut in for a month, one well was shut in for 9 months, and one well was shut in for 11 months. Of the eight inactive producers, one has been shut in since 1999, two each since 1998, and 1996, one each since 1992 and 1991, and one since 1986.

The Grant Canyon Field averaged 254 barrels of oil and 1,182 barrels of water per day in 2001 and accounted for 16.3% of Nevada's total oil production. Oil production decreased 9%, and water production increased 3.3%. Oil production decreased in both active producers. Of the two inactive producers, one has been shut in since 1993 and the other since 1992.

The Eagle Springs Field averaged 184 barrels of oil and 1,155 barrels of water per day in 2001 and accounted for 11.7% of Nevada's total oil production. Oil production increased 12.8% and water production increased 53%. Of the 15 active producers, oil production increased in 11 and decreased in three. Two wells were shut in for 2 months, and one well was shut in for 9 months. Of the six inactive producers, three have been shut in since 1997, one since 1996, one since 1995, and one since 1986.

The Blackburn Field averaged 183 barrels of oil and 4,910 barrels of water per day in 2001 and accounted for 11.7% of Nevada's total oil production. Oil production decreased 14.4%, and water production decreased 4.9%. Of the six active producers, oil production decreased in four wells, increased slightly in one, and remained static in one. One well was shut in for 9 months and another for 11 months. The one inactive producer has been shut in for 3 years.

The Kate Spring Field averaged 151 barrels of oil and 1,412 barrels of water per day in 2001 and accounted for 9.7% of Nevada's total oil production. Oil production decreased 4.2%, and water production decreased 1.2%. Of the four active producers, oil production increased in two and decreased in two. Of the two inactive producers, one has been shut in since 1997 and the other since 1993. A total of 6,719 thousand cubic feet of gas was produced from the Kate Spring Field in 2001, a decrease of only 0.5% from 2000. The gas is used to operate production and related equipment at the lease sites of Makoil, Inc., and Western General, Inc.

The Ghost Ranch Field averaged 99 barrels of oil and 517 barrels of water per day in 2001 and accounted for 6.3% of Nevada's total oil production. Oil production decreased 12.7%, and water production decreased 9.5%. Of the three active producers, oil production decreased in two and increased in one. The one inactive producer has been shut-in since 1997.

The Bacon Flat Field averaged 38 barrels of oil and less than 2 barrels of water per day in 2001 and accounted for 2.4% of Nevada's total oil production. Oil production decreased 5.9%, and water production decreased over 99%. Only one of its three producers was active. One well has been shut in for 8 years and the other for 13 years.

The Sand Dune Field's only producer averaged 37 barrels of oil and 94 barrels of water per day in 2001 and accounted for 2.4% of Nevada's total oil production. Oil production increased 6.6%, and water production increased 3.2%.

The Sans Spring Field's only active producer averaged 17 barrels of oil and 889 barrels of water per

OIL WELL DRILLING ACTIVITY IN NEVADA IN 2001

Company	Well	Permit No.	Location	Permit Date	Spud Date	Completion Date	Depth (Ft.)	Status
EUREKA COUNTY								
Trail Mountain, Inc.	Three Bar Unit No. 6	765	SW^{1}_{4} SE^{1}_{4} NE^{1}_{4} S24 T28N R51E	Sep-95	May-96	Jan-01	9,350	P&A
Foreland Corp.	Pine Valley Federal No. 42-16	828	SE^{1}_{4} NE^{1}_{4} S16 T29N R52E	Jun-00	Aug-00	Feb-01	7,623	P&A
V.F. Neuhaus Properties and Winn Exploration	Tomera Ranch No. 33-2	833	SW^{1}_{4} SW^{1}_{4} S33 T31N R52E	Dec-00	Jan-01	Jan-01	1,960	P&A
D.Y. Exploration, Inc.	Humboldt No. 1-6	834	SE^{1}_{4} SW^{1}_{4} S6 T28N R52E	Apr-01	May-01	May-01	4,130	P&A
V.F. Neuhaus Properties and Winn Exploration	Tomera Ranch No. 33-2R	836	SW^{1}_{4} SW^{1}_{4} S33 T31N R52E	May-01	Jun-01	Aug-01	965	P&A
Stream Energy, Inc.	Stream No. 1-7	839	SW^{1}_{4} NW^{1}_{4} S7 T27N R52E	Aug-01	Sep-01	Sep-01	8,871	P&A
V.F. Neuhaus Properties and Winn Exploration	Tomera Ranch 33-2RR	841	SW^{1}_{4} SW^{1}_{4} S33 T31N R52E	Oct-01	Oct-01			Drilling
LANDER COUNTY								
Aspen Oil, Inc.	No. 1 Battle Mountain	831	NE^{1}_{4} NW^{1}_{4} S9 T32N R45E	Sep-00	Oct-01	Oct-01	2,540	P&A
LINCOLN COUNTY								
Falcon Energy/Kriac Energy, Inc.	Hamlin Wash No. 18-1R	805	SE^{1}_{4} SE^{1}_{4} S18 T8N R70E	Aug-97	Aug-97	Sep-97		TA
Falcon Energy/Kriac Energy, Inc.	Kriac No. 3	810	SE^{1}_{4} SE^{1}_{4} SE^{1}_{4} S18 T8N R70E	Dec-97	Jan-98			Suspended
NYE COUNTY								
Makoil, Inc.	Munson Ranch No. 11-44	672	SE^{1}_{4} SE^{1}_{4} S11 T9N R56E	Apr-93	Jun-94	Jun-94	3,660	TA
Big West Oil and Gas, Inc.	Federal No. 12-14	673	NW^{1}_{4} SW^{1}_{4} S14 T7N R56E	Apr-93	May-93	Jun-93	6,106	TA
Makoil, Inc.	Trap Spring No. 27-32X	804	SW^{1}_{4} NE^{1}_{4} S27 T9N R56E	Aug-97	Sep-99			Drilled
Ranken Energy Corporation	Needle Springs Federal No. 1-35	835	SE^{1}_{4} S35 T11N R52E	May-01				Not drilled
Isern Oil Company	Gigante No. 1-4	837	C, NW^{1}_{4} NE^{1}_{4} S4 T12N R35E	May-01	Aug-01			TA
Makoil, Inc.	Munson Ranch No. 13-11R	840	NW^{1}_{4} NW^{1}_{4} S13 T9N R56E	Sep-01	Oct-01	Dec-01	4,028	Producer
PERSHING COUNTY								
Evans-Barton, Ltd.	Kyle Spring No. 11-43	821	NE^{1}_{4} SE^{1}_{4} S11 T29N R36E	Jul-98	Jul-98			Testing
Evans-Barton, Ltd.	Kyle Spring No. 11-42A	838	NE^{1}_{4} SE^{1}_{4} S11 T29N R36E	Jul-01	Aug-01			Drilled

P&A: Plugged and abandoned, TA: Temporarily abandoned

FEDERAL OIL AND GAS LEASES IN EFFECT IN FISCAL YEARS 2000 AND 2001[1]

	NUMBER OF LEASES						ACREAGE					
	Competitive		Noncompetitive		Simultaneous[2]		Competitive		Noncompetitive		Simultaneous[2]	
County	FY00	FY01	FY00	FY01	FY00	FY01	FY00	FY01	FY00	FY01	FY00	FY01
Carson City	0	0	0	0	0	0	0	0	0	0	0	0
Churchill	0	0	0	0	2	2	0	0	0	0	5,278	5,278
Clark	0	0	0	0	0	0	0	0	0	0	0	0
Douglas	0	0	0	0	0	0	0	0	0	0	0	0
Elko	18	62	50	99	3	3	28,553	70,694	79,545	155,365	7,545	7,545
Esmeralda	0	0	0	2	0	0	0	0	0	3,849	0	0
Eureka	59	87	18	35	1	1	85,747	114,318	25,508	49,501	2,474	2,449
Humboldt	0	0	0	0	0	0	0	0	0	0	0	0
Lander	0	0	0	0	0	0	0	0	0	0	0	0
Lincoln	22	25	60	66	2	1	38,051	42,250	114,896	102,441	8,320	1,921
Lyon	0	0	0	0	0	0	0	0	0	0	0	0
Mineral	0	0	6	5	0	0	0	0	21,929	8,557	0	0
Nye	283	346	137	212	19	19	212,685	281,791	243,857	525,704	7,998	7,998
Pershing	8	8	1	1	0	0	7,640	7,640	1,256	1,256	0	0
Storey	0	0	0	0	0	0	0	0	0	0	0	0
Washoe	0	0	0	0	0	0	0	0	0	0	0	0
White Pine	50	52	33	168	3	0	73,672	73,562	57,013	514,546	7,040	0
TOTAL	440	580	305	588	30	28	446,348	590,255	544,004	1,361,219	38,655	25,191

[1]Data from the U.S. Bureau of Land Management. Some FY00 data have been corrected from earlier reports. Fiscal years (FY) run from Oct. 1 to Sept. 30.
[2]These are the remaining leases that were issued under the simultaneous leasing program that was terminated by the December 22, 1987 amendment to the 1920 Mineral Leasing Act.

PRODUCTION OF NEVADA'S OIL FIELDS (barrels)

Compiled from Producer's Reports filed with the Nevada Division of Minerals

Field (year discovered)	1954–1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
Eagle Springs (1954)	4,073,260	7,075	66,565	162,296	171,638	137,278	111,562	82,067	59,394	67,024	4,938,159
Trap Spring (1976)	10,086,689	427,150	378,829	362,985	306,858	288,686	257,921	263,566	246,725	218,197	12,837,606
Currant (1979)	641	0	0	278	0	202	230	28	55	33	1,467
Bacon Flat (1981)	493,505	102,030	192,601	43,057	23,891	22,465	18,757	16,849	14,766	13,898	941,819
Blackburn (1982)	2,578,486	599,857	576,853	435,975	239,934	151,151	112,008	89,400	78,136	66,899	4,928,699
Grant Canyon (1983)	18,808,297	495,934	308,709	202,129	168,163	143,707	126,128	112,715	102,113	92,900	20,560,795
Kate Spring (1986)	1,232,978	150,309	122,436	104,574	87,789	76,280	69,768	65,315	57,644	55,197	2,022,290
Tomera Ranch 1987)	14,445	2,140	1,970	1,405	387	659	574	398	488	0	22,466
N. Willow Creek (1988)	23,518	3,928	3,736	6,419	3,619	1,478	1,502	123	146	144	44,613
Three Bar (1990)	21,647	1,961	229	0	0	0	0	0	0	0	23,837
Duckwater Creek (1990)	10,049	2,256	1,269	655	433	168	491	93	116	968	16,498
Sans Spring (1983)		69,478	44,279	22,174	17,228	45,001	21,759	10,956	6,990	6,361	244,226
Ghost Ranch (1996)					34,166	113,016	65,370	49,348	41,454	36,172	339,526
Deadman Creek (1996)						109	258	0	0	0	367
Sand Dune (1998)							12,465	15,122	12,624	13,461	53,672
TOTAL	37,343,515	1,862,118	1,697,585	1,341,947	1,059,106	980,200	798,793	705,980	620,651	571,254	46,976,040
Change from previous year		-50%	-9%	-21%	-21%	-7%	-19%	-12%	-12%	-8%	

day in 2001 and accounted for 1.1% of Nevada's total oil production. Oil production decreased 9%, and water production increased 25.8%. Of the two inactive producers, one has been shut in since 1998 and the other since 1993 and since temporarily abandoned.

Three minor fields accounted for about 0.2% of Nevada's total oil production. Oil production from the Currant Field's only well decreased 40%. Oil production from the Duckwater Creek Field's only producer increased 734%, while water production increased 300%. Oil production from the North Willow Creek Field's only active producer increased 1.3%, while water production increased from 0 to 50 barrels for the year.

Three other minor fields recorded no production for 2001. The Deadman Creek Field's only producer was plugged and abandoned in 1998. The Tomera Ranch Field's only producer has been shut in since December 2000. One of Three Bar Field's two producers has been shut in since 1994 and the other since1992.

Most Nevada oil is used to make such products as No. 1 and No. 2 diesel fuel, kerosene, stove oil, and asphalt. Nevada crude oil was transported by trucks to the Energy Income Fund, Inc. (EIF), 8,000-barrel-per-day capacity refinery and asphalt storage plant near Currant in Railroad Valley. The EIF refinery and asphalt storage facility at Tonopah was used to process hydrocarbons from California and other states.

New Producers

One new well was completed as a producer in 2001.In the Trap Spring Field, Munson Ranch No. 13-11R was completed to 4,028 feet by Makoil Co., and is producing froma zone between 3,986 and total depth in the Tertiary Garrett Ranch Volcanics. Production began December 28, 2001 with the pumping of 22 barrels of fluid containing 4% water and 0.5% sediment.

Exploration

Eight wells were permitted for oil and gas in 2001, one more than in 2000. Nine wells were spudded in 2001, up from three spudded in 2000. Drilling was completed on seven wells spudded in 2001, one well spudded in 2000, and one well spudded in 1995, totaling 39,467 feet, up 43% from 17,115 feet in 2000.

One spudded in 2001 and one in 1999 were listed as drilled with no completion date. One well drilled in 2001 was temporarily abandoned, and five wells drilled between 1993 and 1998 continued to be listed as either temporarily abandoned, testing, or suspended. Two drill rigs operated during January, February, May, and June, and three drill rigs operated during July through October.

On June 12, 2001, the Nevada State Office of the Bureau of Land Management held an oil and gas lease sale on 248 parcels covering 396,183 acres. The high bids totaled $114,638 on 42 parcels covering 49,663 acres, which averaged $2.31 per acre. Only eight tracts generated bids of more than the $2.00 per acre minimum. The highest bid was $39.00 per acre made by Makoil, Inc. for Parcel 182 covering the 320 acres of SE1/4 section 19 and NE1/4 section 30, T7N, R57E, about 1 mile west southwest of Grant Canyon (PI/Dwight Plus Drilling Wire, Rocky Mountain Region, Newsletter Edition, Section I, June 15, 2001).

On December 11, 2001, the Nevada State Office of the Bureau of Land Management held another oil and gas lease sale on 159 parcels covering 285,219 acres. Competitive bids were submitted for only five parcels covering 4,065 acres, and none were above the minimum $2.00 per acre (PI/Dwight Plus Drilling Wire, Rocky Mountain Region, Southeastern Edition, Section I, December 13, 2001).

Production of Water from Nevada's Oil Fields (barrels)

Compiled from Producer's Reports filed with the Nevada Division of Minerals

Field (year discovered)	1994–95	1996	1997	1998	1999	2000	2001	Total
Eagle Springs (1954)	492,981	432,300	364,900	410,290	325,574	275,521	421,755	2,723,321
Trap Spring (1976)	6,146,127	2,870,437	3,046,366	2,444,444	2,802,716	2,850,603	2,648,176	22,808,869
Currant (1979)	0	0	0	0	0	0	0	0
Bacon Flat (1981)	127,452	107,164	100,708	14,929	1,756	358,879	613	711,501
Blackburn (1982)	4,077,210	1,788,791	1,777,941	1,937,981	1,938,408	1,884,096	1,792,102	15,196,529
Grant Canyon (1983)	414,184	284,006	335,603	377,934	397,888	417,564	431,433	2,658,612
Kate Spring (1986)	981,093	580,219	529,503	476,346	483,483	521,464	515,205	4,087,313
Tomera Ranch (1987)	64,321	15,013	31,948	35,441	31,121	33,245	0	211,089
N. Willow Creek (1988)	1,794	727	135	0	4	0	50	2,710
Three Bar (1990)	5,958	0	0	0	0	0	0	5,958
Duckwater Creek (1990)	35,928	6,787	1,853	4,620	840	1,196	4,778	56,002
Sans Spring (1993)	515,849	273,928	233,046	363,845	328,544	240,773	324,585	2,280,570
Ghost Ranch (1996)		2,775	99,945	171,921	202,678	208,488	188,592	874,399
Deadman Creek (1996)			0	0	0	0	0	0
Sand Dune (1998)				23,335	53,115	33,308	34,369	144,127
Total	12,862,897	6,362,147	6,521,948	6,261,086	6,566,127	6,825,137	6,361,658	51,761,000
Change from previous year		-4.5%	2.5%	-4.0%	4.9%	3.9%	-6.8%	

Transfers

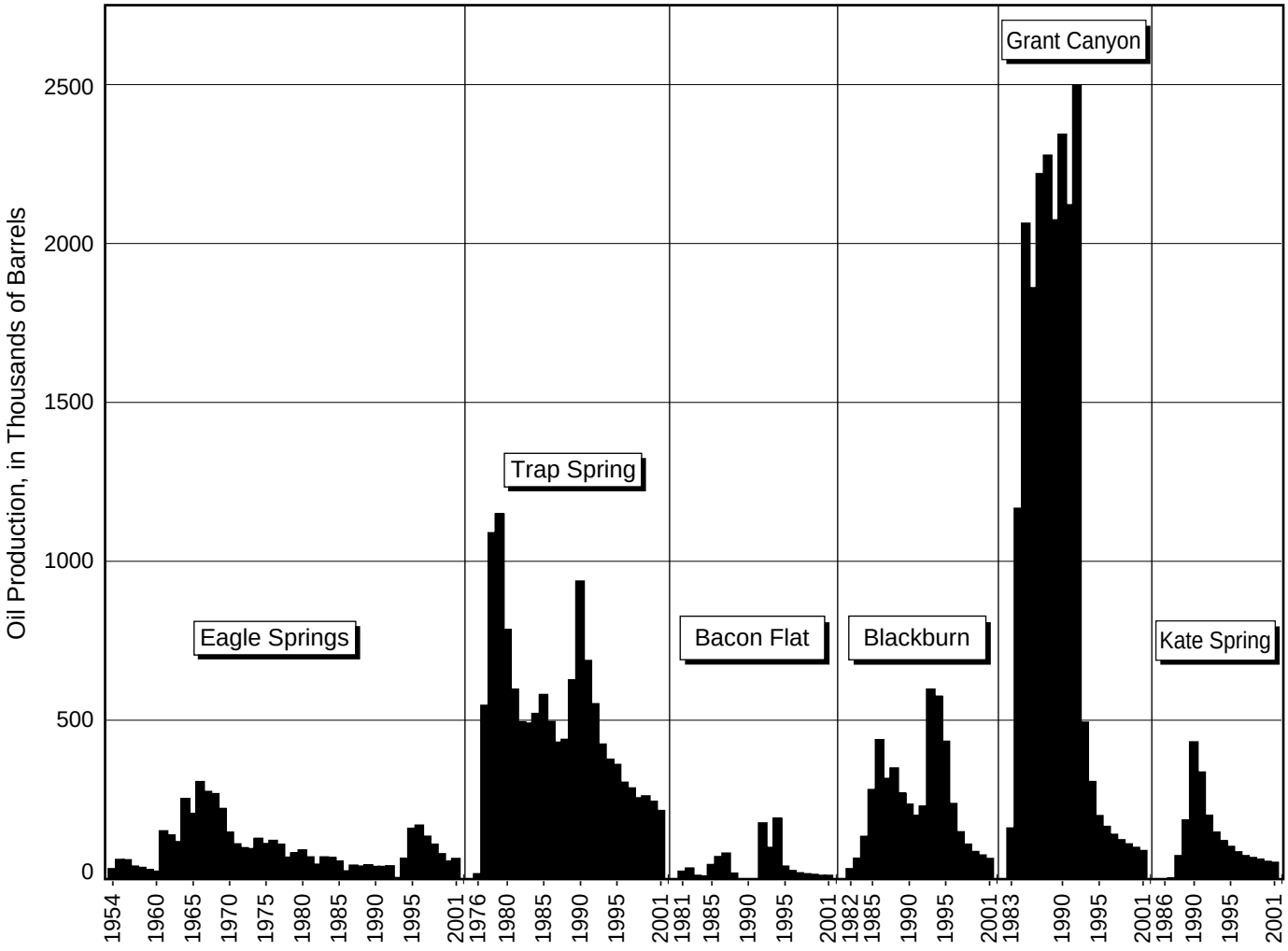
There were no transfers in 2001.

Other Developments

Isern Oil Nevada, LLC, of Gabbs, Nevada, which is the operator for International Oil and Gas, Inc., of Dallas, Texas, began drilling the Sleeping Giant prospect as part of their Sleeping Giant Oil Project (SGOP). SGOP involves drilling a unique 26,000-acre stratigraphic trap in Gabbs Valley. Isern says that this trap may contain up to 1 billion barrels of oil (www. inoil.com/news/ most_recent_news_release.htm). The geology of the area is mapped and described in U.S. Geological Survey Open-File Report 99-352, *Stratigraphy, tephrochronology, and structure setting of Miocene sedimentary rocks in the Cobble Cuesta area, west-central Nevada*.

The Kern River Gas Transmission Company (KRGTC) proposed the Kern River 2003 Expansion Project. This project involves building 634.5 miles of 36-inch-diameter pipeline and supporting facilities. The proposed pipeline would consist of 12 loops or segments running parallel to the existing KRGTC pipeline from Opal Wyoming, to Dagget, California. This pipeline would help bring more natural gas from Wyoming to consumers in Utah, Nevada, and California. In Nevada, the existing pipeline crosses northeast to southwest through the far southeast corner of Lincoln County and across Clark County through Las Vegas. Due to residential and commercial development encroaching upon the existing right-of-way, a 26-mile stretch through the Las Vegas area will not be looped. In Clark County, a new compressor is proposed for the Dry Lake segment, and an existing compressor at Goodsprings is proposed to be upgraded. Several public meetings were held in 2001 concerning this project, and a draft environmental report was issued in February 2002 (Draft Environmental Impact Statement/ Environmental Impact Report, Kern River 2003 Expansion Project, February 2002).

The Nevada Bureau of Mines and Geology Information Office received a few inquiries about coal in Nevada during 2001 and several inquiries concerning methane. Nevada coal is described in NBMG Bulletin 65, *Mineral and water resources of Nevada*, and NBMG Open-File Report 80-5, *A first-stage study of Nevada coal resources*. Bulletin 65 notes seven deposits of low-grade,



impure, lignite and some sub-bituminous coal in Tertiary lake-bed sediments. Attempts made in the late 19th and early 20th centuries to mine some of this coal met with limited success.

U.S. Oil Production and Consumption

According to the Energy Information Agency (EIA) of the U.S. Department of Energy (http://www.eia.doe.gov), crude oil imports accounted for 61% of U.S. consumption in 2001, which is slightly higher than the previous peak of 60.9% set in 2000. U.S crude oil consumption increased by 0.7% in 2001, and production averaged 5,853 million barrels per day, up about 0.5%. However, production in both 2000 and 2001 was the lowest since 1950. Oil provided about 39.4% of the nation's total energy supply in 2001, up from 38.9% in 2000. This is somewhat higher than the 38-39%, which has prevailed since 1991.

The use of oil for electrical production increased 20.1% in 2001 after decreasing 11.8% in 2000. It accounted for 3.4% of electrical production and 3.3% of oil consumption in 2001, up from 2.9% and 2.3% respectively in 2000. Oil-fired generators accounted for only about 4% of the electricity produced in Nevada in 2001. Gasoline production increased 1.3% and accounted for 43.8% of all oil products consumption in 2001, up from 43% in 2000. This percentage has hovered near 43% since 1982. The price of oil decreased 18.2% from an average of $26.72 per barrel in 2000 to $21.86 per barrel in 2001 for domestic oil. The average monthly price of oil hovered around $23.57 per barrel for the first 9 months of the year and then rapidly fell off to $15.49 per barrel by December as an economic downturn, which started in 2000, worsened and world oil stocks increased (www.eia.doe.gov).

In comparison to oil, natural gas consumption decreased 4.4% to 21,447 billion cubic feet (bcf) in 2001 after increasing 4.3% in 2000. Natural gas provided 22.8% of the nation's total energy supply in 2001, down from 23.4% in 2000, and a peak of 24.4% in 1995. The

NEVADA OIL PRODUCERS
(www.state.nv.us/minerals/nvoilprod.htm)

Company	Field	Contact	Address and Phone and FAX Numbers
Big West Oil and Gas, Inc.	Bacon Flat Sans Spring	J. Philips Adams	333 West Center Street North Salt Lake, UT 84054 Phone (801) 296-7700
Deerfield Production Co.	Deadman Creek Eagle Springs Ghost Ranch Sand Dune	Steve McDonald	136 Dwight Road Longmeadow, MA 01106 Phone (413) 565-7127 FAX (413) 567-7926
Evans-Barton, Ltd.	Trap Spring	David M. Evans	P.O. Box 3153 Reno, NV 89505 Phone (775) 827-1613
Foreland Corp.	North Willow Creek Tomera Ranch	David T. Greene	143 Union Blvd., Suite 210 Lakewood, CO 80228 Phone (303) 988-3122 FAX (303) 988-3234
Frontier Exploration Co.	Trap Spring	Andy Pierce	3006 Highland Drive No. 206 Salt Lake City, UT 84106 Phone (801) 486-5555 FAX (801) 486-5575
Makoil, Inc.	Currant Duckwater Creek Grant Canyon Kate Spring Trap Spring	Eugene Kozlowski	500 North Rainbow Blvd. No. 300 Las Vegas, NV 89107 Phone (714) 939-7560 FAX (714) 939-7552
Petroleum Corp. of Nevada	Blackburn	Ken Chattin	P.O. Box 1447 Elko, NV 89801 Phone (775) 753-6810
Trail Mountain, Inc.	Three Bar		105 South 4th St. Artesia, NM 88210 Phone (505) 748-1471
Western General	Kate Spring	Rick Taylor	4899 South Torrey Pines No. 201 Las Vegas, NV 89103 Phone (702) 220-7065 FAX (702) 220-7066

use of natural gas for electrical production increased 5.3% in 2001 after increasing 10.1% in 2000. It accounted for 16.5% of electrical production and 31% of natural gas consumption in 2001, up from 15.7% and 28.1% respectively in 2000. Industrial and residential consumption decreased 4.9% and 3.8% respectively, and commercial consumption rose 1.3% in 2001. The average well-head price increased 11.7% from $3.69 per thousand feet (tcf) in 2000 to $4.12 per tcf in 2001. However, in 2001, the price of natural gas peaked at a monthly average of $8.06 per tcf in January and then declined through the year to $2.38 per tcf in December. The early high prices were due to supply and storage shortages, which caused spikes in bills for electricity and heating. These were alleviated through the year with increased exploration and development and mild winter weather, though the costs to the consumer were commonly spread out through the year. Though Nevada produces no commercial quantities of natural gas, gas-fired generators provided 26.5% of the electricity produced in Nevada in 2001, up from 24% in 2000. Electric utility net generation increased 4.2% from 13,547 million kilowatt-hours (Mkwh) in 2000 to 14,121 Mkwh in 2001 (http://www.eia.doe.gov).

Coal consumption rose less than 0.002% in 2001 at 1,080,898,000 tons after increasing 3.5% in 2000. This is a new record with consumption remaining over 1 billion tons since 1996. Coal production increased 4.4% to 1,121,328,000 tons, a new record, after dropping 2.4% in 2000. Production has remained over 1 billion tons since 1994. Coal provided 23.1% of the nation's total energy supply in 2001, up from 22.6% in 2000. This percentage has hovered between 22% and 23% since 1983. Production of electricity accounted for 92% of coal consumption in 2001, up from 91.7% in 2000. The use of coal for electrical production increased 0.3% and accounted for 51.4% of electrical production in 2001, down from a 4% increase and a 51.8% share respectively in 2000. The average price of coal delivered to electrical utilities increased 2% to $24.77 per short ton in 2001 from $24.28 in 2000. Though Nevada produces no coal, coal-fired generators provided 58.6% of the electricity produced in Nevada in 2001, down from 65.6% in 2000 (www.eia.doe.gov).

NEVADA OIL REFINERIES

Company	Refinery	Address and Phone Number
Energy Income Fund, Inc.	Currant	66 Miles South of Ely Ely, NV 89301 Phone (775) 863-0229
Energy Income Fund, Inc.	Tonopah	105 Refinery Road Tonopah, NV 89049 Phone (775) 482-3555

Directory of Mining and Milling Operations

by David A. Davis

Compiled from information supplied by the Nevada Division of Minerals and Mine Safety and Training Section.
Sand and gravel operations with less than 100,000 tons annual production are not listed.
CIL = carbon-in-leach, CIP = carbon-in-pulp, HL = heap leach, ML = mill, OP = open-pit mine, OS = other surface, UG = underground mine.

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
CARSON CITY							
Brunswick Quarry	T.E. Bertagnolli and Associates	S12,T15N,R20E	aggregate	OP,ML	mining crushing	5	P.O. Box 2577 Carson City, NV 89702 775-883-7155 Fax: 883-7953
Goni Pit	Cinderlite Trucking Co.	S28,T16N,R20E	decomposed granite	OP,ML	mining screening	3	1665 South Sutro Terrace Carson City, NV 89706 775-882-4483 Fax: 882-1671
CHURCHILL COUNTY							
Celite Mine	World Minerals, Inc.	S8, 17, T19N, R26E	diatomite	OP,ML	mining classification drying milling	16	100 Front St. Fernley, NV 89408 775-575-2536 Fax: 575-4857
Huck Salt	Huck Salt and Sons, Inc.	S12,T16N,R31E	salt	OS	mining solar evaporation	4	5033 Austin Hwy. Fallon, NV 89406 775-423-2055 Fax: 423-0467
Moltan Mine	Moltan Co.	S28,32, T23N,R27E	diatomite clay zeolite	OP,ML	mining crushing drying screening	49	P.O. Box 860 I-80 Frontage Rd. Fernley, NV 89408-0860 775-423-6668 Fax: 423-6411
Popcorn Mine	Eagle Picher Minerals, Inc.	S24,T16N,R28E; S19,T16N,R29E	perlite	OP	mining	1	P.O. Box 10480 Reno, NV 89510 775-824-7700 Fax: 824-7715
CLARK COUNTY							
American Sand and Gravel Pit No. 1 (Salt Lake Highway Pit)	American Sand and Gravel, LLC	S24,T19S, R62E	sand gravel	OP,ML	mining crushing	5	5260 Beesley Dr. Las Vegas, NV 89115 702-452-1900 Fax: 651-0375
American Sand and Gravel Pit No. 2 (Lone Mountain)	American Sand and Gravel, LLC	S36,T19S, R59E	sand gravel	OP,ML	mining crushing	5	5260 Beesley Dr. Las Vegas, NV 89115 702-452-1900 Fax: 651-0375
Apex Landfill Pit	Las Vegas Paving Corp.	S19,T18S,R64E	sand gravel	OP,ML	mining crushing screening		4420 S. Decatur Boulevard Las Vegas, NV 89103 702-378-6102
Apex Quarry and Plant	Chemical Lime Co.	S14,22,23,26,27,34,35 T18S,R63E	limestone	OP,ML	mining calcining crushing screening	76	P.O. Box 3609 North Las Vegas, NV 89036 702-643-7702 Fax: 643-9517
Blue Diamond (Jones) Pit	Hanson Aggregates Nevada	S26,T22S,R60E	sand gravel	OP,ML	mining crushing screening	17	9325 S. Jones Blvd., No. A Las Vegas, NV 89139 702-565-1313 Fax: 565-4586
Blue Diamond Mine and Mill	James Hardie Gypsum, Inc.	S24-26,T21S,R58E; S20,29-31, T21S,R59E; S5-8,T22S,R59E	gypsum	OP,ML	mining calcining grinding	130	HCR 89033, Box 2900 Las Vegas, NV 89124 702-875-4111 Fax: 875-4213
Bootleg Pit	Boulder Sand and Gravel, Inc.	S5,8,T23S,R64E	aggregate	OP,ML	mining crushing screening	11	624 Yucca Boulder City, NV 89005 702-294-1156 Fax: 294-0676
Buffalo Road Pit and Mill	CSR West	S21,T21S,R60E	sand gravel	OS,ML	mining crushing screening	18	4511 S. Buffalo Road Las Vegas, NV 89117 702-876-2699 Fax: 871-8139
Cactus Pit	CTC Crushing, LLC	S34,T22S,R61E	sand gravel	OP,ML	mining crushing screening	26	250 Pilot Rd., Suite No. 160 Las Vegas, NV 89120 702-407-0487 Fax: 407-0994

continued

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
CLARK COUNTY (continued)							
Gornowich Pit	Gornowich Sand & Gravel, Inc.	S15,22,T22S,R63E	sand gravel	OP	mining screening washing	20	P.O. Box 30006, 3450 Procyon Ave. Las Vegas, NV 89102 702-876-2777 Fax: 876-2240
Henderson Plant	Chemical Lime Co.	S12,T22S,R62E	lime	ML	hydration	29	P.O. Box 127, BMI Complex Henderson, NV 89015 702-565-8991 Fax: 565-5902
Kaolin Pit	Leavitt Ready Mix	S25,26,T16S,R67E	sand gravel	OP,ML	mining crushing screening	26	P.O. Box 397 Moapa, NV 89025 702-864-2216 Fax: 864-2392
Lone Mountain	Diamond Const.	S36,T19S,R59E	sand gravel	OP,ML	mining gravity	22	7885 Westwind Road Las Vegas, NV 89139 702-644-1016 Fax: 644-6541
Lone Mountain	Las Vegas Paving Corp.	S35,T19S,R59E	sand gravel	OP,ML	mining crushing screening	7	4420 S. Decatur Boulevard Las Vegas, NV 89103 702-378-6102
Lone Mountain	Nevada Ready Mix Corp.	S36,T19S,R59E	sand gravel	OP,ML	mining crushing screening	32	P.O. Box 42755 Las Vegas, NV 89104 702-457-1115
Lone Mountain Community Pit	Various (BLM owns pit)	S36,T19S,R59E; S1,T20S,R59E	sand gravel	OP,ML	mining crushing screening		Bureau of Land Management 4765 West Vegas Dr. Las Vegas, NV 95901 702-647-5000 Fax: 647-5023
Lone Mountain	Southern Nevada Paving	S34,35,T19S,R59E; S3,4,T20S,R59E	sand gravel	OP,ML	mining crushing screening	11	3555 Polaris Avenue Las Vegas, NV 89102 702-876-5226
Money Pit	Southern Nevada Liteweight, Inc.	S16,T25S,R61E	aggregate	OP,ML	mining crushing screening	78	1101 E. Alexander Road Las Vegas, NV 89030 702-399-8621 Fax: 633-5787
PABCO Gypsum-Apex Pit	Pacific Coast Building Products, Inc.	S7,18,T20S,R64E	gypsum	OP,ML	mining crushing wash plant	120	1973 N. Nellis Boulevard #328 Las Vegas, NV 89115 702-643-1016 Fax: 643-6249
Pioneer Gypsum Mine	D.L. Denman Construction Co.	T19-30S,R64E T29-30S,R64E	gypsum	OP	mining	5	4880 Donovan Way North Las Vegas, NV 89031 702-399-5939 Fax: 399-8353
Pipes Pit	Pipes Paving	S1,T20S,R59E	sand gravel	OS,ML	mining crushing screening	54	3529 Clayton North Las Vegas, NV 89030 702-647-1162 Fax: 647-2387
Railroad Pass (El Dorado) Pit	Hanson Aggregates Las Vegas	S11,T23S,R63E	sand gravel	OP,ML	mining crushing screening	9	P.O. Box 92170 Henderson, NV 89009-2170 702-565-1313 Fax: 565-4586
Rainbow Quarries	Las Vegas Rock, Inc.	S34,T25S,R58E	stone	OP,ML	mining crushing	15	11635 Bermuda Rd. Las Vegas, NV 89123 702-791-7625 Fax: 896-4533
Royal Cement Quarry	Royal Cement Co.	S4,T15S,R67E	limestone	OP,ML	mining rotary kiln	54	5501 N. Moapa Valley Rd. Logandale, NV 89021 702-398-3533
Simplot Silica Products Pit	Simplot Industries	S2,3,11,12, T17S,R67E	silica sand	OP,ML	mining drying flotation screening	43	P.O. Box 308 Overton, NV 89040 702-397-2667 Fax: 397-2798
Salt Lake Highway Pit	Various (BLM owns pit)	S24,T19S,R62E	sand gravel	OP	mining		Bureau of Land Management 4765 West Vegas Dr. Las Vegas, NV 95901 702-647-5000 Fax: 647-5023
Sloan Quarry	Frehner Construction Co.	S13,T23S,R60E	sand gravel	OP,OS, ML	mining crushing screening	21	124 West Brooks Avenue North Las Vegas, NV 89030 702-649-6250 Fax: 642-2213
Speedway Pit	Southwest Paving and Grading, Inc.	S26,T19S,R62E	sand gravel	OP,ML	mining crushing	6	2755 North Lamont St. Las Vegas, NV 89115 702-643-8389 Fax: 644-5336
Spring Mountain Pit	Wells Cargo, Inc.	S15,T21S,R60E	sand gravel	OS,ML	mining gravity	13	P.O. Box 81170 Las Vegas, NV 89160 702-873-7440 Fax: 873-1696

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
DOUGLAS COUNTY							
Four Clover Mine	Barbara Smith	S19,T12N,R23E	lapis	OP	mining	1	P.O. Box 2325 Castro Valley, CA 2325 510-537-7868
ELKO COUNTY							
Capstone/Bootstrap Mine	Newmont Mining Corp.	S10,T36N,R49E	gold silver mercury	OP,HL, ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757
Dee Mine	Glamis Gold, Inc.	S34,T37N,R49E	gold silver	OP,UG HL,ML	mining heap leach milling	12	P.O. Box 160 Valmy, NV 89438 775-761-1709 Fax: 934-0082
Dunphy Mill	Baroid/Halliburton Energy Services, Inc.	S26,T33N,R48E	barite	ML	crushing gravity grinding	42	912 Dunphy Ranch Road Battle Mountain, NV 89820 775-468-0515 Fax: 468-2060
Elburz Pit	Vega Construction	S3,T35N,R57E	sand gravel	OS,ML	mining crushing screening	22	P.O. Box 1630, 4100 Idaho Elko, NV 89801 775-738-5381 Fax: 738-6311
Jerritt Canyon Mine	AngloGold Jerritt Canyon Corp.	T39-41N,R52-54E	gold	OP,UG CIL,CIP, HL,ML	mining heap leach milling	411	HC31 Box 78 Elko, NV 89801 775-738-5006 Fax: 758-5453
Ken Snyder Mine	Normandy Midas Operation, Inc.	S21,22,27,28,33,34 T39N,R46E	gold silver	UG,ML	mining milling	233	HC 66 Box 125 Midas, NV 89414 775-529-0604 Fax: 529-0610
Meikle Mine	Barrick Goldstrike Mines, Inc.	S13,T36N,R50E	gold silver	UG,ML	mining milling	607	P.O. Box 29 Elko, NV 89803 775-738-8043 Fax: 738-6543
Pilot Peak Quarry and Plant	Graymont Western U.S., Inc.	S14,15,22,23,26, T34N,R68E	limestone	OP,ML	mining grinding roasting rotary kiln	48	P.O. Box 2520 West Wendover, NV 89883 775-483-5463 Fax: 483-5149
Rain Mine	Newmont Mining Corp.	S33,T32N,R53E	gold silver mercury	UG HL,ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757
Rossi Mine	Baroid/Halliburton Energy Services, Inc.	S14-16,21-23,26-28, 34-35;T37N,R49E	barite	OP,ML	mining crushing	10	912 Dunphy Ranch Road Battle Mountain, NV 89820 775-468-0515 Fax: 468-2060
ESMERALDA COUNTY							
Basalt Mine and Plant	Grefco Minerals, Inc.	S29-32,T2N,R34E	diatomite	OP,ML	mining grinding	23	P.O. Box 288 Mina, NV 89422-0288 775-573-2422 Fax: 760-872-6006
Mineral Ridge Mine	Golden Phoenix Minerals, Inc.	S1,2,12,T2S,R38E S6,T2S,R39E	gold silver	OP,HL	heap leach care & maintenance	6	3595 Airway Dr., Suite 405 Reno, NV 89511-1845 775-853-4919 Fax: 853-5010
Silver Peak Operations	Chemetall Foote Co.	S22,T2S,R39E	lithium carbonate	OS,ML	mining solar evaporation precipitation	68	P.O. Box 98 Silver Peak, NV 89047 775-937-2222 Fax: 937-2250
EUREKA COUNTY							
Betze/Post Mine	Barrick Goldstrike Mines, Inc.	S23-26,T36N,R49E; S12,20,29,30; T36N,R50E	gold	OP,CIL, HL,ML	mining heap leach milling	1143	P.O. Box 29 Elko, NV 89803 775-738-8043 Fax: 738-6543
Carlin North Genesis Complex	Newmont Gold Co.	S33,T36N,R50E	gold	OP,HL, ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757
Carlin North-Post and adjacent mines	Newmont Gold Co.	S19,T36N,R50E	gold	OP,HL, ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757
Carlin South-Carlin and adjacent mines	Newmont Gold Co.	S14,T35N,R50E	gold	UG,HL, ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757

[1] Total for combined Carlin trend operations.

continued

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
EUREKA COUNTY (continued)							
Carlin South -Gold Quarry and adjacent mines	Newmont Gold Co.	S3,T33N,R51E	gold	OP,HL, ML	mining heap leach milling	1455[1]	P.O. Box 669 Carlin, NV 89822-0669 775-778-4000 Fax: 778-4757
Ruby Hill Mine	Barrick Gold Corp.	S9-11,14,15 T19N,R53E	gold silver	OP,CIL, CIP,HL, ML	mining heap leach milling	88	P.O. Box 676 Eureka, NV 89316 775-237-6060 Fax: 237-5408
HUMBOLDT COUNTY							
Getchell and Turquoise Ridge Mines	Placer Dome, Inc.	S33,T39N,R42E	gold silver	UG	mining stockpiling	193	P.O. Box 220 Golconda, NV 89414-9702 775-529-5001 Fax: 529-0752
Hycroft Mine	Hycroft Resources and Development, Inc.	S26,T35N,R29E	gold silver	OP,HL	heap leach	8	P.O. Box 3030 Winnemucca, NV 89446 775-623-5260 Fax: 623-0215
Lone Tree Mine (Lone Tree Complex)	Newmont Mining Corp.	S1,11,13,15,23, T34N,R42E	gold silver	OP,HL, ML	mining flotation heap leach milling	335[2]	P.O. Box 388 Valmy, NV 89438-0388 775-635-9000 Fax: 635-0111
Marigold Mine	Glamis Marigold Mining Co.	S8,9,18-20, T33N,R43E	gold silver	OP,HL, ML	mining heap leach milling	97	P.O. Box 160 Valmy, NV 89438 775-623-9571 Fax: 635-2551
MIN-AD Mine	MIN-AD, Inc.	S28,T35N,R38E	dolomite	OP,ML	mining air separation grinding screening	20	P.O. Box 39 Winnemucca, NV 89446 775-623-5944 Fax: 623-9028
Pinson Mine	Pinson Mining Co.	S28,29,32,33, T38N,R42E	gold silver	OP,HL	heap leach care & maintenance	2	P.O. Box 129 Winnemucca, NV 89446-0129 775-529-5026 Fax: 529-5030
Rainbow Ridge Opal Mine	Rainbow Ridge Opal Mines, Inc.	S22,23,T45N,R26E	precious opal	OP	mining	1	P.O. Box 97 Denio, NV 89404 775-941-0270
Royal Peacock Opal Mine	Walter Wilson	S30,T45N,R26E	precious opal	OP	mining	1	P.O. Box 165 Denio, NV 89404 775-941-0374 Fax: 272-3201
Sage Mine	West Coast Gemstones, Inc.	S12,T43N,R35E	chalcedony	OP	mining development extraction grinding sorting	4	P.O. Box 133 College Place, WA 99324 509-522-4851 Fax: 527-1233
Trenton Canyon Mine (Lone Tree Complex)	Newmont Mining Corp.	S7,18,19,T32N,R43E; S29,32,T33N,R43E	gold silver	OP,HL, ML	mining flotation heap leach milling	335[2]	P.O. Box 388 Valmy, NV 89438-0388 775-635-9000 Fax: 635-0111
Twin Creeks Mine	Newmont Mining Corp.	S3-10,15-22,27-32 T39N,R43E	gold silver	OP,HL, ML	mining heap leach milling	609	P.O. Box 69 Golconda, NV 89414 775-623-4300 Fax: 635-4602
LANDER COUNTY							
Argenta Mine and Mill	Baker Hughes INTEQ	S6,18,19,T32N,R47E	barite	OP,ML	mining gravity grinding	20	P.O. Box 277 Battle Mountain, NV 89820 775-635-5441 Fax: 635-5455
Battle Mountain Grinding Plant	M-I LLC	S18,T32N,R45E	barite	ML	gravity grinding	34	P.O. Box 370 Battle Mountain, NV 89820 775-635-5135 Fax: 635-2191
Blue Ridge Mine	Jay and Grace Wintle	S19,20,29,30, T28N,R47E	faustite turquoise	OP	mining screening sorting, washing	2	810 Sheep Creek Road Battle Mountain, NV 89820 775-635-5231
Cortez/Pipeline Mines	Placer Dome U.S., Inc.	S31,33,34, T28N,R47E	gold	OP,CIL, HL,ML	mining heap leach milling	394	HC66 Box 1250 Crescent Valley, NV 89821 775-468-4400 Fax: 468-4496

[1] Total for combined Carlin trend operations.
[2] Total for combined Lone Tree, Mule Canyon, and Trenton Canyon operations.

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
LANDER COUNTY (continued)							
Greystone Mine	M-I, LLC	S35,T28N,R45E	barite	OP,ML	gravity milling	41	P.O. Box 370 Battle Mountain, NV 89820 775-635-5135 Fax: 635-2191
McCoy/Cove Mine	Echo Bay Minerals Co.	S1-11,T28N,R42E; S36,T29N,R42E	silver gold	UG,HL, ML	mining heap leach milling	147	P.O. Box 1658 McCoy Mine Road, No. 1 Battle Mountain, NV 89820 775-635-5500 Fax: 635-5098
Mule Canyon Mine (Lone Tree Complex)	Newmont Mining Corp.	S4,T31N,R47E	gold silver	OP,HL, ML	mining heap leach milling	335[2]	P.O. Box 388 Valmy, NV 89438-0388 775-635-9000 Fax: 635-0111
Phoenix Project	Newmont Mining Corp.	S22,27,33,34 T31N,R43E	gold silver	OP,HL, ML	heap leach	8	P.O. Box 388 Valmy, NV 89438-0388 775-635-9000 Fax: 635-0111
LINCOLN COUNTY							
Tenacity Perlite Mine and Mill	Wilkin Mining & Trucking Co.	S34,T4S,R62E	perlite	UG,ML	mining milling	8	P.O. Box 829 Panaca, NV 89042 775-728-4463 Fax: 728-4456
LYON COUNTY							
Adams Claim Gypsum Mine	Art Wilson Co.	S25,T16N,R20E	gypsum limestone	OP,ML	mining crushing	19	P.O. Box 20160 Carson City, NV 89721 775-882-0700 Fax: 882-0790
Hazen Pit	Eagle-Picher Industries, Inc.	S6,9,T19N,R26E	diatomite	OP	shipping	1	P.O. Box 10480 Reno, NV 89510 775-824-7700 Fax: 824-7715
Jupiter Mine	Art Wilson Co.	S12,T16N,R24E	clay	OP	mining crushing	1	P.O. Box 20160 Carson City, NV 89721 775-882-0700 Fax: 882-0790
Nevada Cement Mine	Nevada Cement Co.	S3-6,9,T19N,R25E; S31-33,T20N,R25E	limestone clay	OP,ML	mining crushing dry milling rotary kiln	121	P.O. Box 840 Fernley, NV 89408 775-575-2281 Fax: 575-4387
MINERAL COUNTY							
Denton-Rawhide Mine	Kennecott Rawhide Mining Co.	S4,5,8,16,17, T13N,R32E	gold silver	OP,HL ML	mining heap leach milling	164	P.O. Box 2070 Fallon, NV 89407 775-945-1015 Fax: 945-1213
NYE COUNTY							
Ash Meadows Plant	Ash Meadows Zeolite, LLC	S25,T18S,R50E	zeolite	ML	crushing screening packaging	8	HCR 70 P.O. Box 7006 Amargosa Valley, NV 89020 775-372-5524 Fax: 372-5524
Cinder Cone Pit	Allied Building Materials, Inc./ Cind-R-Lite Co.	S36,T14S,R48E; S31,T14S,R49E; S1,T15S,R48E; S6,T15S,R49E	cinder	OP,ML	mining screening	7	4745 Mitchell St. North Las Vegas, NV 89031 702-651-1550 Fax: 651-1551
Daisy Mine	Glamis Gold, Ltd.	S11-15,22,23, T12S,R47E; S7,8,18,T23S,R48E	gold	OP,HL, ML	heap leaching reclamation	3	P.O. Box 160 Valmy, NV 89438 775-764-7970 Fax: 934-0082
Gabbs Mine	Premier Chemicals, Inc.	S23,25-27,34-36, T12N,R36E	magnesite	OP,ML	mining calcining	80	P.O. Box 177 Gabbs, NV 89409 775-285-2601 Fax: 285-4021
IMV Pits	Mud Camp Mining Co., LLC	S28,29,T17S,R49E; S6,21,T17S,R51E	clay	OP,ML	mining drying grinding screening	34	Route Box 549 Amargosa Valley, NV 89020 775-372-5341 Fax: 372-5640
Lathrop Mill	American Borate Co.	S36,T17S,R49E	calcium borate	ML	calcination flotation	9	American Borate Co. Star Route 15 Box 610 Amargosa Valley, NV 89020 775-372-5339

[2] Total for combined Lone Tree, Mule Canyon, and Trenton Canyon operations.

continued

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
NYE COUNTY (continued)							
New Discovery Mine/ White Caps Mill	Vanderbilt Minerals Corp.	S13,14,T12S,R46E; S18,19,T12S,R47E	clay	OP,UG, ML	bagging grinding screening	7	3570 Burgundy Dr. Pahrump, NV 89048 775-537-6944 Fax: 537-0629
Pahrump Community Pit	Various (BLM owns pit)	S28,29,T20S,R54E	sand gravel	OP	mining		Bureau of Land Management 4765 Vegas Dr. Las Vegas, NV 95901 702-647-5000 Fax: 647-5023
Round Mountain Mine (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S19,20,29,30, T10N,R44E	gold silver	OP,HL, ML	mining gravity heap leach milling	625	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 775-377-3112 Fax: 377-3224
Spicerite Project	D and H Mining Limited Partnership	S16,T11S,R47E	building stone	OP	mining crushing screening	5	P.O. Box 897 Beatty, NV 89003 775-553-2459 Fax: 553-2459
Tonopah Mine	Equatorial Tonopah, Inc.	S5,T5N,R42E	copper	HL	heap leach	11	P.O. Box 1569 Tonopah, NV 89049 775-482-3813 Fax: 482-3843
PERSHING COUNTY							
Coeur Rochester Mine	Coeur Rochester, Inc.	S9-11,15,16,21,27, 28,T28N,R34E	silver gold	OP,HL, ML	mining heap leach milling	229	P.O. Box 1057 Lovelock, NV 89419 775-273-7995 Fax: 273-7423
Colado Mine	Eagle-Picher Minerals, Inc.	S6,7,16,18,21,25, T28N,R29E	diatomite perlite	OP,OS	mining	30	P.O. Box 959 150 Coal Canyon Road Lovelock, NV 89419 775-824-7591 Fax: 824-7595
Colado Plant	Eagle-Picher Minerals, Inc.	S33,T28N,R32E	diatomite perlite	ML	drying classification grinding calcining	102	P.O. Box 959 150 Coal Canyon Road Lovelock, NV 89419 775-824-7591 Fax: 824-7595
Empire Quarry	United States Gypsum Co.	S31,T31N,R24E	gypsum	OP	mining	14	P.O. Box 130 Empire, NV 89405 775-557-2341 Fax: 557-2212
Florida Canyon Mine	Apollo Gold, Inc.	S1-4,9-15,T31N,R33E; S37-39,T31½N,R33E; S33-35,T32N,R33E	gold	OP,HL, ML	mining heap leach milling	153	P.O. Box 330 Imlay, NV 89418 775-538-7300 Fax: 538-7324
Section 8 Mine	American Colloid Co.	S8,T27N,R33E	clay	OP	shipping	4	1500 West Shure Drive Arlington Heights, IL 60004 847-392-4600 Fax: 506-6199
W. Glen Sexton Family Trust	Nutritional Additives Co.	S5,8,T34N,R38E	dolomite	OP,ML	mining milling	6	415 Wellington Street Winnemucca, NV 89445 775-623-1151 Fax: 623-1153
STOREY COUNTY							
All-Lite Pit	All-Lite Aggregate, Inc.	S22,T19N,R22E	sand gravel	OS,ML	mining milling	25	3005 Canyon Way Lockwood, NV 89431 775-342-0500
Basalite Dayton Pit	Basalite Division of Pacific Coast Building Products	S8,9,16,17, T17N,R22E	sand gravel	OS,ML	mining crushing milling	6	2600 Boeing Way Carson City, NV 89701 775-882-9336 Fax: 887-1025
Clark Mine and Mill	Eagle-Picher Minerals, Inc.	S27,33,34, T20N,R23E	diatomite	OP,ML	mining calcining drying grinding	63	P.O. Box 10480 Reno, NV 89510 775-824-7700 Fax: 824-7715
WASHOE COUNTY							
Bella Vista Pit	A and K Earthmovers	S3,T18N,R20E	sand gravel	OS,ML	mining screening	5	P.O. Box 1059 Fallon, NV 89407 775-825-1636
Clay Mine	Art Wilson Co.	S13,T27N,R19E	clay	OP	mining	5	P.O. Box 20160 Carson City, NV 89721 775-882-0700 Fax: 882-0790

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
WASHOE COUNTY (continued)							
Empire Mill	United States Gypsum Co.	S11,13,T31N,R23E	gypsum	ML	calcining crushing	137	P.O. Box 130 Empire, NV 89405 775-557-2341 Fax: 557-2212
Hidden Canyon Pit	Granite Construction Co.	S16,T20N,R20E	aggregate	OP,ML	mining crushing screening washing	11	P.O. Box 2087 Sparks, NV 89432 775-355-3434 Fax: 329-2803
Lockwood Quarry	Granite Construction Co.	S17,T19N,R21E	aggregate	OP,ML	mining crushing screening washing	16	P.O. Box 2087 Sparks, NV 89432 775-355-3434 Fax: 329-2803
Paiute Pit	Paiute Aggregates, Inc.	S2,27,34, T21N,R24E	sand gravel	OP	mining	7	10 Hill Ranch Rd. Wadsworth, NV 89442 775-575-4278
Rilite Aggregate Pit	Rilite Aggregate Co.	S23,T18N,R20E	aggregate	OP,ML	mining grinding crushing	13	P.O. Box 11767 Reno, NV 89510 775-329-8842 Fax: 329-3593
Spanish Springs Plant No. 6	Martin Marietta Minerals	S15, T21N,R20E	sand gravel	OP,ML	mining crushing screening	36	11059 Pyramid Lake Rd. Sparks, NV 89436 775-425-4455 Fax: 425-5131
Wade Sand Pit	Granite Construction Co.	S3,T20N,R24E	sand	OP	mining screening	6	P.O. Box 2087 Sparks, NV 89432 775-355-3434 Fax: 329-2803
WHITE PINE COUNTY							
Bald Mountain Mine	Placer Dome U.S. Inc.	S14,15,19,20 T24N,R57E	gold	OP,HL, ML	mining heap leach milling	107	P.O. Box 2706 Elko, NV 89803 775-744-4227 Fax: 744-4216
Mount Moriah Quarry	Mt. Moriah Stone	S22,23,26,27,34-36 T16N,R70E	stone	OP	mining	8	P.O. Box 35 Baker, NV 89311 435-855-2232 Fax: 855-2332

For additional information on Nevada's mineral resources and mineral industries see the following NBMG publications:

Statewide Commodity Bulletins

Antimony (B61)
Barite (B98)
Fluorspar (B93)
Gypsum (B103)
Iron (B53)
Mercury (B41)
Montmorillonite, bentonite, and fuller's earth (B96)
Oil and gas (B104)
Radioactive minerals (B81)
Talcose minerals (B84)
Thermal waters (B91)
Tungsten (B105)
Zeolites (B79)

County Mineral Resource Bulletins

Carson City (B75)
Churchill (B83)
Clark (B62)
Douglas (B75)
Elko (B106)
Esmeralda (B78)
Eureka (B64)
Humboldt (B59)
Lander (B88)
Lincoln (B73)
Lyon (B75)
Mineral (B58)
Nye (B77, B99B)
Pershing (B89)
Storey (B70)
Washoe (B70)
White Pine (B85)

Other Publications

Index to geothermal well files housed at NBMG (L-5)
Gold and silver resources in Nevada (M120)
Nevada geothermal resources (M126)
Oil and gas wells drilled in Nevada since 1907 (L-8)
Nevada mining and you (SP8)
Major mines of Nevada 2001 (P-13)
Outline of Nevada mining history (SP15)
Mining districts of Nevada (R47)

NBMG maintains an open-file office with the following information available to the public:

NBMG, USGS, USBM, and DOE open-file reports on Nevada geology and mineral resources
petroleum and geothermal exploration and production
mining district records and maps
mineral resources and reserves
mineral resource assessments
core and cuttings library
mining claim data
wilderness study area reports
general geologic studies
indexes and ordering information for maps, air photos, and remote sensing imagery