



**Nevada Bureau of
Mines and Geology**

Special Publication MI-2016

The Nevada Mineral Industry 2016

Metals

**Industrial
Minerals**

Oil and Gas

Geothermal

*Exploration
Development
Mining
Processing*



University of Nevada, Reno

Starting in 1979, NBMG has issued annual reports that describe the mineral (precious and base metals and industrial minerals including aggregate), oil and gas, and geothermal activities and accomplishments. This report describes those accomplishments in Nevada for 2016, which includes production, reserve, and resource 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; and a directory of mines and mills.

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Silver Top Shaft, Tonopah Historic Mining Park, Nye County, Nevada.

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Special Publication MI-2016**

**The Nevada Mineral Industry
2016**

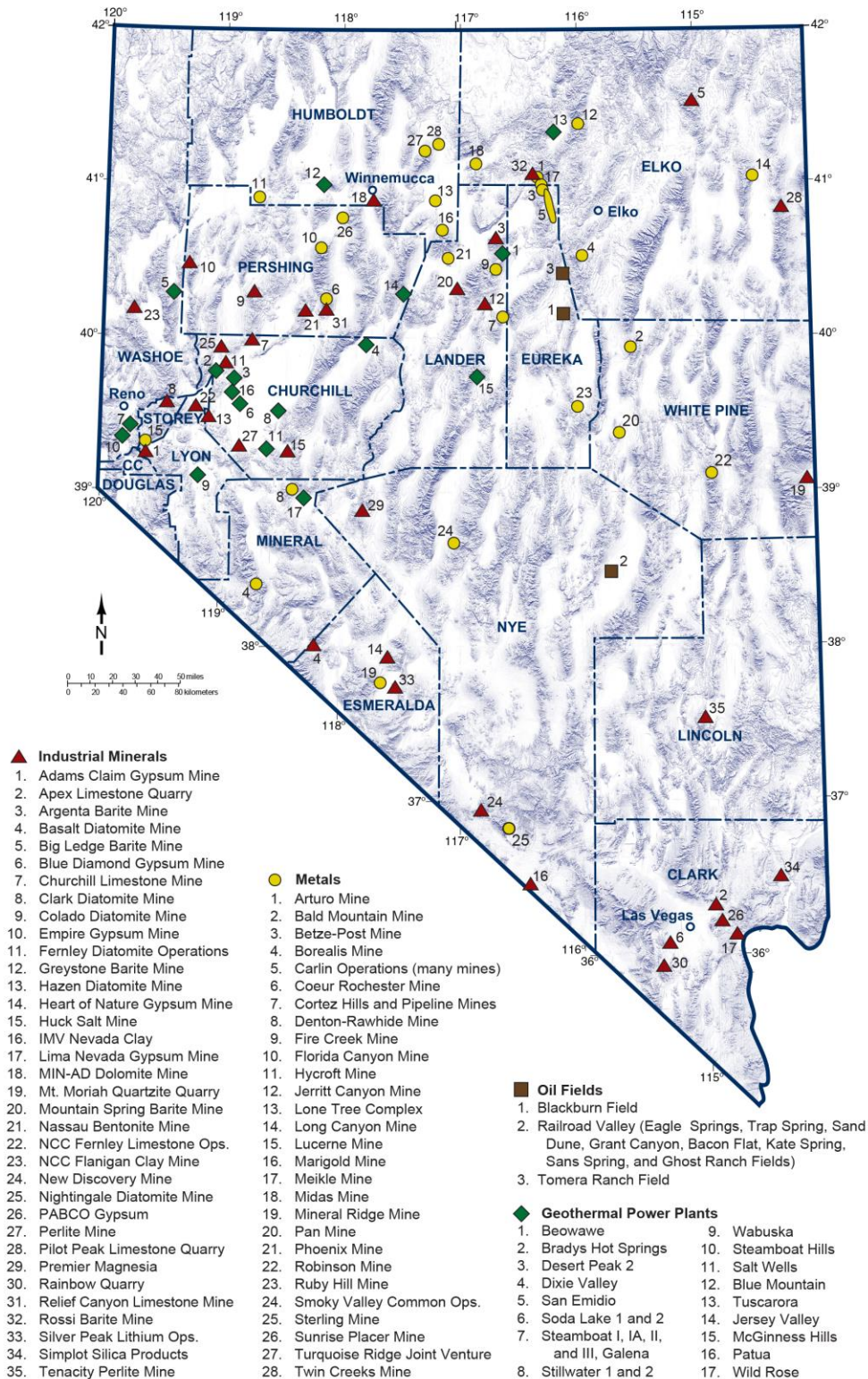
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Mackay School of Earth Sciences and Engineering
College of Science
University of Nevada, Reno

2017



Major mines, oil fields, and geothermal plants, 2016.

OVERVIEW

by John L. Muntean

This report highlights activities through 2016 in metals, industrial minerals, geothermal energy, and petroleum. The value of overall mineral and energy production in Nevada in 2016 was \$8.10 billion, a 8.1% increase from 2015 (table 1, fig. 1). Gold production in 2016 was just under 5.47 million ounces (170 tonnes), a 2.4% increase from 2015. The average gold price in 2015 was \$1250.74/ounce (fig. 2). Gold's share of the value of Nevada's mineral and energy production increased to 84%. Nevada led the nation in the production of gold, and barite (\$19.9 million), and was the only state that produced lithium (\$23.25 million), magnesite (\$6.8 million), and the specialty clays, sepiolite and saponite (\$7.4 million). Other commodities mined and produced in Nevada in 2015, in order of value, included aggregate copper (\$352.5 million), (sand, gravel, and crushed stone) (\$298.6 million), geothermal energy (\$258.2 million), silver (\$152.3 million), diatomite (\$44.2 million), gypsum (\$37.2 million), limestone and dolomite (mainly for cement, \$34.5 million), silica (\$20.4 million), dimension stone and landscape rock (~\$20 million), and petroleum (\$10.3 million). Additional mined materials with production values less than \$10,000,000 in 2015 were molybdenum, perlite, other clays, iron oxides, salt, and semiprecious gemstones (opal). Locations of many of the sites mentioned in the text of this report are shown on NBMG Open-File Report 2017-01, *Nevada Active Mines and Energy Producers*, which is available at http://data.nbmng.unr.edu/public/freedownloads/geospatial-pdf/OF2014-01_plate.pdf.

For the second year in a row Nevada lead the United States in terms of value of overall nonfuel (excluding oil, gas, coal, uranium, and geothermal) mineral production in 2015 (according to the U.S. Geological Survey, Mineral Commodity Summaries 2017, <http://minerals.usgs.gov/minerals/pubs/mcs/2017/mcs2017.pdf>). Nevada accounted for just over 10% of the value of domestic nonfuel mineral production. Nevada has lead the nation seven of the last eight years. Arizona was second and is the country's major copper producer. Texas rose to third, mainly due to its booming construction industry and demand for aggregate and cement, California was fourth, also mainly due to aggregate and cement, and Minnesota was fifth due mainly to iron ore. 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.

Nevada's production of 5.47 million ounces of gold was valued at \$6.84 billion. Nevada gold production accounted for 81% of total U.S. gold production in 2016. The U.S. was the fourth leading gold producer in the

world in 2015. Nevada alone accounted for 5.5% of world production of gold, which was approximately 99.7 million ounces (3,100 tonnes) in 2014. Only China, Russia, and Australia produced more gold than the state of Nevada.

The section on **Metals** and the tables in **Major Precious-Metal Deposits** and **Other Metallic Deposits** provide details on exploration, new deposit discoveries, new mine openings, mine closures, additions to reserves, and mine expansions. As has been the case for many years, gold continues to be the leading commodity produced in Nevada. Production of gold in 2016 came mainly from 13 major mining operations that each produced greater than 100,000 ounces (3 tonnes). The Carlin trend in northeastern Nevada accounted for 39% of the total production, slightly higher than in 2015.

Nevada and the U.S. have produced a significant portion of the world's gold. The U.S. Geological Survey estimates that total world gold production, since the beginning of civilization, has been approximately 5.726 billion ounces (178 thousand tonnes). Although this seems like a large quantity, all the gold ever mined would fit into a cube only 69 ft (21 m) on a side. Interestingly, about 85% of that gold is still in use (in bullion, coins, jewelry, electronics, etc.), and most gold currently in use will be recycled. Total gold production in Nevada through 2016 was 224.2 million ounces (6,974.5 tonnes). Remarkably, 89% has been produced since the Carlin Mine began production in 1965; 87% has been produced during the current boom from 1981 to the present; and 24% has been produced in the last ten years. Cumulative U.S. production, primarily since 1835, is approximately 600 million ounces (18.7 thousand tonnes) or about 10.5% of cumulative world gold production, and total Nevada production is 3.9% of cumulative world production. The Carlin trend alone accounts for 1.5% of all the gold ever mined in the world. By the end of 2016, cumulative production from the Carlin trend was 88.2 million ounces (2,743 tonnes) assuring its place as one of the most productive gold-mining districts in the world.

Nevada continues to be in the midst of the biggest gold boom in U.S. history, as the graph of historical U.S. gold production illustrates (fig. 3). The recent surge in production in the U.S. is largely the result of discoveries of Carlin-type gold deposits in which gold occurs primarily in grains that are too small to be visible to the naked eye. These deposits are mostly in Nevada. The U.S. production so far in the current boom, the period since 1981, has been 274.8 million ounces (8,546 tonnes). This is significantly greater than the total U.S. production during the era of the California gold rush (1849 to 1859, with 29 million ounces (900 tonnes),

although some estimates of unreported production may bring that figure up to 70 million ounces (2,200 tonnes); the Comstock (Nevada) era from 1860 to 1875 with 34 million ounces (1,060 tonnes); and the period from 1897 to 1920, when Goldfield (Nevada), the Black Hills (South Dakota), Cripple Creek (Colorado), and byproduct gold production from copper mines in Arizona and Utah contributed to cumulative production of 95 million ounces (3,000 tonnes). U.S. production in the last decade from 2007 through 2016 alone was 72.2 million ounces (2,246 tonnes). The current boom is

bigger than previous booms not only in terms of cumulative production but also in terms of peak annual production (11.6 million ounces (360 tonnes) in 1998 versus 4.8 million ounces (150 tonnes) in 1909, 2.6 million ounces (80 tonnes) in 1866, and 3.1 million ounces (96 tonnes) in 1853) and duration (at least 36 years for the current boom versus no more than 24 years for any of the earlier booms).

Table 1. Mineral, geothermal power, and petroleum production in Nevada¹

Commodity	2016		2015 (revised)		% Change (2015 to 2016)	
	Quantity	Value	Quantity	Value	Quantity	Value
Gold	5,467,646 oz (170,062 kg)	\$6,838,603,558	5,339,659 oz (166,082 kg)	\$6,194,324,820	2.4%	10.4%
Silver	8,885,873 oz (276,382 kg)	\$152,303,863	9,498,051 oz (295,422 kg)	\$148,929,440	-6.4%	2.7%
Copper	160,218,049 lbs (72,674 tonnes)	\$352,479,708	177,637,852 lbs (80,575 tonnes)	\$454,752,290	-9.8%	-22.5%
Molybdenum	493,010 lbs (224 tonnes)	\$3,244,006	473,888 lbs (215 tonnes)	\$3,227,177	4.0%	0.5%
Aggregate	23,810,000 tons (21,600,000 tonnes)	\$298,600,000	27,940,000 tons (25,346,742 tonnes)	\$207,600,000	-14.8%	43.8%
Barite	230,114 tons (208,758 tonnes)	\$19,981,158	526,380 tons (477,524 tonnes)	\$63,580,318	-56.3%	-68.6%
Gypsum	3,250,872 tons (2,949,172 tonnes)	\$37,247,488	3,397,974 tons (3,082,590 tonnes)	\$37,294,470	-4.3%	0.1%
Geothermal Energy	3,344,232 MWh net	\$258,187,349	3,114,840 MWh net	\$240,033,610	7.3%	7.6%
Petroleum	278,599 barrels	\$10,333,936	281,875 barrels	\$12,606,644	-1.2%	-18.0%
Other Minerals²		\$166,923,491		\$168,648,931		
Totals		\$8,100,657,069		\$7,493,703,230		8.1%

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

²Building stone, cement, clay, diatomite, lime, lithium, magnesite, mercury, iron ore, perlite, salt, and silica sand.

The value of minerals and energy were calculated as follows:

Gold and silver: production reported by NDOM using average annual prices for gold (\$1250.74/oz in 2016 and \$1160.06/oz for 2015) and silver (\$17.14/oz in 2016 and \$15.68 for 2015), as reported by www.kitco.com.

Copper and molybdenum: production reported by NDOM using average annual prices for copper (\$2.20/lb for 2016 and \$2.56/lb for 2015) and molybdenum (\$6.58/lb for 2016 and \$6.81 /lb for 2015), as reported by USGS.

The values of all the other commodities were the gross proceeds reported by the Nevada Department of Taxation (NDT). The total values, as calculated, will not necessarily equal the total gross proceeds reported by NDT.

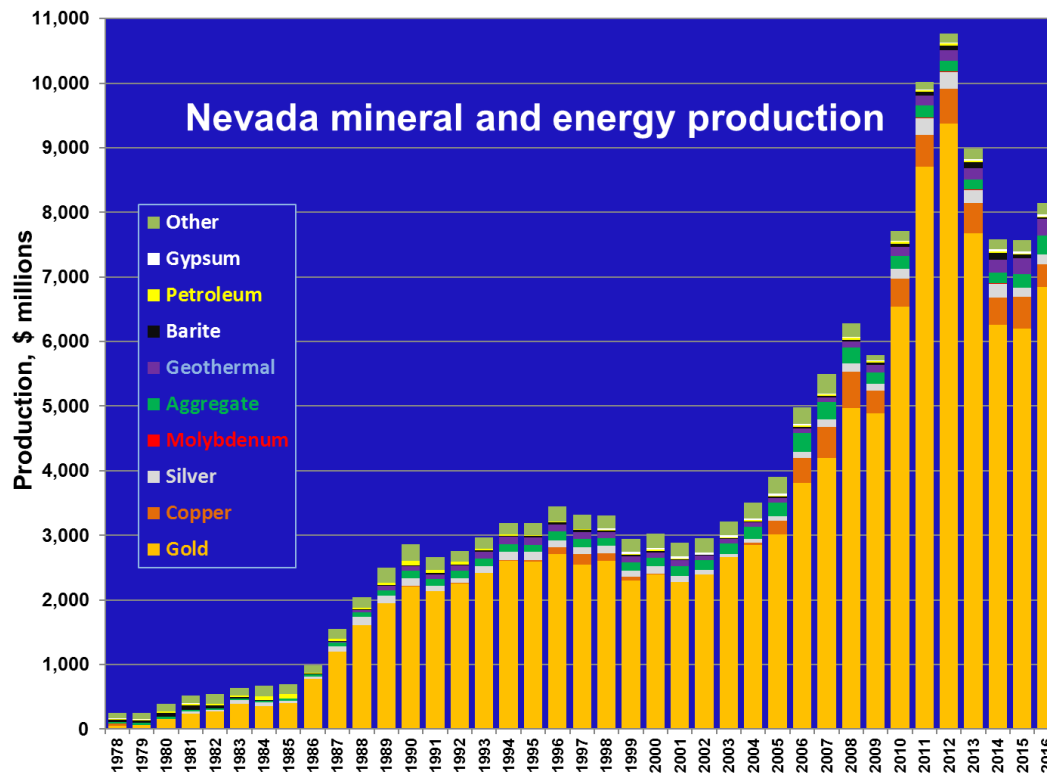


Figure 1. Chart showing relative values of Nevada production of gold, copper, silver, molybdenum, aggregate, geothermal energy, barite, petroleum, gypsum and other minerals from 1978 to 2016. Molybdenum production is only shown for 2011 to 2016.

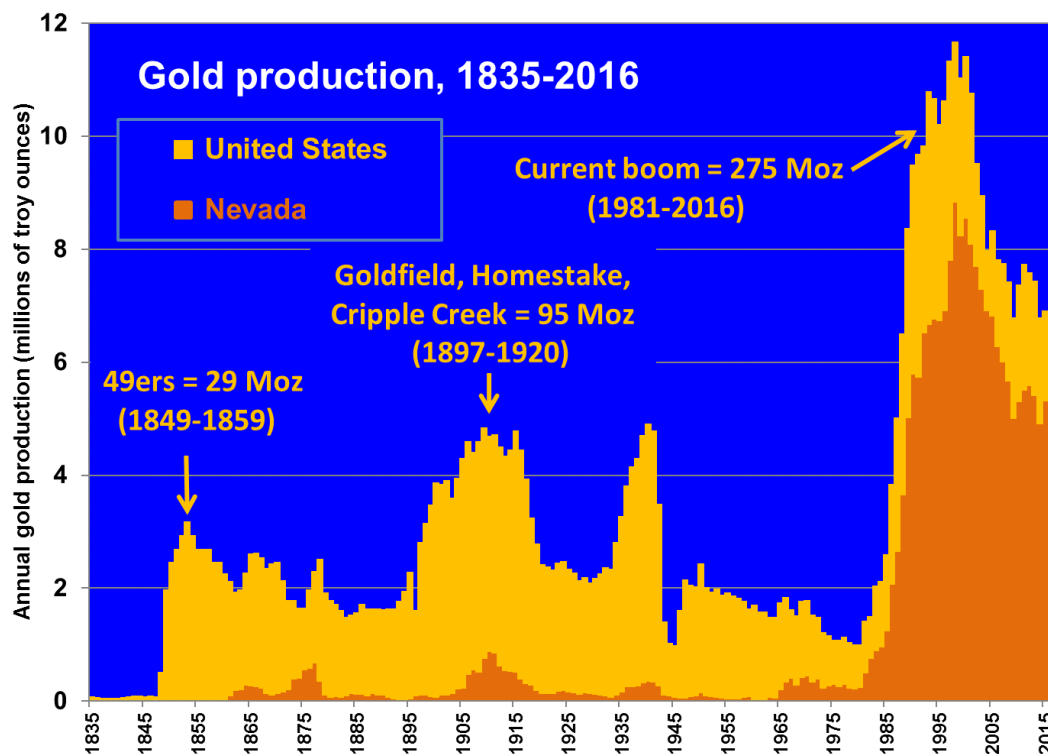


Figure 2. Chart comparing U.S. and Nevada gold production from 1835 to 2016.

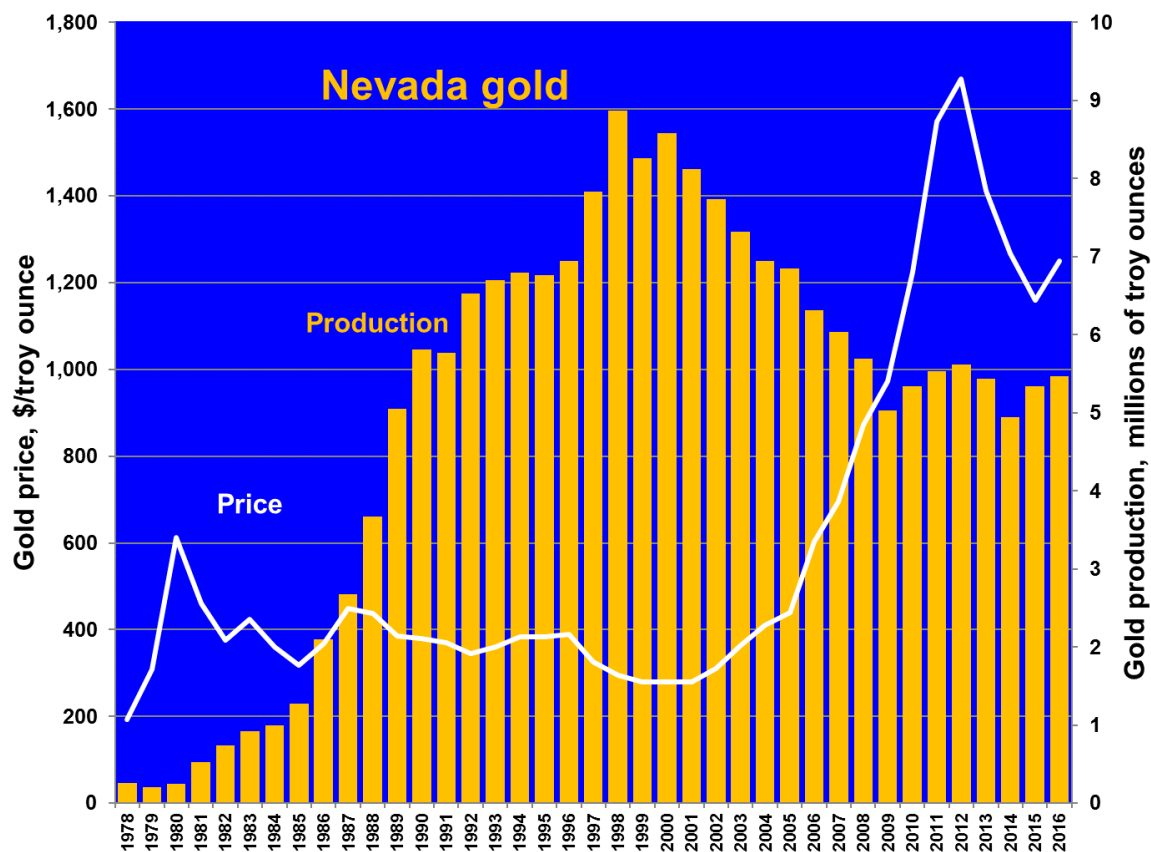


Figure 3. Chart showing Nevada gold production compared to the price of gold from 1978 to 2016.

Barrick Gold Corp. and Newmont Mining Corp. accounted for 78% of Nevada's gold production in 2016, mostly from mines in northeastern Nevada. Barrick produced 2.64 million ounces (82 tonnes) of gold mainly from its Goldstrike and Cortez operations, which both produced just under 1.2 million ounces (37 tonnes) in 2015. Barrick's autoclave at Goldstrike was retrofitted and upgraded with the construction of the Total Carbonaceous Material (TCM) project in 2014, which allows for the use of calcium thiosulphate instead of cyanide to process double refractory ore. After a staged start-up, the TCM process-enhanced autoclaves reached 85% of the full 13,200 tons (12,000 tonnes) per-day production in 2015 and increased the tonnage processed by 34% and improved recovery by 12% in 2016. Other large gold operations were Newmont's mines on the Carlin trend (943,823 ounces), Kinross Gold Corp.'s Round Mountain Mine (371,484 ounces) in Nye County, Newmont's Twin Creeks Mine (367,528 ounces) and the nearby Turquoise Ridge Mine (354,560 ounces, 75% Barrick, 25% Newmont), both in Humboldt County. In

November, Newmont completed construction of its Long Canyon Mine in the Pequop Mountains, producing 22,500 ounces (700 kg) of gold by the end of 2016.

Nevada's silver production in 2016 totaled 8.9 million ounces (276 tonnes), an 8.9% decrease from 2015 (fig. 4). About 49% of the silver production was a byproduct of gold mining. With a ratio of value (average price of gold to average price of silver) of 73:1 in 2016, only those deposits with more than 73 times as much silver as gold can be considered primary silver deposits. Only one such mine operated in Nevada in 2016—Coeur Mining Inc.'s Rochester Mine in Pershing County, which had a silver-to-gold production ratio of 90:1 and total silver production of 4.57 million ounces (142 tonnes) in 2016. It produced about 51% of Nevada's silver in 2016. Nevada's silver production in 2016 accounted for 25% of the U.S. total, which was second in the U.S. behind Alaska.

Nevada's copper production in 2016 was dominated by the Robinson copper-gold-molybdenum mine, operated by KGHM International Ltd. near Ely in

White Pine County. It produced 118.4 million pounds (53,700 tonnes) of copper (fig 5). Copper was also produced at Newmont's Phoenix Mine near Battle Mountain in Lander County, where the value of 41.8 million pounds (19,000 tonnes) of produced copper was about 42% of the value of the mine's gold production. At Phoenix, Newmont produces copper on site with a solvent extraction-electrowinning (SX-EW) plant, as well as producing concentrates that are shipped to smelters outside Nevada, which KGHM's Robinson

Mine ships as well. KGHM also produced 493,010 pounds (224 tonnes) of by-product molybdenum from Robinson, the only reported molybdenum production in Nevada in 2016.

Mineral exploration activity in 2016 is summarized in the chapters on **Metals and Industrial Minerals**. Most exploration focused on gold; however, some companies explored for lithium, copper, silver, zinc, barite, diatomite, and graphite.

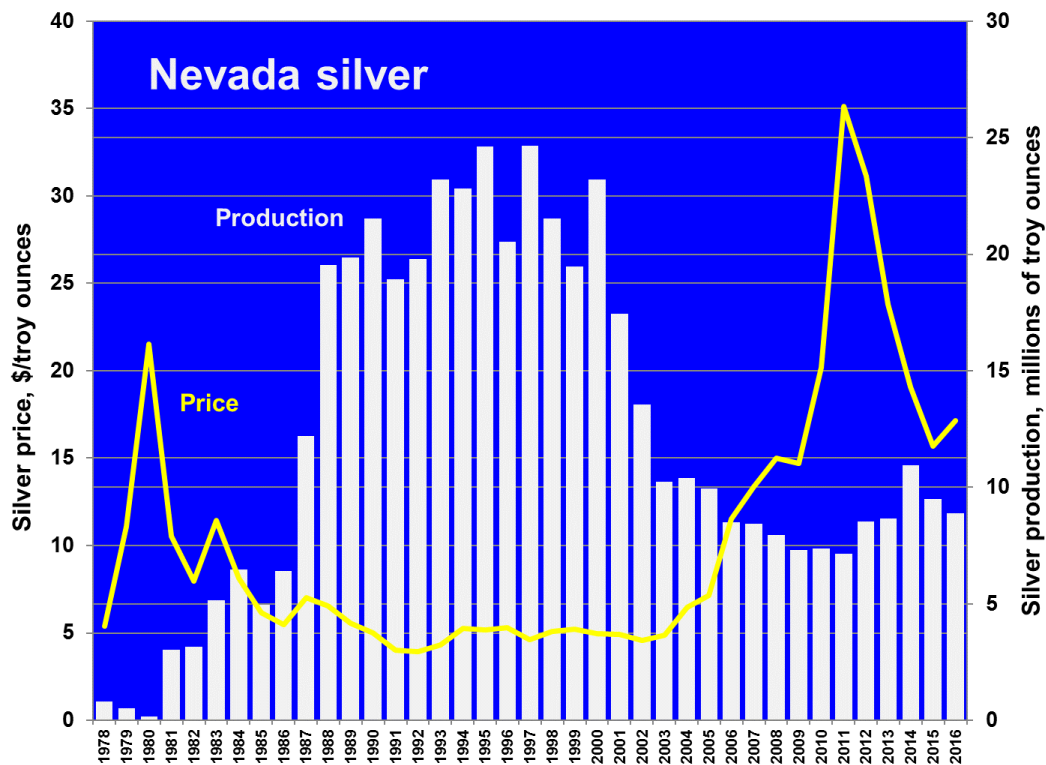


Figure 4. Chart showing Nevada silver production compared to the price of silver from 1978 to 2016.

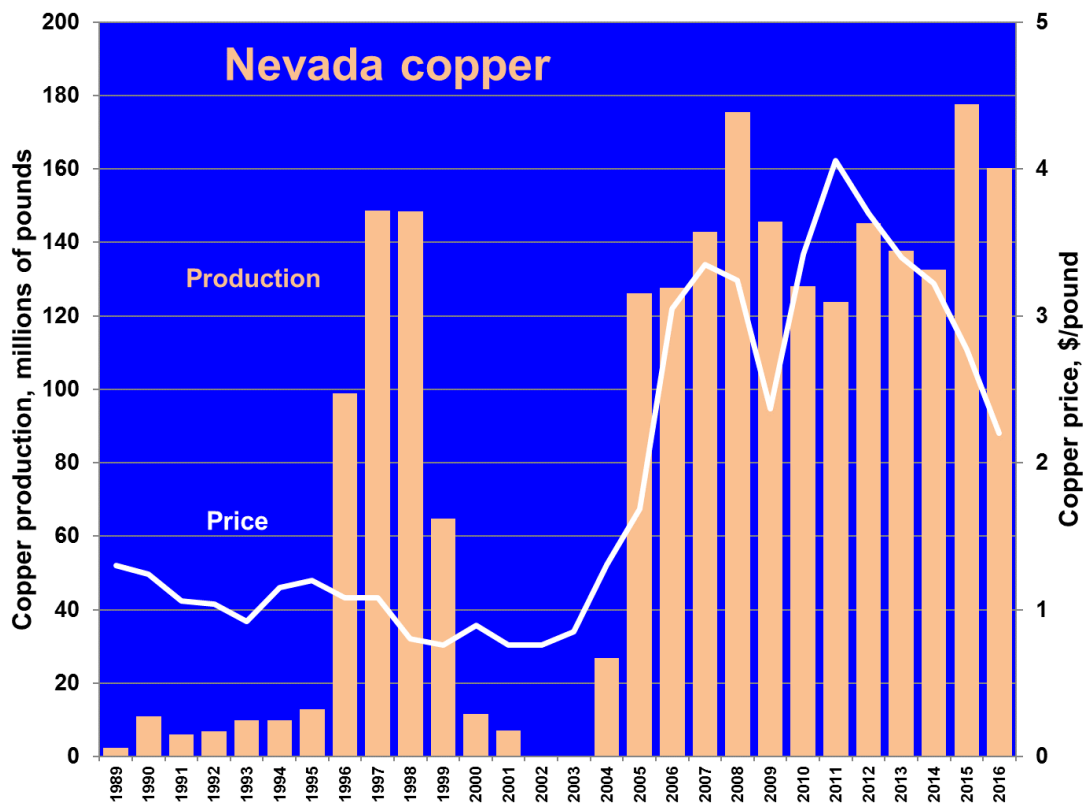


Figure 5. Chart showing Nevada copper production compared to the price of copper from 1989 to 2016.

Exploration activity for metals in Nevada continued to decrease in 2016, as budgets of major companies continued to shrink and very little money flowed into the junior company market. The relatively stagnant environment in Nevada reflected the state of worldwide exploration for metals in 2016. According to S&P Global Market Intelligence, total worldwide exploration for non-ferrous metals fell below \$8 billion for the first time since 2006, marking a dramatic decline since its peak of almost \$22 billion in 2012. Budgets for exploration in the United States decreased 30% from 2015, accounting for only 7% of worldwide budgets in 2016. Nevada accounted for 47% of exploration budgets in the United States.

The Nevada Bureau of Mines and Geology carried out a thorough survey of companies conducting exploration for both metals, industrial minerals, geothermal energy, and oil and gas in 2015 and 2016 (Ressel and Davis, 2017). This follows up on the survey NBMG did in 2011. In 2011, exploration expenditures in Nevada were estimated to be \$675 million (Muntean et al., 2012). In 2015 expenditures had fallen to \$348 million and to \$325 million in 2016. About 85% of the expenditures in 2016 was for precious metals, mainly gold. The number of people directly employed in

exploration decreased from an estimated 1,040 in 2011 to 808 in 2016.

Exploration activity, including new claims staked, was reported in most of Nevada's 17 counties. The Bureau of Land Management's LR2000 database indicated 197,043 claims 171,930 active mining claims at the end of 2016, an increase of 14.6% from the end of 2015 (fig. 6). Of the 19,040 new claims that were staked and filed in 2016, just over half were for lithium exploration.

The decrease in exploration activity for metals, mainly for gold, is also reflected by a decrease in projects that were drilled, dropping for the fifth year in a row from 64 projects in 2015 to 55 projects (fig. 7). Advanced exploration projects show promise for major developments, particularly for gold along the Carlin and Battle Mountain-Eureka (Cortez) trends in Eureka, Elko, and Lander Counties, such as Barrick's large Goldrush deposit near its Cortez mine. Drill programs by junior companies that drew attention in 2016 that were Gold Standard Ventures Corp.'s Railroad-Pinion project near the town of Carlin, Columbus Gold Corp.'s Eastside project near Tonopah, Premier Gold Mines Ltd.'s Cove project, and Klondex's Fire Creek projects, both near Battle Mountain.

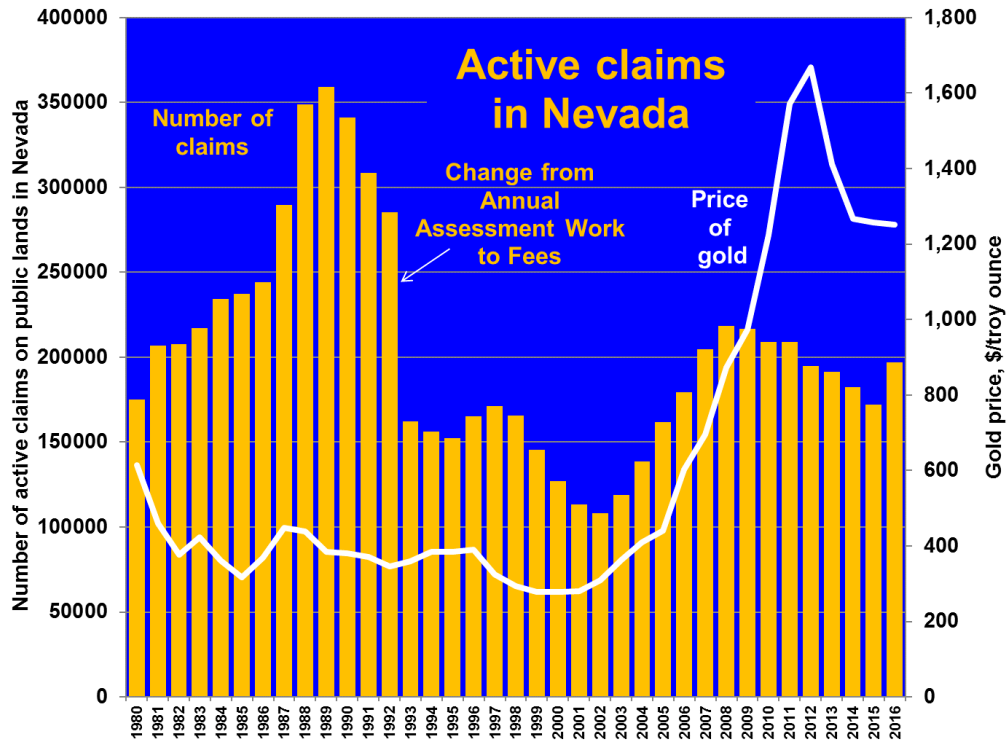


Figure 6. Chart showing number of active mining claims at the end of the year from 1980 to 2016. For comparison, chart also shows the price of gold during that period.

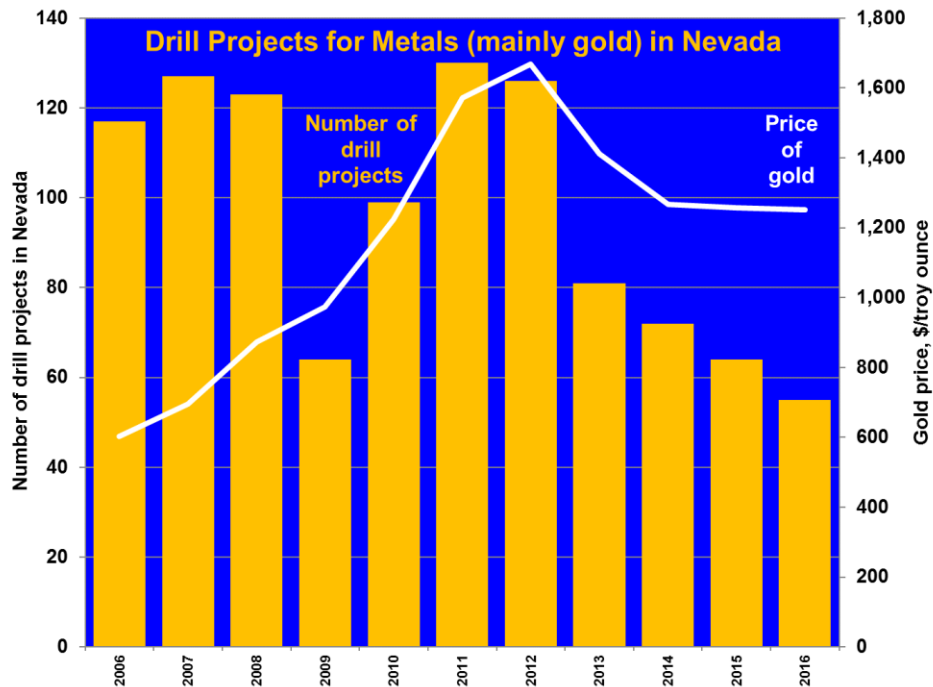


Figure 7. Chart showing number of drill projects targeting metals, mainly gold, from 2006 to 2016. For comparison, chart also shows the price of gold during that period. The number of drill projects shown are minima, given major mining companies and privately held companies are not required to report whether they drilled or not.

The section on **Industrial Minerals** covers developments during 2016 and gives details on important commodities produced from or processed in Nevada, including aggregate, barite, cement, clays, diatomite, dimension stone, dolomite, gypsum, lime, limestone, lithium, magnesium, perlite, potassium alum (kalinite), pozzolan, salt, semiprecious gemstones (opal), silica, and zeolites. Demand for raw materials for construction will likely grow in the future because of Nevada's population and need for highways. Nevada's estimated population in 2016 was 2.940 million, up 8.8% from 2.701 million in 2010 (www.census.gov).

Tesla Motors Inc. held its grand opening event on June 29, 2016 for its ~\$5,000,000,000 Gigafactory near Reno in Storey County. Panasonic is a major investor in the facility. By September 2016 Tesla had spent \$608 million on the Gigafactory. The projected capacity of Gigafactory for 2020 was to have been 35 gigawatt-hours per year of cells as well as 50 gigawatt-hours per year (5.7 MW) of battery packs. The plan is to produce lithium-ion batteries for Tesla electric cars and for home, commercial, and business use. Its plant will more than double the present world production of lithium-ion batteries. Tesla is projecting annual production of 500,000 electric cars by 2020, which will require an annual production of 27,000 tons (24,500 tonnes) of

lithium compounds on top of the present annual world production of almost 40,000 tons (36,000 tonnes).

Albemarle Corp.'s Silver Peak operation in Clayton Valley in Esmeralda County, where subsurface brines are evaporated on a playa, is the only producer of lithium in the United States. Most exploration for industrial minerals in Nevada was focused on lithium, mainly near Clayton Valley. Six of the nine largest new claim blocks staked in 2016 were by junior companies exploring for lithium. Most of this exploration is in southwestern Nevada, mainly Clayton Valley and other nearby playa. Companies that did exploration drilling in 2016 include Pure Energy Minerals Ltd., Cypress Development Corp., Dajin Resources Corp., Lithium X Energy Corp., and Nevada Sunrise Gold Corp. In addition, Lithium Americas Corp. (formerly Western Lithium USA Corp.) continued testing, and evaluation of the lithium-bearing clay resources on its Kings River Valley project in northern Humboldt County.

Nevada was once again the leading domestic producer of barite, of which 95% is used for drilling muds in oil wells. However, production decreased 56% in 2016 because of the drop in oil prices (table 1, fig. 9). The barite price is directly tied to the price the oil and gas.

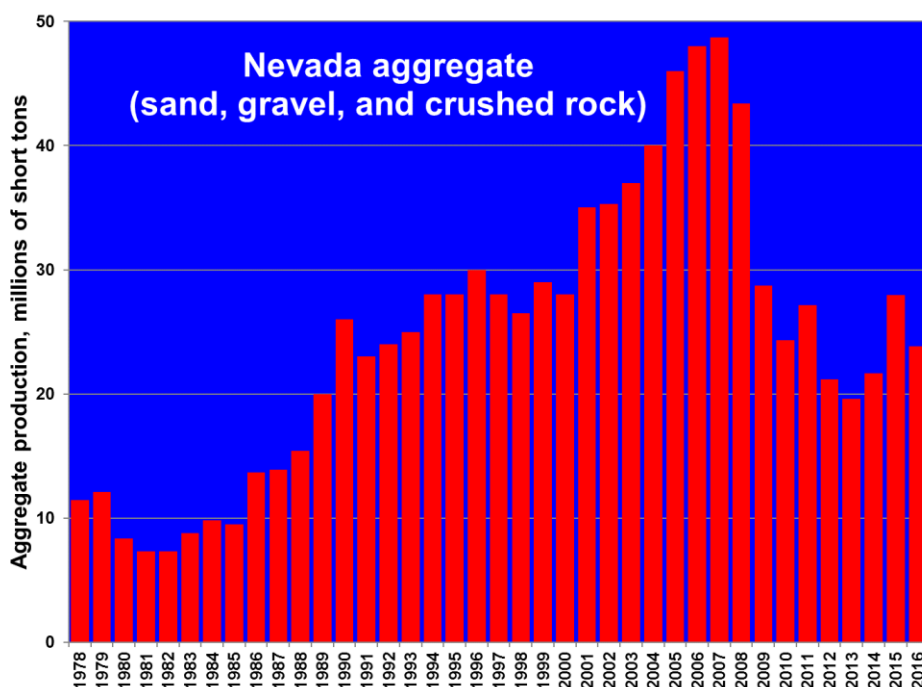


Figure 8. Chart showing Nevada aggregate production from 1980 to 2016.

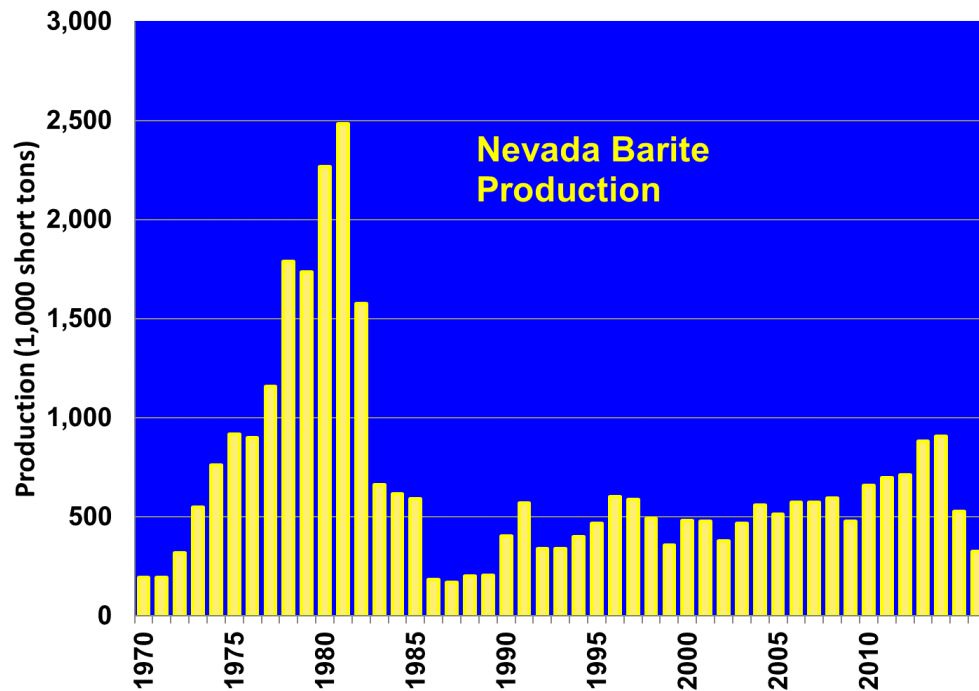


Figure 9. Chart showing Nevada barite production from 1970 to 2016.

Nevada's production of diatomite, which is mainly used in filtration, was second only to California in the U.S. Nevada ranked second in the list of six states which produce 76% of the country's crude gypsum. The state's gypsum production decreased 4% from 2015. Premier Magnesia's Gabbs Mine in Nye County is currently the nation's only hard-rock producer of magnesite.

Developments in the geothermal industry are covered in the section on **Geothermal Energy**. In 2016, Nevada set another record for geothermal power generation with 3,344 million net MWh, which was a 7.3% increase from 2015 (table 1, fig. 10). Although no new geothermal plants came online in 2016, gross geothermal production in Nevada increased to almost 500 MWe (up from ~465 MWe in 2015), associated with the ramping up of the Phase 2 McGinness Hills and Don A. Campbell geothermal plants. The McGinness Hills geothermal field is now Nevada's largest geothermal producer, producing almost 104 MWe gross in 2016: the Steamboat geothermal system is now Nevada's second-largest producer, with approximately 86 MWe gross in 2016. The total geothermal power generation in Nevada in 2016 was 4,377,127 megawatt-hours (MWh) gross and 3,344,233 MWh net, equal to a ~7% increase in generation from 2015, and contributing to almost 8% of Nevada's total electricity generation in 2016. In 2016, the Nevada Division of Minerals (NDOM) permitted 14

wells, and 16 new geothermal wells were drilled (tables 4 and 5). Nine of these were industry production wells drilled by Ormat Nevada Inc. in the Carson Lake, Dixie Meadows, Tungsten Mountain and Tuscarora geothermal fields (table 4). Additionally, geothermal energy is used at numerous places in Nevada for space heating, domestic warm water, recreation, dehydrating vegetables, and other agricultural applications. Programs in the U.S. Department of Energy, energy bills passed by the Nevada and California legislatures, and activities of researchers at the University of Nevada Reno are stimulating geothermal development in Nevada.

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 constitutes only a slight fraction of U.S. production. The amount of Nevada oil production in 2016 decreased 1.2% from 2015 (table 1, fig. 11). Small amounts of co-produced natural gas are used to fuel equipment used for oil production. Three wells were permitted for oil and gas in 2016, down from four permitted in 2015. Only one well was spudded at Blackburn in Pine Valley in 2016. Grant Canyon Oil and Gas LLC drilled to 7,355 ft (2,242 m) in July but was waiting to be completed at year's end.

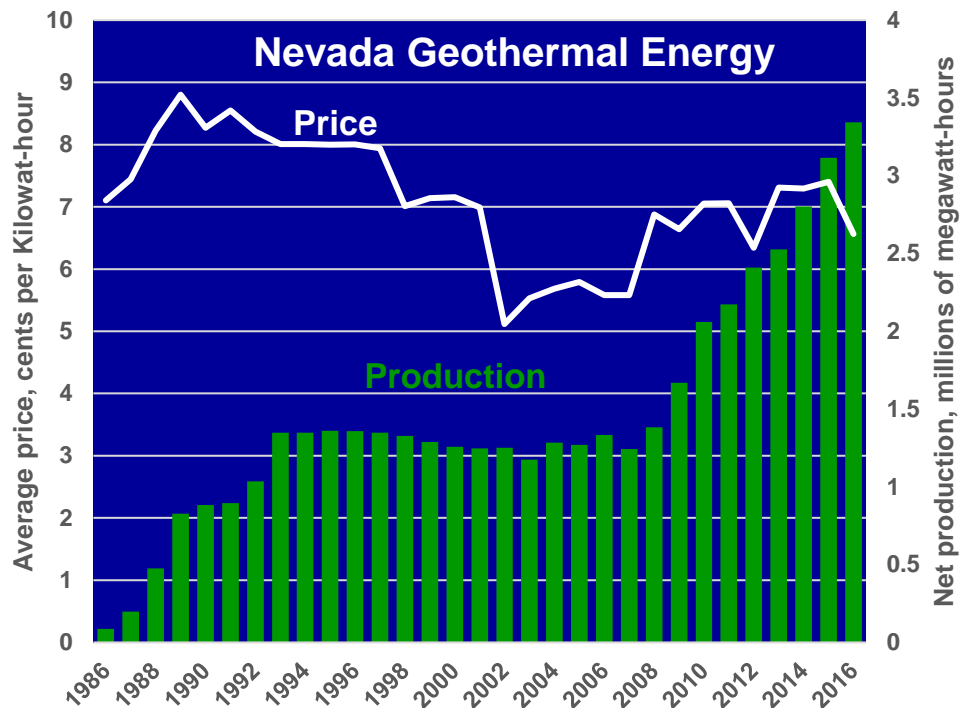


Figure 10. Chart showing net geothermal production in megawatt-hours in comparison to the average price of geothermal power in cents per kilowatt-hour for the period from 1986 to 2016. Note that average price is based on the total MWh produced and total receipts. Actual price for any individual power plant may vary and is held confidential by the state Energy Office.

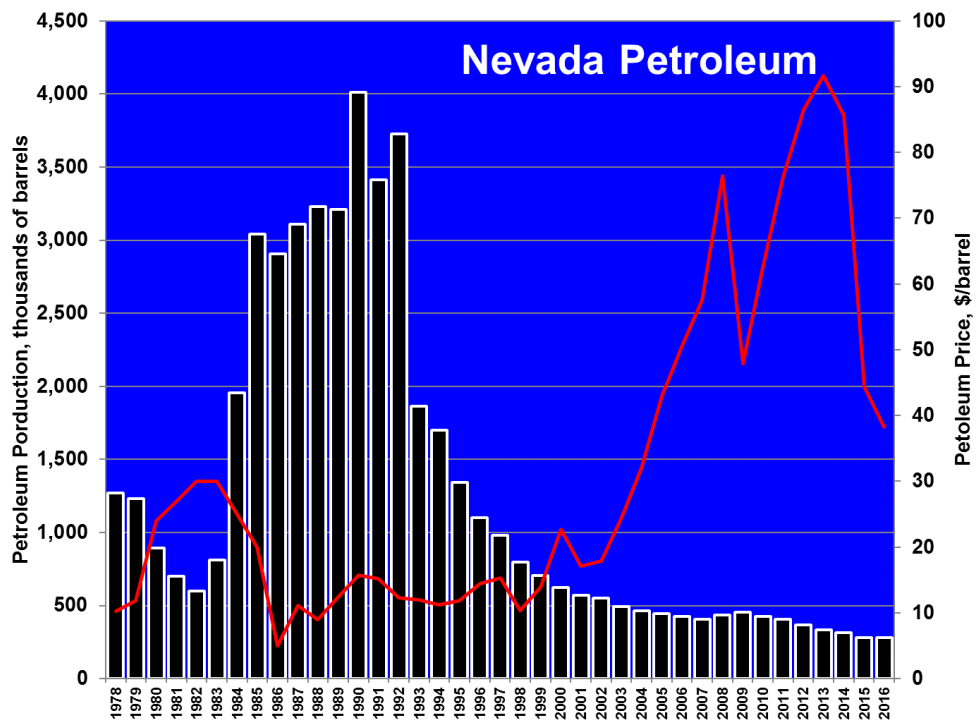


Figure 11. Chart showing Nevada petroleum production from 1978 to 2016.

Local economies benefit from mining in Nevada. Construction of new homes, hotels, casinos, other businesses, schools, and roads requires local sources of sand, gravel, crushed stone, gypsum, and raw materials for cement, all of which are abundant in Nevada. According to the Nevada Department of Employment, Training, and Rehabilitation, the Nevada mining industry employed an average of 12,272 employees in 2016, a 13% decrease from 2015. The average pay for mineral industry employees during this time was \$94,796 per year, the highest average of any employment sector in the state. In addition, it is estimated there are about 65,000 jobs in the state related to providing goods and services needed by the mining industry. Mining employment has remained an important factor in Nevada (Perry and Visser, 2015, Major Mines of Nevada 2016, Mineral Industries in Nevada's Economy, Nevada Bureau of Mines and Geology Special Publication P-26, 28 p.; available at <http://pubs.nbmng.unr.edu/Major-mines-of-Nevada-2016-p/p028.htm>).

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.nbmng.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.gov) provides data on oil and gas, geothermal, solar, wind, hydroelectric, and other energy sources. The Nevada Bureau of Mines and Geology supports several interactive maps on the Web that are backed by periodically updated databases on mineral and energy resources and potential, exploration activity, land ownership and restrictions, and other geographic information (<http://www.nbmng.unr.edu/Maps&Data/index.html>).

CONVERSION FACTORS

1 metric ton = 1.1023113 short ton = 1,000 kilograms = 2,204.6226 pounds = 32,150.7 troy ounces.

31.1035 metric tons = 1 million troy ounces (31.1035 grams = 1 troy ounce).

453.592 grams = 1 pound (avoirdupois) = 16 ounces (avoirdupois) = 14.5833 troy ounces.

34.2857 grams per metric ton = 34.2857 parts per million by weight = 1 troy ounce per short ton.

METALS

by David A. Davis and John L. Muntean

PRODUCTION

Nevada produced 5,467,646 ounces (170,062 kg) of gold, 8,885,873 ounces (276,382 kg) of silver, 160,218,049 pounds (72,674 tonnes) of copper, and 493,010 pounds (224 tonnes) of molybdenum from 22 active mines, as well as minor production from residual leaching from 4 inactive mines and very minor production from 5 placer operations. Table 1 shows the production of gold, silver, copper, and molybdenum in 2016 that was reported to the Nevada Division of Minerals.

Gold production increased 2.4% in 2016. Barrick Gold Corp. and Newmont Mining Corp. accounted for 78% of Nevada's gold production, down from 80% in 2015. The Carlin trend produced 2,129,142 ounces (66,224 kg) of gold, an increase of 9.8% from 2015. The Carlin trend's share of Nevada's gold production increased slightly to 38%. Through 2016, the Carlin trend had produced 88,243,723 ounces (2,744,687 kg) of gold since the original Carlin mine went into production in 1965.

Barrick remained the leading producer of gold in 2016, producing 48% of Nevada's gold. It produced 2,639,826 ounces (82,108 kg) from its mines in Nevada, a decrease of 0.5% from 2015. Nevada production accounted for 48% of Barrick's 5.52 million ounces (0.19 million kg) of worldwide production, up from 33% in 2015. The fact that nearly half of the production of the world's leading gold miner comes from Nevada, underscores yet again the importance of Nevada to the global gold mining industry. Production came from its Cortez, Goldstrike, and Turquoise Ridge (75% share) mines. Its Goldstrike and Cortez mines accounted for 89% of its Nevada production. Importantly, Barrick's Nevada's mines are low-cost producers. Barrick's cash cost per ounce for all its mines worldwide averaged \$518/oz, whereas cash costs for Goldstrike were \$572/oz, \$430/oz for Cortez, and \$498/oz for Turquoise Ridge. The all-in sustaining costs were \$714/oz for Goldstrike, \$518/oz for Cortez and \$625/oz for Turquoise Ridge. The open pits (Pipeline and Cortez Hills) and underground mines (Cortez Hills) at Cortez produced 1,188,587 ounces (36,969 kg) of gold, a 19% increase from 2015. The open pits and underground mines at Goldstrike produced 1,185,319 ounces (36,868 kg) of gold, an increase of 12.5% from 2015. At the end of 2016, Barrick reported 22,326,000 ounces (694,416 kg) of proven and probable reserves in Nevada, a decrease of 7.4% from 2015. In 2016, Barrick began mining ore from its new South Arturo open pit deposit, producing 223,145 ounces (6,941 kg) of gold.

Newmont produced 1,631,131 ounces (50,734 kg) ounces of gold in 2016, essentially the same as in 2015. Newmont's production came from four open pits (Gold Quarry, Emigrant, Silverstar (formerly known as Genesis), and Goldstar) and four underground mines (Leeville, Chukar, Pete Bajo, and Exodus) on the Carlin trend and from its Phoenix and Twin Creeks mines, plus its 25% share of the Turquoise Ridge. Carlin trend operations produced 943,823 ounces (29,356 kg) of gold, 367,528 ounces (11,431 kg) from Twin Creeks, 183,371 ounces (5,703 kg) from Phoenix, and 31,884 ounces (992 kg) from residual leaching at its inactive Lone Tree Mine. Production at Newmont's new Long Canyon Mine commenced in November, producing 22,500 ounces (700 kg) of gold by the end of 2016. The all-in sustaining costs the Carlin trend operations were \$1,048/oz, \$937/oz at Phoenix, \$613/oz at Twin Creeks, and \$227/oz at Long Canyon. Newmont reported 25,480,000 ounces (792,517 kg) of gold reserves in Nevada for year-end 2016, a decrease of 11%.

Other gold mines reporting production over 1000 ounces in 2016 included: Round Mountain [Kinross Gold Corp., 371,484 oz (11,554 kg)], Marigold [Silver Standard Resources Inc., 205,116 oz, (6,380 kg)], Bald Mountain [Kinross Gold Corp., 191,088 oz, (5,944 kg)], Jerritt Canyon [Sprott Mining, Inc., 140,990 oz (4,3850 kg)], Fire Creek [Klondex Mines Ltd., 101,284 oz (3,150 kg)], Rochester (Coeur Mining Inc., 50,750 oz (1,579 kg)], Robinson [KGHM International, 49,217 oz (1,531 kg)], Mineral Ridge [Scorpio Gold Corp., 36,879 oz (1,147 kg)], Hycroft [Hycroft Mining Corp., 32,265 oz (1,004 kg)], Midas [Klondex Mines Ltd., 29,557 oz (919 kg)], Denton-Rawhide [Rawhide Mining LLC, 17,972 oz (559 kg)], Florida Canyon [Rye Patch Gold Corp., 10,873 oz (338 kg)], Pan [GRP Pan, LLC., 8,714 oz (271 kg)], Ruby Hill (Ruby Hill Mining Co., LLC, subsidiary of Waterton Global Resource Management Inc., 6,472 oz (201 kg)], and Lucerne [Comstock Mining Inc., 4,086 oz (127 kg)]. At least 25% of Nevada's gold production in 2016 was from underground mining. However, Newmont does not break out its production into open pit versus underground. The percentage of Nevada gold production from underground mining was likely at least 35%, given Newmont's numerous underground operations on the Carlin trend.

Coeur Mining was the leading silver producer at 4,564,139 ounces (141,961 kg), a 1.4% increase from 2015. All of its production came from its low-grade open pit Rochester Mine, the only primary silver mine in Nevada. Newmont reclaimed its position as the second largest silver producer at 1,504,414 ounces (46,793 kg), 78% of which came from its Phoenix Mine. Klondex Mines Ltd. dropped to third, producing 1,426,583 ounces (44,372 kg) of silver in 2015. As it did in 2015, KGHM International's Robinson Mine produced 74%

Table 1. 2016 Metallic mine production for Nevada.

Mine (type)	Operator	Gold ounces (kg)	Silver ounces (kg)	Copper pounds (tonnes)	Molybdenum pounds (tonnes)
Carlin Trend Operations (op, ug)	Newmont Mining	943,823 (29,356)	101,475 (3,156)		
Cortez Hills/Pipeline (op)	Barrick Cortez	850,312 (26,448)	22,565 (702)		
Betze Post (op)	Barrick Goldstrike Mines	544,736 (16,943)	134,283 (4,177)		
Meikle (ug)	Barrick Goldstrike Mines	417,438 (12,984)	37,615 (1,170)		
Round Mountain (op)	Kinross Gold Corp.	371,484 (11,554)	721,465 (22,440)		
Twin Creeks (op, ug)	Newmont Mining	367,528 (11,431)	227,814 (7,086)		
Turquoise Ridge (ug)	Barrick Gold (75% Barrick, 25% Newmont)	354,560 (11,028)			
Cortez Hills (ug)	Barrick Cortez	338,275 (14,897)	6,294 (196)		
Marigold (op)	Silver Standard Resources	205,116 (6,380)	2,349 (73)		
Phoenix (op)	Newmont Mining	176,756 (5,498)	1,175,126 (36,551)	41,806,950 (18,963)	
Jerritt Canyon (ug)	Jerritt Canyon Gold LLC (Sprott Mining)	140,990 (4,385)			
Bald Mountain (op)	Barrick Gold	129,282 (4,021)	864 (27)		
Fire Creek (ug)	Klondex Mines	101,284 (3,150)	80,593 (2,506)		
Rochester (op)	Coeur Rochester	50,750 (1,579)	4,564,139 (141,961)		
Robinson (op)	KGHM International	49,217 (1,531)		118,411,099 (53,710)	493,010 (224)
Mineral Ridge (op)	Mineral Ridge Gold (Scorpio Gold)	36,879 (1,147)	16,950 (527)		
Hycroft (op)	Hycroft Mining	32,265 (1,004)	235,934 (7,338)		
Midas (ug)	Klondex Mines	29,577 (920)	1,345,990 (41,865)		
Denton-Rawhide (op, lp)	Rawhide Mining	17,972 (559)	105,413 (3,279)		
Florida Canyon (op)	Florida Canyon Mining (Rye Patch Mining US, Inc.)	10,873 (338)	21,898 (681)		
Long Canyon	Newmont Mining	22,500 (700)			
Lone Tree (op, lp)	Newmont Mining	31,884 (992)			
Pan (op)	Midway Gold	8,714 (271)			
Lucerne (op)	Comstock Mining	4,086 (127)	75,657 (2,353)		
Ruby Hill (op)	Barrick Gold	6,472 (201)	7,791 (242)		
Borealis (lp)	Borealis Mining	618 (19)	1,511 (47)		
Sterling (ug)	Sterling Gold Mining	350 (11)			
Sunrise Placer (p)	Sunrise Minerals	668 (21)	121 (3.8)		
2016 Totals		5,467,646 (170,062)	8,885,873 (276,382)	160,218,049 (72,674)	493,010 (224)
2015 Totals		5,339,659 (166,082)	9,498,051 (295,422)	177,637,852 (80,575)	473,888 (215)

lp=leach pad, op=open pit, p=placer, ug=underground

of Nevada's copper. Production in 2016 amounted to 118,411,099 pounds (53,710 tonnes), a decrease of 9.8% from 2015. Newmont's Phoenix Mine made up the balance of the copper production, producing 41,806,950 (18,963 tonnes), a 10.7% decrease from 2015. KGHM International also produced 493,010 pounds (224 tonnes) of molybdenum from Robinson in 2016, a 4.2% increase from 2015.

EXPLORATION

Indicators of exploration activity in Nevada both increased and decreased in 2016, despite the average gold price increasing to \$1,250.74 per ounce, a 7.8% increase from 2015. The gold price rose steadily through the first 6 months of 2016, peaking at \$1,366.25 per ounce on July 6th, before tailing off to \$1,145.90 per ounce at the end of the year. The price of silver averaged \$17.14 per ounce, a 9.3% increase from 2015.

However, the number of active mining claims increased in 2016. Nevada county recorders registered 197,043 claims in fiscal year 2016 (which ended June 30, 2016), a 5.6% increase from fiscal year 2015. These included new claims and annual maintenance of existing claims. Similarly, the number of active claims at the end of 2016, as derived from U.S. Bureau of Land Management's (BLM) LR2000 database, was 180,032, an increase of 4.7% from the end of 2015. The distribution of active claims at the end of 2016 is shown in figure 2. The BLM listed 19,040 new claims that were staked and filed in 2016, almost double of the amount of new claims located in calendar year 2015 (fig. 2). However, 54% of the new claims staked were placer claims, almost certainly for lithium exploration, which is summarized in the chapter on industrial minerals. Table 2 shows the top ten companies that staked the most new claims in calendar year 2016, including the large claim blocks targeting lithium. Kinross Gold staked the most claims not related to lithium exploration. In 2016, it staked 1,356 claims in five separate blocks, including the Queen City district in Nye County, in the Roberts Mountains along the east side of Roberts Creek in Eureka County, in the Garcia Flats area at the northeast end of the Diamond Mountains in Eureka County, in the hills between the Bruner district and Broken Hills in southeastern Churchill County, and in the Cedar Mountains in Mineral County. Barrick Gold staked 1,049 claims in 2016, mainly in four areas. The areas were south of its Cortez Mine, including Carico Lake Valley and the northern Toiyabe Range near the previously mined Toiyabe open pits; the old Tenabo mine and pediment east of Tenabo in Crescent Valley; in the middle of Crescent Valley; and the Mill Canyon area in the Cortez Range. Newmont Mining staked 736 claims in 3 main areas including the West Buttes and

pediment west of the Delker district in Elko County, south and adjacent to the Pony Creek deposit in the Pinon Range in Eureka County, and in the Rand district in Mineral County. Nevada Exploration Inc., a junior company that employs groundwater chemistry in targeting covered areas, staked 645 claims in the north and south ends of Grass Valley in Lander County and in the Treaty Hill-Valmy area just north of Interstate 80 in Humboldt County. Renaissance Gold Inc. staked 318 claims in 5 areas, including the northwest end and adjacent pediment of the Diamond Mountains in Eureka County, the northeast end of Spruce Mountain in Elko County, the northeast end of the Bare Mountain district in southwestern Nye County, the Devil's Gate area in the Gilbert district in the Monte Cristo Range in Esmeralda County, and the Antelope Peak area in the Snake Mountains in Elko County.

At least 55 projects were drilled in 2016, down from 64 projects in 2015. This marked the fifth consecutive annual decrease in drill projects since a peak of 130 projects in 2011 (fig. 3). Table 3 shows the breakdown of the drill projects by size of company and drill program. Four "major" companies (Barrick, Newmont, Kinross, and KGHM) and two "mid-tier" companies (Silver Standard Resources, and Coeur Mining Inc.) drilled at least 21 projects in 2016, down from 25 in 2015. The remaining 34 projects were drilled by 28 "junior" companies.¹ Figure 4 shows the location of projects across the state that were drilled in 2016. Likely, more than the 55 projects reported here were drilled in 2016, especially small drill programs carried out by major or mid-tier companies and privately held companies. Large companies are not required to release much of their exploration results, because exploration commonly does not have a material impact on their businesses.

The main exploration target in Nevada continued to be gold. Of the 55 projects that were known to have been drilled in 2016, 50 of them targeted gold. Copper exploration continued to be focused in the Yerington district in Lyon County, though the amount of drilling and money spent was significantly less than in 2015. The Bear deposit and the old Yerington open pit were drilled by Quaterra Resources Inc. with funds provided by Freeport-McMoRan Nevada LLC. Coeur Mining was the only company drilling primarily for silver, focusing on higher grade mineralization east of its Rochester open pit silver deposit in Pershing County. Nevada Zinc Corp. continued to drill high-grade, non-sulfide zinc mineralization on the north flank of Lone Mountain in Eureka County.

Most of the exploration expenditures by the major companies, mainly Barrick and Newmont, were spent on drilling near their active mines. Much of Barrick's exploration drilling focused on its Cortez Hills and Goldrush deposits on its Cortez property. At Cortez

Hills Barrick continued to expand the underground Deep South deposit, which is largely oxidized and remains open to the south. As of year-end 2016, the measured and indicated resource at Goldrush was 9.57 million ounces at a grade of 0.28 opt gold. Barrick drilled very high grade intercepts at its new Fourmile target, located ~1,650 ft (~500 m) north-northwest along strike of Goldrush. The best intercept at Fourmile, released by Barrick, was 47 ft (14.3 m) grading 0.92 opt (31.7 g/t) gold. Newmont spent \$71 million on exploration in North America out of the \$282 million it spent worldwide in 2016, according to its 2016 annual report. The vast majority of its North American expenditures were in Nevada, namely on Carlin, Twin Creeks, Phoenix, and Long Canyon. Newmont continued to advance its underground projects on the Carlin trend. It delineated a the 3 mile-long (5 km) northwest-trending zone of gold mineralization from the Leeville underground complex to the Pete-Bajo underground mine. It also continued to explore and develop the underground Exodus and Northwest Exodus projects. After Kinross acquired Barrick's Bald Mountain Mine and Barrick's 50% interest in the Round Mountain Mine in January 2016 for \$610,000,000, it carried out aggressive drill programs at both sites. At Bald Mountain Kinross spent \$9 million on exploration and \$40.5 million on capital expenditures. Exploration activities doubled the proven and probable reserves to 2,100,000 ounces of gold by adding 1,240,000 ounces—680,000 ounces to the North area (Saga, Duke, and Top deposits) and 570,000 ounces South area (Vantage complex). At Round Mountain, Kinross spent \$4.6 million on exploration and \$71.9 million on capital expenditures. Silver Standard Resources continued to aggressively drill its Marigold Mine property, focusing on oxide resource targets at the Hideout and Valmy projects.

Junior companies carried out at least 34 drill projects that targeted gold in 2016. Drill programs in 2016 that drew attention were Gold Standard Ventures Corp.'s Railroad-Pinion project, Columbus Gold Corp.'s Eastside project, Premier Gold Mines Ltd.'s Cove project, and Klondex's Fire Creek project. At Railroad-Pinion, Gold Standard Ventures continued its aggressive exploration drilling, focusing on its Dark Star and North Dark Star deposits, and also did drilling at Pinion, north Bullion, Bald Mountain, and Cherry Springs. Columbus Gold continued to drill its Eastside project, where mineralization is hosted in late Miocene rhyolites. In December, it released its first resource estimate for Eastside. Premier Gold drilled high-grade Carlin-style mineralization in the Gap zone between the Helen and Carlin South Deep (CSD) zones, significantly adding potential tonnage to the overall resource and prompting it to consider constructing a decline to further develop the resource from underground. Klondex

continued to drill extensions on known epithermal bonanza veins at its Fire Creek Mine. Not counting operating mines, nine new reserve and/or resource estimates were released in 2016. The properties with new reserve or resource estimates included Bullfrog, Bruner, Castle/Black Rock, Goldsprings, Hollister, Relief Canyon, Contact (copper), and Springer (tungsten). Not all of the estimates included new drilling. Some just used different modeling parameters.

Exploration activity is summarized below by county and district. Projects that were drilled in 2016 are emphasized. Production, reserves and resources of gold and silver are updated in the sections **Major Precious-Metal Deposits**. Recent production, reserves, and resources from projects producing or targeting other metals are listed in the section **Other Metallic Deposits**.

¹ The classification of companies into major, mid-tier, or junior in this section of the report is arbitrarily based on gold production and market capitalization. The loose criteria are as follows: 1) major companies produce greater than 1 million ounces of gold worldwide, and have market capitalizations of over \$3 billion, 2) mid-tier companies produce between 50,000 and 1 million ounces of gold and/or have market capitalizations less than \$3 billion but more than \$500 million, and 3) junior companies produce less than 50,000 ounces of gold and/or have market capitalizations less than \$500 million.

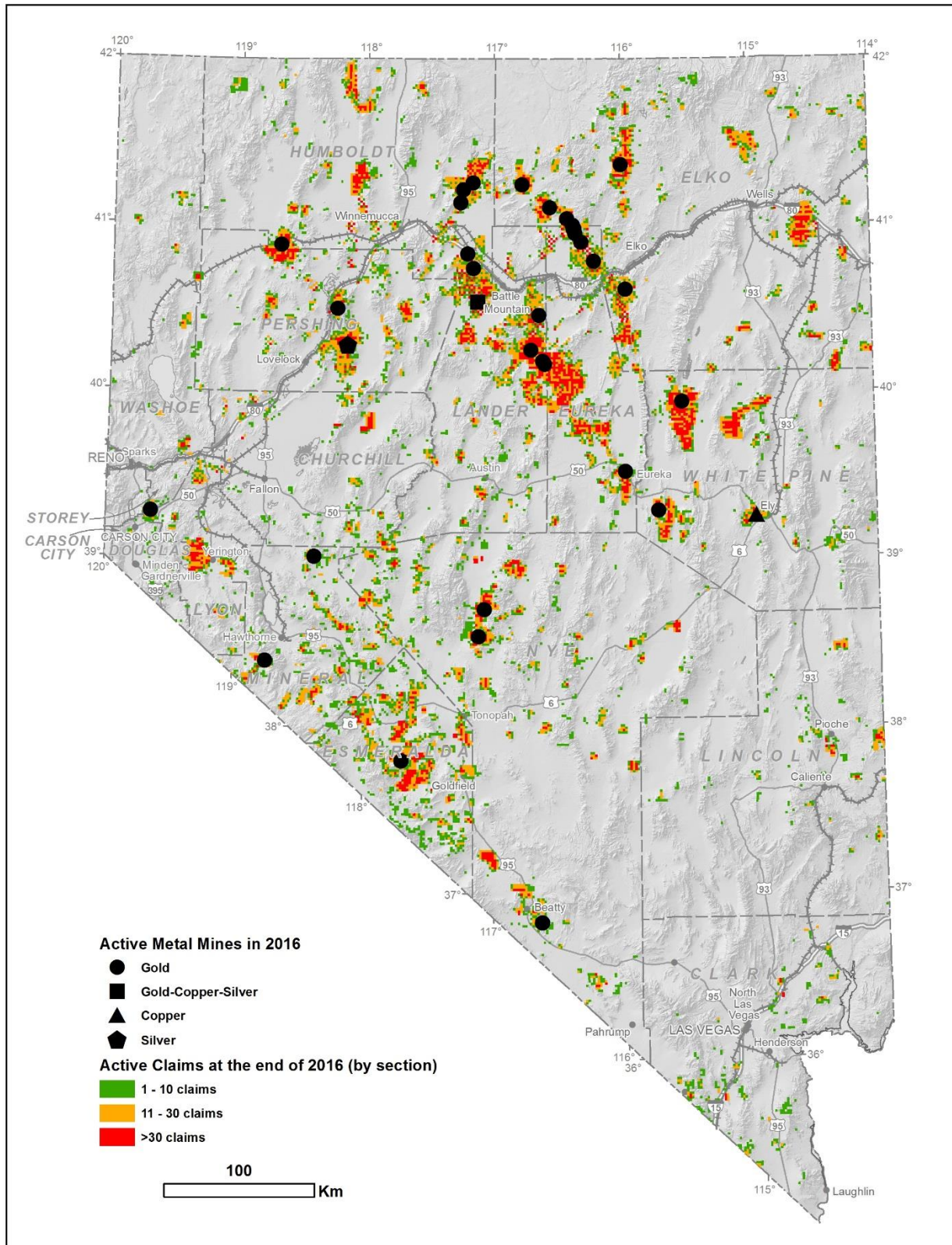


Figure 1. Map showing distribution of active mining claims by section at the end of 2016. Source of data is the U.S. Bureau of Land Management's LR2000 database.

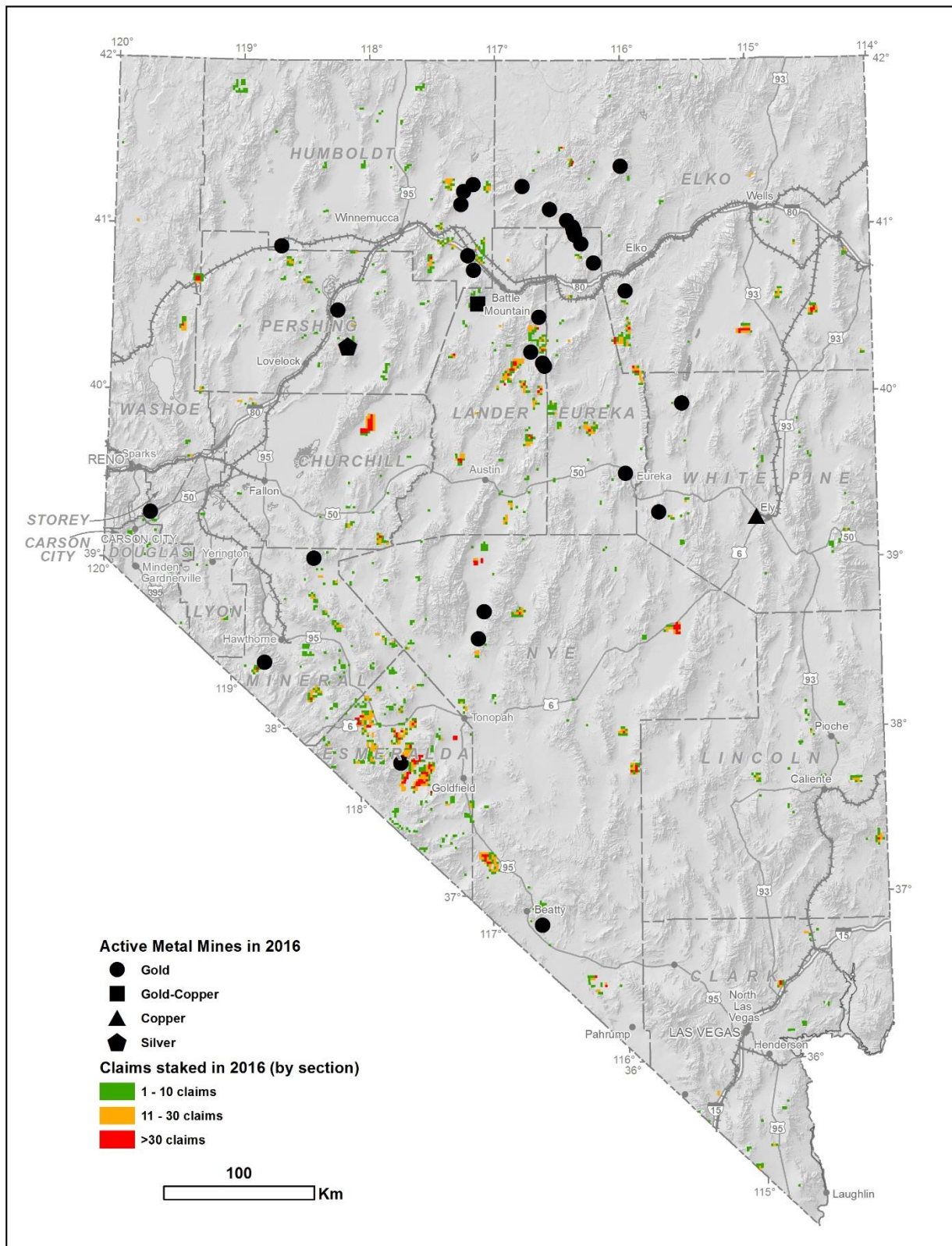


Figure 2. Map showing distribution of active mining claims by section that were staked in 2016. Source of data is the U.S. Bureau of Land Management's LR2000 database.

Table 2. Companies that staked the most new claims in 2016.

Claimant	Number of Claims	Main Areas of Staking
NEVADA ENERGY METALS	1494	1) Southwest end of Big Smoky Valley, Esmeralda County – lithium.
KINROSS GOLD CORP.	1356	1) Queen City district, Nye County 2) Roberts Mountains, along the east side of Roberts Ck. 3) Garcia Flat, northeast end of Diamond Mountains, Eureka County 4) Hills between the Bruner district and Broken Hills in southeastern Churchill County 5) Cedar Mountains, Mineral County
GREAT BASIN OIL LLC	1224	1) Sarcobatus Flat, southwestern Nye County–lithium
BARRICK GOLD CORP.	1049	1) Areas south of the Cortez Mine, including Carico Lake Valley and the Northern Toiyabe Range near the old Toiyabe Mine. 2) Old Tebabo Mine and pediment east of Tenabo in Crescent Valley 3) Middle of Crescent Valley 4) Mill Canyon area in Cortez Range
GREEN ENERGY RESOURCES	883	1) Areas along the northwest, north, northeast, southeast of Clayton Valley–lithium
NEWMONT MINING CORP.	736	1) West Buttes and pediment west to the west in the Delker district, Elko County 2) South and adjacent to Pony Creek deposit in the Piñon Range, Eureka County 3) Rand district in Mineral County
NEVADA EXPLORATION INC.	645	1) North and south ends of Grass Valley, Lander County 2) Treaty Hill-Valmy area north of I-80, Humboldt County
BIG SMOKEY EXPLORATION LLC	589	1) Big Smoky Valley, Esmeralda County–lithium
LITHIUM HOLDINGS	408	1) Columbus Salt Marsh, Esmeralda County–lithium
RENAISSANCE GOLD INC.	318	1) Northwest end and adjacent pediment of Diamond Mountains, Eureka County 2) Northeast end of Spruce Mountain, Elko County 3) Northeastern end of the Bare Mountain district, Southwestern Nye County 4) Devil's Gate area of the Gilbert district in the Monte Cristo Range, Esmeralda County 5) Antelope Peak area of Snake Mountains, Elko County.

Table 3. Breakdown of 2016 drill programs for metals in Nevada.

2016 Drill Projects	Major/Mid-Tier Companies	Junior Companies	Total
Major Drill Program	16 (15)	12 (7)	28 (22)
Minor Drill Program	5 (10)	23 (32)	28 (42)
Total	21 (25)	35 (39)	56 (64)

For comparison, the number of drill programs in 2015 is shown in parentheses.

Major programs are arbitrarily defined as >25 drill holes.

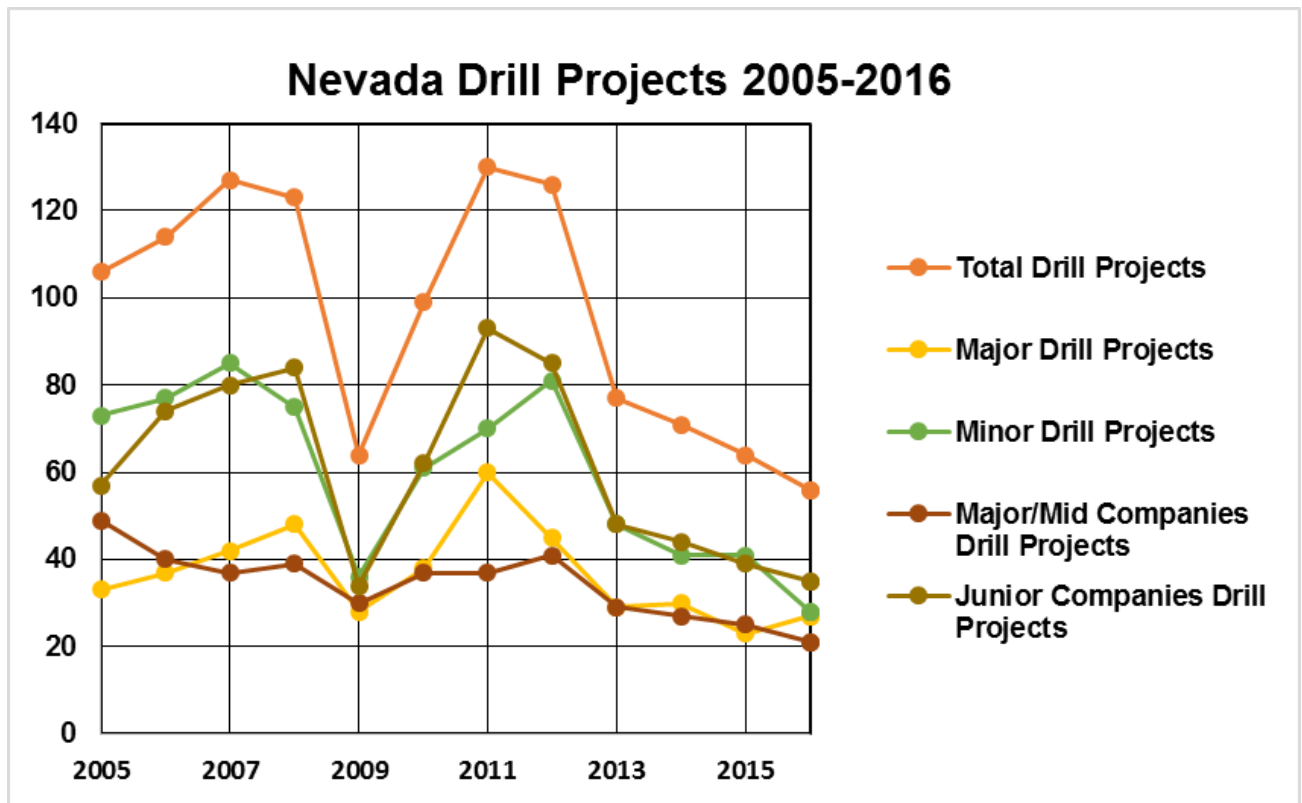


Figure 3. Number of drill projects in Nevada from 2005 to 2016.

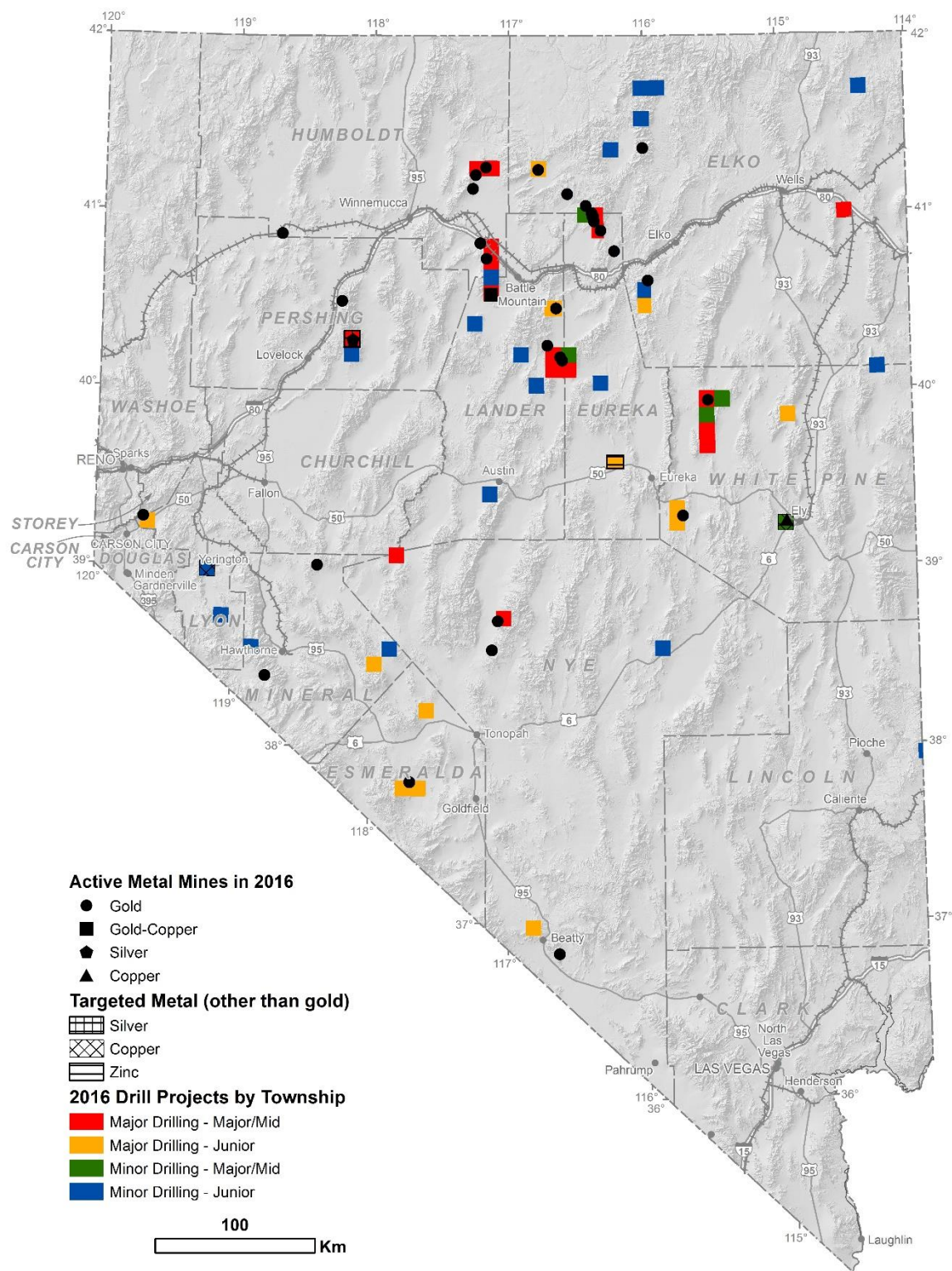


Figure 4. Map summarizing 2016 drill projects by township.

CHURCHILL COUNTY

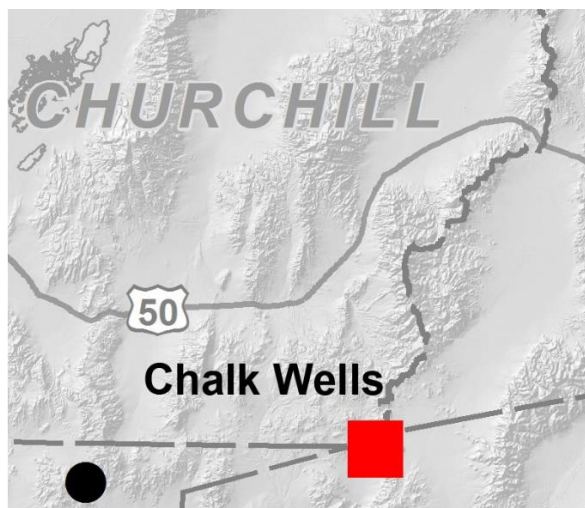


Figure 5. Townships in Churchill County where projects were drilled in 2016. See legend in figure 4.

Aspen District

Baxter. Kinross Gold Corp. completed two phases of reverse circulation drilling on the Baxter property, for which Bravada Gold Corp. is the underlying claimant. Phase I consisted of 16 reverse circulation holes totaling 14,560 ft (4,439 m), which were widely distributed across the large property. The drilling discovered a new shallow zone of oxide gold mineralization at the Sinter target. The mineralization appears to be relatively flat-lying and open along strike. Coupled with geophysical data, the drill data suggest the mineralization may be controlled by an easterly trending fault. Significant intercepts include 5 ft (1.5 m) grading 0.11 (3.757 g/t) gold, 10 ft (6.1 m) grading 0.064 opt (2.199 g/t) gold, 105 ft (32 m) grading 0.026 opt (0.880 g/t) gold, and 34.8 ft (10.6 m) grading 0.03 opt (1.023 g/t) gold. One hole was drilled into the previous undrilled Rhyolite Peak target, which intercepted 5 ft (1.5 m) grading 0.038 opt (1.312 g/t) gold.

Phase II consisted of 25 reverse circulation holes totaling 12,592 ft (3,839 m). The holes were relatively shallow and widely distributed over the northern part of the property. The objective of this phase was to both extend the shallow disseminated gold mineralization and to test for zones of potentially high-grade gold feeder zones. The drilling did extend the Sinter target somewhat and intercepted a potentially new mineralized zone at its eastern end where it remained open to the north, south, and east. Significant intercepts include 10 ft (3 m) grading 0.03 (1.055 g/t) gold, 5 ft (1.5 m) grading 0.027 opt (0.94 g/t) gold, and 15 ft (4.6 m) grading 0.018 opt (0.626 g/t) gold. In February 2015, Kinross Gold Corp. signed an option agreement with Bravada Gold Corp. whereby Kinross can earn up to a

75 percent interest in the property with staged exploration and development expenses totaling \$4,000,000 over 7 years. (Bravada Gold Corp., news releases, 3/1/2016, 6/14/2016, 7/13/2016, 7/25/2016, 11/21/2016; Bravada Gold Corp., website, www.bravadagold.com; Kinross Gold Corp. website, www.kinross.com)

ELKO COUNTY

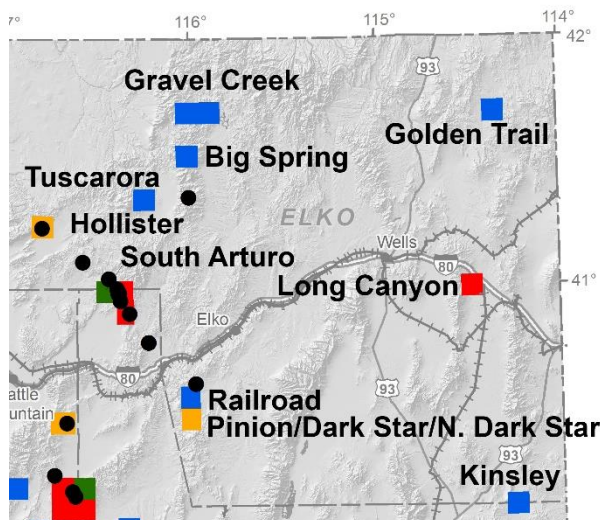


Figure 6. Townships in Elko County where projects were drilled in 2016. See legend in figure 4.

Aura District

Gravel Creek. Western Exploration LLC completed a drill project at its Gravel Creek epithermal deposit located near the old Wood Gulch open pit near the town of Mountain City. No results were released.

Bootstrap District

South Arturo. Barrick Gold Corp. commenced commercial production on August 1 and produced 223,145 ounces of gold from its South Arturo gold deposit (Barrick Gold Corp. 60%; Premier Gold Mines, Ltd, 40%) at the north end of the Carlin trend. The bulk of the ore is being processed through the refractory facilities at the Goldstrike Mine. The life of the mine is expected to be about 10 years followed by three years of closure and reclamation. As part of an advanced exploration drilling program, the company completed six reverse circulation and diamond core holes totaling 6,442 ft (1,964 m) in the western and northwestern margins of the El Nino area of Arturo Button Hill. This drilling program will continue into the spring of 2017. No results were disclosed. (Barrick Gold Corp. Annual Information Form, 3/24/2017; Barrick Gold Corp.

website, www.barrick.com; Premier Gold Mines, Ltd, website, www.premiergoldmines.com)

Carlin District

Emigrant/Rain. Newmont Mining Corp. continued to mine at its Emigrant open pit mine. Production from Emigrant is included in Newmont's production totals for the Carlin trend. The company submitted an amendment to the Rain Mine Plan of Operations for Final Closure and Alternatives. The Rain Mine ceased operations in 2004 and has been undergoing closure and reclamation activities since then. The company conducted extensive analyses of numerous alternatives to remediate acid rock drainage from the north waste rock disposal facility. The disposal facility and heap leach pad have been reclaimed; however, the final closure may require some reworking of the reclaimed areas depending upon which alternative is chosen. The proposed amendment recommended the building of a pipeline from the disposal facility to the Emigrant Mine water treatment plant where acid drainage would be treated and used at the Emigrant Mine. The company was preparing to drill the Saddle deposit about one mile (1.6 km) northwest of the old Rain pit, but no details were released. (Elko Free Press, BLM Seeks Comments for Newmont's Rain Mine Closure, 1/12/2017; Newmont Mining Corp. website, www.newmont.com)

Delano District

Golden Trail. Peloton Minerals, Inc., (originally Montana Gold Mining Co., Inc.) began core drilling its Golden Trail property late in October. The program was designed to establish structural and zonation controls on mineralization along generally northwest-striking trends of mineralization and alteration and to demonstrate near surface gold continuity in the third dimension. No results were released. The Golden Trail Vein is the largest of these zones and is over 3,900 ft (1,200 m) long with an associated alteration zone averaging 100 ft (30 m) wide. It cuts across calc-silicate hornfels, marble, and hydrothermally altered limestone central to, and contiguous with, a strong northwest-trending gravity high. Samples commonly contain gold values above 20 ppb with several samples assaying above 0.25 opt (9 g/t). (Peloton Minerals, Inc., Management Discussion and Analysis, 4/28/2017; Peloton Minerals, Inc., news releases, 10/4/2016, 1/25/2017; Peloton Minerals, Inc., website, www.pelotonminerals.com)

Gold Circle District

Midas. Klondex Mines Ltd. produced 29,577 ounces of gold and 1,345,990 ounces of silver from its Midas Mine, a 3% increase for gold and an 11% decrease for

silver from 2015. A Merrill Crow facility, processed 311,535 tons (282,623 tonnes) of ore combined from both Midas and Fire Creek. The mill processed 190,982 tons (173,258 tonnes) of ore from Midas, a 9% increase from 2015, with average mill head grades of 0.17 opt (5.8 g/t) for gold and 8.13 opt (278 g/t) for silver, 6% and 13% decreases respectively from 2015. The average recovery rates were 93.9% for gold and 86.7% for silver. The production cash cost was \$981 per gold equivalent ounce, a 7.7% increase from 2015. The company's capital expenditures were \$23,100,000.

Midas is a low sulfidation epithermal gold-silver system, and the largest known epithermal deposit along the middle Miocene Northern Nevada Rift. The company completed 148 surface and underground drill holes totaling 80,803 ft (24,635 m). At least 46 of the holes totaling 10,559 ft (3,218 m) were drilled underground. Underground drilling in the 405 (Snow White) vein delineated a mineralized zone extending 290 ft (88 m) along strike and 140 ft (43 m) down dip. Significant intercepts included: 2 ft (0.6 m) grading 4.02 opt (138 g/t) gold and 5.10 opt (175 g/t) Ag, 1 foot (0.3 m) grading 2.14 opt (73.4 g/t) gold and 4.25 opt (146 g/t) silver, and 1.8 ft (0.5 m) grading 4.3 opt (147.5 g/t) gold and 35.29 opt (1,210 g/t) silver. Underground drilling in the 505 (Discovery) vein delineated a mineralized extending 290 ft (88 m) along strike and 170 ft (52 m) down dip. Significant intercepts included: 1.3 ft (0.4 m) grading 0.29 opt (10 g/t) gold and 116.7 opt (4000 g/t) silver, 2 ft (0.6 m) grading 2.18 opt (74.8 g/t) gold and 5.47 opt (187.5 g/t) silver, and 2.1 ft (0.6 m) grading 2.16 opt (74.3 g/t) gold and 16.9 opt (580.1 g/t) silver.

In other drilling, eleven surface holes totaling 13,512 ft (4,118 m) targeted veins to the west: Rico, Grant Jackson, and Midas Trend. Five holes totaling 5,641 ft (1,719 m) were drilled in the Trinity zone. The drilling program was designed to extend the mineralization southward and to better define the controls to the higher grade mineralization. The drilling extended the mineralization and indicated that the contact between the breccia and the overlying Esmeralda Formation sediments may control the high-grade mineralization in the system. Detailed results were not disclosed. (Klondex Mines Ltd. news release, 4/5/2016; Klondex Mines Ltd. Management Discussion and Analysis, 5/10/2016, 8/9/2016, 11/3/2016; Klondex Mines Ltd. Annual Report, 3/23/2017; Klondex Mines Ltd. website, www.klondexmines.com)

Independence Mountains District

Big Springs. Anova Metals Ltd. of West Perth, Australia, spent \$1,850,785 on exploration at its Big Springs gold project, included completion of 17 diamond drill holes totaling 9,902 ft (3,019 m). The drill program concentrated on increasing the resource base

and adding to the resource inventory at the South Sammy and Beadles Creek deposits and to provide geotechnical information for the planned underground development at North Sammy. Five of the holes totaling 2,885 ft (880 m) were completed at South Sammy. One hole passed through six distinct mineralized zones, with a second hole also passing through five of the those zones. The three lowest zones were previously outside the area of known mineralization. Significant intercepts included 15 ft (4.6 m) grading 0.17 opt (5.8 g/t) gold, 15 ft (4.6 m) grading 0.28 opt (9.6 g/t) gold, and 35 ft (10.7 m) grading 0.9 opt (30.9 g/t) gold, including 10 ft (3.0 m) grading 1.76 opt (60.4 g/t) gold. Five holes totaling 2,684 ft (818.2 m) were completed at North Sammy to provide geotechnical information for underground design work and to provide representative core from ore shoots for metallurgical test work. Two holes each were drilled into the 303 and Thumb shoots. Significant intercepts included 45 ft (13.7 m) grading 0.23 opt (8.0 g/t) gold in the 303 shoot and 10 ft (3.0 m) grading 0.37 opt (12.5 g/t) gold in the Thumb shoot. Seven holes totaling 4,336 ft (818.2 m) successfully tested the up- and down-dip extensions of high-grade mineralization at the Beadles Creek prospect. Significant intercepts included 40 ft (12.2 m) grading 0.25 opt (8.5 g/t) gold, 30 ft (9.1 m) grading 0.22 opt (7.5 g/t) gold, 80 ft (18.3 m) grading 0.18 opt (6.2 g/t) gold, and 25 ft (7.6 m) grading 0.12 opt (4 g/t Au) gold.

The company submitted an updated mine plan, which included parts of a detailed engineering study, to the U.S. Forest Service during the first quarter of 2016. After the Forest Service reviewed the plan, it was amended and resubmitted, and then given a pass. The plan involves open pit mining in the existing 601 pit and two new underground operations, one each under the 601 and 701 pits. Mining would last about two years. The combined operation will move an estimated 2,347,362 tons (2,129,512 tonnes) of waste rock and 339,038 tons (307,573 tonnes) of ore grading 0.135 opt (4.6 g/t) gold. A draft environmental assessment was completed and a finding of no significant impact was issued. Independence Mining Co. produced about 463,000 ounces of gold and over 50,000 ounces of silver at Big Springs between 1987 and 1995. (U.S. Forest Service, Big Springs Mine Project, Environmental Assessment, 11/21/2016, 1/30/2017; U.S. Forest Service, Big Springs Mine Project, Finding of No Significant Impact, 11/2016; Anova Metals, Ltd., news release, 11/23/2016; Anova Metals, Ltd., 2016 annual report, 10/21/2017; Anova Metals, Ltd., half year report, 3/17/2017; Anova Metals, Ltd., quarterly reports, 5/2/2016, 7/28/2016, 10/28/2016, 1/30/2017; Anova Metals, Ltd., website, anovametals.com.au)

Jerritt Canyon. At its Jerritt Canyon property, Jerritt Canyon Gold, LLC, (Sprott Mining Inc., 80%;

Whitebox Asset Management, 20%) produced 140,990 ounces of gold, a 16% decreased from 2015. Ore was produced from the Smith, SSX/Steer, Starvation Canyon, and Saval underground mines, with SSX/Steer bring the main producer. Keeping ahead of the mill with ore production was a struggle at times, but at the beginning of the year, the mill was processing 4,000 tons (3,560 tonnes) of ore per day with peaks at 4,700 tons (4,260 tonnes). All of the ore was from the property, as opposed to the past practice of bringing in ore from other mines to run the mill at capacity. Also, at the beginning of the year, the company was re-entering the Saval 4, which would be the property's fourth underground operation. The property was drilled in 2014, but no drilling was reported for 2015 or 2016. (Elko Daily Free Press, 12/21/2015; Elko Daily Free Press Mining Quarterly, Spring 2016; Jerritt Canyon Gold website, www.jerrittcanyon.com)

Ivanhoe District

Hollister. Through its subsidiary Carlin Resources LLC, Waterton Global Resource Management Inc., acquired the underground Hollister and Aurora properties from Great Basin Gold Ltd. through a bankruptcy auction in 2013. Mining ceased late that year, and production from the processing of stockpiles continued into 2014 until the stockpiles were depleted. No production was reported for 2015 and 2016. Aurora includes the Esmeralda Mill. Carlin Resources issued an NI 43-101 technical report on the Hollister Gold Project, which discussed the near surface geology and mineralization and included a resource estimate. On October 3, 2016, Klondex Mines, Ltd., acquired the Hollister and Aurora properties including the Esmeralda Mill by the payment of \$80,000,000 in cash and issuance of 5,000,000 common share purchase warrants and 2,600,000 common shares to Waterton Nevada Splitter, LLC. By year's end, Klondex spent \$800,000 on capital expenditures and \$3,400,000 on development and project costs. Some small scale exploration including bulk sampling of the Gloria vein system was conducted as well as review of old drill data from the Gloria and Hatter Graben vein systems was done. No drilling was conducted. Klondex was planning to spend between \$7,000,000 and \$9,000,000 on development in 2017. (Waterton Global Resource Management, Inc. website, www.watertonglobal.com; Carlin Resources, LLC, NI 43-101 Technical report, 10/25/2016; Klondex Mines Ltd. Annual Report, 3/23/2017; Klondex Mines Ltd. website, www.klondexmines.com)

Kinsley District

Kinsley Mountain. Pilot Gold, Inc., (named changed to Liberty Gold Corp. in May 2017) completed four

reverse circulation drill holes totaling about 5,600 ft (1,700 m) at its Kinsley Mountain project (Pilot Gold, Inc., 79%; Nevada Sunrise Gold Corp., 21%). The drilling targeted high-grade gold mineralization in the Secret Canyon Shale west of the old main pit to test if it might be an extension of the Western Flank Zone about 3,600 ft (1,100 m) to the northwest. Like the Western Flank deposit, the target included: 1) the intersection of the northwest-striking Kinsley fault zone with a swarm of northeast-striking, steeply dipping faults; 2) a broad, deep induced polarization chargeability anomaly; and 3) anomalous pathfinder element geochemistry in surface soil and rock samples. All four of the holes intercepted the Secret Canyon Shale at the expected depth and structural environment; and contained areas of moderate to strong jasperoid alteration, clay alteration, and strong iron oxide and/or disseminated pyrite alteration, which are consistent with that at the Western Flank zone. However, only anomalous gold concentrations were encountered. The drilling results were not disclosed. (Pilot Gold, Inc., Annual Information Form, 3/28/2017; Pilot Gold, Inc., news releases 4/25/2016, 5/9/2017; Liberty Gold Corp, website, libertygold.ca; Nevada Sunrise Gold Corp. website, www.nevadasunrise.ca)

Pequop District

Long Canyon. Newmont Mining Corp. commenced production at its Long Canyon Mine on October 20, 2016, and poured the mine's first gold on November 8. Production was achieved two months ahead of schedule, and at a cost of \$225,000,000, \$50,000,000 below budget. The mine's fleet consists of two shovels and ten 240-ton haul trucks. Brownfield exploration and development of new reserves was ongoing with two drill rigs for in-fill and two for exploration. However, at times, up to 11 rigs were operating. For the first phase, which consisted of one open pit, the estimated annual production over the life of the mine was 100,000 to 150,000 ounces (3 to 4.5 tonnes). The all-in sustaining cost was \$227 per ounce. The ore was all oxide, so there was no acid generation or the need for complex milling or autoclaving. Mineralization was extended to 5 km along a north-northeast-trending strike and was still open in all directions. While the details of the year's drilling program were not released, at least 30 holes were drilled with significant intercepts that included 258 ft (78.6 m) grading 0.45 opt (15.5 g/t) gold, 84 ft (25.6 m) grading 0.43 opt (14.7 g/t) gold, 68 ft (20.6 m) grading 0.33 opt (11.4 g/t) gold, 28 ft (8.4 m) grading 0.33 opt (11.2 g/t) gold, and 73 ft (22.3 m) grading 0.26 opt (8.9 g/t) gold. By year's end, 75% of the inventory had been converted to reserves and resources. Newmont also had a Notice of Intent approved by the BLM to drill just north of Pequop Summit, in an area of Devonian to Pennsylvanian carbonates, including Pilot shale. It is

uncertain whether they drilled any holes in 2016. (Creamer's Media Mining Weekly, 11/11/2016; Elko Free Press Mining Quarterly, Fall 2016, Winter 2016; Newmont Mining Corp. Investor Presentation, 5/2017; Newmont Mining Corp. Long Canyon Fact Sheet, 11/2016; Newmont Mining Corp. news release, 11/11/2016; Newmont Mining Corp. Management Information Circular 3/3/2017; Newmont Mining Corp. Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com; BLM LR2000 database).

Railroad District

Railroad. Gold Standard Ventures Corp. completed 19 reverse circulation and reverse circulation/core combination drill holes totaling 33,701 ft (10,272 m), which included step-out drilling and testing new targets at the Bald Mountain, North Bullion and Cherry Springs areas. Drill samples from Bald Mountain returned anomalous gold and base metal assays. Drilling at North Bullion extended mineralization some 600 ft (180 m) northward from previous drill intercepts. Drilling from the Cherry Springs target area returned no significant gold assays.

The North Bullion Deposit is part of a triangular shaped horst in the footwall of the north-south striking, steeply east-dipping, North Bullion Fault Zone. The horst is bounded on the west by a northeast-striking, northwest-dipping fault, and the deposit is capped by gently east-dipping, dacite sills. The gold is hosted in upper and lower zones ranging between 345 to 1,300 ft (105 to 400 m) in depth with east dips that steepen from about 10° to 45° as they approach the western strand of the North Bullion Fault Zone. The upper zone contains strongly sheared siliciclastic and carbonate rocks of the Mississippian Webb and Tripon Pass Formations. The lower zone contains dissolution collapse breccia developed above and within silty micrite of the Mississippian Tripon Pass Formation and calcarenite of the Devonian Devils Gate Limestone. The gold is associated with sooty sulfides, silica, carbon, clay, barite, realgar, orpiment and elevated concentrations of arsenic, mercury, antimony, and thallium. Gold intercepts above 0.175 opt (6 g/t) were encountered in both the upper and lower gold zones. The deposit apparently formed during an Eocene event with synchronous intrusion, hydrothermal activity and extensional movement on graben-bounding faults. Dacite sills, which are 38.2–38.8 Ma, intrude high angle faults and low-angle, bedding parallel faults, and cap the gold system.

Significant intercepts from North Bullion included: 1) 215 ft (65.6 m) averaging 0.062 opt (3.17 g/t) gold, including 28 ft (8.5 m) grading 0.325 opt (11.16 g/t) gold and 42 ft (12.8 m) grading 0.102 opt (3.49 g/t) gold; 65 ft (19.8 m) averaging 0.128 opt (4.4 g/t) gold, including

17.5 ft (5.3 m) grading 0.204 opt (7.02 g/t) gold; and 3) 31 ft (9.5 m) averaging 0.034 opt (1.18 g/t) gold.

The Bald Mountain target is about 2 miles (3.2 km) southwest of North Bullion. It contains discrete disseminated gold and copper mineralization hosted in strongly oxidized, collapse breccia bodies developed along the contact between hornfelsed silty mudstone of the Webb Formation overlying the marbleized Devonian Devils Gate Limestone. The collapse breccia zone correlates with a prominent gravity low on the southern flank of Bald Mountain. The Bald Mountain target measures 700 ft (210 m) north-south by 1,800 ft (550 m) east-west. The mineralization begins at 325 ft (100 m) below surface on the east side of the target and ranges between 40 ft and 250 ft (12 m and 75 m) in thickness. The gold and copper mineralization is spatially separate. The gold mineralization occurs in the upper part of the breccia, and the copper mineralization occurs in the lower part of the breccia above the Devils Gate marble. Vertical and laterally-extensive hydrothermal alteration consists of oxidation, clays, silicification, and quartz veins/stockwork. Significant intercepts from Bald Mountain included: 1) 85 ft (25.9 m) averaging 0.02 opt (0.67 g/t) gold, including 65 ft (19.8 m) grading 1.46 opt (50 g/t) silver, 0.122% copper, 0.044% molybdenum, and 0.17% lead and 25 ft (7.6 m) grading 0.049 opt (1.67 g/t) gold; 2) 15 ft (4.6 m) grading 1.13 opt (38.77 g/t) silver and 0.11% copper; 3) 25 ft (7.6 m) grading 0.61 opt (20.78 g/t) silver, 0.409% copper, and 0.017% molybdenum; and 4) 40 ft (12.2 m) grading 0.48 opt (16.5 g/t) silver, 0.083% copper, 0.121% lead, and 0.577% zinc. (Gold Standard Ventures Corp. news releases, 5/18/2016, 8/30/2016, 1/23/2017; Gold Standard Ventures Corp. Annual Information Form, 3/31/2017; Gold Standard Ventures Corp. NI 43-101 Technical Report, 3/30/2017; Gold Standard Ventures website, goldstandardv.com)

Robinson Mountain District

Dark Star/North Dark Star. Gold Standard Ventures Corp. completed 40 reverse circulation holes totaling 58,563 ft (17,850 m), mainly on its Dark Star Deposit, which is part of its greater Railroad-Pinion project. The drilling program tested the Dark Star Main Zone, North Dark Star target, and other targets along the Dark Star Corridor. Drilling at the Dark Star Main Zone extended the zones of known mineralization westward and northwestward and provided additional in-fill data and material for metallurgical testing. Drilling in the North Dark Star and Dark Star Corridor areas was designed to test around the initial North Dark Star discovery holes and to test for new zones of mineralization along strike to the south of the current Dark Star deposit area. This drilling discovered an extension of the Dark Star deposit into the new North Dark Star area. Significant intercepts

at North Dark Star included 415 ft (126.2 m) grading 0.12 opt (3.95 g/t) gold including 144 ft (44 m) grading 0.14 opt (4.7 g/t) gold, 59 ft (17.9 m) grading 0.16 opt (5.6 g/t) gold, and 26 ft (7.9 m) grading 0.31 opt (10.7 g/t) gold; 332 ft (101.2 m) grading 0.044 opt (1.5 g/t) gold including 106 ft (32.3 m) grading 0.084 opt (2.87 g/t) gold; and 32 ft (9.8 m) grading 0.11 opt (3.78 g/t) gold. The company spent \$19,230,162 on exploration and issued NI 43-101 technical report on its greater Railroad-Pinion project.

Dark Star is hosted in Pennsylvanian siliciclastic and carbonate rocks of the Tomera and Moleen Formations and occurs in a linear, north-northeast-striking horst block in the footwall of two major faults that bound the east and west flanks of the deposit. Dark Star, North Dark Star, and the Dixie Creek prospect, which is located about two miles (3.6 km) south of Dark Star, lie along the Dark Star corridor, which consists of a five-mile (8-km) long system of prominent north-south to northeast-trending folds; steep en echelon normal faults; and extensive hydrothermal alteration. The North Dark Star resource is located 1,690 ft (515 m) north of the Dark Star resource area. Mineralization at North Dark Star occurs within Pennsylvanian–Permian carbonate host rocks in the footwall of a large-displacement normal fault on the east side of the horst.

A controlled source audio-frequency magnetotelluric (CSAMT) survey was also conducted across the Dark Star structural corridor area. The east-west line covered 13.2 miles (21.2 km) and consisted of nine lines spaced between 660 ft and 1,650 ft (200 m and 500 m) apart. The results of the survey are interpreted as follows: 1) the Dark Star structural corridor is a major north-south orientated structural zone juxtaposing Tertiary rocks against older sedimentary rocks. It consists of two major normal faults that bound a predominantly Pennsylvania–Permian horst block; 2) a north-south oriented horst bounded by two major structures runs parallel to and 1,475 ft (450 m) west of the Dark Star structural corridor. This horst may be a Pennsylvania–Permian aged clastic rock under about 260 ft (80 m) of Tertiary and Quaternary cover; 3) these horsts are terminated to the north by a north-northeast-trending structure. To the south, they are cut by a major cross-cutting west-northwest-trending structure, south of which, they appear to merge; 4) this west-northwest-trending structure may be a splay of the Bullion fault corridor that bends southeastward as the Bullion fault corridor approaches the South fault. The splay bisects the Dark Star deposit and North Dark Star target and intersects the major north-south gold related structures in the Dark Star deposit area; and 5) the Dark Star deposit and North Dark Star target correlate with high resistivity from the surface to 80 ft (25 m) at depth and from 650 ft to 1,300 ft (200 m to 400 m) at depth, respectively. These appear related to silicification by

fluids that rose along the east-bounding structure to the horst block. (Gold Standard Ventures Corp. news releases, 5/24/2016, 5/31/2016, 8/9/2016, 8/18/2016, 10/20/2016, 9/14/2016, 1/19/2017, 6/29/2017; Gold Standard Ventures Corp. Annual Information Form, 3/31/2017; Gold Standard Ventures Corp. NI 43-101 Technical Report, 3/30/2017; Gold Standard Ventures website, goldstandardv.com)

Pinion. Gold Standard Ventures Corp. completed 25 reverse circulation holes totaling 26,423 ft (8,054 m) at its Pinion deposit, which is part of its greater Railroad-Pinion project. The gold mineralization at Pinion is very continuous and widespread within a highly permeable, silicified, and oxidized collapse breccia. The breccia is sandwiched between relatively impermeable silty micrite of the overlying Mississippian Tripon Pass Formation and thickly-bedded calc-arenite of the underlying Devonian Devils Gate Formation. The drilling was designed to extend known zones of mineralization, provide additional in-fill data for specific zones, provide material for continued metallurgical testing, and test the top of the Devonian and other units within the Devonian stratigraphy. The drilling intercepted several zones averaging greater than 0.004 opt (0.14 g/t) gold in the Pinion deposit. The drilling also discovered a new target called the Sentinel Zone, which is located at the north end of the Pinion deposit area. It consists of gold hosted within the Sentinel Mountain dolomite and the top of the underlying Oxyoke sandstone, which are stratigraphically below the limestone of the Devils Gate Formation. The Sentinel mineralization is shallow, oxidized, and open to the north and west. Two holes were drilled west of the Pinion deposit area to test recently generated geophysical and geochemical anomalies and for any near-surface repetitions of the Devils Gate stratigraphy. One hole northwest of the Pinion deposit returned no significant gold assays. The other holes were drilled into the Irene target area but only intercepted 20 ft (6.1 m) 0.005 opt (0.16 g/t) gold. Significant intercepts at Pinion included 1) 142.9 ft (43.6 m) averaging 0.015 opt (0.5 g/t) gold, including 8.3 ft (2.5 m) grading 0.058 opt (2.01 g/t) gold; 2) 163 ft (49.7 m) averaging 0.028 opt (0.96 g/t) gold, including 50.5 ft (15.4 m) grading 0.041 opt (1.39 g/t) gold; and 3) 76.3 ft (23.3 m) averaging 0.023 opt (0.79 g/t) gold, including 24.8 ft (7.6 m) grading 0.034 opt (1.15 g/t) gold. (Gold Standard Ventures Corp. news release, 5/18/2016; Gold Standard Ventures Corp. Annual Information Form, 3/31/2017; Gold Standard Ventures Corp. NI 43-101 Technical Report, 3/30/2017; Gold Standard Ventures website, goldstandardv.com)

Tuscarora District

Tuscarora. In September, Novo Resources Corp. completed eight reverse circulation holes totaling 4,775 ft (1,456 m) on its wholly-owned Tuscarora Project. The program tested a 0.6-mile (1 km) long pediment covered south-southeast that appears to be the extension of Navajo Vein. The Navajo was one of the most prolific veins in the district and was mined along strike for almost 1.25 miles (2 km) before being lost under pediment gravels to the south. Historic drilling indicates it extends over 600 ft (180 m) in depth below the pediment surface. Most of the mining adjacent to the Navajo Vein was conducted between the 1870s and shortly after 1900. Significant intercepts included 1) 10 ft (3.1 m) averaging 2.17 opt (74.18 g/t) gold, including 5 ft (1.5 m) grading 4.19 opt (143.5 g/t) gold; 2) 5 ft (1.5 m) grading 0.628 opt (21.5 g/t) gold; 3) 115 ft (35.1 m) averaging 0.05 opt (1.72 g/t) gold, including 10 ft (3.1 m) grading 0.215 opt (7.37 g/t) gold; 4) 5 ft (1.5 m) grading 0.21 opt (7.2 g/t) gold; and 5) 10 ft (3.1 m) grading 0.174 opt (5.96 g/t) gold. (NBMG Bulletins 38, 106; Novo Resources Corp., news releases, 9/8/2016, 9/13/2016, 10/12/2016; Novo Resources Corp., website, <http://www.novoresources.com>)

ESMERALDA COUNTY

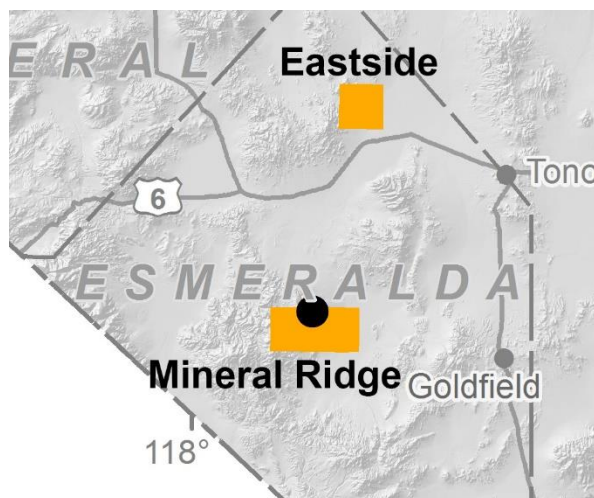


Figure 7. Townships in Esmeralda County where projects were drilled in 2016. See legend in figure 4.

Divide District

Hasbrouck Mountain. West Kirkland Mining Inc., issued an updated NI 43-101 preliminary feasibility study for both the Hasbrouck Mountain and Three Hills (located in the Tonopah district about five miles to the north) properties. The two properties and the recently

leased Hill of Gold property combined are referred to as the Hasbrouck Gold project. The company drilled the Hasbrouck Mountain property (West Kirkland Mining, Inc., 75%; Waterton Precious Metals Fund II Cayman LP, 25%) in 2014 but not in 2015 or 2016. Hasbrouck is a low-sulfidation, epithermal gold–silver deposit hosted in tuffs and sediments of the Siebert Formation with limited mineralization in the underlying Fraction Tuff. Sinter exists near the top of the mountain. Gold and silver mineralization consists principally of thin discontinuous quartz-pyrite veinlets, sheeted veinlets and stockworks, all of which are closely associated with bodies of hydrothermal breccia. Mineralization is accompanied by strong pervasive silicification with associated adularia and pyrite. The sulfide minerals are mostly oxidized. Both deposits will have their own heap leach facility, but the adsorption-desorption-recovery plant for stripping loaded carbon, which will take care of both deposits, will be located at Three Hills. The loaded carbon from the Hasbrouck deposit will be trucked to Three Hills for gold recovery. The weighted recoveries are predicted to be 72% for gold and 11% for silver. In November, West Kirkland signed a ten-year lease to acquire a 100% interest in the Hill of Gold property half way between the Hasbrouck Mountain and Three Hills properties. The lease allows for mining and involve an annual lease payment of \$25,000 for the first three years and \$30,000 per year afterwards on a 2% net smelter return royalty, and the option to buy the mining claims and royalty for \$500,000 at any time during the lease term. The lease is for 25 unpatented mining claims covering about 500 acres (202 hectares). The property was being explored for a possible source of ore for the Three Hills heap leach facility. The company was preparing to conduct a reverse circulation step-out and in-fill drilling program for 2017. (West Kirkland Mining, Inc., NI 43-101 technical report, 9/14/2016; West Kirkland Mining, Inc., Management Discussion and Analysis, 5/1/2017; West Kirkland Mining, Inc., website, www.wkmining.com)

Gilbert District

Eastside. Columbus Gold Corp. completed 49 holes totaling 41,544 ft (12,663 m) of reverse circulation drilling and 15,869 ft (4,837 m) of core drilling on its Eastside project located 20 miles west of Tonopah on the east of flank of the Monte Cristo Range. The drilling program was designed to: 1) test the known gold and silver mineralization at greater depths than drilled so far, since the hydrothermal alteration appears to be getting more intense at depth; 2) test a 2,000-foot (600-meter) long by 330 to 660-foot (100 to 200-meter) wide strong arsenic and antimony geochemical anomaly that extends directly north of the gold surface anomaly beyond the area drilled to date, and 3) test gaps in previous drilling,

where holes are spaced as much as 330 to 490 ft (100 to 150 m) apart. Significant intercepts included: 1) 115 ft (35.1 m) averaging 0.12 opt (4.1 g/t) gold, including 65 ft (19.8 m) grading 0.202 opt (6.91 g/t) gold and 2.84 opt (97.3 g/t) silver; 2) 44 ft (13.4 m) averaging 0.12 opt (4.06 g/t) gold, including 4.5 ft (1.38 m) grading 1.02 opt (34.9 g/t) gold and 6.23 opt (213 g/t) silver; 3) 465 ft (141.7 m) averaging 0.015 opt (0.53 g/t) gold, including 15.4 ft (4.7 m) grading 0.19 opt (6.45 g/t) gold; 4) 55 ft (16.8 m) averaging 2.32 opt (79.29 g/t) silver, including 5 ft (1.5 m) grading 4.0 opt (137.11 g/t) silver and 10.2 ft (3.1 m) grading 4.87 opt (166.84 g/t) silver; and 5) 185 ft (56.4 m) averaging 0.021 opt (0.071 g/t) gold, including 5 ft (1.5 m) grading 0.16 opt (5.48 g/t) gold and 10.2 ft (3.1 m) grading 0.08 opt (2.75 g/t) gold. The mineralization occurs in two broad, northerly-trending zones, referred to as the East and West zones that coincide with two separate, northerly-trending, rhyolite dome complexes. The zones of mineralization have strike lengths of at least 1,475 ft (450 m) in the East zone and 2,790 ft (850 m) in the West zone. Both zones remain open at depth, to the south, and likely to the north. The gold and silver in both zones are associated with silicification and adularia replacement cut by multiphase quartz and adularia veining and stockworks. The rhyolite domes host most of the mineralization with andesite near the dome margins also acting as a host rock. The rhyolite flow dome complexes overlap and were emplaced about 7,200,000 years ago within a confined belt measuring about seven miles (11 km) long by two miles (3.2 km) wide. The company spent \$4,742,004 on exploration at Eastside during its fiscal year, which ended September 30. At year's end, the company released the deposit's maiden resource estimate. (Columbus Gold Corp., Management Discussion and Analysis, 12/12/2017; Columbus Gold Corp., news releases, 2/16/2016, 4/29/2016, 7/18/2016, 8/30/2016, 10/20/2016, 12/5/2016; Columbus Gold Corp., website, www.columbusgoldcorp.com)

Silver Peak District

Mineral Ridge. Mineral Ridge Gold LLC, a subsidiary of Scorpio Gold Corp., produced 36,879 ounces of gold and 16,950 ounces of silver, decreases of 7% and 14% respectively from 2015, from its Mineral Ridge Mine (Scorpio Gold Corp. 70%; Eleveon, LLC, an affiliate of Waterton Global Value L.P., 30%). It mined 826,950 tons (750,204 tonnes) of ore, a decrease of 24% from 2015. The head grade of processed ore averaged 0.044 opt (1.44 g/t) gold. Average cash cost amounted to \$881 per ounce, a 13% increase from 2015. The recovery rates were 90% for gold and 57.9% for silver.

Production came from the Brodie, Bluelite, Mary LC, Missouri, and Solberry pits. The Mary LC pit accounted for 74% of the ore, and the satellite pits

accounted for the remainder. The Bluelite and Solberry pits were depleted in the second quarter, and the Missouri pit was depleted in the fourth quarter. At year's end, mining was expected to continue only through August 2017. To extend the life of the mine, the company was attempting to expand its resources through additional drilling, applying for permits to expand and extend the current operations of new and existing pits, expanding the heap leach pad, and drilling the leach pad to determine if the material on it was amenable for further gold recovery.

The company completed 185 holes totaling 79,927 ft (24,368 m). This included 171 reverse circulation holes totaling 74,449 ft (22,698 m) and 14 oriented core holes totaling 5,478 ft (1,670 m). The Defiance, Custer, Oromonte Paris Bunkhouse Hill, Drinkwater HW (high wall), and Bluelite areas were the main targets. The secondary targets included Mary LC, Drinkwater Pit and Solberry.

The Bunkhouse Hill drill program targeted the down-dip potential of the Mary LC mineralization and showed that the mineralized trend continues, though additional drilling will be required to further define the extent. Due to the surface topography and increasing depths of mineralization, this area would likely be considered an underground resource. The Bunkhouse Hill target covers an area of 1,500 ft (450 m) by about 500 ft (150 m) and is open to the northeast. Mineralization dips 39° northeastward, which contrasts with the 25° to 30° northeastward dip of the Mary LC mineralization. Significant intercepts in the Bunkhouse Hill area include 19.6 ft (5.98 m) grading 0.15 opt (5.15 g/t) gold, 33.5 ft (6.86 m) grading 0.28 opt (9.64 g/t) gold, 18.4 ft (5.61 m) grading 0.13 opt (4.3 g/t) gold, 14 ft (4.27 m) grading 0.13 opt (4.53 g/t) gold, and 22 ft (4.27 m) grading 0.15 opt (5.13 g/t).

Drilling in the Defiance area was intended to expand the Custer mineralization southeastward. The additional drilling in the Custer and Oromonte areas defined the extent of the resource, moved inferred resources into measured resources, and improved the geological database. The Defiance target lies along the same trend as the Custer resource, about 660 ft (200 m) to the southeast. Thirty-six holes were drilled on 164-foot (50-meter) centers on the target. Significant intercepts in the Defiance area include 5 ft (1.52 m) grading 0.29 opt (9.84 g/t) gold, 5 ft (1.52 m) grading 0.19 opt (6.45 g/t) gold, 5 ft (1.52 m) grading 0.104 opt (3.57 g/t) gold, and 10 ft (3.05 m) grading 0.072 opt (2.47 g/t) gold.

The Custer resource is about 1,600 ft (500 m) southeast of the Mary LC deposit. Eighty-one holes were drilled at Custer. Significant intercepts include 5 ft (1.52 m) grading 0.41 opt (13.99 g/t) gold, 5 ft (1.52 m) grading 0.27 opt (9.15 g/t) gold, 10 ft (3.05 m) grading 0.24 opt (8.16 g/t) gold, 10 ft (3.05 m) grading 0.2 opt

(6.7 g/t) gold, 10 ft (3.05 m) grading 0.16 opt (5.33 g/t) gold, and 20 ft (4.27 m) grading 0.11 opt (3.69 g/t).

The Oromonte target lies between the Solberry and Wedge deposits and appears to be faulted offset extension of those deposits. The mineralization would likely have to be mined from underground. Significant intercepts at Oromonte include 10 ft (3.05 m) grading 0.33 opt (11.47 g/t) gold, 10 ft (3.05 m) grading 0.11 opt (3.82 g/t) gold, 15 ft (4.57 m) grading 0.08 opt (2.77 g/t) gold, and 30 ft (9.14 m) grading 0.045 opt (1.55 g/t) gold.

Drilling of the Paris target helped define a steeply dipping mineralized trend similar to the Oromonte deposit, but unfortunately, the associated thickness and grades of this trend were insufficient to be considered a viable resource. Significant intercepts at Paris include 5 ft (1.52 m) grading 0.189 opt (6.48 g/t) gold, 5 ft (1.52 m) grading 0.071 opt (2.43 g/t) gold, 5 ft (1.52 m) grading 0.061 opt (2.09 g/t) gold, 15 ft (4.57 m) grading 0.06 opt (2.05 g/t) gold, and 10 ft (3.05 m) grading 0.052 opt (1.78 g/t).

The NW Brodie trend extends for over 1,600 ft (500 m) between Bluelite and Brodie deposits. It consists of a corridor of ENE-striking quartz veins. Significant intercepts along this trend include 5 ft (1.52 m) grading 0.118 opt (4.05 g/t) gold, 10 ft (3.05 m) grading 1.03 opt (3.53 g/t) gold, 5 ft (1.52 m) grading 0.096 opt (3.29 g/t) gold, 5 ft (1.52 m) grading 0.072 opt (2.47 g/t) gold, and 5 ft (1.52 m) grading 0.07 opt (2.4 g/t). Drilling in the Bluelite area added 1,100 additional ounces of gold mineralization to the Mineral Ridge resource.

The Drinkwater HW drilling program followed up on significant past drill intercepts and attempted to further define the northwestward extent of mineralization. The results from this and previous drilling, coupled with the associated strip ratios, indicated the Drinkwater HW mineralization was not considered economic at current gold prices. The programs at Mary LC, Drinkwater and Solberry were mainly infill drilling to further increase reserves in these areas. However, the drilling in the Solberry and Drinkwater areas was not successful.

At year's end, the remaining capacity on the leach pad was about 581,000 dry tons (527,000 tonnes). The company has plans for a Phase I expansion to add 1,800,000 tons (1,600,000 tonnes) to the western side of the existing leach pad and a Phase II expansion to add 900,000 tons (800,000 tonnes) to the eastern side. The capacity of the leach pad will be increased from the existing 7,600,000 tons (6,900,000 tonnes) to 10,300,000 tons (9,300,000 tonnes) after the construction of both phases. This expansion plan was included in the recent amendment to the Mineral Ridge Plan of Operations submitted to the BLM and Nevada Bureau of Mining Regulation and Reclamation on September 29, 2016. The amendment also includes

authorization to develop and mine the Custer and Oromonte surface pits, the Oromonte and the Bunkhouse Hill underground areas, the expansion of the high wall area of the Drinkwater pit and the Mary LC pit (Bunkhouse Hill area), the addition of a 1,000-ton (910-tonne) toll milling containment; and the addition of 1,400 additional acres (566 hectares) for exploration drilling. (Scorpio Gold Corp. news releases, 2/22/2016, 3/15/2016, 5/3/2016, 5/10/2016, 5/24/2016, 6/27/2016, 12/8/2016; Scorpio Gold Corp. Management Discussion and Analysis, 4/24/2017; Scorpio Gold Corp. website, www.scorpogold.com)

EUREKA COUNTY

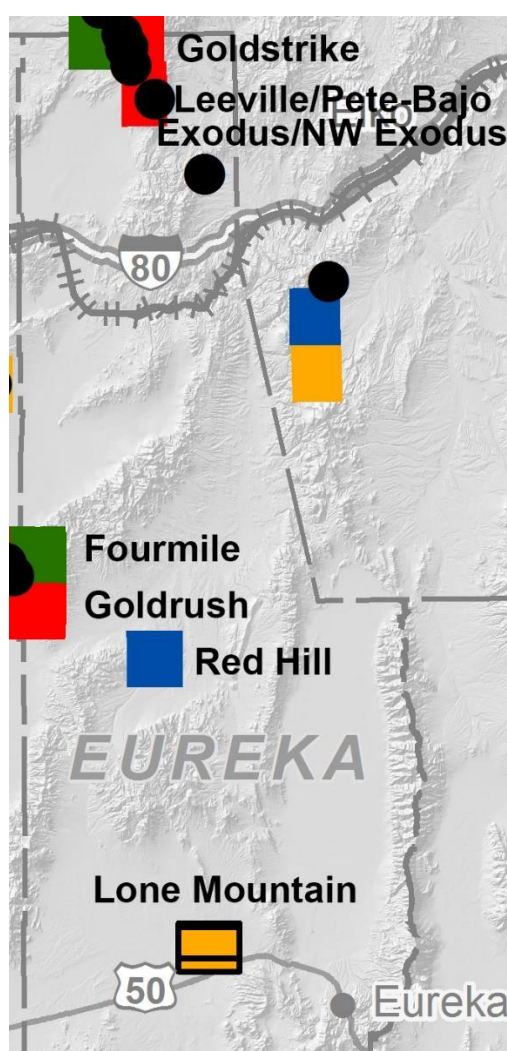


Figure 8. Townships in Eureka County where projects were drilled in 2016. See legend in figure 4.

Alpha District

Bailey Pass area. Kinross Gold Corp. had a Notice of Intent approved by the BLM to drill in Bailey Pass area in the Sulfur Springs Range, where there are Devonian carbonates. Past production from Alpha district included minor amounts of gold, silver, lead, zinc, and copper. It is uncertain whether Kinross drilled any holes in 2016. (BLM LR2000 database).

Buckhorn District

Cortez Summit. In November, Carlin Gold Corp. and Barrick Gold entered into an exploration and earn-in agreement, whereby Barrick can earn a 70% interest in the Carlin Gold's Cortez Summit project by spending \$5,000,000 through the end of 2020 and \$500,000 by September 1, 2017. The property consists of 142 claims in the southern Cortez Mountains between the old Buckhorn and Horse Canyon Mines. It is surrounded on all four sides by Barrick's claim blocks and is adjoined on the west by the claim block that contains the recently discovered and drilled Fourmile target. (Carlin Gold Corp. news releases, 11/10/2016, 11/29/2016, 4/29/2016, 6/6/2017; Carlin Gold Corp. website, carlingold.com)

Carlin Trend

Newmont Carlin Operations Summary. Newmont Mining Corp. reported 943,823 ounces of gold and 101,474 ounces of silver from its Carlin trend operations, which represented increases of 6% and 10%, respectively, from 2015. Production came from four open pits and four underground operations. The open pits were the Goldstar and Silverstar (formerly Genesis) pits in the Lynn district (northern Carlin trend), the Gold Quarry pit in the Maggie Creek district, and the Emigrant Pit in the Carlin district (southern Carlin trend). The underground operations were Leeville, a shaft mine, and Exodus and Pete Bajo, both portal mines, and Chukar, a portal mine accessed from the bottom of the Gold Quarry pit. The increase in production was due to more ore mined at Leeville, higher grade ore mined at Silverstar, and better heap leach recoveries at Emigrant. The bulk of the ore from the underground mines and higher grade refractory ore from the open pits are processed through the Mill 6 roaster. Mill 6 consists of a grinding circuit, roasting circuit and a conventional carbon-in leach circuit and processed about 3,400,000 tons (3,100,000 tonnes) in 2016. Higher grade oxide ore from the open pits is processed by conventional milling and cyanide leaching at Mill 5. Mill 5 also contains a flotation mill for treating lower grade, non-carbonaceous, sulfidic refractory ore to produce a gold/pyrite concentrate. Mill 5 processed

about 5,000,000 tons (4,500,000 tonnes) in 2016. Lower-grade material with suitable cyanide solubility from the open pits is treated on one of four heap leach pads. The all-in sustaining cost was \$1,048 per ounce, a decrease of 8% from 2016 due to lower costs applicable to sales and lower sustaining capital spending. Costs applicable to sales per ounce decreased 5% from 2015 because of lower stockpile and leach pad inventory adjustments, more ounces sold, and fewer tons of waste rock mined. The company spent \$19,000,000 on advanced research and development projects and brownfield exploration to replace depleting reserves and/or enhance the recovery and processing of current reserves. (Newmont Mining Corp., Form 10-K, 2/27/2017; Newmont Mining Corp. website, www.newmont.com)

Cortez District

Fourmile. Barrick Gold Corp. drilled approximately 12 holes at its new Fourmile project, 0.6 to 2 miles (1 to 3 km) north of Goldrush. Intercepts from three of the holes included 47 ft (14.3 m) grading 0.925 opt (31.7 g/t) gold; 19 ft (5.8 m) grading 1.45 opt (49.6 g/t) gold; 19 ft (5.8 m) grading 0.318 opt (10.9 g/t) gold; 17 ft (5.2 m) grading 0.420 opt (14.4 g/t) gold, and 27.6 ft (8.4 m) grading 0.893 opt (30.6 g/t) gold. The grades are significantly higher than those encountered at Goldrush, though they are not as thick as at Goldrush. Like Goldrush, Fourmile occurs in the footwall of a major north-northwest striking fault, referred to as the Fourmile Fault. (Elko Free Press Mining Quarterly, Spring 2017; Barrick Gold Corp. presentation, 6/20/2016; Annual Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com).

Goldrush. Barrick Gold Corp. completed 85 drill holes totaling 73,072 ft (22,278 m) at Cortez, which included both Cortez Hills and Goldrush, but no results were released. The Goldrush project is located about four miles (6 km) southeast from the Cortez Hills open pit. The drilling mainly focused on resource in-fill drilling for the first half of the year, and transitioned to step-out drilling to define the northern extent of the deposit. The measured and indicated resource for year end 2016 was 34,169,000 tons (30,997,600 tonnes) grading 0.28 opt (9.6 g/t) gold for 9,522,000 ounces of gold. The inferred resource amounted to 1,931,000 ounces of gold from material with an estimated grade of 0.24 opt (8.2 g/t). For comparison, the year end 2015 measured and indicated resource was 25,741,000 tons (23,351,800 tonnes) grading 0.31 opt (10.6 g/t) gold for a total of 8,094,000 ounces of gold. The 2015 inferred resource amounted to 1,647,000 ounces of gold from material with an estimated grade of 0.26 opt (8.9 g/t).

The BLM issued two environmental assessments addressing the company's proposal for twin declines for underground exploration at Goldrush. The twin declines, which are planned for 2017, would support both the conversion of existing measured and indicated resources into proven and probable reserves and additional exploration drilling for new resources. They would be located next to the existing Horse Canyon haul road in the northern part of Grass Valley and provide access to the Goldrush resource in Horse Canyon from the west. The mineralization remains open in a number of directions. (Elko Free Press Mining Quarterly, Spring 2017; BLM Environmental Assessment DOI-BLM-NV-B010-2016-0026-EA, 7/20/2016, 9/8/2016; Barrick Gold Corp. presentation, 7/2016; Annual Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com)

Eureka District

Ruby Hill. Ruby Hill Mining Co., LLC, produced 6,471.6 ounces of gold and 7,791.4 ounces of silver from its Ruby Hill Mine, decreases of 39% and 69% respectively from 2015. Barrick Mining Corp. never resumed mining at its Ruby Hill Mine, after the wall failure in November 2013 and sold the mine to Waterton Precious Metals Fund II Cayman, LP in December 2015. Production in 2016 was likely from the leach pads, and no exploration drilling was reported. Ruby Hill Mining Co. LLC was formed by Waterton in 2015 and is managed by Elko Mining Group, LLC. The Nevada Bureau of Mining Regulation and Reclamation renewed the Ruby Hill's water pollution control permit in March. (Nevada Bureau of Mining Regulation and Reclamation, Notice of Decision, 3/4/2016; Nevada Business Search; Waterton Global Resource Management news release, 12/17/2015; Waterton Global Resource Management website, www.watertonglobal.com)

Gibellini District

Gibellini. Due to financial restraints, American Vanadium Corp. put the Gibellini project on care and maintenance during the second half of 2015. No drilling or other work was conducted, and the claims were allowed to expire in 2016. To date, no new claims have been filed over the deposit, and the company has since changed its name to Monitor Ventures Inc. (BLM LR2000 database; American Vanadium Corp. Management Discussion and Analysis, 4/28/2017; Monitor Ventures, Inc., website, <http://earlston.ca/management/mvi>)

Lone Mountain District

Lone Mountain. Between May and July, Nevada Zinc Corp. conducted its Phase 4 drilling program at its wholly-owned North Lone Mountain project, located 16 miles west of Eureka. The company completed 26 reverse circulation holes totaling 8,977 ft (2,737 m). Phase 4 tested for zinc-lead deposits hosted near the surface which could feasibly be mined by open pit methods. Most of the holes were drilled in the Discovery Zone and Mountain View Mine areas with two that tested the northwesterly and down dip part of the Discovery Zone. Significant intercepts included 15 ft (4.57 m) grading 23.53% zinc and 0.11% lead, 25 ft (7.62 m) grading 15.53% zinc and 0.04% lead, 80 ft (24.38 m) grading 12.81% zinc and 0.06% lead, 35 ft (10.67 m) grading 11.38% zinc and 1.12% lead, 330 ft (110.58 m) averaging 6.58% zinc and 0.41% lead including 50 ft (15.24 m) grading 17.98% zinc and 2.26% lead, and 155 ft (47.24 m) averaging 6.01% zinc and 0.43% lead, including 25 ft (7.62 m) grading 21.23% zinc and 1.82% lead.

The company commenced its Phase 5 drilling program in October which was a continuation of testing for near surface deposits. The company completed 24 reverse circulation holes by early January 2017 with some results still pending. Some significant intercepts included 75 ft (22.86 m) grading 17.49% zinc and 1.23% lead southwest of the historic mine workings of the Mountain View Mine, and 175 ft (53.34 m) averaging 3.99% zinc and 0.21% lead, including 100 ft (30.48 m) grading 5.99% zinc. The Discovery Zone mineralization was extended down dip to the north and northeast. To date, all of the mineralization is non-sulfide.

The company's claim block surrounds the one lode claim containing the Mountain View Mine. Between 1943 and 1964, the district production, mostly from the Mountain View Mine, was 4,952,627 pounds of zinc, 649,579 pounds of lead, 600 pounds of copper, and 4,040 ounces of silver. The mined mineralization reportedly consisted mainly of smithsonite, zincite, and hydrozincite with minor cerussite, malachite and azurite along with local sulfides, including sphalerite, galena, chalcopyrite, and pyrite. The ore was hosted in highly brecciated hydrothermal dolomite cut by calcite veins in the Devonian Devils Gate Limestone. It was localized in breccias at the intersections of northeast-striking, southeast-dipping and northwest-striking, southwest-dipping faults. The company issued an NI 43-101 technical report describing the property including the drill results, but reported no resources. (NBMG Bulletin 64; Nevada Zinc Corp., news releases, 5/24/2016, 6/9/2016, 7/6/2016, 7/27/2016, 8/11/2016, 12/20/2016, 1/11/2017; Nevada Zinc Corp., Annual Information Form, 2/28/2017; Nevada Zinc Corp., Management Discussion and Analysis, 4/21/2016; Nevada Zinc

Corp., NI 43-101 technical report, 1/25/2017; Nevada Zinc Corp., website, www.nevadazinc.com)

Lynn District

Exodus/Northwest Exodus. Newmont Mining Corp.'s Northwest Exodus is an extension of the Exodus deposit, which is accessed through a portal in the Lantern pit. Construction for the extension involved 17,000 ft (5,180 m) of drift development, 720 ft (220 m) of vent raises, and 615 ft (188 m) of shaft development. The first gold was poured in August 2016. Northwest Exodus contains 807,000 ounces (5.1 tonnes) and is expected to lengthen the life of the Exodus Mine by seven years and produce between 50,000 and 75,000 ounces of gold annually during the first five years with full production underway at the start of 2018. The ore is refractory and associated with arsenic-rich pyrite and had an average grade of 0.27 opt (9.24 g/t) gold. While the details of the year's drilling program were not released, at least 20 holes were drilled with significant intercepts that included 81 ft (24.7 m) grading 0.47 opt (16 g/t) gold, 88.5 ft (27 m) grading 0.41 opt (14 g/t) gold, 72 ft (22 m) grading 0.35 opt (12 g/t) gold, 75 ft (22.9 m) grading 0.22 opt (7.6 g/t) gold, and 369 ft (112.5 m) grading 0.15 opt (5.3 g/t) gold. By year's end, half of the 2.5-mile (4-km) long north-northwest-trending target had been drill tested, 45% of the inventory had been converted to reserves and resources, and the first footwall stopes had been successfully mined. (Elko Free Press Mining Quarterly, Fall 2016, Winter 2016, Spring 2017; Newmont Mining Corp. Investor Presentation, 5/2017; Newmont Mining Corp. website, www.newmont.com)

Fence/Full House/Leeville/Pete Bajo/Rita K. Newmont Mining Corp. delineated a northwest-trending zone of sediment-hosted gold mineralization extending for three miles (5 km) southeast from the Leeville underground complex to the Pete-Bajo underground mine. The \$19,000,000 budgeted for Carlin for advanced research and development projects and brownfield exploration included plans for 31,000 ft (9,500 m) of drilling for Rita K and 34,500 ft (10,500 m) of drilling for Fence and Full House. The Rita K zone extends about 2,700 ft (850 m) southeast from Leeville and consists of sub-horizontal mineralized zones hosted in folded and faulted Paleozoic sedimentary rocks including the Roberts Mountain and Popovich Formations. The Full House zone is about 1,600 ft (500 m) southeast of Rita K. It consists of a northwest-southeast trending half-mile (800 m) long zone of discrete lenses of gold mineralization at the same depth and hosted in similar rocks as the Rita K. Significant intercepts include 71 ft (21.5 m) grading 1.02 opt (35 g/t) gold, 29 ft (8.8 m) grading 0.4 opt (13.7 g/t) gold, and 66 ft (20.1 m) grading 0.34 opt (11.6 g/t) gold. The

Fence deposit is about 700 ft (220 m) southeast of the Full House zone and just north-northwest of the Pete Bajo Mine. It is hosted mainly in folded and faulted sedimentary rocks of the Roberts Mountain Formation at approximately the same depth as Rita K and Full House. Significant intercepts included 31 ft (9.5 m) grading 1.06 opt (36.4 g/t) gold, 54 ft (16.5 m) grading 0.71 opt (24.2 g/t) gold, 10 ft (3 m) grading 0.38 opt (12.9 g/t) gold, and 22 ft (6.6 m) grading 0.34 opt (11.8 g/t) gold. By the end of 2016, much of the 2-mile by 0.6-mile (3-km by 1-km) corridor of mineralization remained untested; 20% of the inventory had been converted to reserves and resources; and mineralization was confirmed on the Full House Deep Sensing Geochemistry NE trend, 0.6 miles (1 km) to the north. (Newmont Mining Corp. Investor Presentation, 12/2016, 5/2017; Newmont Mining Corp., Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com)

Goldstrike. At its Goldstrike operation, Barrick Gold Corp. produced 544,736 ounces of gold and 134,283 ounces of silver from the Betze-Post open pit, a decrease of 15% and increase of 100%, respectively, from 2015, and 417,438 ounces of gold and 37,615 ounces of silver from the Meikle underground mine, increases of 2% and 112%, respectively. For the open pit and underground operations combined, 962,174 ounces of gold and 171,898 ounces of silver were produced from 76,178,000 tons (67,834,000 tonnes) of material mined including 8,114,000 tons (7,361,000 tonnes) of ore with an average grade of 0.165 opt (5.65 g/t) gold processed. These represent a 6% decrease in material mined, and an 8% increase in ore processed with a 6% decrease in grade from 2015. The all-in sustaining cost was \$723 per ounces, a 10% increase from 2015. Metallurgical recoveries were 75.8% for the open pit ore and 89.8% for the underground ores. The mine life was estimated to be out to 2023 for the underground operation, 2027 for the open pit, and 2032 for processing.

As part of an advanced exploration drill program designed to expand the gold resource and smooth the final high wall design for the proposed fifth northwest Betze pit layback, Barrick completed 10 reverse circulation drill holes totaling 7,957 ft (2,426 m) along the northwestern perimeter of the Betze-Post open pit. This drilling was centered on the key structural intersections which control the distribution of gold. As part of 29 underground exploration projects northwest of the of the Betze-Post open pit, Barrick also completed 739 reverse circulation and core holes totaling 177,530 ft (54,125 m). These projects included initial drill testing, infill drilling, reserve definition drilling, and geotechnical drilling. No results of any of the drilling were released.

Production from the Betze-Post open pit was largely from the North Betze layback. The underground mineralization consists of the Meikle and Rodeo deposits, which are hosted in carbonate breccias and limestone of the Devonian Popovich Formation and various intrusive rocks. Meikle also includes the Meikle Extension, South Meikle, East Griffin, and West Griffin zones, and adjoins the Banshee deposit to the north-northwest. Rodeo also includes West Rodeo and Barrel and adjoins East and West Griffin to the north-north west and the North Post deposit to the south-southeast. The mineralization of the combined ore zones is about 12,000 ft (3,660 m) long by about 1,950 ft (595 m) wide. It starts about 590 ft (180 m) below surface and continues to more than 1,920 ft (586 m) below surface.

The property has two processing facilities—an autoclave installation, which was originally designed to treat non-carbonaceous sulfide ore, and a roaster, which was used to treat carbonaceous ore that responds poorly to cyanidization. These facilities process the refractory ore from both the Goldstrike and Cortez mines. The combined capacity of the two facilities is between 29,000 and 30,000 tons (26,000 to 27,000 tonnes) per day. The autoclave was recently retrofitted and upgraded with the construction of the Total Carbonaceous Material (TCM) project which allows for the use of calcium thiosulphate instead of cyanide to process double refractory ore. Resin is used to collect the dissolved gold rather than activated carbon. After a staged start-up, the TCM process-enhanced autoclaves reached 85% of the full 13,200 tons (12,000 tonnes) per-day production in 2015 and increased the tonnage processed by 34% and improved recovery by 12% in 2016. The new TCM circuit will allow the autoclaves to operate throughout the life of the mine and speed up the processing of stockpiled carbonaceous material. (Barrick Gold Corp., Management Discussion and Analysis, 10/27/2016, 4/25/2017; Barrick Gold Corp. Annual Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com)

Northern Simpson Park Mountains

Red Hill. NuLegacy Gold Corp. completed 41 reverse circulation and four core holes totaling about 35,000 ft (10,688 m) to expand the Iceberg oxide gold deposit and test Avocado geophysical anomaly. The gold mineralization at Iceberg trends north-northwest along an area of at least 1.9 miles (3 km) long by about 1,000 ft (300 m) wide by ~100 feet (~30 m) m thick in at least three horizons. The horizons are: 1) in mid-Tertiary volcanic rocks; 2) at the Devonian Horse Canyon member/Wenban Limestone contact; and 3) deeper in the Wenban Limestone. Gold in the upper two horizons is oxidized and is associated with pyrite in the lowest horizon. The Devonian units are predominantly

carbonates, and the mineralization is associated with decalcification, silicification, and argillization. Significant intercepts in the Iceberg deposit included 1) North zone, 70 ft (21.3 m) averaging 0.063 opt (2.16 g/t) gold including 15 ft (4.6 m) grading 0.178 opt (6.09 g/t) gold, 49 ft (14.8 m) grading 0.062 opt (2.11 g/t) gold, and 70 ft (21.3 m) grading 0.029 opt (0.99 g/t) gold; 2) Central zone, 75 ft (22.9 m) grading 0.038 opt (1.29 g/t) gold, 20 ft (6.1 m) grading 0.034 opt (1.15 g/t) gold, and 115 ft (35.1 m) grading 0.015 opt (0.52 g/t) gold; 3) West zone: 30 ft (9.1 m) grading 0.017 opt (0.59 g/t) gold and 40 ft (12.2 m) grading 0.012 opt (0.41 g/t) gold, and 4) West of Central zone, 25 ft (7.6 m) grading 0.0091 opt (0.31 g/t) gold. Significant intercepts in the Avocado deposit included 99.4 ft (30.3 m) grading 0.016 opt (0.56 g/t) gold, including 31.8 ft (9.7 m) grading 0.045 opt (1.54 g/t) gold and 16.7 ft (5.1 m) grading 0.075 opt 92.57 g/t) gold. The company also completed geological mapping of the entire property, additional geochemical infill sampling, and induced polarization (IP) and controlled source audio-frequency magnetotellurics (CSAMT) geophysical surveys at Iceberg. (NuLegacy Gold Corp. news releases, 5/19/2016, 7/21/2016, 9/7/2016, 11/3/2016, 11/30/2016, 2/7/2017; NuLegacy Gold Corp. Management Discussion and Analysis 2/28/2017; NuLegacy Gold Corp. website, www.nulegacygold.com)

HUMBOLDT COUNTY

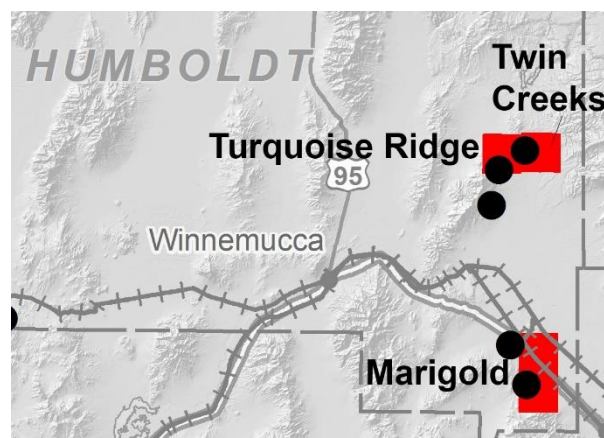


Figure 9. Townships in Humboldt County where projects were drilled in 2016. See legend in figure 4.

Battle Mountain District

Marigold. Silver Standard Resources Inc. produced 205,116 ounces of gold and 2,349 ounces of silver from its Marigold Mine, decreases of 1% and 17% respectively from 2015. The company mined 82,775,000 tons (75,093,000 tonnes) of material of

which 26,029,000 tons (23,613,000 tonnes) was ore with a strip ratio of 2.2:1 at an average grade of 0.013 opt (0.45 g/t) gold. The grade remained the same from 2015. The gold recovery was 72%, and the all in sustaining cost was \$960 per ounce. The ore is oxidized and hosted in argillite, quartzite, sandstone, limestone, chert and meta-volcanic rocks (in upward stratigraphic order) of the Ordovician Valmy Formation, Pennsylvanian-Permian Antler sequence, and Mississippian-Permian Havallah sequence. These rocks are cut by Cretaceous granodiorite dikes and sills trending northwestward. The mineralized zones are generally tabular and shallow-dipping, becoming steeper near normal faults, which trend N10°E to N20°W.

Silver Standard completed 231 reverse circulation holes totaling 180,882 ft (55,147 m) and one core hole totaling 3,132 ft (955 m). The reverse circulation drilling centered on oxide resource targets at the HideOut area and the adjoining Valmy property. The objective was to convert mineral resources to mineral reserves around the 8 South Extension, Terry Zone North, HideOut, Mud, and Valmy pits, and discover to new resources at the Crossfire, East Basalt, and Battle Cry targets on the Valmy property. At HideOut, significant intercepts included 295 ft (90 m) grading 0.057 opt (1.96 g/t) gold and 60 ft (18.3 m) grading 0.096 opt (3.25 g/t) gold, including 25 ft (7.6 m) grading 0.21 opt (7.13 g/t) gold. Other significant intercepts included 1) 150 ft (45.7 m) grading 0.056 opt (1.93 g/t) gold at the Mud pit; 2) 195 ft (59.4 m) grading 0.048 opt (1.65 g/t) gold at Valmy; 3) 130 ft (39.6 m) grading 0.046 opt (1.56 g/t) gold at Terry Zone North; 4) 115 ft (35.1 m) grading 0.032 opt (1.09 g/t) gold, including 30 ft (9.1 m) grading 0.10 opt (3.44 g/t) gold at 8 South Extension, and 5) 245 ft (74.7 m) grading 0.026 opt (0.88 g/t) gold, including 35 ft (10.6 m) grading 0.13 opt (4.48 g/t) gold at Mackay North. The diamond core hole was part of an on-going deep sulfide exploration project; however, no results were released. (Standard Silver Resources, Inc., Management Discussion and Analysis, 2/23/2017; Standard Silver Resources, Inc., new releases 5/9/2016, 8/8/2016, 11/7/2016; Standard Silver Resources, Inc., Annual Information Form, 3/22/2017; Standard Silver Resources, Inc., website, www.silverstandard.com)

Buffalo Mountain District

Lone Tree/Brooks. Newmont Mining Corp. produced 31,854 ounces of gold from its Lone Tree Complex, a 49% increase from 2015. The mine has been in closure since 2007 and the company is conducting on-going reclamation activities. Production mainly comes from the residual heap leaching operation with four haul trucks ranging between 150 and 190 tons (136 to 172 tonnes) at the mine to move leach material around for the leaching operation. The mine's associated autoclave

and flotation mill are on care and maintenance. The company is monitoring the pit lake, which at times has a low pH due to sulfide minerals. The increase in production from the previous year is due to mining at the new Brooks pit, which commenced in 2016. Brooks is located about three miles (5 km) to the southwest. Oxidized ore is being hauled to the Lone Tree heap leach pad for processing. No drilling was reported. (Mining Fall 2016 Edition, Winnemucca Publishing, 10/2016; Newmont Mining Corp. Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com)

Potosi District

Pinson. Atna Resources Ltd. placed its Pinson underground mine on care and maintenance at the end of 2015 due to lack of ore caused by difficult mining conditions and a lack of capital to further develop the mine. On November 18, 2015, the company filed voluntary petitions for relief under chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the District of Colorado and sought ancillary relief in Canada pursuant to the Companies' Creditors Arrangement Act in the Supreme Court of British Columbia in Vancouver, Canada. The company was then delisted from the Toronto Stock Exchange. The main creditor was Waterton Precious Metals Fund II Cayman, LP. Atna Resources Ltd.'s assets were auctioned off on May 2, 2016, and Waterton acquired the Pinson Mine for \$5,000,000. The Osgood Mining Co. LLC was created shortly afterwards and was designated as the mine's operator. (Nevada Department of Taxation, Net Proceeds of Minerals Bulletin, 2016–2017, 7/6/2017; Mine Safety and Health Administration, Mine Data Retrieval System, 2017; Nevada Secretary of State, Nevada Business Search, 2017; United States Bankruptcy Court for the District of Colorado, Case 15-22848 JGR, 5/2/2017; Atna Resources Ltd., Management Discussion and Analysis, 11/19/2015; Atna Resources Ltd., news releases, 11/19/2015, 11/25/2015, 1/18/2016, 5/9/2016)

Turquoise Ridge. The Turquoise Ridge underground mine, which is operated by Barrick Gold Corp., (75% Barrick Gold Corp., 25% Newmont Mining Corp.) produced 354,580 ounces, a 23% increase from 2015. The all-in sustaining costs were \$625 per ounce, a 16% decrease from 2015. Production was from 659,000 tons (598,000 tonnes) of material mined including 577,000 tons (523,000 tonnes) of ore grading 0.5 opt (17.04 g/t) gold. This represents 71% and 34% increases respectively in material mined and ore processed, along with a 9% decrease in grade. The increase in production and decrease in cost was due to increased productivity and investments and upgrades in new equipment and facilities made the year before. Barrick had completed a

prefeasibility study for construction of a third shaft at the north end mine, where most of the remaining reserves and resources are located. The deposit remained open to the northeast. Construction of the shaft was underway during 2016. For sustaining the mine site, the company spent \$32,000,000 annually in 2015 and 2016. Barrick carried out a major drill program in 2016, but no results were reported. (Elko Free Press Mining Quarterly, Summer 2016, Spring 2017; Barrick Gold Corp., Management Discussion and Analysis, 2/15/2017; Barrick Gold Corp., Annual Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com; Newmont Mining Corp. Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com)

Twin Creeks. Newmont Mining Corp. produced 367,528 ounces of gold and 227,814 ounces of silver at its Twin Creeks Mine, a decrease of 22% for gold and an increase of 59% for silver from 2015. The decrease in gold production was due to a planned stripping campaign. The all-in sustaining cost was \$613 per ounce, a decrease of 6% from 2015. Ore from the Vista pit is mainly oxide and goes to the Juniper mill. The Juniper mill processes higher-grade oxide ores by conventional milling for cyanide leaching and processed 1,100,000 tons (990,000 tonnes) of ore during the year. The ore from the Mega pit is mainly refractory and goes to the Sage mill. The autoclaves at the Sage mill process higher-grade refractory ores and lower-grade material with suitable cyanide solubility for treatment on heap leach pads. The Sage mill processed 3,900,000 tons (3,540,000 tonnes) of ore during the year. The company spent \$8,000,000 on advanced research and development projects and brownfield exploration to replace depleting reserves and/or enhance the recovery and processing of current reserves. The company budgeted \$12,000,000 for drilling in 2016 and 2017, though no drilling results were released, except for its Twin Underground project.

The BLM issued a Finding of No Significant Impact which approved the company's proposed amendment to the plan of operation for the Vista VIII Expansion Project. The amendment proposes to expand the existing Vista pit 200 ft (61 m) eastward and 500 ft (152 m) southward and to deepen it to 4,000 ft (1,220 m) above mean sea level. The project will provide about 17,000,000 tons (15,400,000 tonnes) of additional oxide ore to the existing leach and mill facilities and has a predicted operational span of five years.

The Twin Underground project, located below and just north of the Vista pit, was under development and in the definitive feasibility stage in 2016. If approved, the project will cost between \$10,000,000 and \$20,000,000, but is expected to produce 30,000 ounces of gold annually during its first five years. The

mineralization extends 1.4 miles (2.3 km) along a northeast-southwest-trending strike. At least a dozen holes were drilled with significant intercepts that included 16 ft (4.9 m) grading 0.79 opt (26.9 g/t) gold, 24 ft (7.4 m) grading 0.65 opt (22.2 g/t) gold, 53.5 ft (16.3 m) grading 0.63 opt (21.5 g/t) gold, and 27 ft (8.3 m) grading 0.48 opt (16.6 g/t) gold. By the end of 2016, 60% of the inventory had been converted to reserves and resources. (Nevada Division of Environmental Protection Fact Sheet, Twin Creeks Mine—North Project, NEV0086018, 2016; Mining Fall 2016 Edition, Winnemucca Publishing, 10/2016; Elko Free Press Mining Quarterly, Winter 2016; BLM, Preliminary Environmental Assessment, DOI-BLM-NV-W010-2015-0012-EA, 9/2015; BLM, Record of Decision, DOI-BLM-NV-W010-2015-0012-EA, 1/13/2016; Newmont Mining Corp. Investor Presentation, 5/2017; Newmont Mining Corp. Form 8-K/A, 2/23/2017; Newmont Mining Corp. Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com)

Sulphur District

Hycroft. Allied Nevada Gold Corp., later Hycroft Mining Corp., produced 32,265 ounces of gold and 235,934 ounces of silver, decreases of 70% and 62%, respectively, from 2015. On October 22, 2015, Allied Nevada Gold Corp. had completed its financial restructuring and emerged from Chapter 11 under the new name of Hycroft Mining Corp. Also, the new company is no longer a reporting issuer in Canada and no longer needs to file periodic reports to the U.S. Security Exchange Commission. No drilling or other exploration activities were reported for 2016. The company was pursuing options to reduce capital spending. Tests in 2014 using a demonstration plant were conducted for ways to improve the efficiency of the mill proposed in a feasibility study for processing the mine's sulfide and transitional ores. The results are being used in an updated feasibility study. Also, the company was testing the use of trona as a pH modifier in oxidation and leaching sulfide and transitional ores in a heap leach scenario. (Hycroft Mining Corp. news releases: 4/25//2016; Hycroft Mining Corp. website, www.alliednevada.com)

LANDER COUNTY

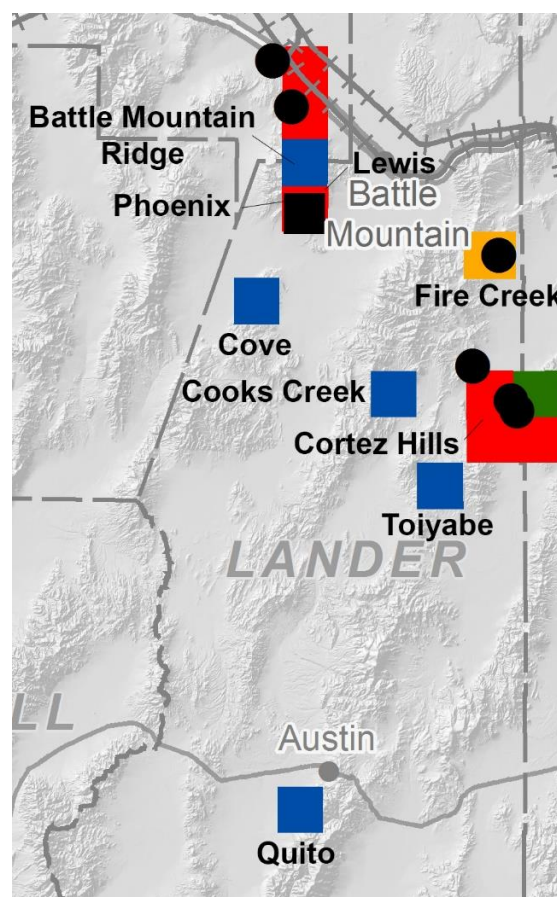


Figure 10. Townships in Lander County where projects were drilled in 2016. See legend in figure 4.

Battle Mountain District

Battle Mountain Ridge. Waseco Resources Inc. completed seven reverse circulation holes varying between 246 ft (75 m) and 879 ft (268 m) in depth and totaling 5,250 ft (1,600 m) at its Battle Mountain Ridge project located south of the Marigold Mine and the previously mined Trenton Canyon deposit. Waseco initially starting drilling the Battle Ridge project in 2012, when it completed a small drill program, during which it intercepted 12 ft (3.7 m) grading 0.9 opt (25.39 g/t) in a zone they termed the Stibnite Gold zone. The 2016 drill program was designed to follow up on high grade gold mineralization in the Stibnite Gold Zone. It was also designed to test for possible extensions of gold zones from the adjacent Trenton Canyon Mine property. Five holes were had significant intercepts that included: 1) 50 ft (15 m) averaging 0.061 opt (2.1 g/t) gold, including 10 ft (3 m) grading 0.22 opt (7.59 g/t) gold; 2) 15 ft (4.6 m) grading 0.16 opt (5.4 g/t) gold; 3) 30 ft (9 m) averaging 0.11 opt (3.7 g/t) gold, including 10 ft (3 m) grading 0.195 opt (6.68 g/t) gold; 4) 50 ft (15 m)

grading 0.061 opt (2.1 g/t) gold, and 5) 25 ft (7.6 m) grading 0.04 opt (1.38 g/t) gold. The new drilling extended the mineralization of the Stibnite Gold zone 230 ft (70 m) further at depth and 148 ft (45 m) northward and 360 ft (110 m) southward of Hole 12-5. The mineralization remains open in both horizontal directions. One hole was drilled into a soil and geophysical anomaly about 3,300 ft (1 km) south of the Stibnite Gold zone. It cut three previously unknown low-grade gold zones that appear to run parallel to the South zone. The remaining hole was drilled near the western edge of the property near shallow disseminated gold mineralization hosted in the Ordovician Valmy Formation. Within 38 ft (11.6 m) of the surface, it intercepted 5 ft (1.5 m) grading 0.016 opt (0.54 g/t) gold and 5 ft (1.5 m) grading 0.012 opt (0.42 g/t) gold. Except for the presence of stibnite, Waseco has not released any information regarding whether the mineralized zones they intercepted are oxidized or sulfide-bearing. Waseco has an agreement with Sparton Resources Inc. whereby it can earn a 75% interest by spending \$900,000 on exploration and make \$75,000 in annual advanced royalty payments. (Waseco Resources, Inc., news releases, 10/19/2016, 11/7/2016, 1/26/2017; Waseco Resources, Inc., website, www.wasecoresources.com)

Lewis. In August, Battle Mountain Gold Inc. commenced a 12-hole core drilling program on its Lewis property, which covers 5,500 acres (2,225 hectares) just north of the Fortitude pit, adjoining Newmont's claim block covering the Phoenix Mine. The drilling was still underway at year's end, but four holes totaling 4,743 ft (1,446 m) had been completed in the Virgin and Buena Vista areas by the end of 2016. The company also conducted helicopter-borne magnetic and radiometric surveys, along with a gravity survey over the property and surrounding areas, as well as geologic mapping and geochemical rock sampling of the northeastern part of the property. Significant intercepts from the Buena Vista holes included: 1) 6.6 ft (2 m) grading 0.33 opt (11.3 g/t) gold and 0.21 opt (7.25 g/t) silver; 2) 54 ft (16.6 m) grading 0.025 opt (0.86 g/t) gold and 0.31 opt (10.6 g/t) silver; 3) 1.6 ft (0.5 m) grading 0.47 opt (16.0 g/t) gold and 3.1 opt (106 g/t) silver; 4) 27 ft (8.3 m) averaging 0.058 (2.01 g/t) gold and 0.467 opt (16 g/t) silver, including 6.6 ft (2 m) grading 0.174 opt (5.93 g/t) gold and 1.24 opt (42.4 g/t) silver; and 5) 12 ft (3.7 m) averaging 0.059 opt (2.02) gold and 0.441 opt (15.1 g/t) silver, including 2.6 ft (0.8 m) grading 0.179 opt (6.13 g/t) gold and 1.31 opt (44.9 g/t) silver. In June 2017, Gold Standard Ventures Corp. acquired Battle Mountain Gold, Inc., and the Lewis property. (Battle Mountain Gold, Inc., news releases, 6/21/2016, 7/27/2016, 8/30/2016, 11/10/2016, 2/21/2017, 6/14/2017; Battle Mountain Gold, Inc., Management Discussion and Analysis, 2/28/2017, 4/3/2017; Battle Mountain Gold,

Inc., website, www.battlemtngold.com; Gold Standard Ventures Corp., news release, 6/14/2017; Gold Standard Ventures Corp., website, goldstandardv.com)

Phoenix. Newmont Mining Corp. produced 176,758 ounces of gold, 1,175,126 ounces of silver, and 41,806,950 pounds of copper from its Phoenix Mine, decreases of 4% and 10%, respectively, for gold and copper and an increase of 19% for silver from 2015. The lower gold production was due to lower mill recovery. The lower copper production was due to lower heap leach recovery and low grade ore being milled. The all-in sustaining cost was \$927 per ounce gold, a decrease of 5% from 2015, and \$2.88 per pound copper, and increase of 25% from 2015. Phoenix is a skarn-hosted polymetallic deposit. The mine contains a mill that produces a gravity gold concentrate and a copper/gold flotation concentrate and recovers additional gold from cyanide leaching of the flotation tails. The mill processed 12,000,000 tons (10,900,000 tonnes) of ore in 2016. The mine also contains a copper leaching facility and a solvent extraction electrowinning facility to produce copper cathode. The BLM is preparing an environmental impact statement for the company's proposal to expand the pit and upgrade some of the related infrastructure. The proposal is to deepen the pit and to expand it to the east and west, which will extend the life of the mine from 2040 out to 2063. The mine's two main pits, the Fortitude and Bonanza pits, will grow together into one big one to be called the Phoenix pit. The proposal is also to expand the copper leach facility, waste rock facilities, and tailings storage. The company spent \$1,000,000 on advanced research and development projects and brownfield exploration to replace depleting reserves and/or enhance the recovery and processing of current reserves, though drilling details and results were not released. (BLM Battle Mountain district, district Manager's Report, 2017; Federal Register, www.federalregister.gov/articles/2015/09/29/2015-24432/notice-of-intent-to-prepare-an-environmental-impact-statement-for-the-proposed-greater-phoenix-mine; Elko Free Press Mining Quarterly, Winter 2015; Newmont Mining Corp. Form 10-K, 2/23/2017; Newmont Mining Corp. website, www.newmont.com)

Big Creek/Birch Creek Districts

Quito. Bravada Gold Corp. completed two core holes totaling 2,047 ft (624 m) on the Russ area on its Quito property. One hole intercepted 130 ft (40 m) grading 0.01 (0.35 g/t) gold and extended the Russ mineralization about 330 ft (100 m) down dip. The other hole was located about 500 m southwest of the Russ area and cut narrow intercepts ranging between 0.003 and 0.015 opt (0.1 and 0.5 g/t) gold in both upper and lower

plate rocks. In 2010, Bravada Gold Corp. signed a letter of intent to earn to 70% interest in the Quito property from Meridian Gold. In July 2015, Coeur Mining, Inc. signed a letter of intent to earn into the Bravada Gold's interest in the Quito property. Between 1986 and 1988, Austin Gold Venture produced 174,460 ounces of gold at Quito from Carlin-style ore with an average recovery grade of 0.17 opt (5.92 g/t) gold. All facilities have been removed and the mill site reclaimed. (Bravada Gold Corp., news releases, 7/13/2016, 8/10/2016, 11/23/2016; Bravada Gold Corp., website, www.bravadagold.com)

Bullion District

Cooks Creek. In December, NV Gold Corp. completed nine reverse circulation holes totaling 4,780 ft (1,475 m) on its Cooks Creek Project, which consists of 66 claims about eight miles (13 km) west of the Pipeline Mine. The holes ranged between 220 ft (67 m) and 800 ft (244 m deep), and tested the Dinner zone and Lunch fault. Of the seven holes drilled in the Dinner zone, only three showed anomalous gold, which returned between 0.2 ppm and 0.27 ppm. One hole started in the Lunch fault had to be re-drilled, and it intercepted 15 ft (4.5 m) grading 0.47 ppm gold. Three or four northeast-striking high-angle faults localize the mineralization within a section of western-facies siliciclastic rocks across at least 4,500 ft (1,370 m) in a north-south direction near the edge of a large alluvial basin. The Main gold zone covers an area of at least 3,400 ft by 1,700 ft (1,040 m by 520 m) and is strongly enriched in arsenic, mercury, and antimony. The mineralization is localized along northeast-trending high-angle faults and hosted by brecciated, argillized to silicified and sulfidized siltstone and chert, and strongly-altered Oligocene felsic volcaniclastic rocks and dikes. The mineralization remains open along strike and depth on at least two northeast-striking fault zones about 1,000 ft (305 m) apart. The Dinner zone is about 2,400 ft (730 m) south of the Main gold zone and consists of silicified and brecciated chert and quartzite along a northeast-trending fault that parallels the structures controlling gold mineralization at the Main zone. The Dinner zone is at least 600 ft (180 m) long by 175 ft (53 m wide) wide, and appears to extend under alluvial cover. (NV Gold Corp. Management Discussion and Analysis, 4/12/2017; NV Gold Corp. news release, 12/1/2016, 2/6/2017; NV Gold Corp. website, <http://www.nvgoldcorp.com>)

Fire Creek. Klondex Mines Ltd. produced 101,284 ounces of gold and 80,593 ounces of silver from its Fire Creek Mine, a 31% increase for gold and a 13% decrease for silver from 2015. The ore was shipped to its Midas mill for processing. The mill processed 120,553 tons

(109,365 tonnes) of ore from Fire Creek, a 39% increase from 2015, with average mill head grades of 0.9 opt (30.8 g/t) for gold and 0.77 opt (26.4 g/t) for silver, 5% and 34% decreases respectively from 2015. The average recovery rates were 93.6% for gold and 86.6% for silver. The production cash cost was \$462 per gold equivalent ounce, about the same as 2015. The company spent \$23,800,000 on capital and \$8,800,000 on exploration.

Fire Creek is a high grade, epithermal vein deposit vertically-zoned within high-angle northwest striking structures and consisting of low-sulfidation mineralization hosted in a package of mid-Miocene basalts in the western half of the Northern Nevada Rift. The company completed 280 surface and underground drill holes totaling 202,490 ft (61,735 m) in 2016. About half of these holes were drilled underground. The drilling extended the mineralization of three of the primary veins. The Karen vein was extended about 450 ft (137 m) along strike and 125 ft (38 m) down dip from its resource. The Joyce vein was extended by about 350 ft (107 m) along strike and 75 ft (23 m) down dip. The Hui Wu vein was extended by about 430 ft (131 m) along strike and 125 ft (38 m) down dip. The drill results clarified where the Hui Wu and Joyce veins intersect and indicated that this intersection is a high grade ore shoot plunging steeply northward. The drill results demonstrated the three primary veins noted above continue northwestward and down dip with similar widths and grades as the existing mineral resource. The drilling also extended Vein 16 875 ft (266.7 m) southward along strike and 175 ft (53.3 m) vertically, and extended Vein 9 100 ft (30 m) northward along strike. One hole tested a 6,500-foot (1,981-meter) geophysical anomaly about 3,960 ft (1,207 m) west of the current mine workings. The hole intersected what appears to be a new mineralized structure open in all directions about 400 ft (122 m) below surface. The structure was designated the West Zone New Discovery.

Significant underground gold intercepts from the above described drill programs included the following. 1) Honeyrunner vein: 11 ft (3.4 m) grading 0.31 opt (10.6 g/t); 2) Hui Wu vein: 5 ft (1.5 m) grading 6.71 opt (230.03 g/t); 3) Joyce vein: 6.8 ft (2.1 m) averaging 3.02 opt (103.6 g/t), including 0.9 ft (0.3 m) grading 21.25 opt (725.1 g/t); 4) Joyce/Karen Intersection: 14.4 ft (4.4 m) averaging 1.45 opt (49.69 g/t), including 1.3 ft (0.4 m) grading 14.5 opt (496.49 g/t); 5) Karen 1 vein: 1.6 ft (0.5 m) grading 1.04 opt (35.6 g/t); 6) Karen/Hui Wu: 7.1 ft (2.2 m) averaging 1.93 opt (66.1 g/t), including 0.7 ft (0.2 m) grading 9.7 opt (331 g/t); 6) Joyce Splay: 2.7 ft (0.8 m) averaging 8.18 opt (280 g/t), including 0.5 ft grading 42.59 opt (1,460 g/t); 7) Karen West: 0.9 ft (0.3 m) grading 2.3 opt (79 g/t); 8) Vein 5: 6.8 ft (2.1 m) grading 3.98 opt (136 g/t); 9) Vein 9: 1.7 ft (0.5 m) grading 6.18 opt (212 g/t); 10) Vein 9 Splay: 6.8 ft (2.1 m) grading 0.15 opt (5 g/t); 11) Vein 13: 2.9 ft (0.9 m)

grading 3.49 opt (119 g/t); 12) Vein 18: 1 foot (0.3 m) grading 5.82 opt (199 g/t); and 13) Vein 41A: 4 ft (1.2 m) grading 0.41 opt. Significant gold intercepts from surface drill programs included the following: 1) North Expansion: 1.3 ft (0.4 m) grading 0.39 opt (13.3 g/t); 2) Northwest Expansion: 9.2 ft (2.8 m) grading 0.46 opt (15.7 g/t); and 3) West Zone: 10 ft (3 m) grading 0.53 opt (18.0 g/t). (Klondex Mines Ltd. news release, 5/3/2016, 11/10/2016; Klondex Mines Ltd. Annual Report, 3/23/2017; Klondex Mines Ltd. website, www.klondexmines.com)

Pipeline Complex/Gold Acres. Production figures for Barrick Gold Corp's Pipeline open pit complex are combined with those for the Cortez Hills open pit reported below. For open pit ore definition, the Pipeline Complex has been drilled on 140-foot (43-meter) centers; however, no drilling was apparently conducted around the Pipeline complex. Carlin-type mineralization in the Pipeline deposit extends up to about 5,250 ft along strike with a maximum width of about 3,900 ft (1,200 m). The mineralized zone was about 200 ft (60 m) below surface and continues down to a depth of more than 2,000 ft (600 m). Early in the year, the company released an NI 43-101 technical report on the entire Cortez Mine property, which contained updated reserves and resources for the Crossroads, Gap, Gold Acres, and Pipeline deposits. (Barrick Gold Corp. NI 43-101 Technical Report, 3/21/2016; Barrick Gold Corp. Annual Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com)

Cortez District

Cortez Hills/Goldrush. Barrick Gold Corp. produced 520,060 ounces of gold and 22,565 ounces of silver from its Pipeline and Cortez Hills open mines, increases of 64% and 28%, respectively, from 2015. Barrick also produced 338,275 ounces of gold and 6,294 ounces of silver from its Cortez Hills underground mine, decreases of 28% and 61%, respectively, from 2015. For all of the production at Barrick's Cortez Mine (Cortez Hill and Pipeline, open pit and underground), 137,698,000 tons (124,919,000 tonnes) of material were mined and 27,681,000 tons (25,112,000 tonnes) of ore with an average grade of 0.05 opt (1.73 g/t) gold were processed, a 17% decrease in material mined and a 12% increase in ore processed with the grade staying the same as in 2015. The all-in sustaining costs were \$518 per ounce, a 14% decrease from 2015. Mining at the Cortez Hills complex is scheduled through 2018 at the open pit and through 2028 underground.

The company completed 85 drill holes totaling 73,072 ft (22,278 m) at Cortez, which included both Cortez Hills and its Goldrush project. Typically, for exploration, reverse circulation holes are drilled during

the initial phases of exploration, but when mineralization is encountered, the holes are re-drilled as core holes for high-quality sampling. For open pit ore definition, the Pipeline Complex is drilled on 140-foot (43-meter) centers, and the Cortez Hills Complex is drilled on 100-foot (30-meter) centers. Underground ore is delineated by nominal 15 meter spaced core holes with additional in-fill reverse circulation drilling as required to define ore boundaries. No results were released. The company issued an NI 43-101 technical report on the entire Cortez Joint Venture with updated reserves and resources. Cortez Hills consists of the Breccia, Middle, and Lower Zones, and the Pediment deposit. The mineralization extends up to about 4,250 ft (1,300m) along strike with a maximum width of about 1,380 ft (420 m). The mineralized zone starts about 390 ft (120 m) below surface and continues down to a depth of more than 2,000 ft (600 m), where it remains open at depth in the Lower Zone. The grade and metallurgical character of the ore determine the type of processing. Lower grade run-of-mine oxide ore is heap leached at the existing facilities. Higher-grade non-refractory ore is treated in a conventional mill using cyanidation and the CIL process. Refractory ore is stockpiled on site and trucked to Goldstrike for processing. The mill throughput varies between 11,500 to 15,000 tons (10,430 and 13,600 tonnes) per day depending on the hardness of the ore being processed.

The company had completed a prefeasibility study and began a follow-up feasibility study centered on the expansion of underground mining in the Deep South Zone including processing, stope configuration, and backfilling. The Deep South Zone is below the currently permitted areas of the Lower Zone at the Cortez Hills underground mine, which are above the presently permitted depth of 3,800 ft (1158 m) AMSL. The project provides for 7,300 ft (2,225 m) twin portals which will provide a direct route to the Deep South Zone making it feasible to mine there. Construction of the portals commenced in the fourth quarter of 2016. The initial capital costs for the project are estimated to be \$153,000,000, but the expansion will provide access to about 1,900,000 ounces proven and probable reserves in the Deep South Zone, over which 80% is oxide ore. The permitting process and preparation of an Environmental Impact Statement will likely take three to four years with a record of decision being expected in 2019 or 2020. Development would begin shortly thereafter with initial production commencing about 2022 or 2023. (Elko Free Press Mining Quarterly, Summer 2016, Spring 2017; BLM, Environmental Assessment, DOI-BLM-NV-B010-2015-055-EA, 7/2015; BLM, Environmental Assessment, DOI-BLM-NV-B010-2016-0026-EA, 9/8/2016; Barrick Gold Corp. NI 43-101 Technical Report, 3/21/2016; Barrick Gold Corp. Annual

Information Form, 3/24/2017; Barrick Gold Corp. website, www.barrick.com)

McCoy District

Cove. Premier Gold Mines Ltd. completed 23 reverse circulation and core holes totaling over 49,200 ft (over 15,000 m) at the Cove portion of its McCoy-Cove project. The drill program tested for continuity and expansion of the high grade gold and silver system within the 1,300-foot (400-meter) Gap Zone between the Helen and Cove South Deep zones. Significant intercepts included: 1) 206 ft (62.8 m) averaging 0.08 opt (2.89 g/t) gold and 2.08 opt (71.38 g/t) silver, including 83 ft (25.3 m) grading 0.18 opt (6.23 g/t) gold and 4.75 opt (162.78 g/t) silver; 2) 8 ft (2.4 m) grading 0.17 opt (5.77 g/t) gold and 20.1 opt (689 g/t) silver; 3) 11 ft (3.4 m) grading 0.29 opt (9.8 g/t) gold and 1.24 opt (42.5 g/t) silver; 4) 33.5 ft (10.2 m) grading 0.35 opt (12.1 g/t) gold and 0.14 opt (4.97 g/t) silver; 5) 39.2 ft (11.9 m) grading 0.47 opt (16.01 g/t) gold and 0.23 opt (7.92 g/t) silver; 6) 4 ft (1.2 m) grading 0.0015 opt (0.05 g/t) gold and 25.52 opt (874 g/t) silver, and 7) 6 ft (1.8 m) grading 0.61 opt (21 g/t) gold and 19.83 opt (679 g/t) silver. A new interpretation of the Cove geological model supported by the results of the drilling suggests that the best gold and silver grades in the Helen, Cove South Deep and 2201 Zone deposits are closely associated with the deep seated Cove thrust fault and altered mafic sills. The fault and sills acted as both the primary structural control and fluid conduits for ore fluids. (Premier Gold Mines, Ltd., news releases, 6/2/2016, 6/23/2016, 8/31/2016, 11/10/2016, 3/21/2017; Premier Gold Mines, Ltd., NI 43-101 Technical Report, 4/15/2017; Premier Gold Mines, Ltd., Annual Information Form, 3/31/2017; Premier Gold Mines, Ltd., Management Discussion and Analysis, 11/14/2016; Premier Gold Mines, Ltd., website, www.premiergoldmines.com)

Toiyabe District

Toiyabe. Starcore International Mines Inc. completed 15 reverse circulation holes including two pre-collar holes totaling 8,321 ft (2,537 m) which were finished with coring totaling 1,555 ft (474 m) on its Toiyabe project. The drilling program tested for gold mineralization associated with resistivity highs, extensions of deep gold intercepts on Section 900 North associated with the 805 Fault, extensions of the near surface resource associated with the Courtney A and B faults, and gold anomalies associated with surface sampling or historic drilling. The best intercept was 132 ft (40.2 m) averaging 0.038 opt (1.3 g/t) gold, including 10 ft (3 m) grading 0.22 opt (7.7 g/t) gold and 5 ft (1.5 m) grading 0.38 opt (12.9 g/t) gold. (Starcore

International Mines, Inc., news release, 7/13/2016, 10/24/2017; Starcore International Mines, Inc., Annual Report 2016, 12/13/2016; Management Discussion and Analysis, 12/14/2016; Starcore International Mines, Inc., website, www.starcore.com)

LINCOLN COUNTY

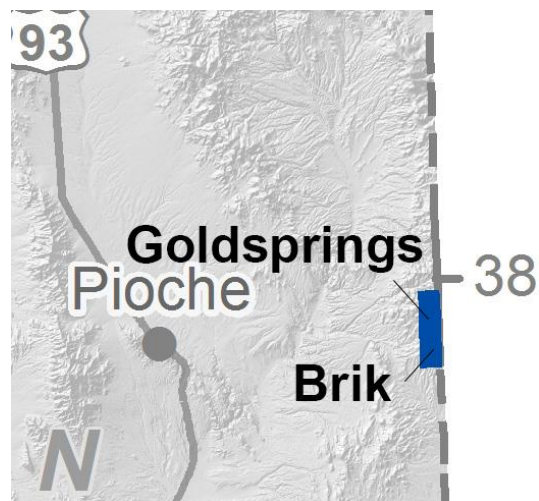


Figure 11. Townships in Lincoln County where projects were drilled in 2016. See legend in figure 4.

Eagle Valley District

Brik. Logan Resources, Ltd., signed a lease option to earn up to 80% interest on the Brik property from Pilot Gold, Inc. (named changed to Liberty Gold Corp. in May 2017). In October and November, the company completed eight drill holes totaling 4,526 ft (1,380 m). Brik is one of several, low-sulfidation epithermal gold and silver systems in southeastern Nevada that occur in an area of nested volcanic calderas. The drilling concentrated on the Hidden Treasure target, which consists of a prominent silicified knob that includes phases of milky quartz, chalcedonic quartz, and quartz breccia, covering an area of about 660 ft by 660 ft (200 m by 200 m). The drilling tested the gold-bearing silica cap; deeper and potentially higher grade gold mineralization considered to be controlled by steep structures; and geophysical targets that may also represent zones of gold-bearing silicification. Significant intercepts included: 1) 110 ft (33.5 m) averaging 0.032 opt (1.11 g/t) gold, including 45 ft (13.72 m) grading 0.067 opt (2.29 g/t) gold, and 2) 110 ft (33.5 m) averaging 0.034 opt (1.15 g/t) gold, including 25 ft (7.6 m) grading 0.058 opt (1.99 g/t) gold. (Pilot Gold, Inc., news release 5/9/2017; Pilot Gold, Annual Information Form, 3/28/2017; Pilot Gold, Pilot Gold website, <http://www.pilotgold.com>; Logan Resources,

Ltd. news release, 9/20/2016, 10/18/2016, 11/23/2016, 3/1/2017; Logan Resources, Ltd. website, <http://loganresources.ca>)

Gold Springs. TriMetals Mining Corp. completed 14 reverse circulation holes in the Thor zone on the Nevada side of its Gold Springs project, which straddles the border with Utah about 22 miles (35 km) east of Pioche. The company also conducted a trenching program in the Thor zone. The Nevada side of the property contains the Thor and Grey Eagle zones, and the Utah side of the property contains the Jumbo and Etna zones. Significant intercepts included 1) 25 ft (7.6 m) grading 1.31 opt (44.775 g/t) gold and 1.7 opt (58.3 g/t) silver; 2) 20 ft (6.1 m) grading 0.13 opt (4.465 g/t) gold and 1.33 opt (45.7 g/t) silver, and 3) 25 ft (7.6 m) grading 0.081 opt (2.761 g/t) gold and 1.48 opt (50.8 g/t) silver. The drilling established the continuity over 1,300 ft (400 m) of the Thor vein system. The combined results of the drilling and geophysical programs indicate the Thor system could be at least one mile (1.6 km) long and contain more than one mineralized vein zone. The trenching exposed several new vein systems 345 ft (105 m) and 410 ft (125 m) west of historic occurrences with assays ranging between 0.022 opt and 0.55 opt (0.749 g/t to 18.8 g/t) gold.

The project area is in the Indian Springs volcanic field which includes the Gold Springs caldera. The mineralization is hosted in complex sheeted veins, breccias, and stockworks oriented along north-south and northeast- and northwest-striking structural zones. These zones cut across andesite and latite flows and rhyolite dikes around the collapsed margins of the caldera. The veins commonly form resistant ledges and ribs that protrude up to 30 ft (9.1 m) above the surrounding ground surface. The veins consist of quartz, adularia, and calcite with minor sulfides, and are laterally extensive and traceable for up to at least 1.25 miles (2 km) along strike between exposures. The Gold Springs area contains many small mines and prospects, which exploited high-grade gold and silver veins scattered across the volcanic field. These mines were last active in the 1940s. The company released an NI 43-101 technical report with updated resources. (TriMetals Mining Corp. news release, 5/3/2016, 6/14/2016; 6/27/2016, 7/27/2016, 8/15/2016, 8/30/2016, 10/6/2016; TriMetals Mining Corp. NI 43-101 Technical Report, 3/31/2017; TriMetals Mining Corp. Annual Information Form, 3/31/2017; TriMetals Mining Corp. website, www.trimetalsmining.com)

LYON COUNTY

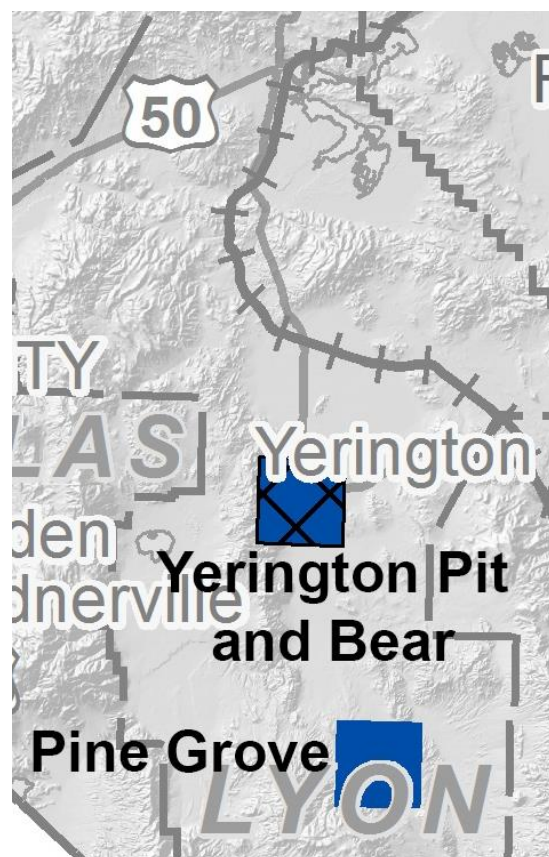


Figure 12. Townships in Lyon County where projects were drilled in 2016. See legend in figure 4.

Wilson District

Pine Grove. In August, Lincoln Mining Corp. and Goldcliff Resource Corp. signed an agreement whereby the latter company can acquire a 40% interest in the Pine Grove project by spending \$1,400,000 over three years and contributing the Wilson patented claim to the Pine Grove project holdings of Lincoln Mining. Goldcliff Resource Corp. funded a drilling program in which 14 reverse circulation holes totaling 6,963 ft (2,133 m) were completed on the Wilson patented claim in December. Thirteen holes were drilled in two fences with one fence being 100 ft (30 m) north of the limit of previous drilling and the other another 100 ft (30 m) farther to the north. The remaining hole was drilled near the southern boundary. All of the holes penetrated the granodiorite, which hosts the mineralization. All of the holes also encountered detectible gold, but only seven encountered significant mineralization. Significant intercepts included: 1) 5 ft (1.5 m) grading 0.604 opt (20.7 g/t) gold; 2) 50 ft (15 m) grading 0.154 opt (5.28 g/t) gold; 3) 25 ft (7.6 m) grading 0.089 opt (3.06 g/t) gold; 4) 25 ft (7.6 m) grading 0.071 opt (2.59 g/t) gold,

and 5) 30 ft (9.14 m) grading 0.062 opt (2.061 g/t) gold. Five of the holes intercepted a new, shallow upper gold zone hosted in the granodiorite. The new zone is open down dip for at least 300 to 400 ft (91 to 122 m) northward toward a mineralized hole drilled in 1991. (Lincoln Mining Corp., news releases, 8/9/2016, 10/27/2016; 11/17/2016, 12/13/2016, 1/12/2017; Lincoln Mining Corp., website, www.lincolnmining.com; Goldcliff Resource Corp., news releases, 11/17/2016, 12/13/2016, 1/12/2017, 2/9/2017; Goldcliff Resource Corp., website, www.goldcliff.com)

Yerington District

Ann Mason and Blue Hill. Entrée Gold Inc. completed a 40-hole drilling program in late 2015 on its Ann Mason project, which includes Blue Hill, but did no drilling in 2016. Entrée Gold Inc. changed its name to Entrée Resource Ltd. and spun-off its Ann Mason Project into a new company Mason Resources Corp. The company conducted geologic mapping and sampling and was preparing an updated preliminary economic assessment of both deposits. (Entrée Gold, Inc., news releases, 5/9/2017; Entrée Gold, Inc., NI 43-101 Updated Preliminary Economic Assessment, 3/3/2017; Entrée Gold Inc. Annual Information Form, 3/10/2017; Entrée Gold, Inc., website, www.entreesourcesltd.com)

Bear/Yerington. Singatse Peak Services LLC, a subsidiary of Quaterra Resources Inc., completed three diamond core holes totaling 9,364 ft (2,855 m) at the Bear deposit on the company's Yerington property. The drilling was part of a six-hole program started in 2015 and was designed to assess historic assay results and determine geological controls for higher-grade mineralization. After completion of the drilling, the mineralization remained open to the north, northeast, and northwest. Hole B-051 was completed vertically to 2,191 ft (668 m) and is located along the northeast edge of the large cluster of historical drilling defining the Bear deposit. Hole B-052 was completed vertically to 3,468 ft (668 m) and is located about 700 ft (213 m) north-northeast of B-051. The mineralization is narrower and lower grade than that in B-051. Molybdenite is more common and occurs in narrow quartz veins that tend to offset chalcopyrite-pyrite veins and continue over a greater vertical range than the copper mineralization. Lower copper and gold grades and higher pyrite/chalcopyrite ratios suggest the hole was drilled into a more distal part of the system. Significant intercepts included: 1) 583 ft (178 m) grading 0.11% copper 0.016% molybdenum, and 2) 666 ft (203 m) averaging 0.14% copper 0.0089% molybdenum, and 0.006 ppm gold, including 119 ft (36.3 m) grading 0.23% copper, 0.0083% molybdenum,

and 0.007 ppm gold, and 43 ft (13.1 m) grading 0.4% copper, 0.0201% molybdenum, and 0.007 ppm gold.

Hole GHH-001 was completed vertically to 2,176 ft (663 m). It was drilled in the Ground Hog Hills along the southwest edge of the large cluster of historical drilling defining the Bear deposit. This is about 1.5 miles (2.4 km) south-southwest of Holes B-051 and B-052 and along the east edge of the large Yerington Mine dump. The hole intercepted 10 ft (3 m) of supergene enriched chalcocite averaging 0.33% copper at a depth of 230 ft (70 m), 30 ft (9.1 m) of oxide copper averaging 0.15% copper at a depth of 350 ft (107 m), and apparently hypogene chalcocite below 400 ft (122 m). The last occurs in widely spaced sulfide veins containing anomalously high amounts of antimony, arsenic, cobalt, zinc, molybdenum, gold, silver, and copper averaging greater than 1% copper. The mineralization occurs in propylitic alteration. Other significant intercepts included: 128.6 ft (39.2 m) grading 0.21% copper 0.0014% molybdenum, and 0.016 ppm gold and 44 ft (13.5 m) grading 0.23% copper 0.0048% molybdenum, and 0.014 ppm gold.

It also drilled about 3 miles (4.8 km) north-northeast of the Yerington pit. Compared to the holes drilled in 2015, which were drilled to the west and southeast, the thickness of the mineralization is greater and bornite is more common. The bornite occurs with chalcopyrite and molybdenite in quartz-sulfide veins, veinlet swarms, and stockworks. Significant intercepts included: 1,482 ft (452 m) averaging 0.26% copper, 0.0054% molybdenum, and 0.021 ppm gold, including 141 ft (43.1 m) grading 0.46% copper, 0.0039% molybdenum, and 0.041 ppm gold and 25 ft (7.6 m) grading 0.43% copper, 0.0182% molybdenum, and 0.12 ppm gold.

In June, Freeport-McMoran Nevada LLC extended the option agreement for two years that it signed in June 2015 with Singatse Peak Services to earn up to a 75% interest in Singatse's Yerington assets, which also include the MacArthur deposit and the old Yerington open pit. As part of the agreement, Freeport-McMoran Nevada LLC funded the drilling project as well as other exploration activities at its discretion that Singatse Peak Services may propose at Bear. (Quaterra Resources, Inc., news releases, 2/8/2016; 4/6/2016, 5/24/2016, 6/9/2016; Quaterra Resources, Inc., Management Discussion and Analysis, 3/29/2016; Quaterra Resources, Inc., website, www.quaterra.com)

Pumpkin Hollow. Nevada Copper Corp. maintained its Pumpkin Hollow project's "construction ready" status and spent \$19,000,000 on exploration, development, and engineering on the property. Exploration activities consisted of reviewing and updating geological data; however, no drilling was conducted in 2016. The company also continued discussions with potential

partners in order to position the project for future development. Low copper prices and an a glut of copper concentrates in 2015 has slowed development of the project. (Nevada Copper Corp. Annual Information Form, 3/30/2017; Nevada Copper Corp. website, www.nevadacopper.com)

MINERAL COUNTY



Figure 13. Townships in Mineral County where projects were drilled in 2016. See legend in figure 4.

Aurora District

Aurora. Waterton Global Resource Management Inc. acquired the Aurora property, also known as the Esmeralda property, which included the Esmeralda Mill along with the Hollister Mine from Great Basin Gold Ltd. through a bankruptcy auction in 2013. The Esmeralda Mill had been used to process ore from the Hollister Mine. Its operation ceased in 2014. The Aurora Mine last produced in 2009. On October 3, 2016, Klondex Mines, Ltd., acquired the Hollister and Aurora properties including the 350-ton-per-day (318-tonne-per-day) Esmeralda Mill by the payment of \$80,000,000 in cash and issuance of 5,000,000 common share purchase warrants and 2,600,000 common shares to Waterton Nevada Splitter, LLC. By year's end, the company had spent \$600,000 on capital expenditures on the property, mainly mill maintenance and rehabilitation. Klondex was studying the feasibility of using the mill for third party toll milling services. (Waterton Global Resource Management, Inc. website, www.watertonglobal.com; Klondex Mines Ltd. Annual

Report, 3/23/2017; Klondex Mines Ltd. website, www.klondexmines.com)

Bell District

Mina Gold. Gold Resource Corp. completed 23 reverse circulation holes totaling 2,125 ft (648 m) on its Mina Gold property during the fourth quarter of 2016. The drilling was concentrated on a portion of the Monster zone. Significant intercepts included: 1) 79 ft (24.08 m) averaging 0.058 opt (1.97 g/t) gold, including 30 ft (9.14 m) grading 0.14 opt (4.87 g/t) gold; 2) 50 ft (15.24 m) averaging 0.068 opt (2.34 g/t gold), including 20 ft (6.10 m) grading 0.15 opt (4.97 g/t) gold; 3) 40 ft (12.19 m) averaging 0.059 opt (2.01 g/t) gold, including 15 ft (4.57 m) grading 0.14 opt (4.81 g/t) gold; and 4) 39 ft (11.9 m) averaging 0.041 opt (1.39 g/t) gold, including 14 ft (4.27 m) grading 0.084 opt (2.89 g/t) gold. All the mineralization was within 125 ft (38 m) of the surface. Past metallurgical reports completed by Legend Metallurgical Laboratory Inc. includes column leach tests at minus 6 inch rock that returned 70% gold recovery in 22 days and 80% gold recovery in 60 days. Minus one-half inch rock returned 75% gold recovery in 2 days. Bottle roll tests on 3/8-inch rock returned 90% gold recovery in 96 hours. These studies indicate the best gold recoveries on the Monster Zone may require particle agglomeration prior to heap leaching. The company had bought the Mina Gold property on August 12, 2016, from Nevada Select Royalty Inc. for \$900,000 in common stock and \$100,000 in cash. (Gold Resource Corp. news releases, 8/15/2016, 3/23/2017; Gold Resource Corp. Form 10-K, 2/28/2017; Gold Resource Corp. website <http://www.goldresourcecorp.com>)

Borealis District

Borealis. Borealis Mining Co., LLC, produced 618 ounces of gold and 1,511 ounces of silver from its Borealis oxide heap leach mine (Gryphon Gold Corp. 40%, Waterton Global Value, L.P., 60%). Borealis Mining Co., LLC, was a subsidiary Gryphon Gold Corp. and is now managed by Elko Mining Group, LLC. The operation re-crushed and leached material from existing heap leach pads. Because of liquidity issues and a lawsuit by some of its shareholders, Gryphon Gold Corp. went into Chapter 11 bankruptcy. The company retained its assets and continued running its business as a debtor-in-possession under supervision of the bankruptcy court but suspended operations in early 2015. The Nevada corporate status of Gryphon Gold Co. was listed as revoked in 2014, and Waterton Global Value L.P. filed to have the company's assets sold at auction on September 16, 2016. (Nevada Bureau of Mining Regulation and Reclamation, Notice of Decision, 9/8/2016; Gryphon Gold Corp.'s interest was

put up for auction in 2016. (Nevada Secretary of State, Nevada Business Search, 2017; Sierra Sun, Notice of Foreclosure Sale of Interest, 8/22/2016)

Huntoon District

Huntoon. In August, Great Western Mining Corp. PLC and Crown Point Gold and Silver Mining Co. signed a cooperation agreement for the Huntoon Mine area. The companies own adjoining claim blocks, and the agreement provides for the sharing of operational resources, giving Great Western Mining Corp. enhanced ground facilities, and allowing Crown Point Gold and Silver Mining Co. to follow any commercially exploitable veins originating on its own claim area into Great Western's area, with any consequent profits shared between the two companies. In November, a joint venture drilling program was commenced on M1 prospect on Great Western Mining Corp.'s claims just northeast of Crown Point Gold and Silver Mining Co.'s claims. The program was funded by the Great Western and consists of three core holes to test the depth of mineralization at M1. The drilling was suspended because of winter weather and was set to resume in early 2017.

Great Western Mining Corp. was also preparing a resource estimate for the M2 prospect for release in early 2017. The resource has a strike length of 2,608 ft (795 m) and could be mined with an open pit. The copper and gold occurs with hematite and magnetite, and the resource was modelled as an iron oxide-copper-gold (IOCG) stringer zone projecting up dip from a thicker, more consistent, diorite-hosted core hosted underneath Sharktooth Peak on Boss Mountain. The IOCG mineralization under Boss Mountain is estimated to be 2.5 miles by 0.6 miles (4 km by 1 km) and open to the southwest. The company also acquired 10 acres (4 hectares) of private land in Marietta, Nevada, and was studying development of a pilot heap leach facility on it. (Great Western Mining Corp., news releases, 10/17/2016, 11/3/2016, 2/22/2017, 6/12/2017; Great Western Mining Corp., Annual Report, 12/31/2016; Great Western Mining Corp., Interim Report, 6/30/2016; Great Western Mining Corp., website, <http://www.greatwesternmining.com>)

Mount Grant District

Lapon Canyon. Walker River Resources Corp. drilled completed nine reverse circulation holes totaling 3,411 ft (1,040 m) at its Lapon Canyon gold project, located on the western flank of the Wassuk Range, north-northwest of the Borealis Mine. The drill program followed up its 2015 drilling program in testing and confirming mineralization around historic workings. Walker River geologists believe the property is

underlain by Cretaceous intrusions. Significant intercepts included: 1) 45 ft (13.7 m) averaging 1.4 opt (48.02 g/t) gold, including 5 ft (1.5 m) grading 13.17 opt (451 g/t) gold; 2) 30 ft (9.2 m) averaging 1.14 opt (39.17 g/t), including 5 ft (1.5 m) grading 6.04 opt (207 g/t) gold, and 3) 14.8 ft (4.6 m) averaging 0.28 opt (9.69 g/t) gold. One of the holes specifically targeted to verify the position of an inaccessible mined-out area. The hole penetrated the mined out stope at a depth of 223 ft (68 m), and between 180 and 220 (54.9 and 67.1 m) intercepted 40 ft (12.2 m) grading 2.27 opt (77.62 g/t) gold including 5 ft (1.5 m) grading 6.63 opt (227 g/t) gold. (Walker River Resources Corp. news releases, 8/4/2016, 11/9/2016; Walker River Resources Corp. Management Discussion and Analysis, 4/28/2017; Walker River Resources website, www.wrrgold.com)

Pamlico District

Pamlico. On July 16, 2016, Columbian Mines Corp. entered into an agreement to acquire the Pamlico Project for \$4,000,000 payable over four years. On December 2, the company changed its name to Newrange Gold Corp. The geology consists of a complex structural setting with volcanic rocks juxtaposed against sedimentary rocks by numerous high and low-angle faults. A series of high-angle, northwesterly to northeasterly trending faults host most of the gold mineralization. The mineralization is deeply oxidized and is dominated by coarse, free gold. The oxidized mineralization extends to at least 800 ft (245 m) below the surface. In 2013, a 617 foot (188 m) long decline was constructed to develop high grade mineralization identified in earlier drilling. Newrange Gold Corp. then staked a 1.9-mile (3 km) long zone containing extensive jasperoid bodies and highly anomalous gold mineralization hosted in carbonate-rich sedimentary rocks adjacent to the Pamlico project. The company collected 21 random rock chip samples that assayed between 123 ppb and 0.15 opt (5.02 g/t) gold and averaged 0.037 opt (1.26 g/t) gold. This led to trench sampling and drilling programs planned for 2017. (Newrange Gold Corp. news releases, 7/19/2016, 11/21/2016, 11/30/2016; Newrange Gold Corp. Management Discussion and Analysis, 12/29/2016, 4/3/2017; Newrange Gold Corp. website, www.newrangegold.com)

Rawhide District

Denton-Rawhide. Rawhide Mining LLC produced 17,972 ounces of gold and 105,413 ounces of silver from its wholly-owned Denton-Rawhide Mine, decreases of 30% and 28% respectively from 2015. No exploration including drilling was reported on this or the company's adjacent Regent property. The company has been leasing the Buckskin Rawhide East Property from

Emgold Mining Corp. since 2012. The original lease required the company to conduct \$500,000 worth of exploration work on Buckskin Rawhide East by the end of May 2016. The lease, however, was amended to allow the company to pay Emgold Mining Corp. seven quarterly installments of \$25,000 to make up for \$175,000 in exploration work that was not completed by the old deadline. The property was last drilled in late 2013. (Emgold Mining Corp. news release, 6/1/2016; Emgold Mining Corp., Emgold Mining Corp. Management Discussion and Analysis, 4/6/2017; Emgold Mining Corp. website, www.emgold.com)

Santa Fe District

Gold Mesa. Gold Resource Corp. completed 120 reverse circulation holes totaling 13,005 ft (3,965 m) on its Gold Mesa property. The property includes the old Clay Peters project site. The drilling was designed to follow up on past reported high grade intercepts. Significant intercepts from the 2016 drilling included: 1) 45 ft (13.72 m) averaging 0.38 opt (1.31 g/t) gold and 1.84 opt (63 g/t) silver, including 10 ft (3.04 m) grading 0.075 opt (2.58 g/t) gold and 4.64 opt (159 g/t) silver; 2) 40 ft (12 m) grading 0.071 opt (2.42 g/t) gold; 3) 20 ft (6.1 m) grading 0.13 opt (4.37 g/t) gold; 4) 10 ft (3 m) grading 0.32 opt (1.11 g/t) gold; 5) 5 ft (1.5 m) grading 0.35 opt (12.15 g/t) gold, and 6) 25 ft (7.6 m) averaging 0.066 opt (2.26 g/t) gold, including 5 ft (1.5 m) grading 0.25 opt (8.40 g/t) gold. All the intercepts are within 100 ft (30.4 m) of the surface. (Gold Resource Corp. news releases, 6/14/2016, 3/21/2017; Gold Resource Corp. Form 10-K, 2/28/2017; Gold Resource Corp. website <http://www.goldresourcecorp.com>)

NYE COUNTY

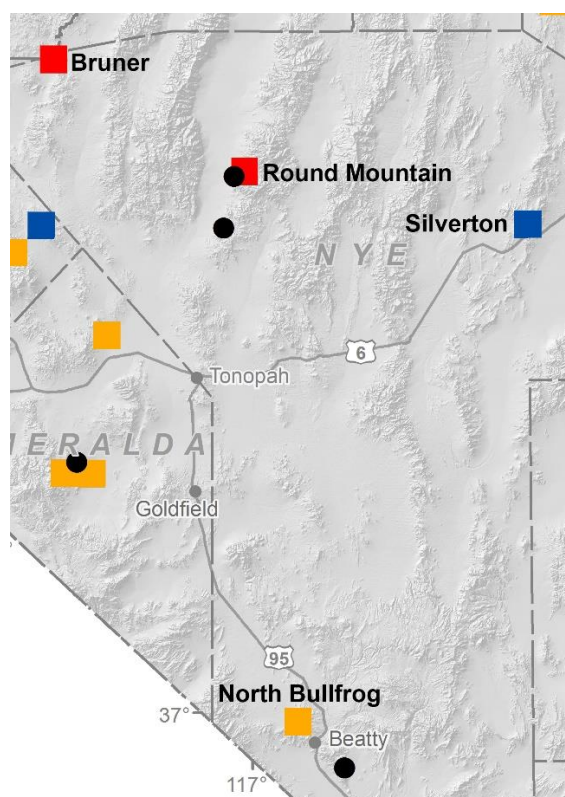


Figure 14. Townships in Nye County where projects were drilled in 2016. See legend in figure 4.

Bare Mountain District

Sterling. Sterling Gold Mining Corp., a subsidiary of Imperial Metals Corp., produced 350 ounces of gold from its Sterling Mine, an 80% decrease from 2015. The underground mining operation ceased at the end of May 2015, but heap leaching continued through 2016. The BLM issued a Finding of No Significant Impact for an environmental assessment submitted for a new open pit, called the Sterling Pit, and after a 30-day review period, the company completed all the major permitting requirements. The proposed Sterling pit would eventually disturb 61 acres (25 hectares) and eventually be 600 ft (180 m) deep. 1,000,000 tons (910,000 tonnes) of ore and 18,000,000 tons (16,300,000 tonnes) of waste rock is estimated to be mined. The project would also require a new heap leach pad and expanded waste rock disposal and stockpile areas. The estimated life of the project is three years for mining, another year for heap leaching, and another year for reclamation. The company spent \$146,000 on exploration and \$150,000 on capital and development expenditures. Exploration consisted of sampling and geologic mapping, but no drilling was reported. Imperial Metals Corp. entered into a letter of intent to sell the Sterling Mine to Northern

Empire Resources Corp. for \$10,000,000 in cash. Northern Empire Resources Corp. was preparing NI 43-101 technical reports with updated resources. (BLM, Preliminary Environmental Assessment, DOI-BLM-NV-S030-2014-0015-EA, 2/2016; Imperial Metals Corp., Management Analysis and Discussion, 8/11/2016; Imperial Metals Corp., news release, 2/17/2017; Imperial Metals Corp., Annual Report, 3/31/2017; Imperial Metals Corp. website, www.imperialmetals.com; Northern Empire Resources NI 43-101 Technical Report, 5/1/2017; Northern Empire Resources website, <http://www.northernemp.com>)

Bruner District

Bruner. In November, Canamex Resources Corp. completed 23 reverse circulation holes totaling 6,060 ft (1,850 m) and three reverse circulation groundwater test holes totaling 1,500 ft (450 m) at the Bruner property (Canamex Resources Corp., 70%; Patriot Gold Corp., 30%). The program was conducted as in-fill drilling to increase the data density of the Paymaster resource to help convert inferred resources to indicated resources. Significant intercepts included: 1) 60 ft (18.3 m) averaging 0.17 opt (5.88 g/t) gold and 0.73 opt (25.1 g/t) silver, including 25 ft (7.6 m) grading 0.38 opt (13.1 g/t) gold and 1.49 opt (51 g/t) silver; 2) 20 ft (6.1 m) grading 0.1 opt (3.48 g/t) gold and 0.15 opt (5.13 g/t) silver; 3) 15 ft (4.6 m) grading 0.49 opt (1.67 g/t) gold and 0.52 opt (17.8 g/t) silver, and 4) 25 ft (7.6 m) grading 0.09 opt (3.23 g/t) gold and 0.3 opt (10.2 g/t) silver. None of the groundwater test holes had groundwater within 500 ft (150 m) of the surface, which means there will be no need for groundwater monitoring wells for development. The company spent \$588,318 on mostly exploration with \$208,470 earmarked for drilling. The company issued an NI 43-101 preliminary economic assessment also with updated resources. The company also acquired the 30% interest of Patriot Gold Corp. for \$1,000,000. (Canamex Resources Corp. news releases, 10/31/2016, 11/8/2016, 1/18/2017, 4/26/2017; Canamex Resources Corp. Management Discussion and Analysis, 4/28/2017; Canamex Resources Corp. Audited Annual Financial Statement, 4/28/2017; Canamex Resources Corp., NI 43-101 Technical Report, 4/5/2016; Canamex Resources website, www.canamex.us; Patriot Gold Corp. website, www.patriotgoldcorp.com)

Bullfrog District

North Bullfrog. Corvus Gold Inc. completed two phases of drilling on its North Bullfrog property. Phase I consisted of 20,500 ft (6,250 m) of reverse circulation drilling, which was concentrated around the Swale target at the intersection of the northwest-trending Yellow Jacket zone and the northeast-trending NWSB

zone. Significant intercepts included: 1) 215 ft (65.5 m) averaging 0.012 opt (0.4 g/t) gold and 0.02 opt (0.67 g/t) silver, including 35 ft (10.7 m) grading 0.02 opt (0.69 g/t) gold and 0.028 opt (0.96 g/t) silver; 2) 210 ft (64 m) averaging 0.014 opt (0.49 g/t) gold and 0.043 opt (1.48 g/t) silver, including 45 ft (13.7 m) grading 0.034 opt (1.18 g/t) gold and 0.065 opt (2.22 g/t) silver.

Phase II started late due to a lack of available drill rigs and ran into early 2017 and consisted of 33,233 ft (10,132 m) of reverse circulation drilling. The program was designed to test for potential resource expansion of the Sierra Blanca/Yellow Jacket deposit to the north, the Swale Zone to the west, and the Liberator Zone to the east, as well as test two potential discoveries—North Jolly Jane and Cat Hill. Significant intercepts from the first two holes included: 1) 50 ft (15 m) averaging 0.01 opt (0.34 g/t) gold and 0.076 opt (2.6 g/t) silver, including 5 ft (1.5 m) grading 0.055 opt (1.88 g/t) gold and 0.35 opt (12 g/t) silver; 2) 560 ft (170.7 m) averaging 0.018 opt (0.6 g/t) gold and 0.055 opt (1.9 g/t) silver, including 20 ft (6.09 m) grading 0.082 opt (2.8 g/t) gold 0.14 opt (4.6 g/t) silver, and 3) 30 ft (9 m) grading 0.07 opt (2.41 g/t) gold and 0.28 opt (9.7 g/t) silver. The early Phase Two returns indicated that the Yellow Jacket and the surrounding new vein systems at Liberator and NWSB may be strengthening to the north. (Corvus Gold Inc., news releases, 9/7/2016, 11/29/2016; Corvus Gold Inc., Management Discussion and Analysis, 1/12/2017, 4/11/2017; Corvus Gold Inc., Form 10-K, 8/22/2016; Corvus Gold Inc., website, www.corvusgold.com)

Fairplay District

County Line. Avidian Gold Inc. drilled its County Line property in 2014 and 2015, but no results were released. No drilling was reported for 2016. The company was leasing the property from Paradise Peak Mining, LLC and adjacent properties from several other companies. These leases were all dropped by late 2016. The property included the old County Line pit and Porphyry pit of the old Paradise Peak Mine. The mineralization is hosted in Oligocene–Miocene rhyolite and andesite flows, ash-flow and air-fall tuffs. The Paradise Peak deposit and the adjacent Ketchup Flat deposit produced 1,614,084 ounces of gold and 24,125,086 ounces of silver between 1989 and 1993. (Avidian Gold, Inc., Interim Financial Statements for six months ending 12/31/2016; Avidian Gold, Inc., Consolidated Financial Statements, 8/15/2016; Avidian Gold, Inc., website, avidiangold.com)

Longstreet District

West flank of McKinney Mountains. Barrick Gold Corp. had a Notice of Intent approved by the BLM to

drill on the west flank of McKinney Mountain adjacent to the Longstreet district, where there has been past production of gold, silver, mercury, lead, and zinc. Mainly Tertiary rhyolitic ash flow tuffs and lesser andesite to rhyolite flows are exposed. In a few areas Neoproterozoic to early Cambrian quartzite is exposed. It is uncertain whether they drilled any holes in 2016. (BLM LR2000 database).

Round Mountain District

Round Mountain. The Round Mountain Gold Corp., a subsidiary of Kinross Gold Corp., produced 371,484 ounces of gold and 721,465 ounces of silver from its Round Mountain Mine, decreases of 4% and 7% respectively from 2015. Mining was conducted at the main Round Mountain pit, two satellite pits (Fairview and South Fairview) east of the main pit, and the Gold Hill pit north of the main pit. 25,937,000 tons (23,530,000 tonnes) of ore grading 0.029 opt (0.98 g/t) were mined, a 10% decrease in tons mined and a 5% increase in grade from 2015. 26,136,000 tons (23,710,000 tonnes) of ore were processed with a recovery rate of 80.7%. The cost of sales was \$773 per ounce. The decrease in gold production was due to fewer ounces recovered from the heap leach pads.

On January 11, 2016, Barrick Gold Corp. sold its interest in the Round Mountain Mine and the Bald Mountain Mine to Kinross Gold Corp. for \$610,000,000 in cash. Kinross Gold Corp. spent \$4,600,000 on exploration and business development and \$71,900,000 on capital expenditures. Kinross Gold Corp. completed a scoping study and was preparing a feasibility study of the Phase W project. Activities involved with the study are focused on mine plan optimization, geologic modeling, metallurgical and geotechnical test work, and engineering of required infrastructure. These activities included infill, geostatistical, geotechnical, and metallurgical drilling. Phase W is a large mineralized zone extending westward from the main Round Mountain pit. The company upgraded the measured and indicated resources to 1,300,000 ounces of gold and added 1,700,000 ounces of gold to the inferred resources during the year. No drilling results were released. Round Mountain pit is presently 10,700 ft (3,260 m) long in a northwest-southeast direction and 8,800 ft (2,680 m) wide. Many areas of the pit are being mined below the oxide zone. Gold Hill is presently 3,000 ft (915 m) long in an east-west direction and 2,600 ft (790 m) wide in a north-south direction. The ore is oxide material that presently needs no crushing due to proper blasting. (Elko Free Press Mining Quarterly, Winter 2016; Kinross Gold Corp. news release, 2/15/2017; Kinross Gold Corp. Annual Report, 3/31/2017; Kinross Gold Corp. website, www.kinross.com)

Silverton District

Silverton. Orogen Gold PLC completed five reverse circulation holes totaling 4,179 ft (1,274 m) on the Silverton Property. The property is owned by Galileo Resources, PLC, and after conducting due diligence, Orogen Gold signed an agreement to earn up to a 51% interest in the property by spending \$400,000 on exploration over 18 months. The best intercept was 235 ft (71.6 m) averaging 0.006 opt (0.2 g/t) gold, including 50 ft (15.24 m) grading 0.01 opt (0.34 g/t) gold. Orogen Gold PLC has since changed its name to Orogen PLC, cancelled the agreement, and went out of the mineral exploration business. (Orogen Gold, PLC, annual report, 12/31/2016; Galileo Resources, PLC, news releases, 4/21/2016, 6/27/2016, 10/25/2016, 1/9/2017, 5/12/2017; Galileo Resources, PLC, website, www.galileoresources.com)

Tybo District

Tybo-Keystone. Newmont Mining Corp. staked the Tybo-Keystone Project in 2010 and 2011 and conducted five small reverse circulation scout drilling programs between 2011 and 2015 consisting of 48 holes totaling 37,671 ft (11,485 m). While most of the data have not been released, two significant intercepts recently published from Hole NTY-10 drilled in 2015 were 1) 320 ft (97.5 m) grading 1.16 opt (39.8 g/t) silver including 10 ft (3.0 m) grading 9.52 opt (326 g/t) silver, 2.23% lead, and 0.22% zinc, and 2) 20 ft (6.1 m) averaging 2.66 opt (91.2 g/t) silver, 3.14% manganese, 0.12% lead, and 0.25% zinc including 15 ft (4.6 m) grading 0.34 opt (11.6 g/t) gold near the bottom of the hole. Newmont also conducted 41 square miles (105 km²) of helicopter-borne magnetic surveys, 23 square miles (60 km²) of ground gravity, and 3 square miles (7.5 km²) of Time Domain EM surveys, as well as collected 3,100 surface samples for gold and multi-element geochemical analyses. Keystone is centered on a large circular feature, which may be a concealed magmatic center or cupola of a large porphyry system. The mineralization in and around the old workings indicate high level porphyry style breccias, skarn, and sulfide replacement bodies with outward zoning of the mineralization grading from base metals to more distal disseminated gold and silver. Tybo has similar geology and mineralization but sits a couple of miles south of the large inferred magmatic center. Historic mining was concentrated along high-angle, dike filled structures. Data from recent geophysical surveys and drilling suggest that large low-angle, intrusive-filled structures at depth may have been the primary mineralizing structures, and the potential for large, flat-lying carbonate replacement and skarn mineralization is high.

(LR-2000, BLM Database, 2017; Newmont Mining Corp. website, www.newmont.com)

PERSHING COUNTY

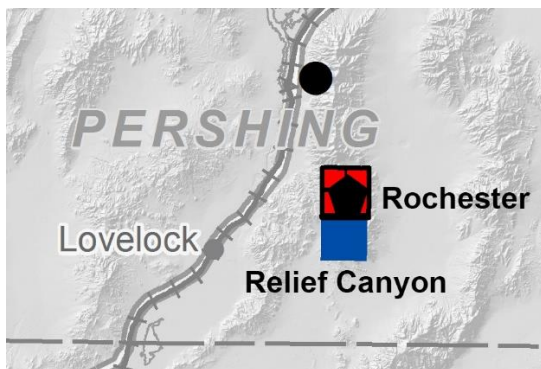


Figure 15. Townships in Pershing County where projects were drilled in 2016. See legend in figure 4.

Antelope Springs District

Relief Canyon. Pershing Gold Corp. completed two phases of drilling on its Relief Canyon project. Phase I included step-out drilling to test high grade zones in the North Target area and was completed with 22 core holes totaling 15,164 ft (4,622 m). It extended mineralization westward with the following significant intercepts: 1) 5 ft (1.5 m) grading 0.733 opt (25.1 g/t) gold; 2) 5 ft (1.5 m) grading 0.407 opt (13.9 g/t) gold and 0.6 opt (20 g/t) silver; 3) 10 ft (3 m) grading 0.26 opt (8.887 g/t) gold, and 4) 20.9 ft (6.4 m) averaging 0.217 opt (7.448 g/t) gold, including 5.5 ft (1.7 m) grading 0.809 opt (27.7 g/t) gold. Phase II was drilled to test targets south and east of the South and Light Bulb pits. It was completed with nine core holes totaling 8,000 ft (2440 m), but results were not released.

The company was preparing a new NI 43-101 preliminary economic feasibility study with update resources for release in 2017. The existing pits consist of the North pit, South pit, and Light Bulb pit. The leach pad was permitted for 21,000,000 tons (19,000,000 tonnes) on 72 acres (29.1 hectares) but only 18 acres (7.2 hectares) had been built. The property contained a state-of-the-art, 3,000 gpm (11,300 liters per minute) adsorption desorption recovery processing facility, which is more than adequate for the existing pits and satellite deposits. The company was in the process of acquiring permits to add a gold refinery system and mercury abatement equipment. The company wants the ability to pour its own dore instead of making arrangements to send loaded carbon rods to another mine with a refinery. It was estimated that \$11,000,000

in capital was needed to restart the mine, and the all-in sustaining cost would be around \$745 per oz. (Elko Free Press, 3/4/2016; Pershing Gold Corp., 10-K Form, 3/31/2017; Pershing Gold Corp., NI 43-101 Technical Reports, 6/2/2017; Pershing Gold Corp. news releases, 7/27/2016, 9/6/2016, 11/17/2016, 1/9/2017; Pershing Gold Corp. website, www.pershinggold.com)

Goldbanks District

Peavine Creek. Kinross Gold Corp. had a Notice of Intent approved by the BLM to drill a few miles south of the Goldbanks district near Peavine Creeks in an area of old mercury prospects on the east side of the East Range. It is uncertain whether they drilled any holes in 2016. (BLM LR2000 database).

Imlay District

Florida Canyon/Standard. On July 28, 2016, Rye Patch Gold Corp. completed its acquisition of 100% ownership of the Florida Canyon and Standard Mines for \$15,000,000 and 20,000,000 common shares of stock. The mine produced 10,873 ounces of gold and 21,898 ounces of silver, decreases of 50% and 68% respectively. Mining ceased at the Standard deposit on April 20, 2015, but heap leaching continued into 2016. In August, Rye Patch Gold Corp. commenced its Florida Canyon Mine restart program. The company crushed the under-liner material for the South Heap Leach facility, completed moving the crusher from the Standard Mine to the South Heap Leach facility, and completed the pregnant and barren solution ponds. Mining commenced November 1, 2016, with blasting on the 5620 bench in the Jasperoid Hill pit, which was followed by the stockpiling of ore. By the end of November, \$24,000,000 had been invested and committed to the project. The crusher was fully operational by December 24, and at year's end, the company began loading 50,200 tons (45,500 tonnes) of oxide material onto the South Heap Leach Pad Expansion. The new heap leach pad is 4,700 ft (1,430 m) long by 2,700 ft wide (823 m) and is expected to last about three years. There is room to build two more if needed. No exploration or resource drilling was reported for 2016. (Mining, Winnemucca Publishing, Fall 2016; Rye Patch Gold Corp., news releases, 8/29/2016, 9/27/2016, 11/23/2016, 1/5/2017, 5/1/2017; Rye Patch Gold Corp., NI 43-101 Amended Technical Report—Preliminary Feasibility Report, 1/27/2017; Jipangu, Inc., website www.jipangu.co.jp; Rye Patch Gold Corp. Annual Information Report, 5/5/2017; Rye Patch Gold Corp. website, ryepatchgold.com)

Rochester District

Rochester. Coeur Rochester Inc., a subsidiary of Coeur Mining Inc., produced 4,564,139 ounces of silver and 50,750 ounces of gold from its Rochester Mine, about the same as in 2015. Mined ore averaged 0.57 opt (19.5 g/t) silver and 0.003 opt (0.102 g/t) gold. Ultimate recovery from crushed ore on the heap leaches was estimated to be 61% for silver and 92% for gold. The total cost applicable to sales per ounce of silver was \$11.90.

Coeur spent \$800,000 on exploration and \$2,700,000 on capitalized drilling. Exploration drilling consisted of 16,220 ft (4,944 m) to test areas southeast of the Packard pit and the new East Rochester resource area. Conversion drilling was conducted, which mainly consisted of 77,415 ft (23,596 m) within the main Rochester pit resource. Significant intercepts from East Rochester included 1) 150 ft (46 m) grading 4.13 opt (141 g/t) silver and 0.013 opt (0.44 g/t) gold; 2) 150 ft (46 m) grading 2.99 opt (102 g/t) silver and 0.012 (0.41 g/t) opt gold, and 3) 220 ft (67 m) grading 2.06 opt (70.5 g/t) silver and 0.007 opt (0.24 g/t) gold. Coeur also had a Notice of Intent approved by the BLM to drill in the Limerick Basin area a few miles west of the Rochester pit. It is uncertain whether they drilled any of those holes in 2016.

The BLM issued a final environmental impact statement and record of decision concerning approving the company's amendment to its plan of operation for expansion of the area to be disturbed by exploration activities. The proposal is for a 20-year project that would include extending the mine life by five to seven years, continue heap leaching for a period of time, and then reclamation and site closure after mining and recovery ended. The plan also calls for expanding the Stage IV heap leach pad and constructing a new heap leach pad. The company released an NI 43-101 technical report that updated the reserves and resources, capital and operating cost estimates, and financial estimates for Rochester. (BLM, Final Environmental Impact Statement, BLM/NV/WN/ES/15-11+1793 2/2016; Coeur Mining Inc., news release, 10/10/2016; Coeur Mining Inc. 10-K Report, 2/9/2017; Coeur Mining Inc., Technical Report for the Rochester Mine, Lovelock, Nevada, U.S.A., 12/31/2016; Coeur Mining Inc. website www.coeur.com; BLM LR2000 database)

STOREY COUNTY

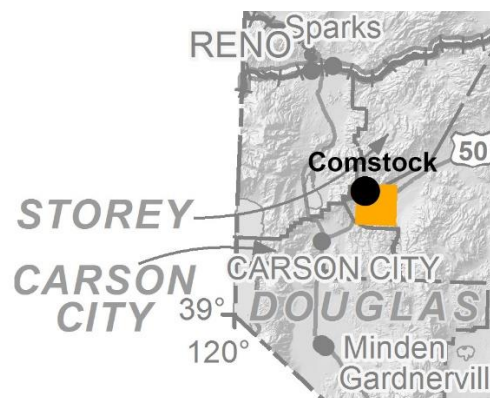


Figure 16. Townships in Storey County where projects were drilled in 2016. See legend in figure 4.

Comstock/Silver City Districts

Comstock. Comstock Mining Inc. produced 4,086 ounces of gold and 75,657 ounces of silver from the Lucerne pit, decreases of 74% and 65%, respectively, from 2015. Mining was completed in 2015 when 729,321 tons (661,640 tonnes) of ore were mined. No ore was mined in 2016. Only 13,197 tons (11,972 tonnes) of ore grading 0.025 opt (0.86 g/t) gold and 0.436 opt (14.9 g/t) silver was crushed and stacked. Recovery from the leach pads was estimated to be 88.5% for gold and 59.5% for silver. The company spent \$4,561,905 on exploration and mine development.

During the first half of the year, the company concentrated mainly on underground exploration and development in the Lucerne Resource area, which mainly included core drilling, drift development, and sampling into the Quartz Porphyry and Succor targets. Plans were also developed to define the extent of known mineralization in the Succor, Woodville and Chute targets in the Lucerne area. By mid-year, the company had expanded its exploration planning to include exploration targets identified across the broader Comstock district. This includes the southern portion of the Dayton Resource area, extending southward into the Spring Valley Group, the company's northern properties referred to as the Gold Hill Group, and northeastern properties within the Occidental Group. During the third quarter of 2016, exploration concentrated on the Dayton Resource area, and an expanded drilling program was designed that would include reverse circulation and diamond core drill holes to place the Dayton Resource into a mine planning stage. During the fourth quarter, exploration and development efforts focused on developing a hydrological model of the Dayton Resource area.

During the first quarter, about 47 core holes totaling 12,380 ft (3,774 m) were completed in the Harris Drift for in-fill and to expand known mineralization. Significant intercepts included: 1) 3 ft (0.9 m) grading 0.894 opt (30.6 g/t) gold and 0.28 opt (9.59 g/t) silver; 2) 1 foot (0.3 m) grading 0.716 opt (24.5 g/t) gold and 1.003 opt (34.3 g/t) silver; 3) 2.5 ft (0.8 m) grading 0.64 opt (21.9 g/t) gold and 0.666 opt (22.8 g/t) silver; 4) 5 ft (1.5 m) averaging 0.321 opt (11 g/t) gold and 11.55 opt (396 g/t) silver, including 2.5 ft (0.8 m) grading 0.404 opt (13.8 g/t) gold and 17.7 opt (606) silver; and 5) 5 ft (1.5 m) grading 0.24 opt (8.22 g/t) gold and 7.5 opt (257 g/t) silver. (Comstock Mining, Inc., press release, 3/8/2016; Comstock Mining, Inc. Form 10-Q, 5/5/2016; Comstock Mining, Inc. Form 10-K, 3/9/2017; Comstock Mining, Inc., website, www.comstockmining.com)

WHITE PINE COUNTY

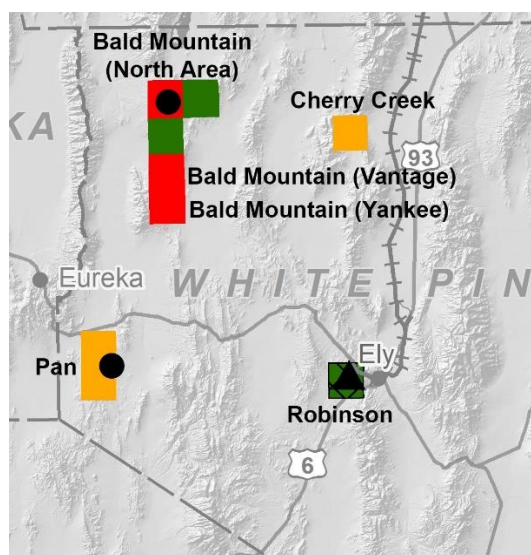


Figure 17. Townships in White Pine County where projects were drilled in 2016. See legend in figure 4.

Bald Mountain District

Bald Mountain. Kinross Gold Corp. produced 129,282 ounces of gold and 864 ounces of silver from its Bald Mountain Mine, decreases of 32% and 96% respectively from 2015. 11,746,000 tons (10,656,000 tonnes) of ore grading 0.019 opt (0.64 g/t) were mined and processed, a 10% decrease in tons mined and a 5% increase in grade from 2015. The cost of sales was \$1,182 per ounce. The company spent \$9,000,000 on exploration and \$40,500,000 on capital expenditures.

Exploration activities doubled the proven and probable reserves to 2,100,000 ounces of gold by adding 1,240,000 ounces—680,000 ounces to the North area and 570,000 ounces to the South area—and adding

270,000 ounces to the inferred mineral resources. The North area additions were due to continued exploration, definition drilling and mine plan optimization at the Saga, Duke and Top pits. The South area additions were due to pre-feasibility work at the Vantage Complex project, and exploration and confirmatory drilling, geological modelling and metallurgical testing at the Vantage, Luxe and Saddle pits. The addition to the inferred mineral resources was the result of drilling, refinements to mineral resource models, and engineering optimization mainly at the Saga, Duke, and Top pits.

Some drilling results were released. Shallow reverse circulation drilling totaling 21,313 ft (6,498 m) was conducted at Saga to test a northwest-trending structure thought to be controlling the high-grade ore in the deposit as calculated in a previous block model. The drilling intercepted mineralization with slightly higher grades than that of the model. In the South Area reverse circulation drilling totaling 104,068 ft (31,728 m) was conducted at Vantage, Gator, Saddle, Luxe, and Pentium with most of activity centered on Vantage and Gator. The program was designed to confirm data from historical drill holes. Infill diamond and reverse circulation drilling totaling 16,610 ft (5,064 m) was conducted at Redbird in the North Area. The drilling was designed to confirm the higher grades in the previously modelled pit and to test the mineralization at the south end of the pit. Significant intercepts at Redbird included: 1) 289 ft (88.2 m) grading 0.047 opt (1.6 g/t) gold; 2) 53 ft (16.2 m) grading 0.152 opt (5.2 g/t) gold, and 3) 177 ft (53.9 m) grading 0.038 opt (1.3 g/t) gold. Follow-up drilling was conducted at the Top Gap area when a condemnation hole intercepted high grade mineralization. Significant intercepts at Top Gap included: 1) 135 ft grading 0.038 opt (1.3 g/t) gold, and 2) 220 ft averaging 0.143 opt (4.9 g/t) gold, including 55 ft (16.8 m) grading 0.286 opt (9.8 g/t) gold.

The pre-feasibility study also involved the construction of a new heap leach pad and associated processing facilities and infrastructure. The preliminary capital estimate for the Vantage Complex project is expected to be in the \$90,000,000 to \$120,000,000 range million, with construction commencing in the first half of 2018. The proposed design of the facilities allows for the full development of the Vantage, Luxe and Saddle pits, which have a combined 30,800,000 tons (28,000,000 tonnes) of ore at an averaging 0.018 opt (0.63 g/t) gold. It also allows for the future development of additional potential satellite pits in the South area, with a forecasted incremental capacity of an additional 37,500,000 tons (34,000,000 tonnes) of ore. The BLM issued a final environmental impact statement and a record of decision approving the proposed 3,097-acre (1,253-hectare) expansion of the Bald Mountain Mine, which allows for the activities covered in the pre-

feasibility study. On January 11, 2016, Barrick Gold Corp. sold its interest in the Round Mountain Mine and the Bald Mountain Mine to Kinross Gold Corp. for \$610,000,000 in cash. (BLM Final Environmental Impact Statement, Casefile NVN - 082888 and 090443, 6/24/2016; BLM Bald Mountain Mine North and South Operations Areas Projects, Record of Decision, 8/17/2016; Elko Free Press Mining Quarterly, Winter 2016; Kinross Gold Corp. news releases, 6/29/2016, 8/25/2016, 2/15/2017; Kinross World, 8/29/2016; Kinross Gold Corp. Annual Report, 3/31/2017; Kinross Gold Corp. website, www.kinross.com)

Cherry Creek District

Cherry Creek. Summit Mining Exploration Inc., a subsidiary of Sumitomo Corp., has an agreement with Viscount Mining Corp. whereby Summit can acquire a 75% interest in the Viscount's Cherry Creek Project by spending \$10,000,000 on exploration and development over an eight year period. Summit Mining Exploration completed 12 reverse circulation holes at Cherry Creek in late 2015, but did not release the results until early 2016. The drilling tested rock chip and soil silver and base metal anomalies, fault-shear-breccia structures, and subsurface alteration zones. The targets included the Ticup Vein, the South Extension of the Ticup Vein, Jacob's Cut, Dr's Cut, and Dr's Cut Extension. Significant silver intercepts included: 1) 30 ft (9.1 m) grading 1.53 opt (52.6 g/t); 2) 90 ft (27.5 m) grading 1.52 opt (52.0 g/t) silver; 3) 40 ft (12.2 m) grading 3.43 opt (117.6 g/t) silver; 50 ft (15.2 m) grading 1.58 opt (54.2 g/t), and 4) 100 ft (30.5 m) grading 1.46 opt (50 g/t) silver. The best gold intercept was 5 ft (1.5 m) grading 0.218 opt (0.748 g/t) gold.

In 2016, the company completed another 32 reverse circulation holes totaling 17,615 ft (5,369 m), which concentrated on the Flint Canyon area. Twenty-one of the 32 holes intercepted intervals of at least 0.003 opt (0.1 g/t) gold. The best intercept was 60 ft (18.3 m) grading 0.013 opt (0.438 g/t) gold. The gold intercepts mainly occurred in local silicified zones along the contact of the Cambrian Dunderberg and Marjum Formations, in collapse breccias and silicified strata in the Ordovician Pogonip Group, and silicified breccia in undifferentiated dolomite. The company also proceeded with geologic mapping south and west of the Flint Canyon and the north end of Silver Canyon and conducted a soil and rock chip geochemical program in a grid over the Flint Canyon area with extensions in all directions. (Viscount Mining Corp. news releases 2/4/2016, 12/21/2016, 3/29/2017; Viscount Mining Corp. website, www.viscountmining.com)

Pancake District

Pan. GRP Pan LLC produced 8,714 ounces of gold from 27,400 tons (24,856 tonnes) of ore from its Pan Mine. The Pan Mine was developed by Midway Gold Corp., which poured its first gold on March 26, 2015. However, in June 2015, the company suspended operations and filed a petition seeking relief under Chapter 11 of the U.S. Bankruptcy Code. In May 2016, GRP Minerals LLC, put in a stalking horse bid and acquired the Pan Mine, Gold Rock project, Pinyon project, and Golden Eagle project and \$16,100,000 in estimated reclamation liabilities for \$5,250,000. Production was restarted on November 1, 2016. During 2016, GRP drilled 127 reverse circulation holes totaling ~45,700 feet (~13,900 m), which added 16,000 ounces (498 kg) to gold reserves. The new drilling now allows modelling silica-rich and clay-rich zones to aid in mine planning for ore-blending to help manage recovery. Pan is a Carlin-type gold system. The mineralization is entirely oxidized and crops out at the surface. It is hosted in the Pilot Shale and limestone of Devils Gate Formation and occurs in elongate dissolution/collapse breccias along the Pan fault and along the Pilot-Devil's Gate contact. In 2017, GRP Minerals, LLC, and Fiore Exploration, Ltd, combined to form Fiore Gold, Ltd. (Fiore Exploration, Ltd, news release, 6/15/2017; Midway Gold Corp., news releases, 3/27/2015, 4/2/2015, 4/20/2015, 6/22/2015, 5/13/2016, 5/17/2016; Midway Gold Corp., website, www.midwaygold.com)

Robinson District

Robinson. The Robinson Nevada Mining Co., a subsidiary of KGHM International Ltd., produced 118,411,099 pounds of copper (53,711 tonnes) and 493,010 pounds (224 tonnes) of molybdenum, a 10% decrease in copper and a 9% decrease in molybdenum from 2015. The mine also produced 49,217 ounces of gold as a by-product, an 18% decrease from 2015. No silver production was reported. Material containing molybdenite is stockpiled, and molybdenum is produced when the stockpiles are large enough to process it in the mill. Concentrates from the mill are trucked to Robinson's Wendover Bulk Transit Co. rail yard at Wendover, Utah, and loaded into Union Pacific train cars headed for the Port of Vancouver. They are shipped mainly to China, India, and Japan. All mining at Robinson is on 21,000 acres of private land.

The decrease in copper production was mainly due the lower amount of ore processed caused by the extended unplanned maintenance shutdown of the flotation thickening unit in the third quarter of the year. This was only partially offset by a higher grade of ore processed, higher recovery rates, and an 11% increase in production during the first half of the year. Production

during the first half of the year was mainly from the lower levels of the Ruth West and Ruth East pits. Ore from the lower levels of the Ruth East averaged 0.53% copper as opposed to ore from mined from the higher levels during 2015, which averaged 0.49% copper. Around year's end, production moved to higher levels of the Ruth West pit, with ore averaging 0.4% copper. The lower levels of the Ruth West pit, which were mined in the first quarter of 2016, averaged 0.47% copper.

While no details or results were reported, the company has an on-going exploration drilling program to provide information for the geologic model, better define the ore body, and provide metallurgical samples. The drill pads are commonly 100 ft by 100 ft (30 m by 30 m). The exploration holes are usually completed to depths from 600 ft to 1,500 ft (180 m to 460 m) below the ground surface using both reverse circulation and core drilling. More than one hole can be drilled from each pad, and up to six holes could be open at any one time.

In October, the BLM issued a preliminary environmental assessment on the proposed Robinson Mine Expansion project. The project proposes to expand the existing Ruth pit and Jupiter, Liberty, and Ruth waste rock dumps; increase total yard and inter-facility disturbance; expand the borrow areas and raise the embankment height of the Giroux Wash tailings storage facility; relocate and create new growth media stockpiles; re-route part of County Road 1146/44A; re-route the Ruth pit dewatering pipeline and Ruth East power line; re-locate the Ruth Overlook Weather Station; and incorporate newly acquired claims into the project boundary. The expansion will extend the mine life out to 2022. (BLM, Preliminary Environmental Assessment, Robinson Mine Expansion project, DOI-BLM-NV-L010-2016-0005-EA, 10/2016; KGHM International, news release 5/17/2017; KGHM International, 1st quarter 2016 consolidated report, 5/13/2016; KGHM International, Half-year 2016 consolidated report, 8/17/2016; KGHM International, 3rd quarter 2016 consolidated report, 9/11/2016; 1st quarter 2017 consolidated report,, 5/5/2017; KGHM International, Annual consolidated report 2016, 3/16/2017; KGHM International, Ltd. website, kghm.com)

MAJOR PRECIOUS-METAL DEPOSITS

by David A. Davis and John L. Muntean

The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of most of these deposits are shown on NBMG Map 149, 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: 1,000,000 tons, 0.055 opt Au, 1.4 opt Ag 1989: reserves-30,000 oz Au, 125,000 oz Ag 1997: 2,500,000 tons, 0.059 opt Au equiv. oz 2011: 10,760,000 tons, 0.015 opt Au, 0.514 opt Ag (measured and indicated resource, 0.007 opt, AuEQ cut-off); 2,255,000 tons, 0.013 opt Au, 0.387 opt Ag (inferred resource, 0.007 opt, AuEQ cut-off)	1914: 35 tons, 0.51 opt Au, 16 opt Ag	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: 2,400,000 tons, 0.049 opt Au 1995: 100,000 oz Au		Tertiary rhyolite	Miocene?
Fireball Ridge (Truckee district)	1988: 258,000 tons, 0.032 opt Au		sedimentary	
Fondaway Canyon (Shady Run district)	1988: 400,000 tons, 0.06 opt Au 1990: 400,000 tons, 0.06 opt Au 2001: 396,000 tons, 0.428 opt Au (indicated resource) 372,849 tons, 0.409 opt Au (inferred resource) 2017: underground sulfide: 2,260,000 tons, 0.18 opt Au, 409,000 oz Au (indicated resource, 0.1 opt Au cut-off grade); 3,530,000 tons, 0.19 opt Au, 660,000 oz Au (inferred resource, 0.1 opt Au cut-off grade)	1989: 1,065 oz Au, 87 oz Ag 1990: 12,000 oz Au	Triassic slate and phyllite	
Jessup (Jessup district)	1998: 8,376,564 tons, 0.024 opt Au, 0.25 opt Ag (global resource) 2007: 5,432,000 tons, 0.022 opt Au, 0.31 opt Ag (indicated resource); 1,265,000 tons, 0.017 opt Au, 0.23 opt Ag (inferred resource) 2009: 8,571,000 tons, 0.015 opt Au, 0.255 opt Ag (measured resource); 13,936,000 tons, 0.012 opt Au, 0.209 opt Ag (indicated resource); 4,954,000 tons, 0.016 opt Au, 0.231 opt Ag (inferred resource)			
New Pass property (New Pass district)	1994: 3,400,000 tons, 0.042 opt Au 1997: 3,100,000 tons, 0.055 opt Au 2006: 11,500,000 tons, 0.0226 opt Au, 0.0041 opt Ag (inferred resource) 2009: 11,142,000 tons, 0.028 opt Au, 0.24 opt Ag (measured and indicated resource); 15,515,488 tons, 0.022 opt gold, 341,750 oz AuEq, 0.202 opt Ag, 3,134,129 opt Ag (inferred resource)		Triassic siltstone	
Pyramid (Holy Cross district)	1998: 62,000 oz Au, 3.5 million oz Ag (drill indicated resource) 2003: 4,000 tons 0.516 opt Au, 74.99 opt Ag, 5.95% Pb, 7.08% Zn (Inferred mineral resource)	1910-1956: ~80,000 oz Au 1977-1987: 17 tons concentrates, 3.302 opt Au, 477.8 opt Ag, 17.5% Pb	welded tuff	

MAJOR PRECIOUS-METAL DEPOSITS, CLARK COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
CLARK COUNTY				
Crescent property (Crescent district)	1992: 390,000 tons, 0.05 opt Au; 3,300,000 tons, 0.022 opt Au			
Keystone (Goodsprings district)	1990: 64,000,000 tons, 0.05 opt Au (estimated geologic resource) 1992: 110,000 tons, 0.11 opt Au	1990: ~1,000 oz Au 1993: idle	lower Paleozoic carbonate rocks	Triassic
DOUGLAS COUNTY				
Buckskin (Buckskin district)	1973: 678,400 tons, averaging 0.15 opt Au, 0.45 opt Ag, 1.3% Cu 1978: 561,500 tons, 0.18 opt Au, 0.5 opt Ag, 1.3% Cu	1918-50 intermittent: est. 10,000 tons Au, Cu ore	Triassic andesite and rhyodacite flows	
ELKO COUNTY				
Banshee (Bootstrap district)	2002: 44,000,000 tons, 0.44 opt Au, 1,400,000 oz Au (preliminary resource) 2011 underground: 1,679,000, tons, 0.327 opt Au, 548,000 oz contained Au		Popovich Fm.	
Big Springs (Independence Mountains district)	1987: 3,760,000 tons, 0.148 opt Au 1989: 1,550,000 tons, 0.172 opt Au 2005 (inferred resource, 0.025 opt Au cut-off): 15,145,000 tons, 0.078 opt Au 2005 (inferred resource, 0.3 opt Au cut-off): 468,000 tons, 0.45 opt Au 2013: North Sammy: 1,430,000, 0.12 opt Au, 167,000 oz Au; North Sammy Contact: 1,430,000 tons, 0.05 Au, 70,000 oz Au; South Sammy: 8,000,000 tons, 0.06 opt Au, 438,000 oz Au; Beadle Creek: 2,310,000 tons, 0.07 opt Au, 70,000 oz Au; Mac Ridge: 1,870,000 tons, 0.04 opt Au, 74,000 oz Au; Dorsey Creek: 330,000 tons, 0.04 opt Au, 12,000 oz Au; Briens Fault: 880,000 tons, 0.05 opt Au, 43,000 oz Au; Big Springs Total: 16,300,000 tons, 0.06 opt Au, 968,000 oz Au (inferred resource, 0.02-0.03 opt Au cut-off grade) 2014: North Sammy: 1,607,000, 0.13 opt Au, 184,100 oz Au; North Sammy Contact: 1,441,000 tons, 0.06 Au, 71,800 oz Au; South Sammy: 8,380,000 tons, 0.06 opt Au, 437,200 oz Au; Beadle Creek: 2,978,000 tons, 0.08 opt Au, 201,700 oz Au; Mac Ridge: 2,080,000 tons, 0.04 opt Au, 81,100 oz Au; Dorsey Creek: 306,000 tons, 0.05 opt Au, 12,900 oz Au; Briens Fault: 881,000 tons, 0.05 opt Au, 40,500 oz Au; Big Springs Total: 17,672,000 tons, 0.07 opt Au, 1,029,900 oz Au (combined measured, indicated and inferred resource, 0.03 opt Au cut-off grade)	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: 25,100,000 tons, 0.039 opt Au (geologic resource) 1996: 20,200,000 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 at the end of this section 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 2002: 23,415 oz Au, 4,717 oz Ag 2003: 29,742 oz Au,	dacitic dikes, Paleozoic siltstone and laminated limestone/chert	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bootstrap/Capstone/ Tara (cont.)		2004: 154,521 oz Au, 43,566 oz Ag 2005: 3,849 oz Au, 322 oz Ag 2006: 2,019 oz Au, 436 oz Ag		
Burns Basin (Jerritt Canyon, Independence Mountains district)	2005-2007: 29,700 tons, 0.134 opt Au (open pit indicated resource) 30,700 tons, 0.194 opt Au (underground indicated resource), 50,600 tons, 0.23 opt Au (underground inferred resource) 2011: 348,800 tons, 0.078 opt Au, 27,200 oz Au (proven and probable reserves, open pit) 344,500 tons, 0.096 opt Au, 33,200 oz Au (measured and indicated resource, includes reserves) 14,000 tons, 0.079 opt Au, 1,100 oz Au (inferred resource) 2012: 423,800 tons, 0.101 opt Au, 42,800 oz Au (proven and probable reserves, open pit) 476,500 tons, 0.097 opt Au, 46,300 oz Au (measured and indicated resource, includes reserves) 5,000 tons, 0.061 opt Au, 300 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
California Mountain (Jerritt Canyon, Independence Mountains district)	2005-2007: 8,000 tons, 0.11 opt Au (open pit indicated resource) 32,100 tons, 0.38 opt Au (underground indicated resource), 9,400 tons, 0.33 opt Au (underground inferred resource) 2011: 4,500 tons, 0.184 opt Au, 800 oz Au (indicated resource, underground) 29,500 tons, 0.192 opt Au, 5,700 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Coyote Zone (Jerritt Canyon, Independence Mountains district)	2005-2007: 45,200 tons, 0.21 opt Au (underground indicated resource) 2,700 tons, 0.18 opt Au (underground inferred resource) 2006-2007: 20,100 tons, 0.104 opt Au (open pit inferred resource)		Hanson Creek and Roberts Mountains Formations	
Cobb Creek (Mountain City district)	1988: 3,200,000 tons, 0.045 opt Au (geologic resource)			
Cord Ranch (Robinson Mountain district)	1991: 3,500,000 tons, 0.037 opt Au 1994: 350,000 oz Au in 3 deposits (see Piñon)		Webb Formation Devils Gate Formation Tomera Formation	
Dark Star (Robinson Mountain district)	2015: 25,470,000 tons, 0.017 opt Au, 374,000 oz Au (inferred resource)		Tomera Formation Moleen Formation	
Dee (Bootstrap district)	1982: 2,500,000 tons, 0.12 opt Au 1990: 4,500,000 tons, 0.059 opt Au 1999: 1,400,000 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	Vinini Formation, Devonian carbonate rocks, dacitic dikes	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Dee (cont.)		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		
Doby George (Aura district)	1995: 3,700,000 tons, 0.060 opt Au 1997: 250,000 oz Au		Schoonover	
Hollister (Ivanhoe district)	1989: oxide-18,400,000 tons, 0.035 opt Au; estimated mineral inventory 83,500,000 tons, 0.034 opt Au, with 52,800,000 tons of oxide and 30.7 million tons of sulfide 1995: 1,300,000 oz Au; 42 million tons of 0.031 opt Au (geologic resource, combined oxide and sulfide) 2001: 719,000 tons, 1.29 opt Au, 7 opt Ag 2007 (May, 0.25 opt Au cut-off grade): 903,000 tons, 1.03 opt Au, 5.71 opt Ag (measured and indicated resource) 805,000, tons, 1.08 opt Au, 3.94 opt Ag (inferred resource) 2008 (June, 0.25 opt Au cut-off grade): 1,615,000 tons, 0.87 opt Au, 4.57 opt Ag (measured and indicated resource) 1,252,000 tons, 0.51 opt Au, 1.43 opt Ag (inferred resource) 2009 (June, 0.25 opt Au cut-off grade): 1,111,200 tons, 1.167 opt Au, 8.59 opt Ag (measured and indicated resource, includes reserves); 1,035,300 tons, 1.340 opt Au, 2.72 opt Ag (inferred resource) 2010 (August, 0.25 opt Au cut-off grade): 1,121,000 tons, 1.305 opt Au, 10.35 opt Ag (measured and indicated resource, includes reserves); 1,487,000 tons, 0.690 opt Au, 11.1 opt Ag (inferred resource) 2012: 516,000 tons, 0.882 opt Au, 455,000 oz Au, 2.9 opt Ag, 1,470,000 oz Ag (proven and probable reserves, Au cut-off grade: 0.25 opt epithermal, 0.15 opt Tertiary mineralization); 1,260,000 tons, 0.595 opt Au, 750,000 oz Au, 2.5 opt Ag, 3,106,000 oz Ag (measured and indicated resource, includes reserves, cut-off 0.1 opt Au); 1,416,000 tons, 0.224 opt Au, 317,000 oz Au, 0.6 opt Ag, 872,000 oz Ag (inferred resource, cut-off 0.1 opt Au) 2016: Oxide: 20,807,000 tons, 0.026 opt Au, 549,000 oz Au, 0.036 opt Ag, 740,000 oz Ag; Mixed: 2,093,000 tons, 0.031 opt Au, 64,000 oz Au, 0.035 opt Ag, 73,000 oz Ag (indicated resource, oxide cut-off grade 0.0044 opt Au, mixed cut-off grade 0.0096 opt Au); Oxide: 36,445,000 tons, 0.012 opt Au, 449,000 oz Au, 0.018 opt Ag, 642,000 oz Ag; Mixed: 1,487,000 tons, 0.022 opt Au, 33,000 oz Au, 0.035 opt Ag, 52,000 oz Ag (inferred resource, cut-off grade 0.0044 opt Au, mixed cut-off grade 0.0096 opt Au)	1990: 6,000 oz Au 1991: 60,000 oz Au 2007: 4,066 oz Au, 38,885 oz Ag 2008: 41,890 oz Au, 192,000 oz Ag 2009: 31,174 oz Au, 243,148 oz Ag 2010: 105,144 oz Au 578,855 oz Ag 2011: 86,518 oz Au 711,493 oz Ag 2012: 62,423 oz Au 301,526 oz Ag 2013: 12,359 oz Au 55,648 oz Ag 2014: 2,342 oz Au 9,433 oz Ag	rhyolitic tuff, flows	Miocene
Island Mountain (Island Mountain district)	2012: 32,000 oz Au (indicated resource); 385,000 oz Au (inferred resource)			
Jerritt Canyon Property (Independence Mountains district)	1981: 12,500,000 tons 0.231 opt Au 1989: 21,600,000 tons, 0.143 opt Au mill ore; 6,500,000 tons, 0.043 opt Au leachable 1999: 1,500,000 oz Au, proven and probable reserves; 3,800,000 oz Au other	1981: ~2,600,000 oz Au 1991: 1,380,000 oz Au, 25,000 oz Ag 1995: 1,296,492 oz Au 1999: 363,000 oz Au	Hanson Creek and Roberts Mountains Formations	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Jerritt Canyon (cont.)	<p>2000: 1,300,000 oz Au proven and probable; 3,700,000 oz Au other mineralized material</p> <p>2001: 2,058,000 oz Au proven and probable; 893,000 oz Au other</p> <p>2002: 580,913 oz Au, proven and probable reserves; 1,296,000 oz Au measured and indicated resource; 1,035,000 oz Au inferred resource</p> <p>2003: 820,104 oz Au, proven and probable reserves; 2,295,000 oz Au measured and indicated resource; 1,034,000 oz Au inferred resource</p> <p>2004: 9,988,000 tons, 0.241 opt Au measured and indicated resource; 4,100,000 tons, 0.219 opt Au inferred resource</p> <p>2005: 3,723,000 tons, 0.24 opt Au (proven and probable reserves); 8,812,000 tons, 0.24 opt Au (measured and indicated resource, includes proven and probable reserves), 2,646,500 tons, 0.23 opt Au (inferred resource)</p> <p>2006: 1,984,900 tons, 0.245 opt Au (proven and probable reserves); 8,203,200 tons, 0.232 opt Au (measured and indicated resource, includes proven and probable reserves), 2,414,800 tons, 0.226 opt Au (inferred resource)</p> <p>2007: 3,155,200 tons, 0.227 opt Au (proven and probable reserve); 8,196,900 tons, 0.239 opt Au (measured and indicated resource, includes proven and probable reserves); 2,319,700 tons, 0.224 opt Au (inferred resource)</p> <p>2010: 4,365,800 tons, 0.164 opt Au (proven and probable reserve); 11,692,300 tons, 0.217 opt Au (measured and indicated resource, includes proven and probable reserves); 4,490,100 tons, 0.198 opt Au (inferred resource)</p> <p>2011: 6,056,900 tons, 0.175 opt Au, 1,060,800 oz Au (proven and probable reserves); 12,289,500 tons, 0.189 opt Au, (measured and indicated resource, includes reserves); 4,115,700 tons, 0.182 opt Au, (inferred resource)</p> <p>2012: 7,287,000 tons, 0.157 opt Au, (proven and probable reserves); 12,443,000 tons, 0.181 opt Au, (measured and indicated resource, includes reserves); 3,845,000 tons, 0.17 opt Au, (inferred resource)</p>	<p>2000: 334,747 oz Au</p> <p>2001: 295,328 oz Au, 7,752 oz Ag</p> <p>2002: 338,660 oz Au, 8,154 oz Ag</p> <p>2003: 302,095 oz Au</p> <p>2004: 243,333 oz Au</p> <p>2005: 202,911 oz Au, 6,322 oz Ag</p> <p>2006: 169,862 oz Au, 7,154 oz Ag</p> <p>2007: 121,700 oz Au, 17,560 oz Ag</p> <p>2008: 35,936 oz Au, 4,620 oz Ag</p> <p>2009: 9,770 oz Au</p> <p>2010: 65,104 oz Au</p> <p>2011: 67,453 oz Au</p> <p>2012: 105,627 oz Au, 4,580 oz Ag</p> <p>2013: 165,000 oz Au</p> <p>2014: 179,329 oz Au</p> <p>2015: 167,683 oz Au, 4,000 oz Ag</p> <p>2016: 140,990 oz Au,</p>		
Kinsley Mountain (Kinsley district)	<p>1988: 2,100,000 tons, 0.048 opt Au</p> <p>1996: 3,400,000 tons, 0.032 opt Au</p> <p>1999: Main NW-trend oxidized: 785,808 tons, 0.037 opt Au; SW "off-trend" oxidized: 590,022 tons, 0.024 opt Au; Main trend, unoxidized/refractory: 994,162 tons, 0.072 opt Au, (drill indicated resources)</p> <p>2015: Secret Canyon Shale sulfide: 1,619,000 tons, 0.17 opt Au, (indicated resource); 560,000 tons, 0.07 opt Au, (inferred resource); Dunderberg Shale sulfide and transitional: 573,000 tons, 0.078 opt Au, (indicated resource; 518,000 tons, 0.071 opt Au, (inferred resource); Oxide: 3,910,000 tons, 0.019 opt Au, (indicated resource); 2,628,000 tons, 0.017 opt Au, (inferred resource); Total: 6,095,000 tons, 0.066 opt Au, (indicated resource); 3,706,000 tons, 0.028 opt Au, (inferred resource)</p>	<p>1993: evaluation</p> <p>1995-97: 127,065 oz Au, 24,452 oz Ag</p> <p>1998: 9,543 oz Au</p> <p>1999: 1,543 oz Au</p>	upper Paleozoic carbonate rocks	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Long Canyon (Pequop district)	2009: 5,300,000 tons, 0.069 opt Au (indicated resource); 9,678,000 tons, 0.048 opt Au 2010: 13,492,000 tons, 0.050 opt Au (measured and indicated resource) 11,457,000 tons, 0.048 opt Au (inferred resource) 2010: 20,250,000 tons, 0.069 opt Au (measured and indicated resource) 12,313,000 tons, 0.056 opt Au (inferred resource) 2012: 27,900,000 tons, 0.094 opt Au 2,630,000 oz Au (inferred resource) 2013: 15,700,000 tons, 0.065 opt Au, (probable reserves); 3,700,000 tons, 0.097 opt Au (mineralized material) 2014: 18,400,000 tons, 0.067 opt Au, (probable reserves recovery); 4,900,000 tons, 0.101 opt Au (mineralized material) 2015: 18,000,000 tons, 0.067 opt Au, (probable reserves); 9,400,000 tons, 0.093 opt Au (mineralized material) 2016: 19,200,000 tons, 0.061 opt Au, (probable reserves); 16,000,000 tons, 0.103 opt Au (mineralized material)	2016: 22,500 oz Au	limestone and dolomite	
Maverick Springs (Maverick Springs area)	2002: 350,000 oz Au, 32,300,000 oz Ag (indicated resource); 747,000 oz Au, 68,800,000 oz Ag (inferred resource) 2004: 69,630,000 tons, 0.01 opt Au (indicated resource); 85,550,000 tons, 0.008 opt Au (inferred resource)			
Meikle (Lynn district)	1992: 7,900,000 tons, 0.613 opt Au (geologic resource) 1999: 5,900,000 tons, 0.647 opt Au (proven and probable reserve); 3,300,000 tons, 0.457 opt Au (mineralized material) 2000: 4,900,000 tons, 0.540 opt Au (proven and probable reserve); 2,900,000 tons, 0.450 opt Au (mineral resource) 2001: 9,000,000 tons, 0.439 opt Au (proven and probable reserve); 13,500,000 tons, 0.433 opt Au (mineral resource) 2002: 9,800,000 tons, 0.398 opt Au (proven and probable reserve); 12,900,000 tons, 0.396 opt Au (mineral resource) 2003: 3,316,000 tons, 0.467 opt Au (proven reserve); 5,862,000 tons, 0.326 opt Au (probable reserve); 1,580,000 tons, 0.435 opt Au (measured resource); 4,261,000 tons, 0.423 opt Au (indicated resource); 7,725,000 tons, 0.366 opt Au (inferred resource) 2004: 7,575,000 tons, 0.392 opt Au (proven and probable reserve); 6,268,000 tons, 0.379 opt Au (mineral resource) <u>2005-2017 (includes all underground reserves at Goldstrike)</u> 2005: 7,319,000 tons, 0.379 opt Au (proven and probable reserve); 3,234,000 tons, 0.386 opt Au (measured and indicated resource); 3,034,000 tons, 0.386 opt Au (inferred resource) 2006: 7,662,000 tons, 0.370 opt Au (proven and probable reserve); 4,143,000 tons, 0.338 opt Au (measured and indicated resource); 2,159,000 tons, 0.301 opt Au (inferred resource) 2007: 7,423,000 tons, 0.364 opt Au (proven and probable reserve); 4,129,000 tons, 0.329 opt Au (measured and indicated resource); 2,747,000 tons, 0.371 opt Au (inferred resource) 2008: 6,923,000 tons, 0.368 opt Au (proven and probable reserve); 4,467,000 tons, 0.323 opt Au (measured and indicated resource); 3,424,000 tons, 0.393 opt Au (inferred resource) 2009: 8,998,000 tons, 0.318 opt Au (proven and probable reserve); 4,436,000 tons, 0.334 opt Au	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 2002: 640,337 oz Au, 203,574 oz Ag 2003: 551,664 oz Au, 99,614 oz Ag 2004: 561,345 oz Au, 129,520 oz Ag <u>2005-2017: all underground production at Goldstrike</u> 2005: 509,568 oz Au, 133,979 oz Ag 2006: 477,035 oz Au, 58,345 oz Ag 2007: 413,186 oz Au, 74,000 oz Ag 2008: 424,687 oz Au, 51,434 oz Ag 2009: 388,548 oz Au, 30,198 oz Ag 2010: 281,308 oz Au, 22,628 oz Ag 2011: 279,348 oz Au, 16,345 oz Ag 2012: 327,203 oz Au, 41,775 oz Ag 2013: 360,578 oz Au, 58,352 oz Ag 2014: 386,679 oz Au, 15,707 oz Ag 2015: 411,003 oz Au, 17,749 oz Ag 2016: 417,438 oz Au, 37,615 oz Ag	Popovich and Roberts Mountains Formations	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Meikle (cont.)	(measured and indicated resource); 1,858,000 tons, 0.341 opt Au (inferred resource) 2010: 10,872,000 tons, 0.272 opt Au (proven and probable reserve); 6,771,000 tons, 0.298 opt Au (measured and indicated resource) 3,047,000 tons, 0.298 opt Au (inferred resource) 2011: 11,895,000 tons, 0.255 opt Au, (proven and probable reserve); 6,077,000 tons, 0.325 opt Au, (measured and indicated resource); 2,698,000 tons, 0.298 opt Au, (inferred resource) 2012: 14,632,000 tons, 0.233 opt Au, (proven and probable reserve); 6,144,000 tons, 0.303 opt Au, (measured and indicated resource); 2,387,000 tons, 0.265 opt Au, (inferred resource) 2013: 10,474,000 tons, 0.247 opt Au, (proven and probable reserve); 5,985,000 tons, 0.302 opt Au, (measured and indicated resource); 1,302,000 tons, 0.311 opt Au, (inferred resource) 2014: 7,342,000 tons, 0.3 opt Au, (proven and probable reserve); 4,123,000 tons, 0.338 opt Au, (measured and indicated resource); 1,827,000 tons, 0.351 opt Au, (inferred resource) 2015: 5,459,000 tons, 0.3 opt Au, (proven and probable reserves); 4,527,000 tons, 0.31 opt Au, (measured and indicated resource); 1,362,000 tons, 0.3 opt Au, (inferred resource); 2016: 6,267,000 tons, 0.29 opt Au, (proven and probable reserves); 3,314,000 tons, 0.3 opt Au, (measured and indicated resource); 1,173,000 tons, 0.29 opt Au, (inferred resource)			
MCE (Jerritt Canyon, Independence Mountains district)	2005-2007: 4,400 tons, 0.20 opt Au (underground measured and indicated resource) 7,800 tons, 0.19 opt Au (underground inferred resource)		Hanson Creek and Roberts Mountains Formations	
Midas (Gold Circle district)	1995: 13,000,000 tons, 0.16 opt Au, 2.7 opt Ag, announced resource, proven Au reserves<500,000 oz 1996: 1,100,000 tons, 1.324 opt Au, 14.95 opt Ag 1999: 3,000,000 tons, 0.816 opt Au, 9.835 opt Ag (proven and probable reserve) 2000: 3,400,000 tons, 0.63 opt Au, 7.77 opt Ag (proven and probable reserves) 2002: 3,400,000 tons, 0.65 opt Au (proven and probable reserve); 400,000 tons 0.46 opt Au (measured and indicated mineralized material); 200,000 tons 0.55 opt Au (inferred material) 2003: 700,000 tons, 0.83 opt Au (proven reserves); 2,700,000 tons, 0.51 opt Au (probable reserves); 900,000 tons 0.42 opt Au (indicated material) 2004: 2,900,000 tons, 0.510 opt Au (proven and probable reserves); 200,000 tons, 0.58 opt Au (indicated resource); 700,000 tons, 0.31 opt Au (inferred resource) 2005: 1,500,000 tons, 0.58 opt Au (proven and probable reserves); 600,000 tons, 0.42 opt Au, (inferred resource) 2006: 1,200,000 tons, 0.47 opt Au (proven and probable reserves which includes 6,800,000 oz Ag); 800,000 tons, 0.33 opt Au, (inferred resource) 2007: 1,000,000 tons, 0.493 opt Au, (proven and probable reserves which includes 7,500,000 oz Ag); 200,000 tons, 0.345 opt Au (measured and indicated resource); 100,000 tons, 0.3013 opt Au (inferred resource) 2008: 900,000 tons, 0.436 opt Au, (proven and probable reserves); 200,000 tons, 0.186 opt Au, (measured and indicated resource); 100,000	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 2002: 232,949 oz Au, 2,870,164 oz Ag 2003: 218,966 oz Au, 2,647,374 oz Ag 2004: 219,778 oz Au, 2,471,135 oz Ag 2005: 167,297 oz Au, 2,166,396 oz Ag 2006: 140,884 oz Au, 1,694,060 oz Ag 2007: 79,133 oz Au, 1,040,059 oz Ag 2008: 150,608 oz Au, 1,872,883 oz Ag 2009: 123,621 oz Au, 1,634,601 oz Ag 2010: 127,196 oz Au, 1,710,318 oz Ag 2011: 111,476 oz Au, 1,512,287 oz Ag 2012: 82,922 oz Au, 1,247,994 oz Ag 2013: 52,195 oz Au, 1,368,896 oz Ag 2014: 21,984 oz Au, 1,489,149 oz Ag 2015: 28,838 oz Au,	Tertiary volcanic rocks	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	<p>tons, 0.321 opt Au (inferred resource)</p> <p>2009: 700,000 tons, 0.425 opt Au, (proven and probable reserve, also includes 4,600,000 oz Ag); 100,000 tons, 0.193 opt Au, measured and indicated resource); 100,000 tons, 0.248 opt Au (inferred resource)</p> <p>2010: 500,000 tons, 0.319 opt Au (proven and probable reserve, also includes 2,800,000 oz Ag); 120,000 tons, 0.167 opt Au (measured and indicated resource)</p> <p>2011: 800,000 tons, 0.226 opt Au, 7.201 opt Ag, (proven and probable reserve); 110,000 tons, 0.070 opt Au; 100,000 tons 4.352 opt Ag (measured and indicated resource); 100,000 tons, 0.049 opt Au, 9.56 opt Ag (inferred resource)</p> <p>2012: 600,000 tons, 0.095 opt Au, 7.791 opt Ag, 50,000 Au, 4,410,000 oz Ag (proven and probable reserves); 100,000 tons, 0.056 opt Au, 6.879 opt Ag, (measured and indicated resource); 300,000 tons, 0.07 opt Au, 7.156 opt, Ag, (inferred resource)</p> <p>2013: 250,000 tons, 0.093 opt Au, 11.48 opt Ag, (proven and probable reserve); 100,000 tons, 0.04 opt Au, 7.25 opt Ag (mineralized material)</p> <p>2014: 242,100 tons, 0.378 opt Au, 10.93 opt Ag, (proven and probable reserve); 1,117,000 tons, 0.377 opt Au, 6.085 opt Ag, (measure and indicated resource); 858,000 tons, 0.28 opt Au, 3.48 opt Ag, (inferred resource)</p> <p>2015: 309,000 tons, 0.233 opt Au, 10.69 opt Ag, (proven and probable reserve); 1,154,900 tons, 0.356 opt Au, 8.4 opt Ag, (measured and indicated resource); 856,800 tons, 0.238 opt Au, 4.814 opt Ag, (inferred resource)</p> <p>2016: 449,000 tons, 0.311 opt Au, 5.52 opt Ag, (proven and probable reserve); 1,114,000 tons, 0.376 opt Au, 5.54 opt Ag, (measured and indicated resource); 671,800 tons, 0.303 opt Au, 2.93 opt Ag, (inferred resource)</p>	<p>1,513,112 oz Ag</p> <p>2016: 29,577 oz Au, 1,345,990 oz Ag</p>		
Mill Creek (Jerritt Canyon, Independence Mountains district)	<p>2005-2007: 78,400 tons, 0.12 opt Au (measured and indicated resource)</p> <p>2011: 186,000 tons, 0.09 opt Au, (proven and probable reserves, open pit) 276,200 tons, 0.094 opt Au, (measured and indicated resource, includes reserves) 3,400 tons, 0.154 opt Au (inferred resource)</p> <p>2012: 197,000 tons, 0.09 opt Au, 302,000 tons, 0.094 opt Au, (measured and indicated resource, includes reserves); 4,000 tons, 0.153 opt Au, (inferred resource)</p>		Hanson Creek and Roberts Mountains Formations	
Murray (Jerritt Canyon, Independence Mountains district)	<p>2005: 243,300 tons, 0.26 opt Au (proven and probable reserve) 789,200 tons, 0.29 opt Au (measured and indicated resource, includes reserves)</p> <p>2006: 18,400 tons, 0.266 opt Au (proven and probable reserve); 393,300 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 152,000 tons, 0.220 opt Au (inferred resource)</p> <p>2007: 393,300 tons, 0.290 opt Au (measured and indicated resource); 152,000 tons, 0.220 opt Au (inferred resource)</p> <p>2011: 412,400 tons, 0.221 opt Au, (proven and probable reserve, underground); 590,200 tons, 0.213 opt Au, (measured and indicated resource, includes reserves); 86,000 tons, 0.215 opt Au, (inferred resource)</p> <p>2012: 495,400 tons, 0.165 opt Au, 81,700 oz Au (proven and probable reserve); 545,000 tons, 0.165 opt Au, 89,900 oz Au (measured and indicated resource, includes reserves); 61,000 tons, 0.162 opt Au, 10,000 oz Au (inferred resource)</p>		Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Pie Creek (Jerritt Canyon, Independence Mountains district)	2005-2007: 190,200 tons, 0.16 opt Au (measured and indicated resource) 28,300 tons, 0.14 opt Au (inferred resource) 2011: 205,400 tons, 0.087 opt Au, (indicated resource); 4,900 tons, 0.09 opt Au, (inferred resource) 2012: 225,000 tons, 0.086 opt Au, (indicated resource); 5,000 tons, 0.089 opt Au, (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Pinion (Piñon; South Bullion) (Robinson Mountain district)	1996: 38,300,000 tons, 0.026 opt Au (geologic mineral inventory) 2002: 30,600,000 tons, 0.026 opt Au, (measured, indicated, and inferred resource) 2014: Piñon: 22,970,000 tons, 0.018 opt Au, (indicated resource); 61,650,000 tons, 0.017 opt Au, 84,620,000 tons, 0.13 opt Ag, (inferred resource) 2016: Piñon: 34,840,000 tons, 0.018 opt Au, (indicated resource); 67,330,000 tons, 0.016 opt Au, 102,170,000 tons, 0.12 opt Ag, (inferred resource)		Webb Formation siltstone Devils Gate Limestone	
Pony Creek (Robinson Mountain district)	1994: 1,100,000 tons, 0.057 opt Au (geologic resource) 2004: 32,410,000 tons, 0.044 opt Au (inferred resource)			
Railroad Property (POD zone) (Railroad district)	1997: POD Zone: 1,500,000 tons, 0.085 opt Au drill-indicated resource			
Rain Property (Carlin district)	1982: 3,400,000 tons, 0.147 opt Au and 8,300,000 tons, 0.083 opt Au			
Gnome	1988: 2,700,000 tons, 0.048 opt Au		Webb Formation	Eocene
Emigrant	1989 (Emigrant Springs): 30,300,000 tons 0.021 opt Au 2005 (Emigrant Springs): 1,531,165 oz Au (proven and probable reserves) 2011 low grade oxide: 1,600,000 oz Au (reserves) 2012: 1,240,000 oz Au (reserves)	2012: 20,738 oz Au, 2,376 oz Ag 2014: included in Newmont Gold production at the end of this chapter	Webb Formation	Eocene
Rain	1989: 22,600,000 tons, 0.052 opt Au (geologic resource) 1996 (Rain/Emigrant Springs): 16,000,000 tons, 0.028 opt Au (proven and probable reserve); 10,400,000 tons, 0.021 opt Au (mineralized material) 1999: 13,467,000 tons, 0.026 opt Au (proven and probable open-pit reserve); 411,000 tons, 0.316 (proven and probable underground reserves) 2000: 13,500,000 tons, 0.026 opt Au proven and probable open pit reserve); 308,000 tons, 0.267 opt (proven and probabe underground reserve); 2001: 13,500,000 tons, 0.026 opt Au (proven and probable open-pit reserve); 21,000 tons, 0.024 opt Au (proven and probable underground resrve); 1,300,000 tons, 0.048 opt Au (mineralized material)	1988: 29,000 oz Au 1991: 135,000 oz Au 1994: 79,000 oz Au 1995: 32,100 oz Au 1996: 48,900 oz Au 1997-2005: included in Newmont Gold production at the end of this section 1999: 23,477 oz Au 2000: 25,004 oz Au,) 2,539 oz Ag 2001: 43,488 oz Au, Au 9,887 oz Ag 2002: 20,065 oz Au, 4,042 oz Ag 2003: 5,039 oz Au, 928 oz Ag 2004: 1,956 oz Au, 551 oz Ag 2005: 404 oz Au, 90 oz Ag		
Saddle	2000: 2,000,000 tons, 0.5 opt Au			
SMZ	1989: 1,600,000 tons, 0.019 opt Au (geologic resource)			

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
REN (Bootstrap district)	2003: 2,100,000 tons, 0.43 opt Au (inferred resource) 2005: 2,100,000 tons, 0.38 opt Au (indicated resource); 1,400,000 tons, 0.37 opt Au (inferred resource) 2006: 2,713,000 tons, 0.37 opt Au (indicated resource); 758,000 tons, 0.47 opt Au (inferred resource) 2007: 2,991,000 tons, 0.37 opt Au (indicated resource); 835,000 tons, 0.47 opt Au (inferred resource)			
Road Canyon (Jerritt Canyon, Independence Mountains district)	2005-2007: 148,600 tons, 0.14 opt Au (measured and indicated resource); 74,300 tons, 0.13 opt Au (inferred resource) 2011: 17,500 tons, 0.069 opt Au, (indicated resource); 185,100 tons, 0.082 opt Au, (inferred resource); 2012: 17,000 tons, 0.07 opt Au, (indicated resource); 187,000 tons, 0.081 opt Au, (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Saval (Jerritt Canyon, Independence Mountains district)	2005: 104,400 tons, 0.23 opt Au (proven and probable reserve); 460,500 tons, 0.25 opt Au (measured and indicated resource, includes reserves); 270,000 tons, 0.25 opt Au (inferred resource) 2006: 120,200 tons, 0.246 opt Au (proven and probable reserve); 369,300 tons, 0.254 opt Au (measured and indicated resource, includes reserve); 191,200 tons, 0.238 opt Au (inferred resource) 2007: 120,200 tons, 0.246 opt Au (proven and probable reserve); 379,800 tons, 0.252 opt Au (measured and indicated resource, includes reserves); 107,400 tons, 0.206 opt Au (inferred resource) 2010: 169,100 tons, 0.210 opt Au (proven and probable reserve, underground) 656,000 tons, 0.227 opt Au (measured and indicated resource, includes reserves); 201,700 tons, 0.209 opt Au (inferred resource) 2011 underground: 169,100 tons, 0.210 opt Au, (proven and probable reserve) 333,600 tons, 0.224 opt Au, (measured and indicated resource, includes reserves); 95,400 tons, 0.2 opt Au, (inferred resource); open pit: 144,900 tons, 0.092 opt Au, (proven and probable reserve) 654,300 tons, 0.074 opt Au, (measured and indicated resource, includes reserve); 222,200 tons, 0.142 opt Au, (inferred resource) 2012 underground: 168,000 tons, 0.207 opt Au, (proven and probable reserve) 177,600 tons, 0.25 opt Au, (measured and indicated resource, includes reserve); 51,000 tons, 0.238 opt Au, (inferred resource); open pit: 83,000 tons, 0.129 opt Au, (proven and probable reserve); 367,000 tons, 0.093 opt Au, (measured and indicated resource, includes reserves); 10,000 tons 0.083 opt Au, (inferred resource)	2014: 2,732 oz Au	Hanson Creek and Roberts Mountains Formations	
Smith (Jerritt Canyon, Independence Mountains district)	2005: 949,300 tons, 0.29 opt Au (proven and probable reserve) 1,863,300 tons, 0.28 opt Au (measured and indicated resource, includes reserves); 677,000 tons, 0.24 opt Au (inferred resource) 2006: 269,000 tons, 0.332 opt Au (proven and probable reserve); 1,064,400 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 541,600 tons, 0.231 opt Au (inferred resource)	<2013: Jerritt Canyon combined 2013: 82,309 oz Au 2014: 80,198 oz Au	Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Smith (cont.)	<p>2007: 954,100 tons, 0.282 opt Au (proven and probable reserve); 1,236,900 tons, 0.278 opt Au (measured and indicated resource, includes reserves); 534,000 tons, 0.221 opt Au (inferred resource)</p> <p>2010: 1,631,700 tons, 0.172 opt Au (proven and probable reserve, underground) 4,186,200 tons, 0.235 opt Au (measured and indicated resource, includes reserves) 1,157,300 tons, 0.195 opt Au (inferred resource)</p> <p>2011: 2,056,600 tons, 0.212 opt Au, (proven and probable reserve, underground) 4,231,500 tons, 0.22 opt Au, (measured and indicated resource, includes reserves) 979,500 tons, 0.196 opt Au, (inferred resource)</p> <p>2012: 3,012,000 tons, 0.164 opt Au, (proven and probable reserves); 5,193,000 tons, 0.202 opt Au, (measured and indicated resource, includes reserves); 977,000 tons, 0.179 opt Au, (inferred resource)</p>			
Smith East (Jerritt Canyon, Independence Mountains district)	<p>2006: 997,400 tons, 0.281 opt Au (measured and indicated resource, includes reserves) 120,400 tons, 0.264 opt Au (inferred resource)</p> <p>2007: 1,065,500 tons, 0.287 opt Au (measured and indicated resource); 125,200 tons, 0.280 opt Au (inferred resource)</p>		Hanson Creek and Roberts Mountains Formations	
South Arturo (Bootstrap district)	<p>2006: 21,073,000 tons, 0.060 opt Au (indicated resource); 1,310,000 tons, 0.053 opt Au (inferred resource)</p> <p>2007: 29,880,000 tons, 0.070 opt Au (indicated resource); 1,020,000 tons, 0.022 opt Au (inferred resource)</p>	2016: 223,145 oz Au	Popovich Formation Bootstrap Limestone Rodeo Creek Formation	
South Arturo (cont.)	<p>2008: 36,857,000 tons, 0.045 opt Au (indicated resource); 3,253,000 tons, 0.013 opt Au (inferred resource)</p> <p>2009: 43,857,000 tons, 0.051 opt Au (proven and probable reserve) 5,628,000 tons, 0.048 opt Au (indicated resource); 4,232,000 tons, 0.018 opt Au (inferred resource)</p> <p>2010: 45,597,000 tons, 0.051 opt Au (proven and probable reserve) 26,735,000 tons, 0.043 opt Au (indicated resource); 11,623,000 tons, 0.018 opt Au (inferred resource)</p> <p>2011: 47,062,000 tons, 0.05 opt Au (probable reserve); 35,803,000 tons, 0.039 opt Au, (indicated resource) 7,430,000 tons, 0.023 opt Au, (inferred resource)</p> <p>2012: 56,280,000 tons, 0.042 opt Au, 0.227 opt Ag, (probable reserve); 27,295,000 tons, 0.045 opt Au, 0.339 opt Ag, (indicated resource); 28,123,000 tons, 0.015 opt Au, 0.077 opt Ag, inferred resource)</p> <p>2013: 34,208,000 tons, 0.049 opt Au, (proven and probable reserve); 54,378,000 tons, 0.044 opt Au, (measured and indicated resource); 25,802,000 tons, 0.014 opt Au, (inferred resource)</p> <p>2014: 3,143,000 tons, 0.15 opt Au, (probable reserve); 39,552,000 tons, 0.049 opt Au, (measured and indicated resource); 9,665,000 tons, 0.023 opt Au, (inferred resource)</p> <p>2015: 2,368,000 tons, 0.16 opt Au, (probable reserve); 290,000 tons, 0.04 opt Au, (measured and indicated resource); 13,000 tons, 0.07 opt Au, (inferred resource)</p> <p>2016: 1,800,000 tons, 0.11 opt Au, (probable reserve); 53,000 tons, 0.034 opt Au, (measured and indicated resource); 11,000 tons, 0.15 opt Au, (inferred resource)</p>			

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
SSX-Steer (Jerritt Canyon, Independence Mountains district)	<p>2005: 1,333,300 tons, 0.25 opt Au (proven and probable reserve); 2,597,500 tons, 0.28 opt Au (measured and indicated resource, includes reserves); 1,052,200 tons, 0.23 opt Au (inferred resource)</p> <p>2006: 739,400 tons, 0.266 opt Au (proven and probable reserve); 2,332,500 tons, 0.266 opt Au (measured and indicated resource, includes reserves); 929,700 tons, 0.23 opt Au (inferred resource)</p> <p>2007: 900,000 tons, 0.226 opt Au (proven and probable reserve); 2,561,400 tons, 0.259 opt Au (measured and indicated resource, includes reserves); 959,200 tons, 0.236 opt Au (inferred resource)</p> <p>2010: 1,215,400 tons, 0.189 opt Au (proven and probable reserve, underground) 4,012,200 tons, 0.224 opt Au (measured and indicated resource, includes reserves); 479,100 tons, 0.194 opt Au (inferred resource)</p> <p>2011: 1,280,900 tons, 0.191 opt Au, (proven and probable reserve, underground) 3,699,200 tons, 0.209 opt Au, (measured and indicated resource, includes reserves); 371,700 tons, 0.198 opt Au, 73,700 oz Au (inferred resource)</p> <p>2012 (including West Mahala): 1,621,000 tons, 0.163 opt Au, (proven and probable reserves); 3,643,000 tons, 0.199 opt Au, (measured and indicated resource, includes reserves); 2,508,000 tons, 0.173 opt Au, (inferred resource)</p>	<p>Prior to 2013: included in combined Jerritt Canyon production 2013: 48,930oz Au 2014: 34,486 oz Au</p>	Hanson Creek Roberts Mountains Formations	
Starvation Canyon (Jerritt Canyon, Independence Mountains district)	<p>2005: 400,500 tons, 0.30 opt Au (probable reserves); 676,400 tons, 0.28 opt Au (measured and indicated resource, includes reserves); 51,400 tons, 0.31 opt Au (inferred resource)</p> <p>2006: 369,600 tons, 0.305 opt Au (probable reserves); 636,500 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 51,200 tons, 0.278 opt Au (inferred resource)</p> <p>2007: 571,600 tons, 0.282 opt Au (probable reserve); 697,300 tons, 0.287 opt Au (measured and indicated resource, includes reserves) 25,500 tons, 0.252 opt Au (inferred resource)</p> <p>2010: 363,000 tons, 0.264 opt Au (proven and probable reserves, underground) 502,400 tons, 0.285 opt Au (measured and indicated resource, includes reserves) 256,300 tons, 0.276 opt Au (inferred resource)</p> <p>2011: 343,400 tons, 0.265 opt Au, (proven and probable reserves, underground); 525,200 tons, 0.251 opt Au, (measured and indicated resource, includes reserves) 244,400 tons, 0.253 opt Au, (inferred resource)</p> <p>2012: 970,000 tons, 0.178 opt Au, (proven and probable reserves); 970,000 tons, 0.178 opt Au, (measured and indicated resource, includes reserves); 21,000 tons, 0.17 opt Au, (inferred resource)</p>	<p>2013: 15,750 oz Au 2014: 61,913 oz Au</p>	Hanson Creek and Roberts Mountains Formations	
Storm Mine (Rossi) (Bootstrap district)	<p>1998: 3,100,000 tons, 0.371 opt Au (resource)</p> <p>2000: 2,700,000 tons, 0.345 opt Au (resource)</p> <p>2002: 1,900,000 tons, 0.335 opt Au (measured and indicated resource); 1,000,000 tons, 0.0335 opt Au (inferred resource)</p> <p>2005 and 2006: 500,000 tons, 0.449 opt Au (measured and indicated resource) 800,000 tons, 0.376 opt Au, (inferred resource)</p>	<p>2008: 52,000 oz Au 2009: 64,558 oz Au, 50,069 oz Ag 2010: 74,429 oz Au, 63,309 oz Ag 2011: 86,508 oz Au, 73,588 oz Ag 2012: 33,802 oz Au, 18,875 oz Ag 2013: 9,503 oz Au, 15,575 oz Ag</p>	Popovich Formation Bootstrap Limestone Rodeo Creek Formation	
Trout Creek (Contact district)	1988: 1,500,000 tons, 0.04 opt Au	1988: exploration	Miocene sedimentary rocks	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Tuscarora (Dexter) (Tuscarora district)	1987: 2,000,000 tons, 0.039 opt Au, 1.9 opt Ag (geologic resource) 1988: 1,800,000 tons, 0.037 opt Au, 0.74 opt Ag (geologic resource)	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	Eocene
Twelvemile Ranch (Tecoma district)	1986: 4,000,000 tons, 0.01 opt Au, (geologic resource)		volcanic and sedimentary rocks	
Waterpipe II (Jerritt Canyon, Independence Mountains district)	2005-2007: 37,400 tons, 0.21 opt Au (underground inferred resource)		Roberts Mountains Formation	
West Mahala (Jerritt Canyon, Independence Mountains district)	2005 and 2006: 368,100 tons, 0.22 opt Au (underground measured and indicated resource); 141,900 tons, 0.21 opt Au (underground inferred resource) 2007: 197,500 tons, 0.218 opt Au (underground indicated resource); 129,600 tons, 0.206 opt Au (inferred resource) 2010: 225,800 tons, 0.189 opt Au (measured and indicated resource, underground); 1,956,900 tons, 0.191 opt Au (inferred resource) 2011: 199,300 tons, 0.188 opt Au, (proven and probable reserves, underground) 388,700 tons, 0.19 opt Au, (measured and indicated resource, includes reserves) 1,854,600 tons, 0.175 opt Au, 324,000 oz Au (inferred resource) 2012: Included with SSX		Hanson Creek and Roberts Mountains Formations	
West Pequop (Pequop district)	2010: 1,349,700 tons, 0.0475 opt Au (measured and indicated resource); 6,055,500 tons, 0.041 opt Au (inferred resource)			
Winters Creek (Jerritt Canyon)	1986: 1,400,000 tons, 0.146 opt Au 2005-2007: 148,900 tons, 0.22 opt Au (measured and indicated resource); 37,200 tons, 0.2 opt Au, (inferred resource, underground) 2011: 90,300 tons, 0.162 opt Au, (indicated resource, underground); 9,200 tons, 0.186 opt Au, (inferred resource) 2012: 117,000 tons, 0.112 opt Au, (indicated resource); 10,000 tons, 0.145 opt Au, (inferred resource)		lower Paleozoic carbonate rocks	Eocene
Wright Window (Jerritt Canyon, Independence Mountains district)	1986: 1,300,000 tons, 0.095 opt Au 2005-2007: 32,600 tons, 0.226 opt Au, (probable reserves); 97,800 tons, 0.16 opt Au, (measured and indicated resource, includes reserves); 19,000 tons, 0.23 opt Au (inferred resource) 2010: 84,500 tons, 0.127 opt Au (probable reserve, open pit); 97,800 tons, 0.156 opt Au (measured and indicated resource, includes reserves); 19,000 tons, 0.229 opt Au (inferred resource) 2011: 112,900 tons, 0.096 opt Au, (proven and probable reserves, open pit); 125,800 tons, 0.094 opt Au, (measured and indicated resource, includes reserves) 4,800 tons, 0.093 opt Au, (inferred resource) 2012: 114,000 tons, 0.096 opt Au, (proven and probable reserves, open pit); 120,000 tons, 0.094 opt Au, (measured and indicated resource, includes reserves) 5,000 tons, 0.089 opt Au, (inferred resource)	1992: 3,500 oz Au		Eocene

ESMERALDA COUNTY

Boss (Gilbert district)	1987: 500,000 tons, 0.07 opt Au 1990: 637,500 tons, 0.023 opt Au (reserves); 31,000 oz Au (geologic resource) 1996: see Castle		Ordovician sedimentary rocks	Miocene?
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MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Castle Black Rock (includes Castle and 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 2012: Castle Zone: 16,185,000 tons, 0.013 opt Au (inferred resource) 2016: 13,646,000 tons, 0.015 opt Au, (measured and indicate resource); 8,763,000 tons, 0.011 opt Au, (inferred resource)		Ordovician Palmetto Formation	
Eastside (Gilbert district)	2016: 39,440,000 tons, 0.017 opt Au, 0.1 opt Ag, (inferred resurce)		Miocene rhyolite dome complexes	
Gemfield (Goldfield district)	1996: 9,500,000 tons, 0.04 opt Au 1998: 500,000 oz, 0.04 opt Au 2003: see Goldfield project 2004: 16,853,000 tons, 0.032 opt Au (measured and indicated resource); 1,001,000 tons, 0.022 opt Au (inferred resource) 2006: 12,459,000 tons, 0.031 opt Au (measured and indicated resource); 88,000 tons, 0.116 opt Au (inferred resource) 2011: 15,748,000 tons, 0.0325 opt Au, (proven and probable reserve); 18,772,000 tons, 0.031 opt Au, 0.098 opt Ag, (measured and indicated resource); 4,596,000 tons, 0.016 opt Au, 0.059 opt Ag, (inferred resource) 2013: 19,7026,000 tons, 0.0298 opt Au, (proven and probable reserve); 27,070,000 tons, 0.025 opt Au, 681,000 oz (measured and indicated resource); 1,190,000 tons, 0.015 opt Au, (inferred resource)		Sandstorm Rhyolite	21 Ma?
Goldfield Project (Goldfield district)	1983: 1,750,000 tons, 0.087 opt Au 1994: 3,480,000 tons, 0.071 opt Au 2003: 23,410,200 tons, 0.031 opt Au (measured and indicated resource); 10,239,100 tons 0.024 opt Au (inferred resource); (includes Goldfield Main, McMahon Ridge, and Gemfield) 2006: 16,856,000 tons, 0.034 opt Au (measured, indicated, and inferred resource, includes McMahon Ridge and Gemfield) 2013: 42,615,000 tons, 0.032 opt Au (measured and indicated resource); 8,756,000 tons, 0.044 opt Au, (inferred resource) (includes Goldfield Main, McMahon Ridge, and Gemfield)	1903-45: 4.19 million oz Au, 1.45 million oz Ag 1989-97: 28,373 oz Au	andesite, rhyodacite, rhyolite	21 Ma
Goldfield Main (Goldfield district)	2004: 6,651,000 tons, 0.036 opt Au (measured and indicated resource); 2,129,000 tons, 0.038 opt Au (inferred resource) 2010: 9,424,000 tons, 0.044 opt Au (indicated resource) 7,267,000 tons, 0.050 opt Au (inferred resource) 2011: 9,425,000 tons, 0.045 opt Au, (indicated resource) 7,264,000 tons, 0.05 opt Au, (inferred resource)			
Goldfield West (Goldfield district)	2011: 5,042,444 tons, 0.015 opt Au, 0.12 opt Ag, (inferred resource)		rhyolite tuff	
Hasbrouck (Divide district)	1982: 5,000,000 tons 0.06 opt Au, 1.5 opt Ag 1986: 12,900,000 tons, 0.0291 opt Au, 0.59 opt Ag 1998: 7,700,000 tons, 0.036 opt Au, 0.7 opt Ag 2003: 26,036,00 tons, 0.023 opt Au (indicated resource); 8,200,000 tons, 0.021 opt Au (inferred resource) 2011: 128,608,197 tons, 0.009 opt Au, 0.228 Ag, (inferred resource) 2014: 14,686,000 tons, 0.014 opt Au, 0.307 opt Ag, (measured resource); 55,002,000 tons, 0.011 opt Au,		Siebert Formation tuff and volcaniclastic rocks	16 Ma

MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	0.248 opt Ag, (indicated resource) 2015: 35,617,000 tons, 0.017 opt Au, 0.297 opt Ag, (proven and probable reserve) 54,185,000 tons, 0.014 opt Au, 0.26 opt Ag, (measured and indicated resource) 11,772,000 tons, 0.009 opt Au, 0.191 opt Ag, (inferred resource)			
Hill of Gold (Divide district)	1988: 500,000 tons, 0.04 opt Au, 0.40 opt Ag 1996: 1,600,000 tons, 0.026 opt Au		Miocene silicic tuff	16 Ma
Imperial (Railroad Springs district)	1985: 769,000 tons, 0.029 opt Au (probable geologic inventory); 2,091,000 tons 0.029 opt Au (possible geologic inventory)	1930s: 2,000-3,000 oz Au,	Cambrian Campito	Formation
Mary-Drinkwater (Silver Peak district)	1991: 531,300 tons, 0.124 opt Au 2010: 4,697,000 tons, 0.047 opt Au (measured and indicated resource, Drinkwater and Mary deposits); 3,793,000 tons, 0.036 opt Au (inferred resource, Drinkwater and Mary deposits) 2014: Mary/LC: 1,502,560 tons, 0.061 opt Au, (probable reserve); 1,534,500 tons, 0.063 opt Au, (indicated resource); 50,900 tons, 0.061 opt Au, (inferred resource); Drinkwater: 170,680 tons, 0.056 opt Au, (probable reserve); 537,900 tons, 0.047 opt Au, (indicated resource); 11,100 tons, 0.035 opt Au, (inferred resource)	1991: 25,000 oz Au, 8,000 oz Ag See Mineral Ridge	Wyman Formation	Mesozoic?
McMahon Ridge (Goldfield district)	2004: 8,200,000 tons, 0.035 opt Au (measured and indicated resource); 171,000 tons, 0.019 opt Au (inferred resource) 2006: 4,138,000 tons, 0.042 opt Au (measured and indicated resource); 172,000 tons, 0.038 opt Au (inferred resource) 2011: 6,074,000 tons, 0.039 opt Au, (indicated resource); 121,000 tons, oz, 0.032 opt Au, (inferred resource)			
Mineral Ridge (Silver Peak district)	1995: 5,200,000 tons, 0.068 opt Au (proven and probable reserves, includes Mary-Drinkwater) 1998: 4,000,000 tons, 0.06 opt Au; 241,000 oz Au 2000: 2,840,000 tons, 0.074 opt Au (minable reserves) 2002: 2,660,000 tons, 0.079 opt Au (total reserves) 2003: 8,300,000 tons, 0.061 opt Au (resource includes 2,660,000 tons, 0.079 opt Au reserves) 2010: 4,697,000 tons, 0.047 opt Au (measured and indicated resource, Drinkwater and Mary deposits); 3,793,000 tons, 0.036 opt Au (inferred resource, Drinkwater and Mary deposits) 2012: 3,231,000 tons, 0.059 opt Au, (indicated resource, Drinkwater, Mary, and Last Chance deposits); 89,000 tons, 0.043 opt Au, (inferred resource, Drinkwater, Mary, and Last Chance deposits) 2014 (includes Mary/LC and Drinkwater): 2,137,120 tons, 0.061 opt Au, (probable reserves); 2,697,500 tons, 0.050 opt Au, (indicated resources); 72,730 tons, 0.055 opt Au, (inferred resource)	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 2002: 397 oz Au, 396 oz Ag 2003: 675 oz Au, 704 oz Ag 2004: 3,638 oz Au, 3,062 oz Ag 2005: 1,589 oz Au, 1,073 oz Ag 2011: 11,932 oz Au, 6,918 oz Ag 2012: 32,871 oz Au, 13,871 oz Ag 2013: 39,160 oz Au, 14,975 oz Au 2014: 40,814 oz Au, 18,182 oz Ag 2015: 39,690 oz Au, 19,742 oz Ag 2016: 36,879 oz Au, 16,950 oz Ag	Wyman Fm.	
Monte Cristo (Gilbert district)	2006: 363,760 tons, 0.190 opt Au, 0.583 opt Ag (inferred resource) 2010: 2,545,980 tons, 0.11 opt Au (inferred resource, McLean Lode); 888,685 tons, 0.04 opt Au (inferred resource, Upper Zone); 999,966 tons 1.27 opt Ag (inferred resource, McLean Lode); 123,948 tons, 0.78 opt Ag (inferred resource, Upper Zone) 2015: 913,000 tons, 0.014 opt Au, 0.3 opt Ag, (inferred resource)	late 1980s: 300,000 tons, 0.072 opt Au	Tertiary andesite, lithic tuff	
Nivloc (Red Mtn. district)	2011: 1,807,000 tons, 0.023 opt Au, 41,000 oz Au, 3.11 opt Ag, (inferred resource)	1937-43: 4,675,408 oz Ag,		

MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Three Hills (Tonopah district)	1996: 3,200,000 tons, 0.036 opt Au 1997: 6,300,000 tons, 0.023 opt Au 2003: 5,736,000 tons, 0.023 opt Au (indicated resource) 2014: 1,091,000 tons, 0.023 opt Au, (measured resource); 7,413,000 tons, 0.017 opt Au, (indicated resource) 2015: 9,653,000 tons, 0.018 opt Au, (probable reserve); 10,897,000 tons, 0.017 opt Au, (indicated resource); 2,568,000 tons, 0.013 opt Au,		Miocene Siebert Formation and Oddie Rhyolite	
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 resource) 2009: 388,920 tons, 0.096 opt Au (indicated resource) 323,230 tons, 0.072 opt Au (inferred resource)		Tertiary quartz latite	
Tonopah Divide (Divide district)	1988: 500,000 tons, 0.04 opt Au, 0.4 opt Ag 1997: 1,800,000 tons, 0.55 opt Au 2005: 400,000 tons, 0.348 opt Au (open pit reserve)	1912-40: 113,794 tons ore 1982-86: 429,876 oz Au 1983-84: 3,759 oz Ag	Siebert Formation	16 ma
Weepah (Weepah district)	1986: 200,000 tons, 0.1 opt Au, 0.4 opt Ag	1930s: N/A 1986-87: 58,000 oz Au	Wyman Formation	Cretaceous

EUREKA COUNTY

Afgan (Antelope district)	1996: 80,000 oz Au drill-indicated resource 1999: 2,800,000 tons, 0.037 opt Au oxide resource 2004: 1,850,000 tons, 0.027 opt Au (indicated resource) 1,290,000 tons, 0.026 opt Au (inferred resource) 2011 (oxide): 3,206,000 tons, 0.021 opt Au, (indicated resource grade); 3,972,000 tons, 0.014 opt Au, (inferred resource)		Webb Formation	
Antimony Hill (Lynn district)	2002: 20,000 oz at 0.05 opt Au (pre-mine resource)		Vinini Formation	
Barrel (Lynn district)	1998 (Barrel and Goldbug): 2,917,000 tons, 0.391 oz Au, 1,140,000 oz Au (proven and probable reserve); 1,170,000 tons, 0.337 opt Au (resource) 2002: 200,000 oz at 0.2 opt Au (pre-mine resource) 2011 underground: 383,000 tons, 0.217 opt Au,		Popovich Fm. Rodeo Creek Fm.	
Beast (Lynn district)	2002: 50,000 oz at 0.02 opt Au (pre-mine resource)	1994-1999: 8,000,000 tons, 0.02 opt Au	Roberts Mountains Fm., Eocene rhyolite dikes	Eocene
Betze-Post (Lynn district)	1988: 128,400,000 tons, 0.095 opt Au 1999: 135,600,000 tons, 0.153 opt Au (proven and probable reserve); 23,300,000 tons, 0.099 opt Au (mineralized material) 2000: 116,400,000 tons, 0.155 opt Au (proven and probable); 55,900,000 tons, 0.063 opt Au (mineral resource) 2001: 108,900,000 tons, 0.151 opt Au (proven and probable); 49,900,000 tons, 0.069 opt Au (mineral resource) 2002: 107,100,000 tons, 0.150 opt Au (proven and probable reserve); 47.6 million tons, 0.070 opt Au (mineral resource) 2003: 61,551,000 tons, 0.128 opt Au (proven reserve); 48,191,000 tons, 0.162 opt Au	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 2002: 1,409,984 oz Au, 135,716 oz Ag 2003: 1,559,401 oz Au, 115,473 oz Ag 2004: 1,381,315 oz Au, 130,609 oz Ag 2005: 1,514,320 oz Au, 114,248 oz Ag 2006: 1,432,698 oz Au, 121,032 oz Ag 2007: 1,215,447 oz Au, 140,923 oz Ag 2008: 1,281,450 oz Au, 152,886 oz Ag	Popovich Fm. Rodeo Creek Fm.	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	(probable reserve); 14,077,000 tons, 0.059 opt Au (measured resource); 23,326,000 tons, 0.061 opt Au (indicated resource); 323,000 tons, 0.065 opt Au (inferred resource) 2004: 123,334,000 tons, 0.131 opt Au (proven and probable reserve); 22,318,000 tons, 0.050 opt Au (mineral resource) 2005: 114,512,000 tons, 0.128 opt Au (proven and probable reserve); 21,115,000 tons, 0.050 opt Au (measured and indicated resource); 417,000 tons, 0.089 opt Au (inferred resource) 2006: 105,206,000 tons, 0.125 opt Au (proven and probable reserve); 20,184,000 tons, 0.050 opt Au (measured and indicated resource); 489,000 tons, 0.078 opt Au (inferred resource) 2007: 94,914,000 tons, 0.128 opt Au (proven and probable reserve); 34,532,000 tons, 0.052 opt Au (measured and indicated resource); 5,014,000 tons, 0.064 opt Au (inferred resource) 2008: 86,254,000 tons, 0.119 opt Au (proven and probable reserve); 15,751,000 tons, 0.055 opt Au (measured and indicated resource); 479,000 tons, 0.092 opt Au (inferred resource) 2009: 82,902,000 tons, 0.112 opt Au (proven and probable reserve); 16,687,000 tons, 0.052 opt Au (measured and indicated resource); 3,568,000 tons, 0.116 opt Au (inferred resource) 2010: 95,865,000 tons, 0.101 opt Au (proven and probable reserve); 4,694,000 tons, 0.037 opt Au (measured and indicated resource) 1,344,000 tons, 0.065 opt Au (inferred resource) 2011: 97,325,000 tons, 0.096 opt Au, (proven and probable reserve); 4,612,000 tons, 0.032 opt Au, (measured and indicated resource); 564,000 tons, 0.055 opt Au, (inferred resource) 2012: 94,541,000 tons, 0.094 opt Au, (proven and probable reserve); 3,621,000 tons, 0.033 opt Au, (measured and indicated resource); 3,049,000 tons, 0.066 opt Au, (inferred resource) 2013: 84,255,000 tons, 0.096 opt Au, (proven and probable reserve); 5,909,000 tons, 0.07 opt Au, (measured and indicated resource); 1,081,000 tons, 0.071 opt Au, (inferred resource) 2014: 81,782,000 tons, 0.11 opt Au, (proven and probable reserve); 4,956,000 tons, 0.055 opt Au, (measured and indicated resource); 516,000 tons, 0.09 opt Au, (inferred resource) 2015: 76,139,000 tons, 0.091 opt Au, (proven and probable reserve); 5,639,000 tons, 0.072 opt Au, (measured and indicated resource); 505,000 tons, 0.081 opt Au, (inferred resource) 2016: 71,650,000 tons, 0.088 opt Au, (proven and probable reserve); 5,760,000 tons, 0.078 opt Au, (measured and indicated resource); 89,300 tons, 0.056 opt Au, (inferred resource)	2009: 901,002 oz Au, 120,736 oz Ag 2010: 884,200 oz Au, 138,931 oz Ag 2011: 721,534 oz Au, 94,572 oz Ag 2012: 812,707 oz Au, 102,700 oz Ag 2013: 521,489 oz Au, 86,124 oz Ag 2014: 515,641 oz Au, 17,993 oz Ag 2015: 642,493 oz Au, 67,223 oz Ag 2016: 544,736 oz Au, 134,283 oz Ag		
Buckhorn property (Buckhorn district)	1984: 5,000,000 tons, 0.044 opt Au, 0.585 opt Ag 1990: 700,000 tons, 0.05 opt Au (geologic resource) 1993: 1,100,000, 0.11 opt Au (geologic resource)	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: 2,000,000 tons, 0.056 opt Au, 0.224 opt Ag 1998: 2,400,000 tons, 0.046 opt Au		lower Paleozoic rocks	
Cabin Creek (Antelope district)	2010: 3,200,000 tons, 0.024 opt Au (indicated resource); 100,000 tons, 0.015 opt Au (inferred resource) 2011: 2,348,000 tons, 0.026 opt Au, (measured and indicated resource) 1,117,000 tons, 0.023 opt Au, (inferred resource)		Devonian McColley Canyon Formation	

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cabin Creek (cont.)	2015: 1,651,000 tons, 0.025 opt Au, (proven and probable reserve); 2,616,000 tons, 0.025 opt Au, 66,000 oz Au (measured and indicated resource); 754,000 tons, 0.019 opt Au, (inferred resource)			
Carlin North, Newmont (Lynn district)				
Blue Star	1987: 1,950,000 tons, 0.066 opt Au 1989: 22,200,000 tons, 0.030 opt Au (geologic resource)	1974-84: intermittent 1988-2010: included in Newmont Gold production at the end of this section	lower Paleozoic sandy siltstone and carbonate rocks, granodiorite	Eocene
Bobcat (Bobstar)	1988: 17,700,000 tons, 0.029 opt Au (geologic resource)		lower Paleozoic rocks	Eocene
Bullion Monarch	1987: 1,000,000 tons, 0.10 opt Au	1977-84: 17,779 oz Au	lower Paleozoic sedimentary rocks	Eocene
Deep Star	1996: 1,400,000 tons, 0.8765 opt Au (proven and probable reserves)	1995: 2,800 oz Au 1996: 93,400 oz Au 1997-2011: included in Newmont Gold production at the end of this section	Popovich Formation	Eocene
Fence	2002: 200,000 oz, 0.2 opt Au (pre-mine resource)		Roberts Mountain Formation	
Fence/Full House/ Rita K/Pete Bajo	2015: 992,000 tons, 0.26 opt Au, (reserve); 1,650,000 tons, 0.27 opt Au, (resource) 2016: 2,200,000 tons, 0.23 opt Au, (reserve); 2,200,000 tons, 0.22 opt Au, (resource)		Roberts Mountain Formation	
Genesis (Silverstar)	1989: 35,800,000 tons, 0.044 opt Au (geologic resource) 1990: 32,000,000 tons, 0.047 opt (includes Blue Star) 2000: 14,100,000 tons, 0.026 opt Au (proven and probable reserve) 2004: 1,065,000 oz Au (proven and probable reserve) 2012: 3,000,000 oz Au (reserve)	1986: production commenced 1988-2010: included in Newmont Gold production at the end of this section	Ordovician-Devonian limestone, argillite, chert	Eocene
Leeville	2004: 2,612,000 oz Au (proven and probable reserve) 2005: 2,433,000 oz Au (proven and probable reserve)	2005-2014: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
North Lantern	2004: 199,940 oz Au			
North Star	1989: 6,900,000 tons, 0.052 opt Au (geologic resource) 1990: 3,900,000 tons, 0.052 opt Au	1988: 4,250 oz Au 1989-2010: included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Post/Goldbug	1996: 25,600,000 tons, 0.190 opt Au (proven and probable reserve); 43,600,000 tons, 0.079 opt Au (mineralized material)	1999-2010: included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Deep Post	2000: 3,100,000 tons, 0.814 opt Au (proven and probable underground reserve) 2004 (includes Deep Star) 1,462,000 oz Au (proven and probable reserve) 2005 (includes Deep Star) 942,000 oz Au (proven and probable reserve)	included in Newmont Gold production at the end of this section		

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Turf	1996: 2,500,000 tons, 0.367 opt Au (mineralized material)	included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
West Leeville (Newmont)	1996: 2,000,000 tons, 0.377 opt Au (proven and probable reserve); 581,000 tons, 0.354 opt Au (mineralized material)	1995-96: 272,000 oz Au 1997-2010: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
West Leeville (Newmont-Barrick)	1996: 7,100,000 tons, 0.425 opt Au (proven and probable reserve); 500,000 tons, 0.328 opt Au (mineralized material)		Roberts Mountains Formation	Eocene
Carlin Mine	1965: 11,000,000 tons, 0.32 opt Au	1965-86: 3,800,000 oz Au		
Carlin/Pete/Lantern	1995: 14,800,000 tons, 0.031 opt Au 1996: 13,700,000 tons, 0.046 opt Au (proven and probable reserve); 14,700,000 tons, 0.046 opt Au (mineralized material) 2004: 940,040 oz Au (proven and probable reserve) 2005: 1,044,841 oz Au (proven and probable reserve)	1994-96: 68,700 oz Au 1997-2014: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
Carlin Underground	2004: 163,000 oz Au 2005: 123,000 oz Au (proven and probable reserve)			
Carlin North area, total open-pit	2001: 32,600,000 tons, 0.044 opt Au, (proven and probable reserve); 13,000,000 tons, 0.039 opt Au			
Carlin North area, total underground	2001: 10,900,000 tons, 0.56 opt Au, (proven and probable reserve); 2,100,000 tons, 0.55 opt Au (mineralized material)			
Carlin South, Newmont (Maggie Creek district)				
Chukar Footwall underground	2001: 278,000 tons, 0.49 opt Au (proven and probable reserve); 115,000 tons, 0.46 opt Au (mineralized material) 2004: 172,000 oz Au (proven and probable reserve) 2005: 256,000 oz Au (proven and probable reserve)	2002-2014: included in Newmont Gold production at the end of this section		
Gold Quarry/Mac/Tusc	1982: 25,100,000 tons, 0.106 opt Au and 150,000,000 tons, 0.036 opt Au 1987: 197,800,000 tons, 0.042 opt Au 1990: 212,600,000 tons, 0.042 opt Au, 534,300,000 tons, 0.037 opt Au (geologic resource) 1996: 174,800,000 tons, 0.046 opt Au (proven and probable reserve); 51,900,000 tons, 0.058 opt Au (mineralized material) 2004: 5,984,000 oz (proven and probable reserve) 2005: 6,554,297 oz (proven and probable reserve)	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 1994-96: 2,978,000 oz Au 1997-2016: included in Newmont Gold production at the end of this section	See below Devonian Rodeo Creek fm.	Eocene Eocene
Mike	1999: 408,000,00 tons, 0.006 opt Au, 151,000,000 tons, 0.10 % Cu 19,000,000 tons, 1.00 % Zn (drill-indicated mineral inventory)			
Tusc	1988: 15.8 million tons, 0.059 opt Au (geologic resource) 1990: 13,300,000 tons, 0.062 opt Au	included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Carlin South open pits	2000: 75,200,000 tons, 0.059 opt Au (proven and probable open-pit reserve) 2001: 61,300,000 tons, 0.062 opt Au proven and probable reserves; 24,600,000 tons, 0.028 opt Au (mineralized material)			
Carlin North and South combined (includes all Newmont's Carlin properties)				
Carlin open pit	2002: 181,800,000 tons, 0.042 opt Au (proven and probable reserve); 9,500,000 tons, 0.028 opt Au (measured and indicated mineralized material); 9,300,000 tons, 0.035 opt Au (inferred)	2004-2016: included in Newmont Gold production at the end of this section		Eocene

	mineralized material)		
	2003: 17,500,000 tons, 0.052 opt Au (proven reserve); 203,300,000 tons, 0.044 (probable reserves); 1,000,000 tons 0.035 (measured material); 11,200,000 tons 0.024 (indicated material); 10,400,000 tons 0.034 opt Au (inferred material)		
	2004: 201,600,000 tons, 0.047 opt Au (proven and probable reserve); 13,200,000 tons, 0.022 opt Au (indicated material); 7,700,000 tons, 0.034 opt Au (inferred material)		
	2005: 238,300,000 tons, 0.043 opt Au (proven and probable reserve); 28,100,000 tons, 0.04 opt Au (measured and indicated resource); 4,200,000 tons, 0.024 opt Au (inferred resource)		
	2006: 271,600,000 tons, 0.042 opt Au (proven and probable reserves); 35,100,000 tons, 0.035 opt Au (measured and indicated resource); 6,300,000 tons, 0.022 opt Au (inferred resource)		
	2007: 213,500,000 tons, 0.045 opt Au (proven and probable reserves); 14,600,000 tons, 0.020 opt Au (measured and indicated resource); 3,700,000 tons, 0.037 opt Au (inferred resource)		
	2008: 202,400,000 tons, 0.045 opt Au (proven and probable reserves); 88,400,000 tons, 0.040 opt Au (measured and indicated resource); 21,100,000 tons, 0.023 opt Au (inferred resource)		
	2009: 259,300,000 tons, 0.044 opt Au (proven and probable reserve); 28,800,000 tons, 0.021 opt Au (measured and indicated resource); 10,400,000 tons, 0.034 opt Au (inferred resource)		
	2010: 263,500,000 tons, 0.043 opt Au (proven and probable reserve); 91,800,000 tons, 0.020 opt Au (measured and indicated resource)		
	2011: 331,700,000 tons, 0.038 opt Au (proven and probable reserve); 112,600,000 tons, 0.026 opt Au (measured and indicated resource); 15,300,000 tons, 0.02 opt Au (inferred resource)		
	2012: 313,200,000 tons, 0.037 opt Au, (proven and probable reserve); 88,900,000 tons, 0.027 opt Au, (measured and indicated resource); 18,900,000 tons, 0.018 opt Au, (inferred resource)		
	2013: 271,600,000 tons, 0.036 opt Au, (proven and probable reserve); 83,800,000 tons, 0.019 opt Au (mineralized material)		
	2014: 244,300,000 tons, 0.037 opt Au, (proven and probable reserve); 81,900,000 tons, 0.027 opt Au (mineralized material)		
	2015: 226,100,000 tons, 0.039 opt Au, (proven and probable reserve); 89,100,000 tons, 0.028 opt Au (mineralized material); 22,800,000 tons, 0.059 opt Au, (proven reserve in stockpiles)		
	2016: 255,300,000 tons, 0.033 opt Au, 8,500,000 oz Au (proven and probable reserve recovery); 100,300,000 tons, 0.036 opt Au (mineralized material); 21,200,000 tons, 0.063 opt Au, 1,330,000 oz Au (proven reserves in stockpiles)		
Carlin underground (includes all underground mines)	2002: 10,000,000 tons, 0.57 opt Au (proven and probable reserve); 2,600,000 tons, 0.50 opt Au (measured and indicated mineralized material); 200,000 tons, 0.53 opt Au (inferred mineralized material)	2004-2016: included in Newmont Gold gold production at the end of this section	Eocene
	2003: 2,700,000 tons, 0.670 opt Au (proven reserves); reserve); 6,100,000 tons, 0.500 opt Au (probable 3,700,000 tons 0.480 opt Au (inferred material)		
	2004: 8,700,000 tons, 0.510 opt Au (proven and probable reserve); 100,000 tons, 0.260 opt Au (indicated material); 3,900,000 tons, 0.470 opt Au (inferred material)		
	2005: 7,700,000 tons, 0.49 opt Au (proven and probable reserve); 300,000 tons, 0.33 opt Au (measured and indicated resource); 3,700,000 tons, 0.46 opt Au (inferred resource)		
	2006: 7,400,000 tons, 0.44 opt Au (proven and probable reserve); 1,100,000 tons, 0.28 opt Au (measured and indicated resource); 3,000,000 tons, 0.47 opt Au (inferred resource)		
	2007: 7,200,000 tons, 0.388 opt Au (proven and probable reserve); 110,000 tons, 0.482 opt Au (measured and indicated resource); 2,600,000		

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Carlin underground (cont.)	<p>tons, 0.480 opt Au (inferred resource)</p> <p>2008: 11,700,000 tons, 0.313 opt Au (proven and probable reserve); 340,000 tons, 0.330 opt Au (measured and indicated resource); 3,100,000 tons, 0.327 opt Au (inferred resource)</p> <p>2009: 9,700,000 tons, 0.311 opt Au (proven and probable reserve); 810,000 tons, 0.180 opt Au (measured and indicated resource); 7,400,000 tons, 0.289 opt Au (inferred resource)</p> <p>2010: 14,600,000 tons, 0.307 opt Au, (proven and probable reserve)</p> <p>4,200,000 tons, 0.290 opt Au (measured and indicated resource); 1,300,000 tons, 0.345 opt Au (inferred resource)</p> <p>2011: 18,000,000 tons, 0.282 opt Au, (proven and probable reserve)</p> <p>7,600,000 tons, 0.241 opt Au (measured and indicated resource); 1,300,000 tons, 0.264 opt Au (inferred resource)</p> <p>2012: 23,500,000 tons, 0.265 opt Au, (proven and probable reserve);</p> <p>1,300,000 tons, 0.18 opt Au, (measured and indicated resource); 4,000,000 tons, 0.26 opt Au, (inferred resource)</p> <p>2013: 23,900,000 tons, 0.252 opt Au, (proven and probable reserve recovery);</p> <p>2,900,000 tons, 0.235 opt Au (mineralized material)</p> <p>2014: 23,300,000 tons, 0.258 opt Au, (proven and probable reserve); 1,900,000 tons, 0.195 opt Au (mineralized material)</p> <p>2015: 23,000,000 tons, 0.266 opt Au, (proven and probable reserve);</p> <p>1,800,000 tons, 0.192 opt Au (mineralized material)</p> <p>2016: 18,600,000 tons, 0.278 opt Au, (proven and probable reserve);</p> <p>3,200,000 tons, 0.223 opt Au (mineralized material)</p>			
Gold Bar (Antelope district)	<p>1984: 2,800,000 tons, 0.09 opt Au</p> <p>1990: mined out in December</p> <p>1994: 240,000 oz Au</p> <p>1995: 190,000 oz Au</p> <p>2001: 473,000 oz Au in 6 deposits</p> <p>2002: 3,600,000 tons, 0.100 opt Au (resource)</p> <p>2009 : 21,500,000 tons, 0.032 opt Au (measured and indicated resource, Gold Pick and Gold Ridge deposits); 8,700,000 tons, 0.021 opt Au (inferred resources, Gold Pick and Gold Ridge deposits)</p> <p>2010: 33,300,000 tons, 0.027 opt Au (measured and indicated and resource, Gold Pick and Gold Ridge deposits); 1,200,000 tons, 0.016 opt Au (inferred resource, 0.012 opt Au Gold Pick and Gold Ridge deposits)</p> <p>2011: 21,486,000 tons, 0.028 opt Au, (measured and indicated resource, Cabin Creek, Gold Pick, and Gold Ridge deposits); 7,758,000 tons, 0.027 opt Au, (inferred resources, Cabin Creek, Gold Pick, and Gold Ridge deposits)</p> <p>2015: 13,099,000 tons, 0.032 opt Au, 419,000 oz Au (proven and probable reserve, 0.009 opt Au cut-off grade, , Cabin Creek, Gold Pick, and Gold Ridge deposits); 22,112,000 tons, 0.028 opt Au, (measured and indicated resource, Cabin Creek, Gold Pick, and Gold Ridge deposits); 4,792,000 tons, 0.024 opt Au, (inferred resource, Cabin Creek, Gold Pick, and Gold Ridge deposits)</p>	<p>1987-90: 238,262 oz Au</p> <p>1991: 80,727 oz Au, 3,000 oz Ag</p> <p>1992-94: 155,080 oz Au</p>	Devonian Nevada Formation	Eocene?
Gold Canyon (Antelope district)	<p>1992: 86,500 oz Au (reserves);</p> <p>131,000 oz Au (geologic resource)</p> <p>1993: 770,000 tons, 0.080 opt Au</p> <p>2001: see Gold Bar</p> <p>2002: 2,500,000 tons, 0.056 opt Au (resource)</p>	reported with Gold Bar	Denay Fm.	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Gold Pick (Antelope district)	1988: 10,000,000 tons, 0.06 opt Au 1993: 1,400,000 tons, 0.079 opt Au 2001: <i>see</i> Gold Bar 2002: 5,000,000 tons, 0.057 opt Au (measured mineral resource) 2005: 7,874,000 tons, 0.041 opt Au (indicated resource) 2011: 16,553,000 tons, 0.028 opt Au, (measured and indicated resource); 5,649,000 tons, 0.029 opt Au, (inferred resource) 2015: 10,145,000 tons, 0.033 opt Au, (proven and probable reserve); 17,069,000 tons, 0.028 opt Au, (measured and indicated resource) 3,046,000 tons, 0.025 opt Au, (inferred resource)	reported with Gold Bar	Devonian McColley Canyon Formation	Eocene?
Gold Ridge (Antelope district)	1988: 400,000 tons, 0.06 opt Au 1993: 426,000 tons, 0.059 opt Au 2001: <i>see</i> Gold Bar 2002: 584,164 tons, 0.046 opt Au (resource) 2011: 2,585,000 tons, 0.028 opt Au, (measured and indicated resource); 992,000 tons, 0.025 opt Au (inferred resource) 2015: 1,303,000 tons, 0.033 opt Au, (proven and probable reserve); 2,427,000 tons, 0.028 opt Au, (measured and indicated resource); 824,000 tons, 0.024 opt Au, (inferred resource)	reported with Gold Bar	Devonian McColley Canyon Formation	Eocene?
Goldrush (Cortez district)	2011: 11,221,000 tons, 0.113 opt Au (indicated resource); 41,290,000 tons (0.139 opt Au (inferred resource)) 2012: 65,914,000 tons, 0.127 opt Au, (measured and indicated resource); 43,183,000 tons, 0.132 opt Au, (inferred resource) 2013: 75,540,000 tons, 0.132 opt Au, (measured and indicated resource); 39,472,000 tons, 0.134 opt Au, (inferred resource) 2014: 75,091,000 tons, 0.141 opt Au, (measured and indicated resource); 30,776,000 tons, 0.184 opt Au, (inferred resource) 2015: 146,000 tons, 0.33 opt Au, (measured resource); 25,595,000 tons, 0.31 opt Au, 8,509,000 oz Au (indicated resource); 6,278,000 tons, 0.26 opt Au, (inferred resource) 2016: 34,169,000 tons, 0.28 opt Au, (measured and indicated resource); 8,094,000 tons, 0.24 opt Au, (inferred resource)			
Goldstone (Antelope district)	1988: 1,700,000 tons, 0.08 opt Au 1993: 130,928 tons, 0.104 opt Au 2001: <i>see</i> Gold Bar	reported with Gold Bar		
Horse Canyon (Cortez district)	1984: 3,940,000 tons, 0.055 opt Au 1988: included in Cortez Joint Venture figures	1984: 40,000 oz Au 1988-93: included with Cortez Joint Venture	Wenban Limestone	
Hunter (Antelope district)	2009: 500,000 tons, 0.031 opt Au (indicated resource); 100,000 tons, 0.015 opt Au (inferred resource)			
Mineral Ridge (Eureka district)	1988: 3,000,000 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
North Post (Lynn district)	2011 underground: 3,348,000 tons, 0.244 opt Au			

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Northwest Exodus (Lynn district)	2015: 770,000 tons, 0.18 opt Au, (resource); 100,000 tons, 0.015 opt Au Au (reserves); 2,800,000 tons, 2,800,000 tons, 0.27 opt Au, 700,000 oz Au (resources) 2016: 3,300,000 tons, 0.24 opt Au, 800,000 oz Au (reserves); 2,200,000 tons, 0.18 opt Au, 300,000 oz Au (resource)			
Ratto Canyon (Lookout Mountain) (Eureka district)	1984: ~200,000 oz Au (entire Ratto Ridge area): 2006: 836,000 tons, 0.24 opt Au (measured and indicated resource) 2010: 13,640,000 tons, 0.021 opt Au (measured and indicated resource) 16,420,000 tons, 0.012 opt Au (inferred resource) 2011: 20,745,000 tons, 0.019 opt Au (measured and indicated resource); 18,385,000, 0.012 opt Au, (inferred resource) 2013: 28,940,000 tons, 0.018 opt Au (measured and indicated resource); 11,790,000, 0.012 opt Au, (inferred resource)	1987-88: 17,000 oz Au 1987: 180,000 tons,	Dunderberg Shale, Eocene Hamburg Dolomite Hamburg Dolomite	
Rock Creek (Eureka-Lander Co. line)	1997: 800,000 tons, 0.045 opt Au		Tertiary latite tuff	
Rodeo Projects (Rodeo, Griffin, Goldbug, North Betze) (Lynn district)	1998: 2,900,000 tons, 0.487 opt Au (proven and probable reserves); 5,800,000 tons, 0.302 opt Au (mineralized material) 1999: 5,800,000 tons, 0.466 opt Au, (proven and probable reserves); 13,000,000 tons, 0.270 opt Au (mineralized material) 2000: 9,200,000 tons, 0.414 opt Au (proven and probable reserve); 7,400,000 tons, 0.333 opt Au (mineral resource) 2005-2014: reserves are combined with Meikle reserves	included with Meikle production, Elko County		Eocene
Ruby Hill (Eureka district)	1994: <i>geologic resource</i> -20,000,000 tons, 0.08 opt Au 1995: 7,620,000 tons, 0.099 opt Au 1999: 3,770,000 tons, 0.110 opt Au (proven and probable reserve); 7,330,000 tons, 0.072 opt Au (mineralized material) 2000: 2,700,000 tons, 0.105 opt Au (proven and probable reserve); 7,300,000 tons, 0.072 opt Au (mineralized material) 2004: (East Archimedes) 17,093,000 tons, 0.059 opt Au (proven and probable reserve); 3,049,000 tons, 0.061 opt Au (mineral resource) 2006: (East Archimedes) 19,479,000 tons, 0.055 opt Au (proven and probable reserve); 601,000 tons, 0.088 opt Au (measured and indicated resource) 2007: (East Archimedes) 18,763,000 tons, 0.055 opt Au (proven and probable reserve); 3,202,000 tons, 0.076 opt Au (measured and indicated resource); 6,000 tons, 0.333 opt Au (inferred resource) 2008: (East Archimedes) 18,844,000 tons, 0.044 opt Au (proven and probable reserve); 111,919,000 tons, 0.04 opt Au measured and (indicated resource); 3,495,000 tons, 0.037 opt Au (inferred resource) 2009: 13,933,000 tons, 0.050 opt Au (proven and probable reserve); 8,960,000 tons, 0.057 opt Au (measured and indicated resource); 2,928,000 tons, 0.051 opt Au, (inferred resource) 2010: 17,182,000 tons, 0.065 opt Au (proven and probable reserve); 61,530,000 tons, 0.023 opt Au (measured and indicated resource); 12,885,000 tons, 0.024 opt Au (inferred resource)	1997-98: 133,100 oz Au, 8,686 oz Ag 2000: 125,193 oz Au, 7,984 oz Ag 1999: 123,841 oz Au, 7,688 oz Ag 2001: 134,737 oz Au, 9,315 oz Ag 2002: 135,448 oz Au, 9,750 oz Ag 2003: 18,134 oz Au, 2,441 oz Ag 2004: 6,057 oz Au, 1,868 oz Ag 2007: 142,856 oz Au, 8,368 oz Ag 2008: 102,553 oz Au, 7,572 oz Ag 2009: 103,523 oz Au, 39,110 oz Ag 2010: 81,382 oz Au, 43,276 oz Ag 2011: 127,089 oz Au, 42,754 oz Ag 2012: 41,242 oz Au, 32,124 oz Ag 2013: 91,074 oz Au, 76,283 oz Ag 2014: 33,124 oz Au, 65,020 oz Ag 2015: 10,673 oz Au, 24,842 oz Ag 2016: 6,471.6 oz Au 7,791.4 oz Ag	Goodwin Limestone	

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Ruby Hill (cont.)	2011: 16,778,000 tons, 0.058 opt Au, 978,000 contained oz Au (proven and probable reserve); 107,626,000 tons, 0.021 opt Au, 2,245,000 contained oz Au (measured and indicated resource); 5,779,000 tons, 0.034 opt Au 196,000 contained oz Au (inferred resource) 2012: 7,823,000 tons, 0.042 opt Au, (proven and probable reserves); 172,646,000 tons, 0.02 opt Au, 3 (measured and indicated 5,152,000 tons, 0.043 opt Au, (inferred resource) 2013: 4,963,000 tons, 0.028 opt Au, (proven and probable reserve); 178,428,000 tons, 0.02 opt Au (measured and indicated resource); 18,343,000 tons, 0.04 opt Au, (inferred resource) 2014: 1,762,000 tons, 0.016 opt Au, (proven and probable reserve); 207,613,000 tons, 0.019 opt Au (measured and indicated resource); 24,410,000 tons, 0.047 opt Au, (inferred resource)			
Tonkin Springs (Antelope district)	1983: 1,840,000 tons, 0.089 opt Au, 0.204 opt Ag 1987: 1,500,000 tons, 0.05 opt Au (oxide); 2,500,000 tons, 0.09 opt Au (sulfide) 1991: 9,000,000, 0.05 opt Au 1999: 30,700,000 tons, 0.045 opt Au (resource) 2006: 29,672,000 tons, 0.043 opt Au (measured and indicated resource); 3,466,000 tons, 0.044 opt Au, (inferred resource) 2008: 35,584,000 tons, 0.041 opt Au (measured and indicated resource) 9,290,000 tons, 0.033 opt Au, (inferred resource)	1987-88: 10,265 oz Au 1989-90: 3,821 oz Au, 1,872 oz Ag	Vinini Formation	Eocene?
HUMBOLDT COUNTY				
Adelaide Crown (Gold Run district)	1989: 585,000 tons, 1.313 opt Ag, 0.043 opt Au (south pit); 165,000 tons, 0.015 opt Au, 1.10 opt Ag (other areas)	1990-91: 4,917 oz Au, 53,474 oz Ag	Preble Formation	Tertiary
Ashdown (Vicksburg district)	1987: 1,160,000 tons, 0.125 opt Au 1992: 1,100,000 tons, 0.12 opt Au 2002: 100,000 oz Au	See Other Metallic Deposits for Mo	Mesozoic granite	Mesozoic
Buckskin (National district)	1997: 50,221 oz Au, 466,243 oz Ag estimated resource		Miocene rhyolite flows	16 Ma
Chimney Creek (Potosi district)	1988: 26,900,000 tons, 0.068 opt Au; i (proven and probable reserve) 2,100,000 oz Au (Inferred, south pit) 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	
Converse/Redline (Buffalo Valley district)	2003: 77,459,000 tons, 0.020 opt Au (measured and indicated resource) 2004: 263,000,000 tons, 0.0150 opt Au, 0.058 opt Ag (measured and indicated resource) 35,000,000 tons, 0.0143 opt Au, 0.052 opt Ag 2011: 352,990,000 tons, 0.015 opt Au, 0.11 opt Ag, (measured and indicated resource); 34,440,000 tons, 0.015 opt Au, 0.087 opt Ag, (inferred resource) 2014: 400,000,000 tons, 0.017 opt Au, Au; 0.11 opt Ag, (measured and indicated resource); 40,800,000 tons, 0.017 opt Au, 0.099 opt Ag, (inferred resource)		Havallah Formation, granodiorite	Tertiary
Getchell/Turquoise Ridge (Potosi district)	1989: 8,100,000 tons, 0.154 opt Au (mill grade and 1,430,000 tons, 0.049 opt Au heap-leach ore); 5,700,000 tons, 0.092 opt Au (sulfide) and 2,600,000 tons,	1938-50, 1962-67: 788,875 oz Au 1987-88: ~35,000 oz Au 1989: 120,730 oz Au,	Comus and Preble Formations, dikes, granodiorite	37-41 Ma

0.055 opt Au oxide (geologic resource)	9,407 oz Ag
1999: 18,100,000 tons, 0.359 opt Au	1990-91: 372,987 oz Au
2000: 2,800,000 oz Au (measured resource);	1992-95: 790,600 oz Au,
5,500,000 oz Au (indicated resource);	258,700 oz Ag
6,700,000 oz (inferred resource)	1996-97: 348,517 oz Au
2002: 2,690,000 oz Au (proven and probable	1998: 175,302 oz Au,
reserve); 1,510,000 oz Au (measured and	52,490 oz Ag
indicated mineral resource)	1999: 111,000 oz Au
2003: (Turquoise Ridge) 6,000,000 tons,	2002: 54,600 oz Au,
0.57 opt Au (proven reserve); 2,400,000 tons,	5,400 oz Ag
0.62 opt Au (probable reserve); 4,400,000 tons,	2003: 93,337 oz Au
0.3 opt Au (indicated material); 2,800,000 tons,	2004: 162,637 oz Au
Au 0.4 opt Au (indicated material); 4,800,000	2005: 208,492 oz Au,
tons, 0.49 opt Au (inferred material)	54,419 oz Ag
2005: (Turquoise Ridge and Getchell Footwall	2006: 233,127 oz Au,
deposits) 7,600,000 tons, 0.56 opt Au (proven	30,473 oz Ag
and probable reserve); 5,600,000 tons, 0.42	2007: 251,133 oz Au
opt Au (measured and indicated resource);	2008: 168,808 oz Au
400,000 tons, 0.54 opt (inferred resource)	2009: 177,333 oz Au
2006: (Turquoise Ridge and Getchell Footwall	2010: 161,579 oz Au
deposits) 8,436,000 tons, 0.544 opt Au (proven	2011: 178,283 oz Au
and probable reserve); 4,801,000 tons, 0.432	2012: 191,754 oz Au
opt Au (measured and indicated resource);	2013: 223,189 oz Au
1,961,000 tons, 0.493 opt (inferred resource)	2014: 259,345 oz Au
2007: (Turquoise Ridge and Getchell Footwall	2015: 289,421 oz Au
deposits) 11,239,000 tons, 0.458 opt Au (proven	2016: 354,580 oz Au
and probable reserve); 3,291,000 tons, 0.409	
opt Au (measured and indicated resource);	
2,000,000 tons, 0.444 opt (inferred resource)	
2008: (Turquoise Ridge) 10,614,000 tons, 0.501	
opt Au (proven and probable reserves);	
3,289,000 tons, 0.435 opt Au (measured and	
indicated resource); 4,440,000 tons, 0.505 opt	
(inferred resource)	
2009: (Turquoise Ridge) 10,680,000 tons, 0.507	
opt Au (proven and probable reserves); 2,307,000	
tons, 0.431 opt Au (measured and indicated	
resource); 5,033,000 tons, 0.456 opt (inferred	
resource)	
2010 (Turquoise Ridge): 12,339,000 tons, 0.456	
opt Au (proven and probable reserve, 92%	
recovery); 85,625,000 tons, 0.131 opt Au	
(measured and indicated resource); 43,427,000	
tons, 0.160 opt Au (inferred resource)	
2011 (Turquoise Ridge): 15,981,000 tons, 0.442	
opt Au, (proven and probable reserve);	
83,192,000 tons, 0.122 opt Au, (measured	
and indicated resource); 33,992,000 tons, 0.13	
opt Au, (inferred resource)	
2012 (Turquoise Ridge) 20,358,000 tons, 0.381	
opt Au, (proven and probable reserve; 80,690,000 tons,	
0.123 opt Au, (measured and indicated resource)	
39,014,000 tons, 0.131 opt Au, 5,089,000 oz Au	
(inferred resource)	
2013 (Turquoise Ridge): 13,337,000 tons, 0.51	
opt Au, 6,760,000 oz Au, (proven and probable	
reserve); 120,695,000 tons, 0.127 opt Au	
(measured and indicated resource); 49,508,000 tons,	
0.15 opt Au, (inferred resource)	
2014 (Turquoise Ridge): 12,050,000 tons, 0.57	
opt Au, (proven and probable reserve);	
119,351,000 tons, 0.135 opt Au,	
(measured and indicated resource);	
43,170,000 tons, 0.184 opt Au, (inferred resource)	
2015 (Turquoise Ridge): 12,587,000 tons, 0.45	
opt Au, (proven and probable reserve);	
110,214,000 tons, 0.138 opt Au, (measured	
and indicated resource); 26,417,000 tons, 0.147 opt Au,	
(inferred resource)	
2016 (Turquoise Ridge): 22,210,000 tons, 0.44	
opt Au, 5,372,000 oz Au, (proven and probable	
reserve, recovery rate 92%, cut-off grade 0.29	
opt Au); 74,648,000 tons, 0.169 opt Au,	
12,647,000 oz Au (measured and indicated	
resource, various cut-off grades); 23,485,000	
tons, 0.185 opt Au, 3,257,000 oz Au (inferred	
resource, various cut-off grades)	

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Hycroft (Sulphur district)	<p>1988: 25,000,000 tons, 0.025 opt Au 1999: 23,800,000 tons, 0.0204 opt Au (proven and probable reserve); 2,300,000 tons, 0.0177 opt Au (indicated reserves) 2000: 41,900,000 tons, 0.0196 opt Au (measured and indicated resource); 14,100,000 tons, 0.0152 opt Au (inferred resource) 2004: 47,479,000 tons, 0.016 opt Au (measured and indicated resource; 12,029,000 tons, 0.011 opt Au (inferred resource) 2005: 33,320,000 tons, 0.02 opt Au (proven and probable reserve); 52,700,000 tons 0.019 opt Au (measured and indicated resource); 8,700,000 tons, 0.015 opt Au (inferred resource) 2007: 33,320,000 tons, 0.020 opt Au (proven and probable reserve); 19,780,000 tons, 0.018 opt (measured and indicated resource); 283,392,000 tons, .019 opt Au (inferred resource) 2008: 73,159,508 tons, 0.016 opt, Au (proven and probable reserve); 141,300,000 tons, 0.014 opt (measured and indicated resource) 180,200,000 tons, 0.012 opt Au (oxide inferred resource); 199,400,000 tons, 0.20 opt Au (sulfide inferred resource) 2009: 177,228,000 tons, 0.014 opt Au, 0.18 opt Ag, (proven and probable oxide reserve); 366,991,000 tons, 0.013 opt Au, 0.22 opt Ag (measured and indicated oxide resource) 143,927,000 tons, 0.018 opt Au, 0.72 opt Ag 95,510,000 tons, 0.011 opt Au, 0.33 opt Ag (measured and indicated sulfide resource); 148,804,000 tons, 0.017 opt Au, 0.85 opt Ag (inferred oxide resource); 2010: 196,000,000 tons, 0.013 opt Au, 0.25 opt Ag (proven and probable oxide heap leach reserves); 720,000,000 tons, 0.007 opt Au, 0.15 opt Ag (measured and indicated oxide and transitional heap leach resource); 620,000,000 tons, 0.014 opt Au, 0.71 opt Ag (measured and indicated oxide, transitional and sulfide mill resource); 181,000,000 tons, 0.015 opt Au, 0.56 opt Ag (inferred oxide, transitional and sulfide resource) 2011: 1,134,669,000 tons, 0.011 opt Au, 0.42 opt Ag, (proven and probable oxide heap leach reserve); 939,619,000 tons, 0.009 opt Au, 0.25 opt Ag, (measured and indicated resource); 534,938,000 tons, 0.01 opt Au, 0.253 opt Ag (inferred resource, 0.004 opt Au) 2012: 1,108,078,000 tons, 0.011 opt Au, 11,875,000 oz Au, 0.46 opt Ag, 509,559,000 oz Ag (proven and probable reserve); 1,596,780,000 tons, 0.008 opt Au, 0.23 opt Ag, (measured and indicated resource); 628,251,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource) 2013: 951,001,000 tons, 0.011 opt Au, 0.49 opt Ag (proven and probable reserve); 1,587,969,000 tons, 0.008 opt Au, 0.23 opt Ag, (measured and indicated resource); 627,093,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource)] 2014: 949,201,000 tons, 0.011 opt Au, 0.49 opt Ag, (proven and probable reserves); 1,357,064,000 tons, 0.008 opt Au, 0.24 opt Ag, (measured and indicated resource); 620,059,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource)</p>	<p>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 oz Ag 2002: 1,771 oz Au, 217 oz Ag 2003: 644 oz Au, 100 oz Ag 2004: 61 oz Au 2008: 1,000 oz Au, 3,000 oz Ag 2009: 53,189 oz Au, 65,753 oz Ag 2010: 102,483 oz Au, 233,974 oz Ag 2011: 104,002 oz Au, 479,440 oz Ag 2012: 114,705 oz Au, 696,114 oz Ag 2013: 181,941 oz Au, 858,073 oz Ag 2014: 214,345 oz Au, 1,818,637 oz Ag 2015: 107,998 oz Au, 621,788 oz Ag 2016: 32,265 oz Au, 235,934 oz Ag</p>	<p>Camel conglomerate,</p>	<p>1-2 Ma</p>
Lone Tree (Buffalo Mountain district)	<p>1990: 5,400,000 tons (oxide mill ore), 0.159 opt Au, 5,700,000 tons (heap-leach oxide ore); 0.025 opt Au and 1,200,000 oz Au (sulfide ore) 1994: 4,000,000 oz Au 2000: 40,800,000 tons, 0.060 opt Au (proven and probable reserve) 2001: 29,200,000 tons, 0.065 opt Au (proven and probable reserve); 7,900,000 tons,</p>	<p>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,</p>	<p>Havallah Formation, Antler sequence, and dacite porphyry</p>	<p>38 Ma</p>

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Lone Tree (cont.)	0.032 opt Au (mineralized material) 2002: 21,000,000 tons, 0.069 opt Au (proven and probable reserve); 2,000,000 tons, 0.057 opt Au (measured and indicated mineralized material); 1,000,000 tons, 0.047 opt Au inferred mineralized material 2003: 3,300,000 tons, 0.092 opt Au (proven reserve); 13,000,000 tons, 0.084 opt Au (probable reserve); 2,100,000 tons, 0.054 opt Au (indicated material); 600,000 tons, 0.054 opt Au (inferred material) 2004: 14,000,000 tons, 0.063 opt Au (proven and probable reserve); 3,400,000 tons, 0.044 opt Au (indicated material); 200,000 tons, 0.116 opt Au (inferred material) 2005: 4,000,000 tons, 0.080 opt Au (proven and probable reserve); 3,000,000 tons, 0.032 opt Au (measured and indicated resource) 2007: 4,200,000 tons, 0.022 opt Au (measured and indicated resource) 2012: 2,200,000 tons, 0.023 opt Au, 50,000 oz Au (indicated resource); 5,000,000 tons, 0.032 opt Au, 80,000 oz Au (inferred resource) 2013: 2,500,000 tons, 0.023 opt Au (mineralized material); stockpiles: 4,20,000 tons, 0.017 opt Au, 70,000 oz Au (proven reserve) 2014: 2,200,000 tons, 0.023 opt Au (mineralized material); 1,600,000 tons, 0.005 opt Au (leach pad), 10,000 oz Au (stockpiles); 500,000 tons 0.017 opt Au, 10,000 oz Au (proven reserve) 2015: 2,200,000 tons, 0.023 opt Au (mineralized material); leach pad: 1,100,000 tons, 0.007 opt Au, 10,000 oz Au; stockpiles: 2,700,000 tons, 0.007 opt Au, 20,000 oz Au (proven reserve) 2016: 3,800,000 tons, 0.011 opt Au, (proven and probable reserve)	38,346 oz Ag 2001: 260,518 oz Au, 29,974 oz Ag 2002: 327,160 oz Au, 65,905 oz Ag 2003: 434,704 oz Au, 80,094 oz Ag 2004: 497,065 oz Au, 140,144 oz Ag 2005: 339,187 oz Au, 46,934 oz Ag 2006: 357,787 oz Au, 26,601 oz Ag 2007: 182,768 oz Au, 37,172 oz Ag 2008: 16,775 oz Au, 1,897 oz Ag 2009: 12,011 oz Au, 2,309 oz Ag 2010: 1,313 oz Au, 2011: 19,619 oz Au, 28 oz Ag 2012: 29,738 oz Au, 5,789 oz Ag 2013: 22,931 oz Au, 4,970 oz Ag 2014: 21,702 oz Au, 920 oz Ag 2015: 21,349 oz Au 2016: 31,854 oz Au		
Marigold (Battle Mountain district)	1987: 8,000,000 tons, 0.0935 opt Au 1990: 4,300,000 tons, 0.105 opt Au (mill ore); 7,600,000 tons, 0.026 opt Au (heap-leach ore) 1999: 19,090,000 tons, 0.032 opt Au 2000: 30,200,000 tons, 0.035 opt Au (proven and probable reserve); 20,700,000 tons, 0.029 opt Au measured and (indicated resource) 2001: 75,500,000 tons, 0.027 opt Au (proven and probable reserves); 109,900,000 tons, 0.014 opt Au (measured and indicated resource) 2002: 79,100,000 tons, 0.026 opt Au (proven and probable reserve); 129,700,000 tons, 0.014 opt Au (mineral resource) 2003: 9,366,000 tons, 0.031 opt Au (proven reserve); 83,909,000 tons, 0.023 opt Au (probable reserve); 19,937,000 tons, 0.020 opt Au (measured reserve); 20,069,000 tons, 0.020 opt Au (indicated resource); 177,450,000 tons, 0.014 opt Au (inferred resource) 2004: 71,218,500 tons, 0.023 opt Au (proven and probable reserve); 18,043,500 tons, 0.022 opt Au (measured and indicated resource); 21,000,000 tons, 0.014 opt Au (inferred resource) 2005: 98,210,000 tons, 0.021 opt Au (proven and probable reserve); 157,480,000 tons, 0.020 opt Au (measured and indicated resource, includes reserves); 163,230,000 tons, 0.013 opt Au (inferred resource) 2006: 102,870,000 tons, 0.021 opt Au (proven and probable reserve); 94,587,000 tons, 0.018 opt Au (measured and indicated resource); 88,212,000 tons, 0.011 opt Au (inferred resource) 2007: 84,660,000 tons, 0.020 opt Au (proven and probable reserve); 46,410,000 tons, 0.020 opt	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 2002: 83,321 oz Au, 1,281 oz Ag 2003: 142,100 oz Au, 2,080 oz Ag 2004: 141,304 oz Au, 2,354 oz Ag 2005: 205,663 oz Au, 1,723 oz Ag 2006: 149,805 oz Au, 1,986 oz Ag 2007: 140,840 oz Au, 2,233 oz Ag 2008: 144,106 oz Au, 5,037 oz Ag 2009: 146,842 oz Au, 4,239 oz Ag 2010: 136,754 oz Au, 3,729 oz Ag 2011: 153,741 oz Au, 4,162 oz Ag 2012: 144,382 oz Au, 2,729 oz Ag 2013: 161,062 oz Au, 3,394 oz Ag 2014: 162,382 oz Au, 3,085 oz Ag 2015: 207,005 oz Au, 2,841 oz Ag 2016: 205,116 oz Au,	Paleozoic chert, argillite, and carbonate rocks	

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Marigold (cont.)	<p>Au (measured and indicated resource); 122,530,000 tons, 0.013 opt Au (inferred resource)</p> <p>2008: 69,600,000 tons, 0.020 opt Au (proven and probable reserve); 42,660,000 tons, 0.016 opt Au (measured and indicated resource); 44,810,000 tons, 0.013 opt Au (inferred resource)</p> <p>2009: 150,000,000 tons, 0.016 opt Au (proven and probable reserve)</p> <p>42,190,000 tons, 0.015 opt Au (indicated resource); 75,000,000 tons, 0.015 opt Au (inferred resource)</p> <p>2010: 143,529,000 tons, 0.016 opt Au (proven and probable reserve); 80,526,000 tons, 0.014 opt Au (indicated resource); 46,638,000 tons, 0.014 opt Au (inferred resource)</p> <p>2011: 226,889,000 tons, 0.015 opt Au (proven and probable reserve); 32,935,000 tons, 0.012 opt Au (measured and indicated resource); 11,037,000 tons, 0.013 opt Au (inferred resource)</p> <p>2012: 324,770,000 tons, 0.015 opt Au (proven and probable reserve); 50,130,000 tons, 0.012 opt Au, (measured and indicated resource); 89,559,000 tons, 0.012 opt Au, (inferred resource)</p> <p>2013: 264,585,000 tons, 0.016 opt Au (proven and probable reserve); 37,000,000 tons, 0.013 opt Au, (measured and indicated resource); 25,014,000 tons, 0.013 opt Au, (inferred resource)</p> <p>2014: 143,970,000 tons, 0.017 opt Au (probable reserve)</p> <p>268,630,000 tons, 0.017 opt Au, 4,000,000 oz Au (indicated resource); 14,770,000 tons, 0.016 opt Au, (inferred resource)</p> <p>2015: 154,650,000 tons, 0.013 opt Au (probable reserves); 332,560,000 tons, 0.013 opt Au, (indicated resource inclusive of probable reserves); 42,770,000 tons, 0.013 opt Au, (inferred resource)</p> <p>2016: 204,000,000 tons, 0.013 opt Au (probable reserve); 383,900,000 tons, 0.013 opt Au; (indicated resource inclusive of probable reserves)</p> <p>65,400,000 tons, 0.012 opt Au, (inferred resource)</p>	2,349 oz Ag		
North Stonehouse (Buffalo Mountain district)	1991: 2,500,000 tons, 0.103 opt Au (mill ore)		Havallah Formation	39 Ma
Pinson (Potosi district)	<p>1980: 3,245,000 tons, 0.119 opt Au</p> <p>1989: 480,000 oz Au</p> <p>1996: 2,600,000 tons, 0.072 opt Au</p> <p>2005: 1,692,000 tons, 0.421 opt Au (measured and indicated resource); 3,097,000 tons, 0.34 opt Au (inferred resource)</p> <p>2006: (includes Range Front, Ogee and CX-West zones); 2,505,000 tons, 0.454 opt Au (measured and indicated resource); 3,374,500 tons, 0.340 opt Au (inferred resource)</p> <p>2012: 1,738,738 tons, 0.369 opt Au, Au (proven and probable reserve cut-off grade, 0.2 opt Au); 25,466,300 tons, 0.039 opt Au, 981,700 oz Au (measured and indicated resource, Mag and South Zone open pit deposits); 824,000 tons, 0.034 opt Au, (inferred resource, Mag Pit and S); 0.01 opt Au cut-off grade, Mag and South Zone open pit deposits); 2,919,800 tons, 0.368 opt Au, (measured and indicated resource, underground deposits); 2,236,200 tons, 0.378 opt Au, (inferred resource)</p> <p>2014: 389,000 tons, 0.402 opt Au, (proven and probable reserves, underground); 798,000 tons, 0.43 opt Au, (measured and indicated resource, underground); 1,672,000 tons 0.419 opt Au, (inferred resource); Mag Pit: 7,170,000 tons, 0.0451 opt Au, (proven and probable reserve); 25,466,000</p>	<p>1980: 56,000 oz Au</p> <p>1986-88: 189,864 oz Au</p> <p>1989: 72,489 oz Au (includes Preble)</p> <p>1990-91: 112,022 oz Au</p> <p>1992-94: 145,210 oz Au, 12,700 oz Ag</p> <p>1995: 44,854 oz Au</p> <p>1996-98: 128,935 oz Au, 7,990 oz Ag</p> <p>1999: 11,975 oz Au, 442 oz Ag</p> <p>2000: 1,116 oz Au, 31 oz Ag</p> <p>2001: 679 oz Au</p> <p>2012: 1,378 oz Au</p> <p>2013: 5,183 oz Au</p> <p>2014: 3,780 oz Au</p> <p>2015: 16,898 oz Au</p>	Comus Formation	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	tons. 0.039 opt Au, (measured and indicated resource); 824,000 tons. 0.034 opt Au, (measured and indicated resource) 2015: Mag pit: 7,160,000 tons, 0.0451 opt Au, 322,644 Au (proven and probable reserve); 23,335,000 tons, 0.039 opt Au, (measured and indicated Resource); 533,000 tons 0.038 opt Au, (inferred resource, South Zone pit: 2,131,000 tons, 0.033 opt Au, (measured and indicated resource); 291,000 tons. 0.028 opt Au, (inferred resource)			
Preble (Potosi district)	1985: 1,800,000 tons, 0.062 opt Au 1986: 3,160,000 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: 4,100,000 oz Au (additional geologic resource of 100,000 Au in refractory material) 1992: 3,260,000 oz Au (reserve) 1993: see Twin Creeks	1990-92: 296,000 oz Au 1993: see Twin Creeks	Ordovician	Eocene?
Sandman (Tenmile district)	2007: 8,033,000 tons, 0.034 opt Au (measured and indicated resource); 1,418,000 tons, 0.027 opt Au (inferred resource) 2012: 1,300,000 tons, 0.036 opt Au, 0.199 opt Ag, (indicated resource) 1,100,000 tons, 0.063 opt Au, 0.167 opt Ag, (inferred resource) 2013: 1,300,000 tons, 0.036 opt Au, 0.2 opt Ag (mineralized material)			
Sleeper (Awakening district)	1985: 4,200,000 tons, 0.13 opt Au, 0.73 opt Ag 1989: 1,975,000 oz Au 1990: 44,100,000 tons, 0.038 opt Au, 0.152 opt Ag 1999: 2,100,000 oz Au at average grade of 0.025 opt Au; 18,100,000 oz Ag at average grade of 0.208 opt Ag 2008: 29,718,000 tons, 0.025 opt Au (indicated resource) 22,046,000 tons, 0.017 opt Au 2011 (oxide): 47,167,350 tons, 0.011 opt Au, 0.12 opt Ag, (measured and indicated resource); 14,541,139 tons, 0.009 opt Au, 0.1 opt Ag, (inferred resource) 2011 (sulfide): 143,269,803 tons, 0.015 opt Au, 0.14 opt Ag, (measured and indicated resource); 75,409,000 tons, 0.013 opt Au, (inferred resource) 2012 (oxide): 79,798,000 tons, 0.008 opt Au, 0.11 opt Ag, (measured and indicated resource) 32,667,000 tons, 0.007 opt Au, 0.093 opt Ag, (inferred resource) 2012 (sulfide): 280,614,000 tons, 0.01 opt Au, (measured and indicated resource); 188,960,000 tons, 0.008 opt Au, 0.083 opt Ag, (inferred resource) 2012 (alluvial): 168,000 tons, 0.059 opt Au (mine dumps): 24,707,000 tons, 0.009 opt Au 0.07 opt Ag, (inferred resource) 2015: Global Resource: 324,517,000 tons, 0.011 opt Au, 0.096 opt Ag, (measured and indicated resource) 266,540,000 tons, 0.0093 opt Au, 0.055 opt Ag, (inferred resource)	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 2002: 130 oz Au, 263 oz Ag	Miocene "latite" flows and dikes, silicic ash-flow tuff, Triassic slate and phyllite	16.1 Ma
Trenton Canyon (includes Valmy and North Peak) (Buffalo Valley district)	1994 oxide resource: 14,600,000 tons, 0.035 opt Au, 1999: 995,000 tons, 0.021 opt Au (North Peak); 10,800,000 tons, 0.022 opt Au (Valmy) 2015: Valmy: 350,000 oz Au (inferred mineral resource)	2000: included with Lone Tree 2001: 24,228 oz Au, 2,996 oz Ag 2002: 3,685 oz Au, 742 oz Ag 2006: 1,937 oz Au, 38 oz Ag 2007: 1,768 oz Au, 360 oz Ag		
Trout Creek (Battle Mountain district)	1989: 50,000 oz Au			

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Twin Creeks (Chimney and Rabbit Creeks) (Potosi district)	<p>1993: 5,700,000 oz Au 1999: 87,100,000 tons, 0.079 opt Au (proven and probable reserve) 2000: 75,200,000 tons, 0.086 opt Au (proven and probable reserve) 2002: 47,600,000 tons, 0.081 opt Au (proven and probable reserves); 55,000,000 tons, 0.057 opt Au (measured and indicated mineralized material); 1,800,000 tons, 0.046 opt Au (inferred mineralized material) 2003: 14,000,000 tons, 0.085 opt Au (proven reserve); 48,200,000 tons, 0.074 opt Au (probable reserve); 8,000,000 tons, 0.051 opt Au (measured material); 34,800,000 tons, 0.051 opt Au (indicated material); 1,700,000 tons, 0.041 opt Au (inferred material) 2004: 61,800,000 tons, 0.075 opt Au (proven and probable reserve); 15,300,000 tons, 0.077 opt Au (indicated material); 800,000 tons, 0.043 opt Au (inferred material) 2005: 61,200,000 tons, 0.074 opt Au (proven and probable reserve); 19,900,000 tons, 0.049 opt Au (measured and indicated resource); 3,100,000 tons, 0.033 opt Au (inferred resource) 2006: 64,800,000 tons, 0.077 opt Au (proven and probable reserves); 25,000,000 tons, 0.058 opt Au (measured and indicated resource); 3,100,000 tons, 0.033 opt Au (inferred resource) 2007: 52,100,000 tons, 0.078 opt Au (proven and probable reserve); 21,000,000 tons, 0.063 opt Au (measured and indicated resource); 2,600,000 tons, 0.030 opt Au (inferred resource) 2008: 51,700,000 tons, 0.077 opt Au (proven and probable reserves); 31,100,000 tons, 0.051 opt Au (measured and indicated resource); 10,800,000 tons, 0.018 opt Au (inferred resource) 2009: 50,200,000 tons, 0.077 opt Au (proven and probable reserves); 35,000,000 tons, 0.050 opt Au (measured and indicated resource); 11,300,000 tons, 0.018 opt Au (inferred resource) 2010: 57,800,000 tons, 0.076 opt Au (proven and probable reserve); 37,900,000 tons, 0.039 opt Au (measured and indicated resource); 12,000,000 tons, 0.0194 opt Au (inferred resource) 2011: 48,700,000 tons, 0.078 opt Au (proven and probable reserve); 46,000,000 tons, 0.045 opt Au (measured and indicated resource); 13,500,000 tons, 0.026 opt Au (inferred resource) 2012: 58,300,000 tons, 0.058 opt Au (proven and probable reserve); 41,900,000 tons, 0.059 opt Au, (measured and indicated resource); 3,900,000 tons, 0.061 opt Au (inferred resource) 2013: 39,400,000 tons, 0.06 opt Au, 2,360,000 oz Au (proven and probable reserve, 73% metallurgical recovery); 32,000,000 tons, 0.069 opt Au (mineralized material;) stockpiles: 33,900,000 tons, 0.067 opt Au, (proven reserve, stockpiles) 2014: 33,600,000 tons, 0.064 opt Au, (proven and probable reserve); 38,500,000 tons, 0.059 opt Au (mineralized material); stockpiles: 36,100,000 tons, 0.065 opt Au, (proven reserve, stockpiles) 2015: 29,200,000 tons, 0.058 opt Au, (proven and probable reserve recovery); 39,400,000 tons, 0.057 opt Au (mineralized material); 35,600,000 tons, 0.064 opt Au, (proven reserve, stockpiles) 2016: 29,900,000 tons, 0.053 opt Au, (proven and probable reserve); 31,600,000 tons, 0.062 opt Au (mineralized material); 32,000,000 tons, 0.063 opt Au, (proven reserve, stockpiles)</p>	<p>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 2002: 786,313 oz Au, 158,401 oz Ag 2003: 697,607 oz Au, 128,535 oz Ag 2004: 352,810 oz Au, 99,472 oz Ag 2005: 267,620 oz Au, 144,172 oz Ag 2006: 354,484 oz Au, 43,467 oz Ag 2007: 488,457 oz Au, 99,344 oz Ag 2008: 512,190 oz Au, 57,913 oz Ag 2009: 437,830 oz Au, 84,159 oz Ag 2010: 452,744 oz Au, 211,935 oz Ag 2011: 484,449 oz Au, 290,802 oz Ag 2012: 408,751 oz Au, 79,574 oz Ag 2013: 406,847 oz Au, 88,184 oz Ag 2014: 385,169 oz Au, 252,836 oz Ag 2015: 470,759 oz Au, 143,631 oz Ag 2016: 367,528 oz Au, 227,814 oz Ag</p>	Paleozoic	41-43 Ma
Winnemucca Mountain (Winnemucca district)	<p>1998: 130,000 to 140,000 oz Au (proven reserve), 300,000 oz Au (indicated resource)</p>			

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Austin Gold Venture (Birch Creek district)	1986: 1,750,000 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: Overall Battle Mountain complex): 60,200,000 tons, 0.036 opt Au, (resource including reserves); 46,600,000 tons, 0.040 opt Au (reserve) 1999 (Phoenix): 5,680,000 oz Au (proven and probable reserve); 1,500,000 oz Au (additional mineralization) 2000: 175,200,000 tons, 0.034 opt Au (proven and probable reserve)	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
Battle Mountain Ridge (Battle Mountain district)	<2011: 2,900,000 tons, 0.023 opt Au (resource)			
Buffalo Valley Gold Project (Buffalo Valley district)	1988: 1,500,000 tons, 0.05 opt Au 1994: 4,800,000 tons, 0.07 opt Au 1997: 600,106 oz Au (resource); 100,797 oz Au, (other mineralized material) 2010: 18,300,000 tons, 0.020 opt Au (indicated resource); 900,000 tons, 0.017 opt Au (inferred resource) 2011: 16,500,000 tons, 0.019 opt Au (indicated resource); 2,900,000 tons, 0.014 opt Au (inferred resource) 2012: 23,100,000 tons, 0.063 opt Au 470,000 oz Au (indicated resource); 715,000 tons, 0.035 opt Au 14,300 oz Au (inferred resource) 2013: 22,100,000 tons, 0.019 opt Au (mineralized material) 2014: 15,500,000 tons, 0.019 opt Au (mineralized material)	1988-90: 39,668 oz Au		Eocene?
Chem (Iowa Canyon district)	2004: 2,500,000 tons, 0.013 opt Au, 3 (resource)	Tertiary rhyolite	tuff	
Colorback (Bullion district)	1996: 297,000 tons, 0.038 opt Au (geologic resource)		Sedimentary	
Copper Basin (Battle Mountain district)	1996: 638,000 oz Au, 1,228,000 oz Ag, 164,000,000 lbs Cu (estimated endowment) 2012: 1,200,000 oz Au, 2,300,000 oz Ag, 164,000,000 lbs Cu (resource)	1870-1987: Intermittent N/A		
Cortez Mine Complex (Bullion and Cortez districts) CJV includes original Cortez Mine, Pipeline, South Pipeline, Gold Acres (2007 and on includes Cortez Hills)	1968: 3,600,000 tons, 0.279 opt Au (Cortez deposit) 1987: 4,800,000 tons, 0.105 opt Au 1999: 189,400,000 tons, 0.050 opt Au (proven and probable reserve); 119,100,000 tons, 0.035 opt Au mineralized material 2000: 151,300,000 tons, 0.047 opt Au (proven and probable); 60,000,000 tons, 0.047 opt Au (mineralized material) 2001: 191,100,000 tons, 0.044 opt Au (proven and probable reserve); 76,600,000 tons, 0.040 opt Au (resource) 2002: 229,300,000 tons, 0.034 opt Au (proven and probable reserve); 281,700,000 tons, 0.025 opt Au (measured and indicated resource) 2003: 88,131,000 tons, 0.061 opt Au (proven reserves); 49,623,000 tons, 0.045 opt Au (probable reserve); 44,617,000 tons, 0.046 opt (measured resource); 130,580,000 tons, 0.027 opt Au (indicated resource); 18,023,000 tons,	1942-84: 2,400,000 tons, 0.13 opt Au; 2,000,000 tons, 0.041opt 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 2002: 1,081,677 oz Au 2003: 1,065,402 oz Au 2004: 1,051,197 oz Au 2005: 915,889 oz Au,	Roberts Mountains Formation, Wenban Limestone, Valmy Formation, quartz porphyry dikes	

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cortez Mine Complex (cont.)	<p>0.047 opt Au (inferred resource)</p> <p>2004: 193,560,000 tons, 0.046 opt Au (proven and probable reserve); 188,860,000 tons, 0.028 opt Au (measured and indicated); 20,500,000 tons, 0.024 opt Au inferred resource</p> <p>2005: 275,800,000 tons, 0.040 opt Au (proven and probable reserve); 309,000,000 tons, 0.033 opt Au (measured and indicated resource); 39,200,000 tons, 0.058 opt Au (inferred resource)</p> <p>2006: 184,000,000 tons, 0.061 opt Au (proven and probable reserve); 44,470,000 tons, 0.041 opt Au (measured and indicated resource); 6,540,000 tons, 0.131 opt Au (inferred resource)</p> <p>2007: 144,090,000 tons, 0.080 opt Au (proven and probable reserve); 76,240,000 tons, 0.045 opt Au (measured and indicated resource); 19,340,000 tons, 0.153 opt Au (inferred resource)</p> <p>2008: 222,125,000 tons, 0.060 opt Au (proven and probable reserve); 81,088,000 tons, 0.046 opt Au (measured and indicated resource); 29,912,000 tons, 0.129 opt Au (inferred resource)</p> <p>2009: 243,669,000 tons, 0.058 opt Au (proven and probable reserve); 46,622,000 tons, 0.074 opt Au (measured and indicated resource); 30,128,000 tons, 0.144 opt Au (inferred resource)</p> <p>2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserve); 60,463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource)</p> <p>2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserve); 60,463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource)</p> <p>2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserve); 60,463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource)</p> <p>2011: 306,879,000 tons, 0.047 opt Au, (proven and probable reserve); 54,391,000,000 tons, 0.069 opt Au, (measured and indicated resource); 21,881,000 tons, 0.074 opt Au, (inferred resource)</p> <p>2012: 306,190,000 tons, 0.049 opt Au (proven and probable reserve); 50,943,000 tons, 0.053 opt Au, (measured and indicated resource); 25,174,000 tons, 0.065 opt Au, (inferred resource)</p> <p>2013: 207,710,000 tons, 0.053 opt Au (proven and probable reserve); 100,465,000 tons, 0.049 opt Au, (measured and indicated resource); 17,344,000 tons, 0.054 opt Au, (inferred resource)</p> <p>2014: 169,557,000 tons, 0.068 opt Au (proven and probable reserve); 42,907,000 tons, 0.082 opt Au, (measured and indicated resource); 26,047,000 tons, 0.052 opt Au, (inferred resource)</p> <p>2015: 168,908,000 tons, 0.067 opt Au (proven and probable reserves); 48,180,000 tons, 0.045 opt Au, (measured and indicated resource); 20,700,000 tons, 0.042 opt Au, (inferred resource); 3,814,000 tons, 0.115 opt Au, (proven reserves, stockpiles) (proven and probable reserve);, 34,542,000 tons, 0.062 opt Au, (measured and indicated resource); 15,990,000 tons, 0.048 opt Au, (inferred resource)</p>	<p>52,160 oz Ag</p> <p>2006: 408,255 oz Au, 25,065 oz Ag</p> <p>2007: 534,173 oz Au, 47,240 oz Ag</p> <p>2008: 464,253 oz Au (6,804 oz Au from Cortez Hills), 69,278 oz Ag</p> <p>2009: 517,512 oz Au, 74,080 oz Ag</p> <p>2010 (open pit): 791,978 oz Au, 45,477 oz Ag</p> <p>2010 (underground): 47,988 oz Au</p> <p>2011 (open pit): 1,119,910 oz Au, 19,721 oz Ag</p> <p>2011 (underground): 301,129 oz Au, 4,775 oz Ag</p> <p>2012 (open pit): 939,004 oz Au, 25,155 oz Ag</p> <p>2012 (underground): 430,962 oz Au, 9,986 oz Ag</p> <p>2013 (open pit, includes Pipeline): 825,196 oz Au, 22,187 oz Ag</p> <p>2013 (underground): 545,852 oz Au, 13,666 oz Ag</p> <p>2014 (Cortez Hills and Pipeline open pits): 506,274 oz Au, 17,739 oz Ag</p> <p>2014 (Cortez Hills underground): 395,093 oz Au, 13,464 oz Ag</p> <p>2015: (Cortez Hills and Pipeline open pit): 520,060 oz Au, 17,602 oz Ag</p> <p>2015 (Cortez Hills underground): 478,940 oz Au, 16,210 oz Ag</p> <p>2016: (Cortez Hills and Pipeline open pit): 850,312 oz Au, 22,565 oz Ag</p> <p>2016 (Cortez Hills underground): 338,275 oz Au, 6,294 oz Ag</p>		

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cortez Hills (Cortez district)	2005: 71,300,000 tons, 0.079 opt Au 5,545,000 oz Au (proven and probable reserve); 5,500,000 tons, 0.42 opt Au, measured and (indicated resource, underground); 13,800,000 tons, 0.13 opt Au, (inferred resource) 2006: 8,500,000 oz Au (proven and probable reserve) 2008: 15,620,000 tons, 0.127 opt Au, 1, (proven reserve); 128,150,000 tons, 0.074 opt Au, (probable reserve) 2010 (open pit): 31,531,000 tons, 0.139 opt Au (proven and probable reserve) 2010 (underground, breccia zone): 2,251,000 tons, 0.595 opt Au (proven and probable reserve) 2010 (underground, middle zone): 3,173,000 tons, 0.370 opt Au (proven and probable reserve) 2011 (open pit): 32,591,000 tons, 0.131 opt Au, (proven and probable reserve); 237,000 tons, 0.08 opt Au, (measured and indicated resource); 1,351,000 tons, 0.025 opt gold, (inferred resource) 2011 (underground): 6,516,000 tons, 0.446 opt Au, 2,908,000 oz Au (proven and probable reserve); 6,476,000 tons, 0.379 opt Au (measured and indicated resource); 3,197,000 tons, 0.337 opt gold, (inferred resource) 2015 (open pit): 18,702,000 tons, 0.117 opt Au, (proven and probable reserve); 3,440,000 tons, 0.04 opt gold, (Breccia Zone, inferred resource); 2015 (underground): 12,912,000 tons, 0.347 opt Au, (proven and probable reserve); 3,172,000 tons, 0.297 opt Au, (measured and indicated resource); 1,341,000 tons, 0.035 opt gold, (inferred resource)	2010-2016: Production combined with Cortez Mine Complex	Roberts Mountains Formation, Wenban Limestone	
Cortez NW Deepes (Cortez district)	2011: 4,689,000 tons, 0.047 opt Au, (measured and indicated resource); 3,951,000 tons, 0.065 opt gold, (inferred resource)		Roberts Mountains Formation, Hanson Creek Formation	
Cortez Pits (Cortez district)	Pre-2015: See Cortez Mine Complex 2015: 4,083,000 tons, 0.056 opt Au, (measured and indicated resource); 1,283,000 tons, 0.02 opt Au, (inferred resource),	1968-1993: See Cortez		
Crescent Pit (Bullion district)	1994: 1,970,000 tons mill grade, 0.125 opt Au, 2,200,000 tons heap-leach, 0.029 opt Au 1997: included in Cortez Mine Complex			
Crescent Valley (Bullion district)	1994: placer reserves: 8,000,000 cu yd, 0.031 oz Au/cu yd 1995: placer resource: 6,000,000 cu yd, 0.03 oz Au/cu yd			
Crossroads (Bullion district)	2010: 125,842,000 tons, 0.027 opt Au (proven and probable reserve) 2011: 129,391,000 tons, 0.03 opt Au, 3,937,000 oz Au (proven and probable reserve, 0.004-0.075 opt Au cut-off grade); 23,895,000 tons, 0.015 opt Au, 370,000 oz Au (measured and indicated resource); 7,273,000 tons, 0.015 opt gold, (inferred resource) 2015: 94,749,000 tons, 0.033 opt Au, (proven and probable reserve); 19,030,000 tons, 0.014 opt Au, (measured and indicated resource); See Pipeline for inferred resource			
Dean (Lewis district)	1995: 11,000 oz Au (proven reserves); 240,000 oz Au (resource_			
Elder Creek Project/Shoshone (Lewis district)	1989: 91,500 oz Au 1990: 1,500,000 tons, 0.041 opt Au	1990-91: 20,102 oz Au	Valmy Formation	Cretaceous or Eocene

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Fire Creek (northeast of Bullion district)	1982: 350,000 tons, 0.06 opt Au 2005: 1,779,196 tons, 0.328 opt Au (indicated resource) 2006: 1,961,195 tons, 0.576 opt Au (indicated resource) 2008: 2,654,650 tons, 0.479 opt Au (indicated resource); 1,184,202 tons, 0.396 opt Au (inferred resource) 2011: 2,364,745 tons, 0.513 opt Au, (indicated resource); 611,824 tons, 0.366 opt Au, (inferred resource) 2011: 5,705,560 tons, 0.289 opt Au, (indicated resource); 1,910,008 tons, 0.240 opt Au, (inferred resource) 2014 (Joyce, Karen, Vonnice Veins): 158,800 tons, 1.285 opt Au, 0.927 opt Ag, (proven and probable reserve); ; (Far North, Main, 2014 (North, South, West Zones): 377,400 tons, 1.1 opt Au, 0.86 opt Ag, (measured and indicated resource); 840,000 tons, 0.43 opt gold, 0.38 opt Ag, (inferred resource) 2015: 240,000 tons, 1.311 opt Au, 0.972 opt Ag, (proven and probable reserve); 462,500 tons, 1.011 opt Au, 0.783 opt Ag, (measured and indicated resource); 1,064,900 tons, 0.41 opt gold, 0.319 opt Ag, (inferred resource) 2016: 240,000 tons, 1.213 opt Au, 0.94 opt Ag, (proven and probable reserve); 526,000 tons, 0.948 opt Au, 0.78 opt Ag, (measured and indicated resource); 931,000 tons, 0.538 opt Au, 0.48 opt Ag, (inferred resource)	1983-84: 767 oz Au 2012: 191 oz Au, 286 oz Ag 2014: 65,655 oz Au, 62,911 oz Ag 2015: 77,055 oz Au, 92,114 oz Ag 2016: 101,284 oz Au; 80,593 oz Ag	basaltic andesite	Miocene
Fortitude Complex (Battle Mountain district)	1984: 16,000,000 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: <i>see</i> Battle Mountain Complex 2001: <i>see</i> Phoenix	Battle Formation, Antler Peak Limestone Pumpernickel Formation	37 Ma
Fortitude Extension (Battle Mountain district)	1992: 500,000 oz Au 1993: 900,000 oz Au (geologic resource) 1996: included in Battle Mountain Complex			
Gap (Bullion district)	2010: 53,571,000 tons, 0.015 opt Au (proven and probable reserve) 2011: 48,151,000 tons, 0.016 opt Au, 772,000 oz Au (proven and probable reserve); 9,259,000 tons, 0.013 opt Au, (measured and indicated resource); 2,504,000 tons, 0.013 opt gold, (inferred resource) 2015: 2,569,000 tons, 0.02 opt Au, (measured and indicated resource);	2011: Production combined with Cortez Joint Venture	Wenban Limestone	
Gold Acres (Bullion district)	2011: 5,032,000 tons, 0.097 opt Au, (measured and indicated resource); 778,000 tons, 0.092 opt Au, 72,000 oz Au (inferred resource) 2015: 3,479,000 tons, 0.105 opt Au, 367,000 oz Au (measured and indicated refractory resource, 0.062 305,000 tons, 0.103 opt Au, (inferred refractory resource)	1942-1993: Production included with Cortez Joint Venture	Roberts Mountains Formation, Wenban Limestone, Valmy Formation	

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Hilltop (Hilltop district)	1984: 10,300,000 tons, 0.073 opt Au 1989: 10,000,000 tons, 0.049 opt Au 2005: 121,000,000 tons, 0.019 opt Au (measured and indicated resource)		Valmy Formation	Oligocene?
Independence (Battle Mountain district)	2010: 14,802,000 tons, 0.014 opt Au, 0.27 opt Ag (measured and indicated oxide resource) 5,997,000 tons, 0.011 opt Au, 0.066 opt Ag (inferred oxide resource); 4,182,000 tons, 0.19 opt Au (inferred sulfide resource) 2011 Shallow Deposit: 16,056,000 tons, 0.014 opt Au; 0.236 opt Ag, (proven and probable reserve); 4,592,000 tons, 0.01 opt Au, 0.046 opt Ag, (inferred resource); Deep Skarn Deposit: 4,182,000 tons, 0.19 opt gold, (inferred resource)			
Iron Butte (South of Warm Springs district)	2009: 21,180,858 tons, 0.014 opt Au, 0.26 opt Ag, (resource) 2010 Red Ridge Zone: 14,072,175 tons, 0.019 opt Au (oxide resource); Au; 9,661,356 tons, 0.015 opt Au, (sulfide resource) North Zone: Oxide: 641,179 tons, 0.019 opt Au, (oxide resource); 6,182,878 tons, 0.019 opt Au (sulfide resource)			
Klondike (Kingston District)	1989: 100,000 oz Au equivalent			
McCoy/Cove (McCoy district)	1981: 2,500,000 tons, 0.08 opt Au, 1 opt Ag (McCoy) 1987: 14,000,000 tons, 0.05 opt Au (McCoy); 4,000,000 oz Au, 25,000,000 oz Ag (Cove) 1989: 2,900,000 oz Au, 128,000,000 oz Ag (proven and probable reserves) 3,500,000 oz Au, 1,500,000 oz Ag (geologic resource) 1999: 11,800,000 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: 4,700,000 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) 2010 (Helen Zone): 684,855 tons, 0.77 opt Au (inferred resource) 2011 (Helen Zone): 391,600 tons, 0.59 opt Au (inferred resource) 2013 (Helen Zone): 468,600 tons, 0.31 opt Au, (indicated resource); 973,600 tons, 0.29 opt Au, (inferred resource)	1986: 50,000 oz Au 1987-98: 3,046,660 oz Au, 85,790,000 oz Ag 1999: 124,500 oz Au, 8,430,000 oz Ag 2000: 162,784 oz Au, 2001: 94,633 oz Au 6,451,425 oz Ag 2002: 33,142 oz Au, 1,987,421 oz Ag 2003: 4,699 oz Au, 706 oz Ag 2004: 8,454 oz Au 64,335 oz Ag 2005: 2,740 oz Au, 776 oz Ag 2006: 2,939 oz Au, 596 oz Ag	Panther Canyon Formation (conglomerate, sandstone), Augusta Mountain Fm. (limestone) granodiorite	Eocene
Mud Springs (Bald Mtn. Zone) (Bullion district)	1993: 42,000 oz Au (geologic resource)			
Mule Canyon (Argenta district)	1992: 8,500,000 tons, 0.136 opt Au 1996: 9,000,000 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 2002: 13,444 oz Au, 2,708 oz Ag 2003: 8,086 oz Au, 1,490 oz Ag 2004: 2,289 oz Au, 645 oz Ag 2005: 47,896 oz Au, 5,449 oz Ag 2006: 30,732 oz Au, 3,248 oz Ag 2007: 22,466 oz Au, 4,565 oz Ag	basalt and basaltic andesite	15-16 Ma

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Pediment (Cortez district)	2010: 47,316,000 tons, 0.024 opt Au (proven and probable reserve) 2011: 49,469,000 tons, 0.024 opt Au, (proven and probable reserve); 805,000 tons, 0.008 opt Au, (inferred resource) 2015: 21,268,000 tons, 0.027 opt Au, (proven and probable reserve); 3,851,000 tons, 0.03 opt Au, 125,000 oz Au (inferred resource)			
Phoenix (Battle Mountain district)	2001: 174,200,000 tons, 0.034 opt Au (proven and probable reserves); 156,300,000 tons, 0.17% Cu (proven and probable reserves); 73,800,000 tons, 0.026 opt Au (mineralized material); 99,600,000 tons, 0.14% Cu (mineralized material) 2002: 174,200,000 tons, 0.034 opt Au (probable reserves); 156,300,000 tons, 0.16 % Cu (probable reserves); 1,500,000 tons, 0.033 opt Au (measured and indicated mineralized material); 72,300,000 tons, 0.026 opt Au (inferred mineralized material); 63,500,000 tons, 0.14 % Cu (inferred mineralized material) 2003: 175,700,000 tons, 0.035 opt Au (probable reserves); 94,700,000 tons, 0.022 opt Au (indicated material); 18,900,000 tons, 0.029 opt Au (inferred material); 85,200 tons, 0.12% Cu (indicated material); 14,300 tons, 0.11% Cu (inferred material) 2004: 248,000,000 tons, 0.034 opt Au (proven and probable reserves); 33,900,000 tons, 0.022 opt Au (indicated material); 34,900,000 tons, 0.028 opt Au (inferred material); 216,700,000 tons, 0.15% Cu probable; 32,000,000 tons, 0.21% Cu (indicated); 29,800,000 tons, 0.17% Cu (inferred) 2005: 308,400,000 tons, 0.029 opt Au (proven and probable reserves); 22,200,000 tons, 0.023 opt Au (measured and indicated resource); 16,500,000 tons, 0.026 opt Au (inferred resource) 2006: 295,200,000 tons, 0.027 opt Au (proven and probable reserves); 92,800,000 tons, 0.017 opt Au (measured and indicated resource) 23,200,000 tons, 0.022 opt Au (inferred resource) 2007: 278,100,000 tons, 0.027 opt Au (proven and probable reserves); 92,800,000 tons, 0.017 opt Au (measured and indicated resource); 22,900,000 tons, 0.022 opt Au (inferred resource) 2008: 299,800,000 tons, 0.021 opt Au (proven and probable reserves); 61,600,000 tons, 0.015 opt Au (indicated resource); 34,000,000 tons, 0.019 opt Au (inferred resource) 2009: 285,000,000 tons, 0.020 opt Au (probable reserves); 158,400,000 tons, 0.013 opt Au (indicated resource); 35,400,000 tons, 0.015 opt Au (inferred resource) 2010: 329,800,000 tons, 0.018 opt Au (probable reserve); 150,900,000 tons, 0.013 opt Au (indicated resource); 54,300,000 tons, 0.015 opt Au (inferred resource) 2011: 447,100,000 tons, 0.016 opt Au, 450,300,000 tons, 0.244 opt Ag, 109,980,000 oz Ag (proven and probable reserve); 216,400,000 tons, 0.012 opt Au, 0.173 opt Ag (indicated resource); 132,300,000 tons, 0.012 opt Au, 0.197 opt Ag (inferred resource) 2012: 439,900,000 tons, 0.017 opt Au, 443,200,000 tons, 0.254 opt Ag, (proven and probable reserve); 198,100,000 tons, 0.013 opt Au, 0.186 opt Ag, (measured and indicated resource); 117,200,000 tons, 0.012 opt Au, 0.202 opt Ag, (inferred resource); stockpiles: 2,300,000 tons, 0.089 opt Ag, (inferred resource)	2001: 5,641 oz Au, 6,468 oz Ag 2002: 6,134 oz Au, 1,236 oz Ag 2003: 5,444 oz Au, 1,003 oz Ag 2004: 7,887 oz Au, 2,224 oz Ag 2005: 6,406 oz Au, 1,156 oz Ag 2006: 67,394 oz Au, 38,112 oz Ag, 6,235,096 lbs Cu 2007: 181,313 oz Au, 664,787 oz Ag, 10,808,206 lbs Cu 2008: 175,259 oz Au, 1,040,563 oz Ag, 15,853,706 lbs Cu 2009: 218,732 oz Au, 1,212,153 oz Ag, 23,733,389 lbs Cu 2010: 214,142 oz Au, 921,350 oz Ag, 19,008,818 lbs Cu 2011: 205,658 oz Au, 1,152,312 oz Ag, 23,897,865 lbs Cu 2012: 158,843 oz Au, 1,325,200 oz Ag, 27,809,189 lbs Cu 2013: 202,055 oz Au, 1,550,346 oz Ag, 29,815,908 lbs Cu 2014: 189,474 oz Au, 1,653,459 oz Ag, 46,014,331 lbs Cu 2015: 183,371 oz Au, 986,159 oz Ag, 46,330,821 lbs Cu 2016: 176,758 oz Au, 1,175,126 oz Ag, 41,806,950 lbs Cu		Eocene

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Phoenix (cont.)	2013: 335,800,000 tons, 0.017 opt Au, 339,100,000 tons, 0.24 opt Ag, (proven and probable reserve) 174,800,000 tons, 0.011 opt Au, 0.21 opt Ag (mineralized material) 2014: 322,700,000 tons, 0.017 opt Au, 324,900,000 tons, 0.24 opt Ag, (proven and probable reserve) 49,500,000 tons, 0.019 opt Au, 0.22 opt Ag (mineralized material); stockpiles: 3,300,000 tons, 0.027 opt Au, (probable reserve) 2015: 288,300,000 tons, 0.017 opt Au, 289,500,000 tons, 0.25 opt Ag, (proven and probable reserve) 153,700,000 tons, 0.012 opt Au, 0.21 opt Ag (mineralized material); stockpiles: 3,200,000 tons, 0.028 opt Au, (proven reserve) 2016: 256,600,000 tons, 0.017 opt Au, 0.24 opt Ag, (proven and probable reserve); 178,100,000 tons, 0.021 opt Au, 0.21 opt Ag (mineralized material)			
Pipeline (Bullion district)	1991: 11,300,000 tons, 0.237 opt Au (geologic resource) 1996: 136,700,000 tons, 8,700,000 oz Au (measured resource, includes South Pipeline) 1997: included in Cortez Mine Complex 2010: 41,453,000 tons, 0.017 opt Au (proven and probable reserve) 2011: 35,704,000 tons, 0.02 opt Au, (proven and probable reserve, Pipeline/South Pipeline); 4,803,000 tons, 0.018 opt Au, (measured and indicated resource); 2,022,000 tons, 0.012 opt Au, (inferred resource) 2015: 17,455,000 tons, 0.017 opt Au, (proven and probable reserve); 15,848,000 tons, 0.019 opt Au, (measured and indicated resource); Combined Pipeline, Crossroads, Gap: 13,918,000 tons, 0.02 opt Au, (inferred resource)	1996-2009, 2013-15: included in Cortez Mine Complex	Roberts Mountains Formation	Eocene?
Robertson (Bullion district)	1988: 11,000,000 tons, 0.04 opt Au 1999: 254,678 oz Au (proven and probable reserves, Porphyry zone); 33,000 oz Au (measured, Lucky Boy); Altenburg Hill, 21,300 oz Au (measured, Altenburg Hill); 37,300 oz Au (inferred, Widows Mine); 91,400 oz Au (measured, Gold Pan) 2005-2006: 22,900,000 tons, 0.031 opt Au (measured and indicated resource) 9,408,000 tons, 0.046 opt Au (inferred resource) 2007: 91,300,000 tons, 0.025 opt Au (inferred resource) 2009: 178,924,188 tons, 0.0189 opt Au (inferred resource) 2011: 191,725,418 tons, 0.0143 opt Au (inferred resource)	1989: 3,700 oz Au	Valmy Formation	Eocene
Slaven Canyon property (Bateman Canyon district)	1994: 50,000 oz Au 2002: 1,600,000 tons, 0.043 opt Au			
South Pipeline (Bullion district)	1992: 900,000 tons, 0.082 opt Au (geologic resource) 1994: 76,500,000 tons, 0.048 opt Au (geologic resource)		Roberts Mountains Fm.	Eocene
Surprise (Battle Mountain district)	1987: 225,000 oz Au 1988-91: production and reserves included in Fortitude figures	1987: 2,000 oz Au	skarn	37 Ma
Toiyabe	1988: 813,400 tons, 0.066 opt Au 2009: 4,975,000 tons, 0.035 opt Au (indicated resource)	1988: 32,000 oz Au, 10,300 oz Ag 1990-91: 20,480 oz Au, 15,125 oz Ag	lower Paleozoic calcareous siltstone	Eocene?
Victorine (Kingston) (Kingston district)	1987: 1,480,000 tons, 0.208 opt Au (ore reserves) 1992: 915,000 tons, 0.304 opt Au 1995: 256,000 tons, 0.36 opt Au (proven and	1987-88: 39,247 oz Au, 88,207 oz Ag 1988-89: 25,131 oz Au	Cambrian to Ordovician Broad Canyon	

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	probable reserves); 31,160 oz Au (geologic resource) 2000: 120,000 oz Au (proven and probable reserves); 200,000 oz Au (possible reserves)		sequence	

LINCOLN COUNTY

Atlanta (Atlanta district)	1980: 1,100,000 tons, 0.08 opt Au, 1.6 opt Ag 1996: 300,000 oz Au, 3,000,000 oz Ag 2011 Main Zone: 6,391,000 tons, 0.047 opt Au, 0.25 opt Ag, (indicated resource) 4,330,227 tons, 0.031 opt Au, 133,662 oz Au, 0.56 opt Ag, (inferred resource) 2011: East-West Zones: 1,610,800 tons, 0.046 opt Au, 0.13 opt Ag, (indicated resource); 830,783 tons, 0.039 opt Au, 0.23 (inferred resource) 2012: 15,503,000 tons, 0.035 opt Au, 0.38 opt Ag, (measured and indicated resource); 18,538,000 tons, 0.029 opt Au, 0.213 opt Ag, (inferred resource)	1954: 22,000 tons ore 1960s: 27,000 tons ore 1975-1985: 1,500,000 tons, 0.09 opt Au, 1.25 opt 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 (Pennsylvania district)	1997: 50,000 tons, 0.03 opt Au, 0.80 opt Ag; (geologic reserves); 700,000 tons, 0.039 opt Au (geologic resource)		Tertiary diorite Tertiary andesite	
Easter and Delamar Project (Delamar district)	1994: 3,360,000 tons, 0.069 opt Au (geologic resource) 1995: 1,500,000 tons, 0.069 opt Au 2010 (Easter project): 2,640,000 tons, 0.0386 opt Au, 0.408 opt Ag (indicated resource) 200,000 tons, 0.0333 opt Au, 0.350 opt Ag (inferred resource)		Cambrian quartzite	Miocene
Gold Springs (Eagle Valley district)	2012: Grey Eagle zone: 3,196,276 tons, 0.02 opt Au 0.02 opt Ag, 632,617 oz Ag, (inferred resource) 2014: Grey Eagle zone): 8,450,000 tons, 0.018 opt Au, 0.2 opt Ag, (measured and indicated resource); 3,557,000 tons, 0.017 opt Au, 0.198 opt Ag, (inferred resource) 2015 (Grey Eagle zone: 10,052,000 tons, 0.016 opt Au, 0.19 opt Ag, (measured and indicated resource); 2,417,000 tons, 0.01 opt Au, 0.14 opt Ag, (inferred resource) 2017 Grey Eagle zone: 7,909,000 tons, 0.018 opt Au, 0.21 opt Ag, (measured and indicated resource); 965,000 tons, 0.013 opt Au, 0.19 opt Ag, (inferred resource, 0.007 opt Au cut-off grade); 2017 Thor zone: 391,000 tons, 0.028 opt Au, 0.53 opt Ag, (measured and indicated resource); 25,000 tons, 0.018 opt Au, 0.32 opt Ag, (inferred resource)		Miocene latite to andesite	
Groom Mine (Groom district)	1963: Reserve: 30,000 tons, 0.5 opt Ag, 4-5% Pb (reserve)	1915-26: Concentrates: 6,145 tons, 100,341 oz Ag, 5,926,371 lbs. Pb 1915-37: 5,737 tons ore valued at \$367,325	Sedimentary	

LYON COUNTY

Dayton Resource Area (Comstock Mine Project) (Silver City District)	2010: 4,970,000 tons, 0.034 opt Au, 0.244 opt Ag (measured and indicated resource) 1,210,000 tons, 0.026 opt Au, 0.298 opt Ag (inferred resource) 2011 (Alhambra, Dayton, and Kossuth Mines): 8,330,000 tons, 0.029 opt Au, 0.213 opt Ag (measured and indicated resource); ; 8,590,000 tons, 0.024 opt Au, 0.131 opt Ag (inferred resource)		Santiago Canyon tuff, Alta Formation	
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MAJOR PRECIOUS-METAL DEPOSITS, LYON COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Fire Angel (Como district)	1989: 5,600 oz Au (resource) 148,500 oz Au (geologic resource)			
Hercules (Como district)	1997 (Hydra-Hercules): 259,329 oz Au, 1,956,511 oz Ag (geologic resource) 2012: 7,703,522 tons, 0.0125 opt Au, 0.107 opt Ag, (indicated resource) 31,121,649 tons, 0.0121 opt Au, 0.135 opt Ag, (inferred resource)	Tertiary andesite		
Pine Grove (Wilson district)	1994: 2,500,000 tons, 0.061 opt Au 2008: 2,738,000 tons, 0.25 opt Au (inferred resource, Wilson deposit) 3,321,000 tons, 0.075 opt Au (inferred resource, Wheeler deposit) 2011 Wilson and Wheeler deposits: 5,316,000 tons, 0.033 opt Au (indicated resource); 4,136,000 tons, 0.028 opt Au (inferred resource) 2012 Wheeler: 2,867,000 tons, 0.038 opt Au, (measured and indicated resource, Wheeler) 96,000 tons, 0.027 opt Au, (inferred resource, Wheeler); 3,189,000 tons, 0.03 opt Au, (measured and indicated resource, Wilson); 732,000 tons, 0.026 opt Au, (inferred resource, Wilson) 2015 1,268,000 tons, 0.06 opt Au, (measured and indicated resource, Wheeler) 3,000 tons, 0.032 opt Au, (inferred resource, Wheeler); 959,000 tons, 0.05 opt Au, (measured and indicated resource, Wilson); 85,000 tons, 0.068 opt Au, (inferred resource, Wilson]			
South Comstock Joint Venture (Silver City district)	1994: 3,000,000 tons, 0.05 opt Au 1995: 100,000 oz Au			
Talapoosa (Talapoosa district)	1988: 2,500,000 tons, 0.041 opt Au, 0.53 opt Ag (resource, oxide); 14,900,000 tons, 0.03 opt Au 0.49 opt Ag (resource, sulfide) 1995: 29,900,000 tons, 0.026 opt Au, 0.4 opt Ag (proven and probable reserves); 45,000,000 tons 0.025 opt Au and 0.33 opt Ag, (geologic resource, includes reserve) 2010: 20,130,000 tons, 0.027 opt Au, 0.35 opt Ag, (measured and indicated resource, Bear Creek zone); 10,401,000 tons, 0.027 opt Au, 0.326 opt Ag, (inferred resource, Bear Creek zone); 2,921,000 tons, 0.028 opt Au, 0.4 opt Ag, (measured and indicated resource, Main zone oxide); 2,194,000 tons, 0.03 opt Au, 0.391 opt Ag, (inferred resource) 2013: 31,264,470 tons, 0.032 opt Au, 0.437 opt Ag, (measured and indicated resource.); 11,198,000 tons, 0.021 opt Au, 0.194 opt Ag, (inferred resource) 2015 Oxide: 4,538,050 tons, 0.036 opt Au, 0.51 opt Ag; Sulfide: 26,726,420 tons, 0.032 opt Au, 0.31 opt Ag, (measured and indicated resource); Oxide: 1,762,000 tons, 0.027 opt Au, 0.065 opt Ag; Sulfide: 9,436,000 tons, 0.02 opt Au,		andesite	Miocene

MINERAL COUNTY

Aurora Mine (Aurora district)	1989: 347,000 tons, 0.253 opt Au 1996: 900,000 tons, 0.1 opt Au 2003: see Esmeralda	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	andesite, rhyolite	10 Ma
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MAJOR PRECIOUS-METAL DEPOSITS, MINERAL COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Aurora Mine (cont.)		1997-98: 15,414 oz Au, 7,287 oz Ag		
Aurora Partnership (Aurora district)	1983: 1,500,000 tons, 0.129 opt Au, 0.3 opt Ag 1995: 230,000 tons, 0.208 opt Au (in portion of Humboldt vein system) 2003: see Esmeralda	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: 2,100,000 tons, 0.08 opt Au, 0.5 opt Ag 1988: 1,792,000 tons, 0.046 oz Au/ton 2000: 33,400,000 tons, 0.044 opt Au, 0.22 opt Ag (cumulative resource) 2005: 44,700,000 tons, 0.03 opt Au (measured and indicated resource) 34,800,000 tons, 0.02 opt Au (inferred resource) 2006: 8,235,000 tons, 0.022 opt Au, 0.158 opt Ag (measured and indicated resource, oxide) 35,157,000 tons, 0.032 opt Au, 0.164 opt Ag (measured and indicated resource, oxide, partially oxidized, sulfides) 16,909,000 tons, 0.028 opt Au, 0.106 opt Ag (inferred resource, oxide, partially oxidized, and sulfides) 2008: 29,560,000 tons, 0.045 opt Au, 0.273 opt Ag (measured and indicated resource, combined sulfide, partially oxidized and oxide); 36,161,000 tons, 0.027 opt Au, 0.196 opt Ag (inferred resource, combined sulfide, partially oxidized and oxide); 8,546,000, 0.028 opt Au, 0.222 opt Ag (measured and indicated resource, oxide and partially oxidized); 13,706,000 tons, 0.018 opt Au, 0.096 opt Ag (inferred resource, oxide and partially oxidized) 2009: 16,650,000 tons, 0.023 opt Au, 0.19 opt Ag (measured and indicated resource, oxide, partially oxidized) 2010: 14,294,000 tons, 0.023 Au (proven and probable reserve, in situ, oxide, partially oxidized); 16,650,000 tons, 0.023 Au (proven and probable reserve, in situ leach pads and dumps, oxide, partially oxidized); 35,643,000 tons, 0.040 opt Au (measured and indicated resource, in situ leach pads and dumps, oxide, partially oxidized, and sulfide); 50,225,000 tons, 0.022 opt Au (inferred resource, in situ leach pads and dumps, oxide, partially oxidized, and sulfide)	1981-84: 170,000 oz Au 1986-88: 116,256 oz Au 1989-90: 107,495 oz Au 52,401 oz Ag 2011: 3,171 oz Au 1,992 oz Ag 2012: 32,066 oz Au 13,871 oz Ag 2013: 10,556 oz Au 21,187 oz Ag 2014: 10,589 oz Au, 35,133 oz Ag 2015: 7,998 oz Au, 29,321 oz Au 2016: 617.9 oz Au, 1,510.54 oz Au	rhyolite flow dome, andesite flows, breccias, volcaniclastic rocks	5 Ma
Candelaria Mine (Candelaria district)	1982: 18,500,000 tons, 1.09 opt Ag, 0.009 opt Au 1988: 24,000,000 tons, 1.267 opt Ag, 0.011 opt Au 1999: 27,300,000 tons, 3.4 opt Ag (resource); additional 800,000 oz Ag in low-grade stockpile 2000: 48,000 oz Au and 45,400,000 oz Ag (indicated reserve)	1982: 1,700,000 oz Ag, 9,000 oz Au 1987: total production was 1000,000 oz Ag as of June 1987 1988-98: 30,6700,000 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: 24,100,000 tons 0.045 opt Au, 0.47 opt Ag 1989: 29,400,000 tons, 0.040 oz Au, 0.368 opt Ag (reserve); 59,300,000 tons, 0.0274 opt Au, 0.298 opt Ag (geologic resource) 1997: 447,000 oz Au, 3,900,000 oz Ag (resource)	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 2002: 82,584 oz Au, 695,248 oz Ag	rhyolite plugs, flows, tuffs, breccias	16 Ma

MAJOR PRECIOUS-METAL DEPOSITS, MINERAL COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Denton-Rawhide (cont.)		2003: 63,283 oz Au, 525,809 oz Ag 2004: 43,390 oz Au, 446,000 oz Ag 2005: 33,820 oz Au, 311,760 oz Ag 2006: 26,334 oz Au, 235,870 oz Ag 2007: 19,597 oz Au, 160,964 oz Ag 2008: 17,731 oz Au, 150,493 oz Ag 2009: 19,370 oz Au, 209,528 oz Ag 2010: 20,159 oz Au, 342,382 oz Ag 2011: 24,828 oz Au, 438,023 oz Ag 2012: 24,052 oz Au, 339,044 oz Ag 2013: 23,900 oz Au, 305,000 oz Ag 2014: 28,446 oz Au, 256,138 oz Ag 2015: 23,334 oz Au, 147,316 oz Ag 2016: 17,972 oz Au, 105,413 oz Ag		
Esmeralda (Aurora district)	2003: 30,710,500 tons, 0.031 opt Au (measured and indicated resource, open pit), 9,206,300 tons, 0.025 opt Au (open pit inferred resource, open pit); 192,152 tons, 0.50 opt Au (underground-minable resource, underground)	2009: 5,212 oz Au, 24,980 oz Ag	andesite rhyolite	10 Ma
Golden Mile (Bell district)	2007: 2,409,805 tons, 0.064 opt Au (resource)		Luning Formation	
Isabella Pearl (Santa Fe District)	2013: 3,013,100 tons, 0.064 opt Au, 191,400 oz Au (probable and probable reserves, run of mine, oxide, and sulfide)			
Marietta (Marietta district)	1990s Silver Glance: 853,000 tons, 0.036 opt Au, 1.07 opt Ag; Sultana Zone: 176,000 tons, 0.02 opt Au, 3.0 opt Ag; Endowment Mine: 45,000 tons, 0.15 opt Au, 20 opt Ag (estimated resources)			
Mina Gold (Bell district)	1997: Monster Zone: 1,770,000 tons, 0.055 opt Au (mineralized material; geologic resource)	1997: exploration	Tertiary feldspar porphyry	
Mindora (Garfield district)	1988: 1,000,000 tons, 0.037 opt Au and 1.78 opt Ag	1988: exploration		
Pamlico (Pamlico district)	1996: 900,000 tons, 0.05 opt Au, 45,000 oz Ag (resource)		Sedimentary	
Santa Fe (Santa Fe district)	1984: 8,000,000 tons, 0.032 opt Au, 0.26 opt Ag 1990: 6,800,000 tons, 0.035 opt Au, 0.241 opt Ag	1989-95: 345,499 oz Au, 710,629 oz Ag	Luning Formation	Miocene
Silver Gulch (Marietta district)	2006: 853,000 tons, 0.036 opt Au, 1.09 opt Ag (calculated resource)		Dunlap Formation	Tertiary
Sultan Group (Marietta district)	1990: 176,000 tons, 0.02 opt Au, 3 opt Ag (resource)			

NYE COUNTY

Baxter Springs (Manhattan district)	1988: 1,000,000 tons, 0.05 opt Au 1990: 5,000,000 tons, 0.05 opt Au (geologic resource)			
Bruner property, (Bruner district)	1992: Duluth Zone: 15,000,000 tons, 0.026 opt Au (geologic resource) 2015: Total: 11,350,000 tons, 0.024 opt Au, 0.2 opt Ag, (indicated resource); 2,700,000 tons, 0.026 opt Au, (inferred resource) Historic Resource Area: 3,860,000 tons, 0.026 opt Au, 0.28 opt Ag, (indicated resource); 385,000 tons, 0.012 opt Au, 0.11 opt Ag, (inferred resource); Penalas Zone: 7,500,000 tons, 0.024 opt Au, 0.16 opt Ag (indicated resource);	1931-1942 (Penalas): 80,100 tons ore, 26,000	Tertiary volcanic rocks	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bruner property (cont.)	1,540,000 tons, 0.024 opt Au, 0.092 opt Ag, (inferred resource) Paymaster Zone: 770,000 tons, 0.037 opt Au, 0.16 opt Ag (inferred resource) 2016: Total: 13,120,000 tons, 0.019 opt Au, 0.17 opt Ag, (indicated resource); 2,870,000 tons, 0.021 opt Au, 0.087 opt Ag, (inferred resource) Historic Resource Area: 460,000 tons, 0.02 opt Au, 0.23 opt Ag (indicated resource); 441,000 tons, 0.01 opt Au, 0.1 opt Ag, (inferred resource) Penalas Zone: 8,650,000 tons, 0.019 opt Au, 0.14 opt Ag, (indicated resource); 1,710,000 tons, 0.02 opt Au, 0.071 opt Ag, (inferred resource); Paymaster Zone: 716,500 tons, 0.032 opt Au 0.086 opt Ag, (inferred resource)			
Bullfrog (Bullfrog district)	1989: 18,600,000 tons, 0.097 opt Au 1996: 10,200,000 tons, 0.062 opt Au proven and probable reserve; 3,700,000 tons, 0.040 opt Au mineralized material 2016: Bullfrog North: 14,700,000 tons, 0.026 opt Au, Bullfrog Northeast/Mystery Hill: 990,000 tons, 0.023 opt Au, (mineral inventory)	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
Cimmaron (San Antone district)	2004: 1,730,600 tons, 0.035 opt Au (inferred material)			
Corcoran Canyon (Barcelona district)	2004: 1,774,700 tons, 0.025 opt Au, 5.11 opt Ag (indicated and inferred material)		rhyolitic ash-flow tuff	
Daisy (Bare Mountain district)	1993: 4,700,000 tons, 0.024 opt Au (geologic resource) 1998: 4,200,000 tons, 0.033 opt Au (proven and probable reserve)	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: 1,230,000 tons Au ore 1993: idle	1989-1991: Withheld	silicic volcanic rocks	Miocene
Golden Arrow (Golden Arrow district)	1997: 12,400,000 tons, 0.039 opt Au resource 2009: 12,172,000 tons, 0.024 opt Au, 0.33 opt Ag (measured and indicated resource, oxide and sulfide); 3,790,000 tons, 0.013 opt Au, 0.33 opt Ag (inferred resource, oxide and sulfide); 6,736,000 tons, 0.019 opt Au, 0.23 opt Ag (measured and indicated resource, oxide) 2,040,000 tons, 0.009 opt Au, 0.25 opt Ag (inferred resource, oxide)		Tertiary rhyolite tuff	
Gold Hill property (Round Mt. district)	1998: 306,620 oz Au, 4,871,890 oz Ag (potential resource) 2003: (included in Round Mt.)	2012-15: included with Round Mountain	rhyolite ash-flow tuff	26 Ma(?)
Gold Wedge property (Manhattan district)	2002: 104,706 oz Au, 0.494 opt Au (measured resource); 47,052 oz Au, 0.583 opt Au (indicated resource); 394,626 oz Au, 0.494 opt Au (inferred resource) 2005: 333,000 tons, 0.310 opt Au (measured and indicated resource)	2008: 406 oz dore		

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Longstreet property (Longstreet district)	1989: 400,000 tons, 0.024 opt Au, (geologic resource); 9,600,000 tons, 0.024 opt Au 2011: 4,369,836 tons, 0.024 opt Au, 0.66 opt Ag, (indicated resource); 867,050 tons, 0.024 opt Au, 0.66 opt Ag, (inferred resource) 2013: 4,844,000 tons, 0.019 opt Au, 0.456 opt Ag, (in-pit indicated resource); 336,000 tons, 0.014 opt Au, 0.425 opt Ag, (in-pit inferred resource)		rhyolitic volcanic rocks	Oligocene
Manhattan property (Manhattan district)	1989: 100,000 tons, 0.50 opt Au (geologic resource) 1997: 1,700,000 tons, 0.13 opt Au (proven and probable reserve)		Cambrian Gold Hill Formation	
Midway (Rye Patch district) Midway (cont.)	1997: 270,000 oz Au (preliminary resource) 2005: 5,526,000 tons, 0.039 opt Au (inferred resource) 2011: 114,000 tons, 0.3017 opt Au, (inferred resource)		Ordovician Palmetto Formation Tertiary volcanic rocks	
Montgomery Shoshone (Bullfrog district)	1988: 3,100,000 tons, 0.072 opt Au, 0.240 opt Ag 2015: 1,590,000 tons, 0.028 opt Au, (resource) 2016: Shallow: 1,130,000 tons, 0.031 opt Au, Deeper: 990,000 tons, 0.027 opt Au (mineral inventory)	Early 1900s: 70,000 oz Au Late 1990s: 220,000 oz Au	rhyolitic ash-flow tuff	9.5 Ma
Nevada Mercury (Bare Mountain district)	1994: 50,000 oz Au (geologic resource)			
North Bullfrog (Bullfrog district)	2008: 2,226,600 tons, 0.026 opt Au (indicated resource); 1,047,200 tons, 0.023 opt Au (inferred resource) 2011: 26,268,000 tons, 0.0085 opt Au, 0.011 opt Ag, (Jolly Jane and Mayflower oxide indicated resource); 515,380,000 tons, 0.0055 opt Au, 0.023 opt Ag, (Connection oxide and Mayflower and Sierra Blanca oxide and unoxidized inferred resource) 2012: 40,465,000 tons, 0.008 opt Au, 0.011 opt Ag, (Jolly Jane and Mayflower oxide indicated resource), 243,230,000 tons, 0.0053 opt Au, 0.023 opt Ag, (Connection Jolly Jane, Mayflower, and Sierra Blanca oxide inferred resource) 2014: Total: 28,352,000 tons, 0.008 opt Au, 0.013 opt Ag, (indicated resource); 205,011,000 tons, 0.006 opt Au, 0.019 opt Ag, (inferred resource); Yellowjacket: 4,070,000 tons, 0.03 opt Au, 0.16 opt Ag, (indicated resource); 20,287,000 tons, 0.027 opt Au, 0.18 opt Ag (inferred resource) Sierra Blanca: 1,019,000 tons, 0.006 opt Au, 0.038 opt Ag, (indicated resource) 195,904,000 tons, 0.006 opt Au, 0.02 opt Ag, (inferred resource); Mayflower: 6,024,000 tons, 0.013 opt Au, 0.012 opt Ag, (indicated resource); 34,000 tons, 0.006 opt Au, 0.007 opt Ag (inferred resource) Jolly Jane: 21,310,000 tons, 0.007 opt Au, 0.012 opt Ag, (indicated resource); 9,073,000 tons, 0.006 opt Au, 0.016 opt Ag, (inferred resource) 2015: Total Mill: 6,250,000 tons, 0.075 opt Au, 0.57 opt Ag, (measured and indicated resource) 1,630,000 tons, 0.028 opt Au, 0.14 opt Ag, (inferred resource); Total Heap Leach: 25,518,000 tons, 0.01 opt Au, 0.16 opt Ag, (measured and indicated resource); 194,400,000 tons, 0.0065 opt Au, 0.023 opt Ag, (inferred resource); Yellowjacket Mill: 4,250,000 tons, 0.087 opt Au, 0.67 opt Ag, (measured resource); 2,000,000 tons, 0.052 opt Au, 0.35 opt Ag, (indicated resource); 1,630,000 tons, 0.028 opt Au, 0.14 opt Ag, (inferred resource); Sierra Blanca and Yellowjacket Heap Leach: 340,000 tons, 0.0085 opt Au, 0.093 opt Ag, (measured resource); 14,000 tons, 0.0085 opt Au, 0.068 opt Ag, (indicated resource); 185,600,000 tons, 0.0064 opt Au, 0.023 opt Ag, 3 (inferred resource)		Miocene Crater Flat Tuff	

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
North Bullfrog (cont.)	Jolly Jane Heap Leach: 19,400,000 tons, 0.0085 opt Au, 0.015 opt Ag, (indicated resource); 8,760,000 tons, 0.007 opt Au, 0.018 opt Ag, (inferred resource); Mayflower Heap Leach: 5,650,000 tons, 0.016 opt Au 0.014 opt Ag, (inferred resource),			
Northumberland (Northumberland district)	1988: 12,000,000 tons, 0.06 opt Au 2005: 30,910,000 tons, 0.067 opt Au (measured and indicated resource) 4,381,000 tons, 0.091 opt Au (inferred resource) 2008: 36,518,000 tons, 0.06 opt Au Au (measured and indicated resource); 7,418,000 tons, 0.10 opt Au (inferred resource)	1939-42: 32,700 oz Au 1981-84: 950,000 tons/year 1988: 29,667 oz Au, 130,394 oz Ag 1981-1990: ~230,000 oz Au, 485,000 oz Ag	Roberts Mountains and Hanson Creek Formations, granodiorite, tonalite, quartz porphyry dikes	
Paradise Peak/Ketchup Flats pit (Fairplay district)	1984: 10,000,000 tons, 0.1 opt Au, 3 opt Ag 1989: 5,220,000 tons, 0.09 opt Au, 3.62 opt Ag, mill ore; 11.5200,000 tons, 0.036 opt Au, 0.445 opt Ag, leachable 1996: 5,000,000 tons, 0.022 opt Au, 0.2 opt Ag (Ketchup Flats)	1986-88: 560,000 oz Au, 8,500,000 oz Ag 1989-94: 1,054,084 oz Au, 15,600,000 oz Ag	rhyolite and andesite flows, ash-flow and air-fall tuffs	Miocene
Reward property (Bare Mountain district)	1998: 77,500 oz Au 2007: 5,181,340 tons, 0.0266 opt Au (proven and probable reserve); 6,423,571 tons, 0.0245 opt Au (measured and indicated resource) 2009: 7,147,721 tons, 0.0243 opt Au (proven and probable reserve) 2010: 7,709,000 tons, 0.023 opt Au (proven and probable reserve) 2011: 11,856,200 tons, 0.0224 opt Au, (proven and probable reserves) 18,055,000 tons, 0.0201 opt Au, (measured and indicated resource, 4,757,000 tons, 0.0138 opt Au, (inferred resource) 2012: 12,347,000 tons, 0.022 opt Au, (proven and probable reserves);18,055,000 tons, 0.02 opt Au; (measured and indicated resource); 4,757,000 tons, 0.014 opt Au, 65,600 oz Au (inferred resource) 2013: 10,731,000 tons, 0.023 opt Au, (proven and probable reserves); 20,294,000 tons, 0.019 opt Au, (measured and indicated resource) 7,071,000 tons, 0.015 opt Au, (inferred resource)		Cambrian Wood Canyon Fm.	
Round Mountain (Round Mountain District)	1977: 12,000,000 tons, 0.061 opt Au, 0.07 opt Ag 1989: 27,100,000 tons, 0.032 opt 1999: 320,000,000 tons, 0.018 opt Au (proven and probable reserve); 126,000,000 tons, 0.016 opt Au (mineralized material) 2000: 273,200,000 tons, 0.019 opt Au (proven and probable reserve); 18,700,000 tons, 0.022 opt Au (mineralized material) 2002: 192,100,000 tons, 0.020 opt Au (proven and probable reserve); 54,600,000 tons, 0.012 opt Au (mineral resource) 2003: 129,866,000 tons, 0.017 opt Au (proven reserve); 49,838,000 tons, 0.020 opt Au (probable reserves); 21,000,000 tons, 0.013 opt (probable reserves); 21,000,000 tons, 0.013 opt Au (measured resource); 54,440,000 tons, 0.018 opt Au (indicated resource); 19,580,000 tons, 0.018 opt Au (inferred resource, includes Gold Hill) 2004: 433,400,000 tons, 0.018 opt Au (proven and probable reserve); 64,000,000 tons, 0.015 opt Au (mineral resource) 2005: 275,608,000 tons, 0.017 opt Au (proven and probable reserve); 35,412,000 tons, 0.017 opt Au (measured and indicated resource);	1977: 37,085 oz Au, 18,910 oz Ag 1978: 48,842 oz Au, 28,003 oz Ag 1979: 45,991 oz Au, 24,940 oz Ag 1981: 57,589 oz Au, 29,528 oz Ag 1982: 72,562 oz Au, 33,738 oz Ag 1983: 93,253 oz Au, 54,665 oz Ag 1984: 121,013 oz Au, 71,460 oz Ag 1985: 138,748 oz Au, 77,234 oz Ag 1986: 168,319 oz Au, 110,739 oz Ag 1987: 190,578 oz Au, 146,702 oz Ag 1988: 234,378 oz Au, 181,862 oz Ag 1989: 386,227 oz Au, 211,297 oz Ag 1990: 431,871 oz Au, 236,650 oz Ag 1991: 321,393 oz Au, 200,993 oz Ag 1992: 363,721 oz Au, 306,771 oz Ag 1993: 372,528 oz Au, 300,386 oz Ag 1994: 423,308 oz Au, 267,863 oz Ag 1995: 344,437 oz Au, 250,529 oz Ag 1996: 410,977 oz Au, 345,2598 oz Ag 1997: 480,430 oz Au, 356,085 oz Ag 1998: 510,502 oz Au, 511,320 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 2002: 755,493 oz Au, 627,579 oz Ag 2003: 784,587 oz Au, 761,333 oz Ag 2004: 762,966 oz Au, 773,950 oz Ag	rhyolite ash flow tuff	26 Ma

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Round Mountain (cont.)	<p>35,374,000 tons, 0.013 opt Au (inferred resource)</p> <p>2006: 226,084,000 tons, 0.017 opt Au (proven and probable reserve); 26,134,000 tons, 0.019 opt Au (measured and indicated resource); 32,898,000 tons, 0.013 opt Au (inferred resource)</p> <p>2007: 141,736,000 tons, 0.018 opt Au (proven and probable reserves); 30,632,000 tons, 0.022 opt Au (measured and indicated resource)</p> <p>2008: 185,162,000 tons, 0.018 opt Au (proven and probable reserves); 57,140,000 tons, 0.019 opt Au (measured and indicated resource); 12,982,000 tons, 0.012 opt Au (inferred resource)</p> <p>2009: 157,614,000 tons, 0.019 opt Au (proven and probable reserves); 87,824,000 tons, 0.021 opt Au (measured and indicated resource); 57,208,000 tons, 0.017 opt Au (inferred resource)</p> <p>2010: 146,034,000 tons, 0.018 opt Au (proven and probable reserves); 101,736,000 tons, 0.022 opt Au (measured and indicated resource); 49,740,000 tons, 0.018 opt Au (inferred resource)</p> <p>2011: 165,376,000 tons, 0.017 opt Au, (proven and probable reserve); 166,840,000 tons, 0.016 opt Au (measured and indicated resource); 77,694,000 tons, 0.012 opt Au (inferred resource)</p> <p>2012: 141,356,000 tons, 0.018 opt Au, (proven and probable reserve); 88,586,000 tons, 0.021 opt Au, (measured and indicated resource); 56,246,000 tons, 0.015 opt Au (inferred resource)</p> <p>2013: 92,917,000 tons, 0.02 opt Au, 13,481,000 tons, 0.25 opt Ag, (proven and probable reserves); 84,028,000 tons, 0.022 opt Au, 6,433,000 tons, 0.2 opt Ag, (measured and indicated resource); 54,048,000 tons, 0.016 opt Au, 278,000 tons, 0.09 opt Ag, (inferred resource)</p> <p>2014: 60,186,000 tons, 0.027 opt Au, 6,892,000 tons, 0.32 opt Ag, (proven and probable reserves); 52,399,000 tons, 0.02 opt Au, 2,414,000 tons, 0.29 opt Ag, (measured and indicated resource); 17,330,000 tons, 0.017 opt Au, 1,426,000 tons, 0.2 opt Ag, (inferred resource)</p> <p>2015: 72,910,000 tons, 0.02 opt Au, 1,472,000 oz Au; 2,612,000 tons, 0.33 opt Ag, 870,000 oz Ag (proven and probable reserves); 44,975,000 tons, 0.015 opt Au, 12,389,000 tons, 0.22 opt Ag, (measured and indicated resource); 17,864,000 tons, 0.013 opt Au, 2,620,000 tons, 0.17 opt Ag, (inferred resource)</p> <p>2016: 62,947,000 tons, 0.02 opt Au, 4,904,000 tons, 0.25 opt Ag, (proven and probable reserves); 83,812,000 tons, 0.023 opt Au, 7,173,000 tons, 0.2 opt Ag, (measured and indicated resource); 109,992,000 tons, 0.018 opt Au, 2,536,000 tons, 0.17 opt Ag, (inferred resource)</p>	<p>2005: 736,886 oz Au, 636,361 oz Ag</p> <p>2006: 657,911 oz Au, 644,017 oz Ag</p> <p>2007: 587,445 oz Au, 955,681 oz Ag</p> <p>2008: 477,499 oz Au, 931,368 oz Ag</p> <p>2009: 414,941 oz Au, 850,878 oz Ag</p> <p>2010: 358,614 oz Au, 651,457 oz Ag</p> <p>2011: 360,020 oz Au, 644,329 oz Ag</p> <p>2012: 367,595 oz Au, 926,284 oz Ag</p> <p>2013: 314,886 oz Au, 636,564 oz Ag</p> <p>2014: 330,071 oz Au, 580,685 oz Ag</p> <p>2015: 385,159 oz Au, 775,025 oz Ag</p> <p>2016: 371,484 oz Au, 721,465 oz Ag</p>		
Sterling (Bare Mountain district)	<p>1983: 200,000 tons, 0.20 opt Au</p> <p>1989: 469,000 tons, 0.21 opt Au</p> <p>1996: 129,000 tons, 0.245 opt Au</p> <p>2006: 214,554 tons, 0.216 opt Au</p> <p>2012: 144 Zone: 509,712 tons, 0.133 opt Au, (measured and indicated resource); Panama Zone: 103,040 tons, 0.082 opt Au, (measured and Indicated resource)</p>	<p>1983-88: 75,900 oz Au</p> <p>1990-91: 24,841 oz Au</p> <p>1995-98: 36,811 oz Au</p> <p>1999: 3,093 oz Au</p> <p>2012: 12,000 oz Au</p> <p>2013: 7,500 oz Au</p> <p>2014: 5,721 oz Au</p> <p>2015: 1,740 oz Au</p> <p>2016: 350 oz Au</p>	Wood Canyon and Bonanza King Formations	14 Ma
South Monitor (west of Ellendale district)	<p>1996: 250,000 oz Au</p> <p>1997: 14,000,000 tons, 0.026 opt Au, 0.12 opt Ag</p>		Tertiary volcanic	

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Sullivan (Fairplay district)	1987: 10,200,000 tons, 0.039 opt Au, 0.086 opt Ag and 0.37% Cu 1995: 17,000,000 tons, 34% Cu, 0.0255 opt Au, and 8,500,000 tons, 0.32% Cu (proven and possible reserve)		Mesozoic granodiorite and metavolcanic rocks	Mesozoic
Summit (Union district)	1996: 100,000 tons, 0.07 opt Au, 2012: 200,000 tons, 0.035 opt Au (open pit resource)	1990: 8,800 oz Au	Triassic dolomite and limestone	

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Bunce (Velvet district)	1989: 600,000 tons, 0.04 opt Au (geologic resource) 1990: 500,000 tons, 0.04 opt Au		rhyolite	Miocene?
Colado Gold (Willard district)	1997: 15,000,000 tons, 0.022 opt Au (resource) 2007 (May 2008): 22,707,000 tons, 0.012 opt Au (oxide, measured and indicated resource); 594,000 tons, 0.070 opt Au (sulfide, measured and indicated resource); 79,129,000 tons, 0.015 opt Au (inferred resource)		Triassic-Jurassic metasedimentary rocks	
Florida Canyon (Imlay district)	1987: 22,000,000 tons, 0.023 opt Au 1988: 37,000,000 tons, 0.023 opt Au 1997: 45,500,000 tons, 0.024 opt Au (reserves); 122,800,000 tons, 0.022 opt Au (proven and probable mineralized material) 2002: 20,000,000 tons, 0.017 opt Au (proven and probable reserves) 2003: 374,393 oz Au (proven and probable reserves) 2004: 16,792,000 tons, 0.016 opt Au (proven and probable reserves) 2010 reserve: 832,000 oz Au; resource: 746,700 oz Au 2012: 1,124,800 oz Au (reserves) 761,000 oz Au (resources) 2016: 84,202,100 tons, 0.013 opt, Au (measured and indicated resource) 350,800 tons, 0.015 opt Au (inferred material)	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 2002: 121,516 oz Au, 72,567 oz Ag 2003: 101,811 oz Au, 60,065 oz Ag 2004: 73,082 oz Au, 60,405 oz Ag (includes Standard) 2005 (Florida Canyon): 29,186 oz Au, 7,571 oz Ag 2005 (Standard): 21,522 oz Au, 51,751 oz Ag 2006 (Florida Canyon): 16,061 oz Au, 12,423 oz Ag 2006 (Standard): 46,070 oz Au, 64,497 oz Ag 2007 (Florida Canyon): 31,916 oz Au, 28,152 oz Ag 2007 (Standard): 11,814 oz Au, 24,735 oz Ag 2008 (Florida Canyon): 47,095 oz Au, 40,745 oz Ag 2008 (Standard): 2,625 oz Au, 3,644 oz Ag 2009 (Florida Canyon): 44,814 oz Au, 39,760 oz Ag 2009 (Standard): 1,510 oz Au, 3,270 oz Ag 2010 (Florida Canyon): 54,975 oz Au, 39,903 oz Ag 2016 (Florida Canyon and Standard): 10,873 oz Au; 21,898 oz Ag	Grass Valley Formation	2 Ma
Goldbanks (Goldbanks district)	1994: 900,000 oz Au 1996: 80,800,000 tons, 0.019 opt Au (proven and probable reserve); 7,400,000 tons, 0.014 opt Au (possible reserve); 106,800,000 tons, 0.028 opt (Au drill indicated resource) 2000: 569,000 oz Au and 1,700,000 oz Ag (indicated reserves) 2006: 28,310,000 tons, 0.02 opt Au (inferred resource, Main and KVV zones)			
Lincoln Hill (Rochester district)	2010: 17,215,000 tons, 0.02 opt Au, 0.5 opt Ag 2012: 3,846,000 tons, 0.012 opt Au, 0.34 opt Ag, (measured resource, oxide); 19,985,000 tons, 0.011 opt Au, 0.29 opt Ag, (indicated resource); 395,000 tons, 0.015 opt Au 0.56 opt Ag, (measured resource, sulfide); 4,878,000 tons, 0.012 opt Au, 0.5 opt Ag, (indicated resource, sulfide); 8,412,000 tons, 0.008 opt Au, 0.24 opt Ag, (inferred resource, oxide); 7,227,000 tons, 0.014 opt Au, 0.57 opt Ag, (inferred resource, sulfide)			

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Lincoln Hill (cont.)	2014: 4,194,000 tons, 0.014 opt Au, 0.37 opt Ag, (measured resource, oxide); 21,686,000 tons, 0.013 opt Au, 234,000 oz Au, 0.32 opt Ag, (indicated resource, oxide); 448,000 tons, 0.017 opt Au 0.64 opt Ag, (measured resource, sulfide); 5,982,000 tons, 0.014 opt Au, 0.53 opt Ag, (indicated resource, sulfide) 9,702,000 tons, 0.009 opt Au, 0.27 opt Ag, (inferred resource, oxide); 13,250,000 tons, 0.016 opt Au, 0.52 opt Ag, (inferred resource, sulfide)			
Nevada Packard (Rochester district)	2000: 9,500,000 equivalent oz Ag (reserve) 2013: 35,372,000 tons, 0.56 opt Ag, 0.002 opt Au, (measured and indicated resource); 6,806,000 tons, 0.47 opt Ag, 0.003 opt Au, (inferred resource)	1913-23: 241,266 tons ore valued at \$1,559,319 1981-83: 100,000 oz Ag	Weaver Rhyolite	
Relief Canyon (Antelope Springs district)	1983: 9,000,000 tons, 0.032 opt Au 1988: ~1,300,000 tons, 0.03 opt Au 1996: 8,600,000 tons, 0.022 opt Au 2013: 32,541,000 tons, 0.017 opt Au (mineralized material) 2014: 26,698,000 tons, 0.022 opt Au, (measured and indicated resource, oxide); 10,124,000 tons, 0.015 opt Au, (inferred resource, oxide); 250,000 tons, 0.071 opt Au, (indicated resource, sulfide); 163,000 tons, 0.048 opt Au, (inferred resource, sulfide) 2015: 36,918,000 tons, 0.02 opt Au, (measured and indicated resource, oxide); 6,928,000 tons, 0.01 opt Au, (inferred resource, oxide); 417,000 tons, 0.054 opt Au, (indicated resource, sulfide); 2,000 tons, 0.025 opt Au, (inferred resource, sulfide) 2016: 37,855,000 tons, 0.02 opt Au, (measured and indicated resources, oxide); 5,267,000 tons, 0.009 opt Au, 47,000 oz Au (inferred resource, oxide); 613,000 tons, 0.057 opt Au, (indicated resource, sulfide); 16,000 tons, 0.029 opt Au; (inferred resource, sulfide)	1984: 24,500 oz Au 1987-88: 82,000 oz Au 1989-90: 34,266 oz Au, 39,235 oz Ag 2009: 92 oz Au, 342 oz Ag	Natchez Pass Limestone, Grass Valley Formation	Tertiary
Rochester (Rochester district)	1981: 75,000,000 tons, 1.5 opt Ag 1989: 94,500,000 tons, 0.012 opt Au, 1.40 opt Ag (geologic resource) 1997: 74,200,000 oz Ag, 603,000 oz Au 2000: 50,000,000 oz Ag, 410,000 oz Au (includes Nevada Packard) 2001: 51,400,000 tons, 0.85 opt Ag, 0.007 opt Au (proven and probable reserves); 61,800,000 tons, 0.75 opt Ag, 0.005 opt Au (mineralized material) 2002: 46,900,000 tons, 0.008 opt Au, 0.85 opt Ag (proven and probable reserves); 33,800,000 tons, 0.009 opt Au, 0.77 opt Ag (mineralized material) (includes Nevada Packard) 2003: 32,700,000 tons, 0.01 opt Au, 0.91 opt Ag (proven and probable reserve); 40,300,000 tons, 0.01 opt Au, 0.77 opt Ag (mineralized material) 2004: 21,453,000 tons, 0.010 opt Au, 0.87 opt Ag (proven reserve); 2,545,000 tons, 0.010 opt Au, 0.81 opt Ag (probable reserve); 26,205,000 tons, 0.010 opt Au, 0.81 opt Ag (measured resource); 8,551,000 tons, 0.010 opt Au, 0.96 opt Ag (indicated resource); 308,000 tons, 0.003 opt Au, 1.73 opt Ag (inferred resource) 2005: 10,168,000 tons, 0.011 opt Au, 0.86 opt Ag (probable reserves); 15,646,000 tons, 0.010 opt Au, 1.03 opt Ag (measured and indicated resource) 2006: 3,720,000 tons, 0.007 opt Au, 0.66 opt Ag (proven reserves); 15,235,000 tons, 0.010 opt Au, 0.94 opt Ag (measured and indicated	1986-98: 810,329 oz Au, 59,300,000 oz Ag 1999: 70,396 oz Au, 6,200,000 oz Ag 2000: 75,886 oz Au, 6,678,274 oz Ag 2001: 81,200 oz Au, 6,478,916 oz Ag 2002: 71,905 oz Au, 6,417,792 oz Ag 2003: 52,363 oz Au, 5,585,385 oz Ag 2004: 69,456 oz Au, 5,669,073 oz Ag 2005: 70,298 oz Au, 5,720,489 oz Ag 2006: 71,891 oz Au, 5,113,504 oz Ag 2007: 50,408 oz Au, 4,614,779 oz Ag 2008: 21,041 oz Au, 3,033,720 oz Ag 2009: 12,633 oz Au, 2,181,788 oz Ag 2010: 9,641 oz Au, 2,023,423 oz Ag 2011: 6,276 oz Au, 1,392,433 oz Ag 2012: 38,071 oz Au, 2,801,501 oz Ag 2013: 30,860 oz Au,	Koipato Group, Weaver Rhyolite, Rochester Rhyolite	Late Cretaceous

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Rochester (cont.)	resource) 2007: 32,664,000 tons, 0.010 opt Au, 0.86 opt Ag (measured and indicated resource) 2008: 114,058,000 tons, 0.005 opt Au, 0.54 opt Ag (measured and indicated resource) 2010: 48,271,000 tons, 0.005 opt Au, 0.57 opt Ag (proven and probable reserve); 215,602,900 tons, 0.003 opt Au, 0.44 opt Ag (measured and indicated resource); 21,984,300 tons, 0.003 opt Au, 0.65 opt Ag (inferred resource) 2012: 79,923,000 tons, 0.56 opt Ag, 0.004 opt Au, (proven and probable reserve); 264,283,000 tons, 0.46 opt Ag, 0.003 opt Au, (measured and indicated resource) 45,643,300 tons, 0.6 opt Ag, 0.003 opt Au, (inferred resource) 2013: 187,234,000 tons, 0.54 opt Ag, 0.004 opt Au, (proven and probable reserve); 141,722,000 tons, 0.44 opt Ag, 0.003 opt Au (measured and indicated resource, includes Nevada Packard); 37,365,300 tons, 0.62 opt Ag, 0.003 opt Au, (inferred resource, includes Nevada Packard) 2014: 145,235,000 tons, 0.55 opt Ag, 0.004 opt Au, (proven and probable reserve); 173,201,000 tons, 0.44 opt Ag, 0.003 opt Au, (mineralized material) 2015: 150,691,000 tons, 0.53 opt Ag, 0.003 opt Au, 477,000 oz Au (proven and probable reserve); 140,951,000 tons, 0.48 opt Ag, 0.003 opt Au (mineralized material) 2016: 244,804,691,000 tons, 0.46 opt Ag, 0.003 opt Au, (proven and probable reserve); 69,461,000 tons, 0.56 opt Ag, 0.003 opt Au (mineralized material)	2,798,937 oz Ag 2014: 44,887 oz Au, 4,189,071 oz Ag 2015: 52,588 oz Au, 4,630,739 oz Ag 2016: 50,750 oz Au, 4,564,139 oz Ag		
Rosebud Project (Rosebud district)	1992: 570,000 oz Au (0.362 opt), 5,500,000 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
Spring Valley (Spring Valley district)	2005-2006: 10,030,000 tons, 0.024 opt Au (measured and indicated resource) 7,753,000 tons, 0.025 opt Au (inferred resource) 2007: 50,600,000 tons, 0.0196 opt Au (inferred resource) 2008: 87,750,000 tons, 0.021 opt Au (inferred resource) 2011: 159,641,000 tons, 0.013 opt Au (measured and indicated resource) 114,567,000 tons, 0.017 opt Au (inferred resource) 2014: 222,600,000 tons, 0.019 opt Au, (measured and indicated resource), 62,100,000 tons, 0.016 opt Au, (inferred resource)		Permo-Triassic Koipato Group	
Standard (Imlay district)	2002: 17,200,000 tons, 0.019 opt Au (proven and probable reserves) 2003: 404,100 oz Au (proven and probable reserves) 2004: 25,776,000 tons, 0.017 opt Au (proven and probable reserves) 2010 reserve: 292,000 oz Au; resource: 14,300 oz Au	1939-42, 1946-49: 45,743 oz Au, 127,451 oz Ag 2004-2010: included with Florida Canyon 2011: 41,161 oz Au, 46,896 oz Ag 2012: 43,575 oz Au, 50,983 oz Ag 2013: 46,152 oz Au, 58,333 oz Ag 2014: 40,311 oz Au, 79,231 oz Ag 2015: 21,716 oz Au, 67,687 oz Ag 2016: combined with Florida Canyon	Natchez Pass Limestone, Grass Valley Formation argillite	

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Tag-Wildcat (Farrel district)	1989: 416,000 tons, 0.076 opt Au (reserves); 1,500,000 tons, 0.043 opt Au; (geologic resource) 2003: see Wildcat		Tertiary volcanic rocks	Miocene
Trinity (Trinity district)	1987: 1,000,000 tons, 5.25 opt Ag Sulfide resource: ~4,000,000 tons, 2.5 opt Ag 2012: 19,790,000 tons, 1.07 opt Ag, 0.217% Pb, 0.354% Zn, (inferred resource)	1987-89: ~600,000 oz Ag	rhyolite porphyry, rhyolite tuff	26 Ma
Wildcat (Farrel district)	2003: 38,108,000 tons, 0.018 opt Au (indicated resource); 28,355,000 tons, 0.015 opt Au (inferred resource)		Tertiary volcanic	Miocene
Wilco-Colado (Willard district)	2012: 6,399,000 tons, 0.009 opt Au, 0.047 opt Ag, (measured resource, oxide); 37,571,000 tons, 0.008 opt Au, 0.047 opt Ag, (indicated resource, oxide); 3,449,000 tons, 0.014 opt Au 0.195 opt Ag, (measured resource, sulfide); 16,864,000 tons, 0.012 opt Au, 0.162 opt Ag, (indicated resource, sulfide); 39,032,000 tons, 0.007 opt gold, 0.082 opt Ag, (inferred resource, sulfide)		Jurassic-Triassic Auld Lang Syne Group	
Wilco-Section Line (Willard district)	2012: Oxide: 12,279,000 tons, 0.011 opt Au 0.113 opt Ag, (measured resource 23,676,000 tons, 0.008 opt Au, 0.081 opt Ag, (indicated resource); Sulfide: 5,558,000 tons 0.015 opt Au 0.128 opt Ag, (measured resource); 20,024,000 tons, 0.014 opt Au, 0.126 opt Ag, (indicated resource); 18,947,000 tons, 0.014 opt gold, 0.154 opt Ag, (inferred resources)		Jurassic-Triassic Auld Lang Syne Group	
Willard (Willard district)	2007: 17,295,000 tons, 0.016 opt Au (oxide, measured and indicated resource) 448,000 tons, 0.070 opt Au (sulfide, measured and indicated resource) 20,849,000 tons, 0.015 opt Au (inferred resource)	Late 1980s to early 1990s: ~90,000 oz Au	Jurassic-Triassic Grass Valley Formation	6 Ma

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, 1.200,000 oz Ag			
Comstock Lode (Comstock district)	1980: 10,000,000 tons, 0.08 opt Au, 3.1 opt Ag			
Comstock Mine Project (Comstock/Silver City districts)	2011 (Lucerne and Dayton Resource Areas): 51,260,000 tons, 0.029 opt Au, 0.28 opt Ag, Au, 14,360,000 oz Ag (measured and indicated resource); 33,580,000 tons, 0.026 opt Au, 0.179 opt Ag, (inferred resource); 2013: 61,880,000 tons, 0.029 opt Au, 0.276 opt Ag, (measured and indicated resource); 0.166 opt Ag, (inferred resource)	2004-2016: Production under Lucerne Resource Area	Santiago Canyon tuff; Alta Formation	
Flowery (Golden Eagle) (Comstock district)	1989: 100,000 tons, 0.037 opt Au 1993: 362,000 tons, 0.064 opt Au, 0.97 opt Ag, (geologic resource)	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
Gooseberry (Ramsey district)	1985: 216,505 tons, 0.209 opt Au, 8.08 opt Ag	1978-81: Ore: 235,000 tons, 0.14 opt Au, 7.18 opt Ag 1985: 5,000 oz Au, 225,000 oz Ag	Kate Peak Formation	

MAJOR PRECIOUS-METAL DEPOSITS, STOREY COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Lucerne Resource Area (Comstock Mine Project/Hartford Hill Complex) (Comstock district)	2010 (Billy the Kid and Lucerne Mines: 26,540,000 tons, 0.028 opt Au, 0.354 opt Ag (measured and indicated resource) 12,660,000 tons, 0.023 opt Au, 0.252 opt Ag (inferred resource) 2011 (Billy the Kid, Hartford, and Lucerne Mines): 42,930,000 tons, 0.03 opt Au, 0.293 opt Ag (measured and indicated resource); 26,990,000 tons, 0.027 opt Au, 0.196 opt Ag (inferred resource)	2004: 2,836 oz Au, 12,695 oz Ag 2005: 5,715 oz Au, 26,488 oz Ag 2006: 5,000 oz Au, 20,000 oz Ag (estimated) 2012: 2,588 oz Au, 26,738 oz Ag 2013: 17,739 oz Au, 186,482 oz Ag 2014: 19,601 oz Au, 222,416 oz Ag 2015: 15,451 oz Au, 221,723 oz Ag 2016: 4,086 oz Au, 75,657 oz Ag	Santiago Canyon tuff; Alta Formation	
Oliver Hills (Comstock district)	1990: 3,370,000 tons, 0.054 opt Au, 1.2 opt Ag 1993: 400,000 tons, 0.05 opt Au, 0.5 opt Ag, (geologic resource)	1991: 573 oz Au, 6,947 oz Ag		

WASHOE COUNTY

Mountain View Gold Project (Deephole district)	1995: 19,500,000 tons, 0.027 opt Au 1998: 10,700,000 tons, 0.055 opt Au 2002: 23,219,000 tons, 0.013 opt Au (indicated resource); 46,600,000 tons, 0.039 opt Au (inferred resource)		rhyolite	Miocene
Olinghouse (Olinghouse district)	1994: ~500,000 tons, 0.057 opt Au (geologic resource) 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: 2,500,000 tons, 0.085 opt Au 1988: 5,500,000 tons, 0.064 opt Au (proven and probable reserves); 20,100,000 tons, 0.029 opt Au (geologic resource) 2003: 1,598,350 tons, 0.033 opt Au (indicated); 440,924 tons, 0.054 opt Au (inferred)	1986-87: 80,000 oz Au 1988-95: 118,045 oz Au, 25,400 oz Ag	rhyolite, explosion breccia sinter	15-16 Ma
Wind Mountain (San Emidio)	1988: 15,000,000 tons, 0.021 opt Au, 0.42 opt Ag 2007: 33,657,553 tons, 0.012 opt Au (measured and indicated resource) 9,758,547 tons, 0.009 opt Au (inferred resource) 2011 Oxide: 58,816,000 tons, 0.1 opt Au, oz Au, 0.25 opt Ag, (indicated resource); 19,866,000 tons, 0.006 opt Au, 0.17 opt Ag (inferred resource) Mixed and unoxidized: 498,000 tons, 0.12 opt Au, 0.4 opt Ag, (indicated resource); 14,595,000 tons, 0.016 opt Au, (inferred resource)	1989: 30,900 oz Au, 335,000 oz Ag 1991: 91,000 oz Au, 405,000 oz Ag 1992: 54,690 oz Au, 297,403 oz Ag 1993: 19,570 oz Au, 92,630 oz Ag	Tertiary sedimentary rocks	late Tertiary or Quaternary

WHITE PINE COUNTY

Alligator Ridge (Bald Mountain district)	1983: 500,000 tons, 0.09 opt Au 1989: 100,000 tons, 0.064 opt Au 1992: 11,500,000 tons, 0.046 opt Au (geologic resource, 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 (Bald Mountain district)	1989: 6,700,000 tons, 0.069 opt Au 1999: 32,600,000 tons, 0.041 opt Au, (proven	1986: 50,000 oz Au 1988-89: 103,731 oz Au	quartz porphyry, Cambrian shale	Jurassic?

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bald Mountain (cont.)	<p>and probable reserve); 31,700,000 tons, 0.044 opt Au, (mineralized material)</p> <p>2000: 509,000 oz Au (proven and probable reserve); 2,030,000 oz Au (measured and indicated resource)</p> <p>2002: 508,000 oz Au (proven and probable reserve); 2,300,000 oz Au (measured mineral resource)</p> <p>2003: 10,143,000 tons, 0.033 opt Au (proven reserve); 8,549,000 tons, 0.040 opt Au (probable reserves); 10,371,000 tons, 0.027 opt Au (measured resource); 10,836,000 tons, 0.043 opt Au (indicated resource); 19,224,000 tons, 0.029 opt Au (inferred resource)</p> <p>2004: 21,530,000 tons, 0.044 opt Au (proven and probable reserve); 53,586,000 tons, 0.027 opt Au (measured and indicated resource); 10,808,000 tons, 0.018 opt Au (inferred resource)</p> <p>2005 (includes Alligator Ridge): 105,050,700 tons 0.032 opt Au (proven and probable reserve); 35,000,000 tons 0.023 opt Au (measured and indicated resource); 14,868,000 tons, 0.026 opt Au (inferred resource)</p> <p>2006 (includes Alligator Ridge): 109,922,000 tons, 0.031 opt Au (proven and probable reserve); 23,289,000 tons, 0.035 opt Au (measured and indicated resource); 17,290,000 tons, 0.023 opt Au (inferred resource)</p> <p>2007 (includes Alligator Ridge): 128,093,000 tons, 0.024 opt Au (proven and probable reserve); 36,493,000 tons, 0.024 opt Au (measured and indicated resource); 24,648,000 tons, 0.017 opt Au (inferred resource)</p> <p>2008 (includes Alligator Ridge): 57,675,000 tons, 0.018 opt Au (proven and probable reserve) 90,374,000 tons, 0.019 opt Au (measured and indicated resource); 71,004,000 tons, 0.021 opt Au (inferred resource)</p> <p>2009 (includes Alligator Ridge): 227,346,000 tons, 0.020 opt Au (proven and probable reserve); 99,338,000 tons, 0.012 opt Au (measured and indicated resource); 40,184,000 tons, 0.012 opt Au (inferred resource)</p> <p>2010 (includes Alligator Ridge): 246,711,000 tons, 0.019 opt Au (proven and probable reserve); 151,944,000 tons, 0.011 opt Au (measured and indicated resource); 60,636,000 tons, 0.011 opt Au (inferred resource)</p> <p>2011 (includes Alligator Ridge): 307,162,000 tons, 0.017 opt Au, (proven and probable reserve); 123,191,000 tons, 0.013 opt Au (measured and indicated resource); 72,491,000 tons, 0.011 opt Au, (inferred resource)</p> <p>2012: 295,559,000 tons, 0.017 opt Au, (proven and probable reserves); 125,190,000 tons, 0.012 opt Au, (measured and indicated resource); 88,864,000 tons, 0.009 opt Au, (inferred resource)</p> <p>2013: 135,051,000 tons, 0.018 opt Au, (proven and probable reserve); 206,436,000 tons, 0.018 opt Au, (measured and indicated resource); 57,515,000 tons, 0.013 opt Au, (inferred resource)</p> <p>2014: 66,664,000 tons, 0.024opt Au, (proven and probable reserve); 224,118,000 tons, 0.019 opt Au, (measured and indicated resource); 32,724,000 tons, 0.016 opt Au, (inferred resource)</p> <p>2015: 54,104,000 tons, 0.021opt Au, (proven and probable reserve); 190,116,000 tons, 0.019 opt Au, (measured and indicated resource); 23,532,000 tons, 0.015 opt Au, (inferred resource)</p>	<p>1990-93: 287,110 oz Au, 76,745 oz Ag</p> <p>1994: 80,000 oz Au</p> <p>1995-96: 221,908 oz Au, 62,460 oz Ag</p> <p>1997-98: 243,500 oz Au, 63,416 oz Ag</p> <p>1999: 105,475 oz Au, 18,058 oz Ag</p> <p>2000: 134,469 oz Au, 14,400 oz Ag</p> <p>2001: 108,392 oz Au, 18,321 oz Ag</p> <p>2002: 172,328 oz Au, 21,547 oz Ag</p> <p>2003: 90,602 oz Au, 26,810 oz Ag</p> <p>2004: 46,685 oz Au, 27,635 oz Ag</p> <p>2005: 77,767 oz Au, 32,652 oz Ag</p> <p>2006: 277,615 oz Au, 32,121 oz Ag</p> <p>2007: 125,998 oz Au, 21,702 oz Ag</p> <p>2008: 103,610 oz Au, 15,352 oz Ag</p> <p>2009: 75,037 oz Au, 12,389 oz Ag</p> <p>2010: 60,333 oz Au, 15,000 oz Ag</p> <p>2011: 92,818 oz Au, 14,615 oz Ag</p> <p>2012: 171,154 oz Au, 40,954 oz Ag</p> <p>2013: 95,497 oz Au, 29,479 oz Ag</p> <p>2014: 161,036 oz Au, 48,240 oz Ag</p> <p>2015: 191,088 oz Au, 26,164 oz Ag</p> <p>2016: 129,282 oz Au, 864 oz Ag</p>	and limestone	

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2016: 121,789,000 tons, 0.018 opt Au, (proven and probable reserve); 221,493,000 tons, 0.015 opt Au, (measured and indicated resource); 54,533,000 tons, 0.012 opt Au, (inferred resource)			
Bellview (White Pine district)	1988: 277,000 tons, 0.04 opt Au, 1,000,000 tons, 0.036 opt Au (geologic resource)			
Casino/Winrock (Bald Mountain district)	1989: Casino: 804,000 tons, 0.054 opt Au; Winrock: 1,300,000 tons, 0.037 opt Au 1990: Winrock: 993,000 tons, 39,000 oz Au 1992: <i>see</i> Alligator Ridge	1990-92: 46,800 oz Au	late Paleozoic sedimentary rocks	Eocene
Golden Butte (Cherry Creek district)	1989: 4,230,000 tons, 0.031 opt Au	1989-91: 43,519 oz Au, 16,911 oz Ag	Chainman Shale	Cretaceous or Eocene
Gold Rock (Easy Junior/ Nighthawk Ridge) (White Pine district)	1989: 5,680,000 tons, 0.031 opt Au 1991: 137,000 oz Au 1997: 510 oz Au, 76 oz Ag 2011: 14,294,000 tons, 0.022 opt Au, (indicated resource); 19,724,000 tons, 0.017 opt Au (inferred resource) 2014: 26,241,000 tons, 0.021 opt Au, (measured and indicated resource); 35,416,000 tons, 0.017 opt Au, (inferred resource)	1990: 11,500 oz Au, 900 oz Ag	Devonian and Mississippian rocks	Eocene
Green Springs (White Pine district)	1988: 1,250,000 tons, 0.06 opt Au (resource); 500,000 tons, 0.039 opt Au, (additional resource)	1988-91: 63,000 oz Au, 1989-90: 9,000 oz Ag	Upper Joana Limestone	
Griffon (White Pine district)	1993: 60,000 oz Au (geologic resource) 1994: 50,454 oz Au, 0.039 opt Au (geologic resource) 1995: 2,737,000 tons, 0.025 opt Au (proven and probable reserve) 1997: 100,000 oz Au	1998: 37,921 oz Au, 269 oz Ag 1999: 24,740 oz Au	Mississippian Chainman Shale	
Horseshoe (Bald Mountain district)	1991: 1,500,000 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?
Limousine Butte (Butte Valley district)	1987: 57,000 oz Au 2009 (0.012 opt Au cut-off grade): 10,600,000 tons, 0.023 opt Au (measured and indicated resource) 2,500,000 tons, 0.020 opt Au (inferred resource)	1987: ~25,000 oz Au/year 1988: 25,324 oz Au, 1989: 3,874 oz Au	Paleozoic sedimentary rocks	Eocene?
Little Bald Mtn. (Bald Mountain district)	1986: 1,000,000 tons, 0.10 opt Au 1989: 200,000 tons, 0.13 opt Au; 260,000 tons, 0.127 opt Au (geologic resource) 1993: 140,000 tons, 0.13 opt Au, 21,800 oz Au (geologic resource)	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: 7,700,000 tons, 0.05 opt Au, 0.5 opt Ag 1994: 9,040,000 tons, 0.052 opt Au, 0.38 opt Ag (reserve) 1996: 10,800,000 tons, 0.038 opt Au, 0.24 opt Ag 1997: 7,720,000 tons, 0.035 opt Au 2009: 12,617,000 tons, 0.031 opt Au, 0.144 opt Ag (measured and indicated resource); 1,491,000 tons, 0.012 opt Au, 0.122 opt Ag (inferred resource)	1995-97: 99,500 oz Au, 207,500 oz Ag	Dunderberg Shale	Cretaceous

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Mt. Hamilton (cont.)	2011 (Centennial deposit): 22,527,000 tons, 0.022 opt Au, 0.134 opt Ag, (proven and probable reserve); 23,650,000 tons, 0.022 opt Au, 0.133 opt Ag (measured and indicated resource); 3,454,000 tons, 0.018 opt Au, 0.079 opt Ag, (inferred resource), 2012 (Seligman deposit): 6,960,000 tons, 0.022 opt Au, 0.097 opt Ag, (indicated resource); 3,770,000 tons, 0.021 opt Au, 0.144 opt Ag, (inferred resource) 2013: 31,880,000 tons, 0.022 opt Au, 0.19 opt Ag, (measured and indicated resource); 10,330,000 tons, 0.017 opt Au, 0.16 opt Ag, (inferred resource) 2014: 22,500,000 tons, 0.024 opt Au, 0.198 opt Ag, (proven and probable reserve); 33,710,000 tons, 0.022 opt Au, 0.195 opt Ag, (measured and indicated resource); 6,721,000 tons, 0.018 opt Au, 0.171 opt Ag, (inferred resource)			
Pan (Pancake district)	1989: 241,000 oz Au 1998: 10,860,000 tons, 0.022 opt Au (indicated and inferred resource) 2003: 17,890,000 tons, 0.019 opt Au (indicated resource); 7,986,000 tons, 0.016 opt Au (inferred resource) 2009: 34,650,000 tons, 0.018 opt Au (measured and indicated resource) 1,600,000 tons, 0.017 opt Au (inferred resource) 2010: 42,750,352 tons, 0.016 opt Au (measured and indicated resource); 1,600,000 tons, 0.017 opt Au (inferred resource) 2011: 53,253,000 tons, 0.016 opt gold, (proven and probable reserve); 88,226,224 tons, 0.128 opt Au, (measured and indicated resource); 4,330,080 tons, 0.105 opt Au, (inferred resource) 2015: Total: 21,196,000 tons, 0.0143 opt gold, 302,400 oz Au (proven and probable reserve); North Pan: 10,685,000 tons, 0.0148 opt gold, (proven and probable reserve); Red Hill: 337,000 tons, 0.0337 opt gold, (proven and probable reserve); Central Pan: 335,000 tons, 0.0132 opt Au, 4 (proven and probable reserve); South Pan: 9,273,000 tons, 0.0131 opt gold, (proven and probable reserve); South Satellite: 546,000 tons, 0.0119 opt gold, (proven and probable reserve); Pan Mine: 34,157,000 tons, 0.014 opt Au, 477,100 oz Au, (measured and indicated resource); 9,517,080 tons, 0.012 opt Au, (inferred resource)	2015: 21,216 oz Au, 680 oz Ag 2016: 8,714 oz Au	Mississippian rocks	
Robinson (Robinson district)	1989: 46,000,000 tons, 0.019 opt Au; (geologic resource) 1991: 20,000,000 tons 0.012 opt Au (geologic resource) 1999: 194,000,000 tons, 0.59% Cu, 0.007 opt Au, (proven and probable reserve) 2003: 146,300,000 tons, 0.687% Cu, 0.008 opt Au, (proven and probable reserve) 2005: 160,400,000 tons, 0.69% Cu, 0.073 opt Au (proven and probable reserve) 610,979,000 tons, 0.55% Cu, 0.0064 opt Au (measured resource) 171,858,000 tons, 0.44% Cu, 0.0041 opt Au (indicated resource) 98,166,000 tons, 0.32% Cu, 0.0015 opt Au (inferred resource) 2006: 122,401,000 tons, 0.69% Cu, 0.0076 opt Au (proven and probable reserve) 2007: 103,788,000 tons, 0.68% Cu, 0.0067 opt Au (proven and probable reserve)	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, 370,000,000 lbs Cu 1999: 26,250 oz Au, 153,104 oz Ag, 6,200,000 lbs Cu 2004: 12,228 oz Au, 27,000,000 lbs Cu 2005: 80,941 oz Au, 191,479 oz Ag, 126,000,000 lbs Cu	Rib Hill Sandstone, Cretaceous Riepe Spring Limestone, intrusions	

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Robinson (cont.)	2008: 121,693,000 tons, 0.54% Cu, 0.0067 opt Au (proven and probable reserve) 2009: 103,059,000 tons, 0.53% Cu, 0.0062 opt Au (proven and probable reserve) 2010: 121,250,000 tons, 0.50% Cu, 0.0053 opt Au (proven and probable reserves) 716,490,000 tons, 0.33% Cu, 0.0044 opt Au (measured and indicated resource) 154,320,000 tons, 0.29% Cu, 0.0041 opt Au (inferred resource) [2014: 131,586,000 tons, 0.41 % Cu, 0.005 opt Au, (proven and probable reserves); 394,750,000 tons, 0.45 % Cu, 0.006 opt Au, (measured and indicated resource) 13,164,000 tons, 0.38% Cu, 0.006 opt Au (inferred resource) 2015: Ruth/Ruth East: 124,000,000 tons, 0.416% Cu, 0.0048 opt Au, 0.0238% Mo (remaining reserves 2015-2022)	2006: 75,074 oz Au, 156,839 oz Ag, 121,319,197 lbs Cu, 260,000 lbs Mo 2007: 108,118 oz Au, 179,238 oz Ag, 131,986,134 lbs Cu, 62,033 lbs Mo 2008: 137,628 oz Au, 183,903 oz Ag, 159,684,092 lbs Cu, 78,855 lbs Mo 2009: 99,000 oz Au, 200,819 oz Ag, 122,000,000 lbs Cu, 88,711 lbs Mo 2010: 72,998 oz Au, 245,746 oz Ag, 108,967,015 lbs Cu, 226,688 lbs Mo 2011: 31,969 oz Au, 116,774 oz Ag, 88,893,372 lbs Cu, 756,785 lbs Mo 2012: 30,948 oz Au, 225,421 oz Ag, 117,509,548 lbs Cu, 449,001 lbs Mo 2013: 47,452 oz Au, 161,638 oz Ag, 107,898,857 lbs Cu, 830,789 lbs Mo 2014: 26,303 oz Au, 86,601,987 lbs Cu 445,030 lbs Mo 2015: 60,360 oz Au, 131,307,031 lbs Cu, 543,036 lbs Mo 2016: 49,217 oz Au, 118,411,099 lbs Cu, 493,010 lbs Mo		
Taylor (Taylor district)	1980: 10,000,000 tons, 3 opt Ag 1988: 5,920,000 tons, 2.7 opt Ag (resource) 2007: 6,433,000 tons, 2.31 opt Ag (measured and indicated resource) 757,000 tons, 2.54 opt Ag (inferred resource) 2013: 8,894,000 tons, 1.89 opt Ag, (measured and indicated resource); 1,716,000 tons, 2.3 opt Ag (inferred resource)	1981-1984: 3,800,000 oz Ag, 3,000 oz Au	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 1993: see Bald Mountain	1990: ~15,000 oz Au 1992: 10,800 oz Au	Pilot Shale	36-38 Ma?

Newmont Gold and Silver Production in the Carlin Trend

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

<u>Year</u>	<u>Gold (oz)</u>	<u>Silver (oz)</u>
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	1,536,401	255,011
2000	1,865,648	108,111
2001	1,547,247	292,241
2002	1,378,782	277,753
2003	1,122,208	206,767
2004	1,287,674	363,052
2005	1,397,583	227,158
2006	1,310,258	169,212
2007	1,322,001	268,875
2008	1,320,019	149,254
2009	1,172,790	225,431
2010	934,282	69,430
2011	917,973	76,938
2012	987,959	192,333
2013	1,020,791	221,256
2014	907,282	76,614
2015	885,242	92,173
2016	943,823	101,475

NA= not available

OTHER METALLIC DEPOSITS

by David A. Davis and John L. Muntean

This is a compilation, in progress, of metallic deposits other than gold and silver. Initially, active projects with recently released reserves, resources, and production were included and earlier published data are included as found. The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of active mines are shown on page 2, and contact information is listed in the Directory of Mining and Milling Operations.

Deposit name	Metals	Reserves/resources	Production
CHURCHILL COUNTY			
Buena Vista (Mineral Basin district)	Fe	1945: 350,000 tons ore, 54% Fe 2013: 111,200,000 tons, 18.6% Fe (probable reserve); 148,700,000 tons, 18.8% Fe (indicated resource); 61,000,000 tons, 19.9% Fe (inferred resource)	1943-52: 563,000 tons ore >57% Fe 1958: 150,000 tons >56% Fe
CLARK COUNTY			
Boulder City (Las Vegas district)	Mn	1949: 1,000,000 tons, 7.5% Mn or 15,000,000 tons, 3% Mn (resource)	
Silver Leaf (Tri-State) (Bunkerville district)	W	1963: 21,000 tons (inferred reserve) 1981: 44,000 tons, 0.35% WO ₃ , 96,000 tons, 0.3% WO ₃ (indicated and inferred resource)	1953-71, 1980: 165 units
DOUGLAS COUNTY			
Buckskin (Buckskin district)	Cu, Au	1973: 678,400 tons, averaging 0.15 opt Au, 0.45 opt Ag, 1.3% Cu 1978: 561,500 tons, 0.18 opt Au, 0.5 opt Ag, 1.3% Cu	1918-50 intermittent: est 10,000 tons Au, Cu ore
Pine Nut (Gardnerville district)	Mo	2007: 82,000,000 tones, 0.06% Mo	
ELKO COUNTY			
Carlin Vanadium (Carlin district)	V	2010: 28,000,000 tones, 0.515% V ₂ O ₅ (inferred resource)	
Contact (Contact district)	Cu	2009: 33,578,000 tons, 0.293% Cu (proven and probable reserve); 89,551,000 tons, 0.268% Cu (measured and indicated resource); 50,520,000 tons, 0.302% Cu (inferred resource) 2012: 215,710,000,000 tons, 0.25% Cu (measured and indicated resource); 70,921,000,000 tons, 0.24% Cu, (inferred resource) 2013: 141,094,000 tons, 0.22% Cu, (proven and probable reserve); 3,340,000 tons, 0.18% Cu (inferred resource) 2016: 141,094,000 tons, 0.22% Cu, (proven and probable reserve); 213,113,000 tons, 0.2% Cu (measured and indicated resource, 12,982,000 tons, 0.2%, (inferred resource)	
Hot Spot No. 1 (Mountain City district)	U	1956: 13,200 tons, 0.137% U ₃ O ₈ in eight small deposits (indicated ore)	

OTHER METALLIC DEPOSITS, ELKO COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Indian Springs (Delano district)	W	2007: 10,800,000 tons, 0.171% WO ₃ (indicated resource); 8,200,000 tons, 0.167% WO ₃ (inferred resource)	
Marshall (Contact district)	Cu	1972: 8,128,115 tons, 2.3% Cu equivalent	1917-30: N/A
Montrose (Alder district)	W	1952: 1,050 tons, 0.25% WO ₃ (inferred resource)	
Rio Tinto (Mountain City District)	Cu	1976 Footwall deposit: 600,000 tons, 1% copper (one-third mined)	1931-47: 1,109,878 tons, 9.7% Cu, 0.3 opt Ag, 0.006
Victoria (Dolly Varden district)	Cu, Ag	1973: 3,500,000 tons, 2.45% Cu (reserves) 1976 underground: 2,068,650 tons, 3% Cu (proven and probable reserve) 1981: 1,375,425 tons, 2.15% Cu, 0.35 opt Ag (proven and probable reserves)	1975-77: 6,000 tons Cu 1980-81: 124,575 tons, 1.56% Cu, 0.32 opt Ag

ESMERALDA COUNTY

Black Horse (Black Horse district)	W, Mo	1982: 300,000 tons, 0.05% WO ₃ , 0.08% Mo	1940-78 (Intermittant): 6,000 units WO ₃
Cucomungo (Tule Canyon district)	Mo	2006 Basalt Cap Zone: 30,000,000 tons, 0.11% MoS ₂ (0.066% Mo, drill-indicated resource); Roper Tunnel Zone: 9,000,000 tons 0.125% to 0.25% MoS ₂ (possible resource)	

EUREKA COUNTY

Gibellini (Gibellini district)	V	2011: 19,970,000 tons 0.30% V ₂ O ₅ (proven and probable reserve, Gibellini Hill, part of the measured and indicated resource); 23,050,000 tons, 0.29% V ₂ O ₅ (measured and indicated resource, Gibellini Hill); 14,230,000 tons, 0.17% V ₂ O ₅ (inferred resource, reduced material)	
Mount Hope (Mount Hope district)	Mo	2007: 965,926,000 tons 0.068% Mo (proven and probable reserves); 109,641,000 tons, 0.030% Mo (measured and indicated resource); 191,308,000 tons, 0.063% Mo (inferred resource) 2014: 984,602,000 tons 0.07% Mo (proven and probable reserves); 65,243,000 tons, 0.033% Mo (measured and indicated resource); 111,261,000 tons, 0.056% Mo (inferred resource)	

HUMBOLDT COUNTY

Alpine (Porvenir) (Potosi district)	W	1946: 10,000 tons, 0.475% WO ₃ (estimated and inferred reserve)	1943: 8,000 tons, 0.5% WO ₃ 1942-43, 1952-53: est. 24,000 units WO ₃
Ashdown (Vicksburg district)	Mo	1983: 10,000 tons molybdenite on dump 2006 (Sylvia Vein): 21,550 tons, 8% Mo	2006: 10,500 lbs Mo 2007: 247,466 lbs Mo 2008: 202,597 lbs Mo 2009: 214,714 lbs Mo 2010: 189,035 lbs Mo 2011: 648,853 lbs Mo 2012: 44,092 lbs Mo
Cordero (Opalite district)	Ga	2007: 1000,000 tons, 47.7 ppm Ga (measured and indicated resource); 6,600,000 tons, 43.7 ppm Ga (inferred resource)	

OTHER METALLIC DEPOSITS, ELKO COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Granite Creek (Potosi district)	W	1946: 118,000 tons, 0.48% WO ₃ (measured, indicated, and inferred reserve)	1942-44: 88,000 tons, 0.5% WO ₃ 1942-46, 1950-57: 149,100 units WO ₃
Kings Valley (Disaster district)	U	2006: 2,978,000 tons, 0.081% U ₃ O ₈ (inferred resource)	
Kirby (Potosi district)	W	1946: 5,500 tons, 0.42% WO ₃ (measured, indicated, and inferred reserve)	<1943: 32,000 tons, 0.43% WO ₃ 1943, 1950-51: est. 25,000 units WO ₃
Knight (Potosi district)	W	1946: 2,100 tons, 0.52% WO ₃ (estimated and inferred reserve)	
Markus (Potosi district)	W	1946: 7,650 tons, 0.4% WO ₃ (measured, indicated, and inferred reserve)	1956-57: 100,000 units WO ₃
McDermitt (Opalite district)	Hg	1982: 1,325,000 tons, 10 lbs per ton Hg (measured reserve)	1974-90: N/A
Pacific (Getchell) (Potosi district)	W	1946: 40,000 tons, 0.5% WO ₃ (estimated and inferred reserve)	1951-1956: est. 150,000 units WO ₃
Richmond (Potosi district)	W	1946: 20,000 tons, 0.5% WO ₃ (estimated and inferred reserve)	1942-43: 30,000 tons, 0.5% WO ₃ 1942-43, 1954: 15,100 units WO ₃
Riley (Dernan) (Potosi district)	W	1946: 578,500 tons, 0.7% WO ₃ (estimated and inferred reserve)	1943-45: 88,000 tons 1943-57: est. 337,000 units WO ₃
Uranium Lode Star (Virgin Valley district)	U	1984: 15 to 20,000,000 tons low grade uranium-bearing material ("submarginal" resource)	
Valley View (Saunders) (Potosi district)	W	1945: 56,000 tons, 0.49% WO ₃ (estimated and inferred reserve)	<1945: 1,500 tons 1942-44, 1951-1956: est. 37,680 units WO ₃

LANDER COUNTY

Apex (Reese River district)	U	2006: 1,119,928 tons, 0.07% U ₃ O ₈ (inferred resource)	1954-60, 1963-66: 106,000 lbs. U ₃ O ₈
Black Eagle (Jersey district)	Mn	1942: 49,000 tons, 12.27% Mn (assured); 70,000 tons, 11.96% Mn (assured and probable); 83,500 tons, 11.68% Mn (assured, probable, and possible)	
Black Rock (Buffalo Valley district)	Mn	1942: 16,650 tons, 15.1% Mn (assured); 30,000 tons, 14.1% Mn (assured and probable); 42,600 tons, 12.7% Mn (assured, probable, and possible)	1942-47: 11,150 tons, 13.5-39.9% Mn 1950-53: 10,126 tons ore
Buckingham (Battle Mountain district)	Mo	1984: 1.1 billion tons, 0.06% MoS ₂ (resource)	
(Battle Mountain district)	Cu	2007: 279,600,000 tons, 0.13% Cu (proven and probable reserves); 91,300,000 tons, 0.16% Cu (measured and indicated resource); 23,900,000 tons, 0.16% Cu (inferred resource) 2008: 302,000,000 tons, 0.15% Cu (proven and probable reserves); 91,700,000 tons, 0.20% Cu (measured and indicated resource); 95,953,000 tons, 0.23% Cu (inferred resource) 2009: 287,500,000 tons, 0.16% Cu (proven and probable reserves); 199,687,000 tons, 0.18% Cu	2006: 6,235,096 lbs Cu 2007: 10,808,206 lbs Cu 2008: 15,853,706 lbs Cu 2009: 23,733,389 lbs Cu 2010: 19,008,818 lbs Cu 2011: 23,897,865 lbs Cu 2012: 27,809,189 lbs Cu 2013: 29,815,908 lbs Cu 2014: 46,014,331 lbs Cu (See Major Precious Metal Deposits also.) 2015: 46,330,821 lbs Cu (See Major Precious Metal Deposits also.) 2016: 41,806,950 lbs Cu

OTHER METALLIC DEPOSITS, LANDER COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Phoenix (cont.)		(measured and indicated resource); 91,815,000 0.23% Cu (inferred resource) 2010 Mill: 332,600,000 tons, 0.15% Cu (probable reserve, 61% recovery); 150,900,000 tons, 0.13% Cu (indicated resource); 56,600,000 0.12% Cu (inferred resource) 2010 Leach: 132,900,000 tons, 0.23% Cu (probable reserve, 53% recovery); 25,900,000 tons, 0.19% Cu (indicated resource); 45,900,000 tons, 0.22% Cu (inferred resource) 2011 Mill: 450,300,000 tons, 0.15% Cu, 1,300,000,000 lbs. Cu (proven and probable reserve, 61% recovery); 216,400,000 tons, 0.09% Cu (indicated resource); 132,300,000 tons, 0.1% Cu (inferred resource) 2011 Leach: 170,200,000 tons, 0.21% Cu, 690,000,000 Cu, (proven and probable reserve, 52% recovery); 14,100,000 tons, 0.2% Cu (indicated resource); 54,100,000 tons, 0.2% Cu (inferred resource) 2012 Mill: 443,200,000 tons, 0.15% Cu, (proven and probable reserve); 198,100,000 tons, (measured and indicated resource); 119,600,000 tons, 0.1% Cu, (inferred resource); Leach: 177,100,000 tons, 0.24% Cu, (probable reserve); 22,300,000 tons, 0.25% Cu (measured and indicated resource); 16,900,000 tons, 0.2% Cu, (inferred resource) 2013 Mill: 339,100,000 tons, 0.14% Cu, (proven and probable reserve); (leach): 160,800,000 tons, 0.22% Cu, (probable reserve); Total: 499,900,000 tons, 0.17% Cu, (proven and probable reserve); 220,500,000 tons, 0.14% Cu (mineralized material) 2014 Mill: 324,900,000 tons, 0.14% Cu, (proven and probable reserve); Leach: 211,700,000 tons, 0.19% Cu, (probable reserve); Total: 536,500,000 tons, 0.16% Cu, (probable reserve) 89,100,000 tons, 0.13% Cu (mineralized material) 2015 Mill: 289,500,000 tons, 0.14% Cu, (proven and probable reserve); Leach: 237,900,000 tons, 0.19% Cu, (proven and probable reserve); Total: 527,400,000 tons, 0.17% Cu, (proven and probable reserve); 199,400,000 tons, 0.12% Cu (mineralized material) [2016: 395,500,000 tons, 0.16% Cu, (proven and probable reserve); 257,000,000 tons, 0.13% Cu (mineralized material)	(See Major Precious Metal Deposits)

LINCOLN COUNTY

Andies Mine (Tem Piute district)	Hg	1964: 64,000 tons, 2.13 lbs. per ton (indicated)	
Groom Mine (Groom district)	Pb, Zn	1963: Reserve: 30,000 tons, 0.5 opt Ag, 4-5% Pb (reserve)	1915-26: Concentrates: 6,145 tons, 100,341 oz Ag, 5,926,371 lbs. Pb
Pan American (Comet district)	Pb, Zn	1982: 2,196,000 tons, 1.17% Pb, 2.45% Zn, (proven reserve)	1947-78: N/A

LYON COUNTY

Ann Mason (Yerington district)	Cu	2010: 1,409,960,000 tons, 0.336% Cu, (inferred resource) 315,220,000 tons, 0.485% Cu, (inferred resource)	
	Cu, Mo	2012: 1,253,000,000 tons, 0.33% Cu,	

OTHER METALLIC DEPOSITS, LYON COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Ann Mason (cont.)		0.006% Mo, 0.0006 opt Au, 0.017 opt Ag (indicated resource); 962,000,000 tons, 0.29% Cu, 0.004% Mo, 0.0009 opt Au, 0.019 opt Ag (inferred resource)	
	Cu, Mo	2015: 1,540,000,000 tons, 0.32% Cu, 0.006% Mo, 0.0009 opt Au, 0.019 opt Ag (indicated resource); 699,600,000 tons, 0.29% Cu, 0.007% Mo, 0.0009 opt Au, 0.019 opt Ag (inferred resource)	
Blue Hill (Yerington district)	Cu, Mo	2012: Oxide Zone: 52,290,000 tons, 0.17% Cu, Mixed Zone: 27,220,000 tons, 0.18% Cu, (inferred resource); Sulfide Zone: 54,960,000 tons, 0.23% Cu, 0.005% Mo, 0.0003 opt Au, 0.009 opt Ag (inferred resource)	
MacArthur (Yerington district)	Cu	2008: 57,365,000 tons, 0.239% Cu, (measured and indicated resource, oxide and chalcocite material) 75,832,000 tons, 0.283% Cu, (inferred resource, oxide and chalcocite material) 2010: 143,721,000 tons, 0.192% Cu (measured and indicated resource, oxide and chalcocite material); 215,043,000 tons, 0.197% Cu (inferred resource, oxide and chalcocite material); 74,090,000 tons, 0.256% Cu (inferred resource, primary sulfide material) 2011: 159,094,000 tons, 0.212% Cu, (measured and indicated resource, oxide and chalcocite material); 243,417,000 tons, 0.201% Cu, (inferred resource, oxide and chalcocite material); 1,098,000 tons, 0.292% Cu, (measured and indicated resource, primary sulfide material); 34,900,000 tons, 0.283% Cu (inferred resource, primary sulfide material)	
Pumpkin Hollow (Yerington district)	Cu, Fe,	2007: 342,735,000 tons, 0.579% Cu, 0.0019 opt Au, 0.07 opt Ag, 15.67% Fe (measured and indicated resource); 438,164,000 tons, 0.446% Cu, 0.0015 opt Au, 0.07 opt Ag, 10.23% Fe (inferred resource)	
	Cu	2009 (0.2% Cu cut-off grade): 488,228,000 tons, 0.58% Cu, 0.002 opt Au, 0.069 opt Ag (measured and indicated resource); 440,826,000 tons, 0.42% Cu, 0.001 opt Au, 0.048 opt Ag (inferred resource)	
	Fe	2009 (10% Fe cut-off grade): 306,420,000 tons, 30.04% Fe (measured and indicated resource); 440,138,000 tons, 20.67% Fe (inferred resource)	
	Cu	2010: 531,042,000 tons, 0.55% Cu, 0.003 opt Au, 0.079 opt Ag (total measured and indicated resource); 495,129,000 tons, 0.37% Cu, 0.001 opt Au, 0.044 opt Ag (total inferred resource); 33,544,000 tons, 1.74% Cu, 0.010 opt Au, 0.244 opt Ag (measured and indicated resource, eastern underground deposits,) 249,155,000 tons, 0.6% copper, 0.002 opt gold, 0.067 opt Ag (measured and indicated resource, western open pit deposits)	
	Fe	2010: 340,898,000 tons, 32.59% Fe (measured and indicated resource, western open pit deposits); 29,769,000 tons, 25.6% Fe (inferred resource, western open pit deposits)	
	Cu, Au, Ag	2011 Western open pit deposits: 560,599,000 tons, 0.39% Cu, 0.002 opt Au, 0.053 opt Ag, (measured and indicated resource); 387,757,000 tons, 0.3% Cu, 0.001opt Au, 0.039 opt Ag, (inferred resource) Eastern underground deposits: 50,589,000 tons, 1.45% Cu, 0.009 opt Au, 0.213 opt Ag, (measured and indicated resource); 12,098,000 tons, 1.11% Cu, 0.002 opt Au,	

OTHER METALLIC DEPOSITS, LYON COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Pumpkin Hollow (cont.)		0.065 opt Ag, (inferred resource)	
	Fe	2011: Western open pit deposits: 340,898,000 tons, 32.59% Fe, (measured and indicated resource)	
	Cu, Au, Ag	2012 Western open pit deposits: 732,056,000 tons, 0.37% Cu, 0.001 opt Au, 0.046 opt Ag, (measured and indicated resource); 225,073,000 tons, 0.31% Cu, 0.001 opt Au, 0.041 opt Ag, (inferred resource); East underground deposits: 27,645,000 tons, 1.49% Cu, 0.008 opt Au, 0.17 opt Ag, (proven and probable reserve) E2 underground deposits: 8,132,000 tons, 1.65% Cu 0.006 opt Au, 0.186 opt Ag, (proven and probable reserve)	
	Fe	2012: Western open pit deposits: 400,226,000 tons, 32.2% Fe, (measured and indicated resource)	
	Cu, Au, Ag	2013: open pit: 528,186,000 tons, 0.377% Cu, 0.001 opt Au, 0.048 opt Ag, (proven and probable reserves); Western open pit deposits: 732,056,000 tons, 0.37% Cu, 0.001 opt Au, 0.047 opt Ag, (measured and indicated resource); 225,073,000 tons, 0.31% Cu, 0.001 opt Au, 0.039 opt Ag, (inferred resource)	
	Fe	2013: Western open pit deposits: 242,957,000 tons, 32.8% Fe, (measured resource,); 152,265,000 tons, 31% Fe, (indicated resource); 118,334,000 tons, 29% Fe, (inferred resource)	
	Cu, Au, Ag, Fe	2015: Western open pit deposits: 539,285,000 tons, 0.39% Cu, 0.001 opt Au, 0.044 opt Ag, (proven and probable reserves); 566,400,000 tons, 0.43% Cu, 0.001 opt Au, 0.042 opt Ag, 13.6% Fe, (measured and indicated resource); 8,000,000 tons, 0.52% Cu, 0.001 opt Au, 0.052 opt Ag, 6.1% Fe, (inferred resource); Eastern Underground Area: 32,603,000 tons, 1.287% Cu, 0.005 opt Au, 0.113 opt Ag, (proven and probable reserves); 54,100,000 tons, 1.39% Cu, 0.005 opt Au, 0.116 opt Ag, 17.8% Fe, (measured and indicated resource); 29,200,000 tons, 1.09% Cu, 0.003 opt Au, 0.064 opt Ag, 12.8% Fe, (inferred resource)	
Yerington (Yerington District)	Cu	2011: 18,391,000 tons, 0.23% Cu, 85,886,000 lbs. (measured and indicated resource, oxide and chalcocite material); 24,703,000 tons, 0.2% Cu, 97,873,000 lbs. Cu (inferred resource, oxide and chalcocite material); 102,526,000 tons, 0.26% Cu, (measured and indicated resource, primary sulfide material); 160,104,000 tons, 0.2% Cu (inferred resource, primary material)	1952-79: 1,744,000,000 lbs. Cu
	Cu	2013: Oxide and Chalcocite Zone: 23,500,000 tons, 0.25% Cu (measured and indicated resource,); 25,900,000 tons, 0.23% Cu, (inferred resource) Primary Sulfide Zone: 105,000,000 tons, 0.3% Cu, (measured and indicated resource); 128,000,000 tons, 0.23% Cu (inferred resource)	
MINERAL COUNTY			
Desert Scheelite (Pilot Mtns. District)	W, Cu, Ag	2012: 6,710,000 tons, 0.31% WO ₃ , 0.71 opt Ag, 0.16% Cu (indicated resource, 770,000 tons, 0.3% WO ₃ , 0.28 opt Ag, 0.24% Cu (inferred resource)	
New York Canyon (Santa Fe District)	Cu	2010: 26,250,000 tons, 0.43% Cu (indicated resource), 2,900,000 tons, 0.31% Cu (inferred resource)	
Pine Tree (Pilot Mtns. District)	Mo, Cu, Ag	2011: 240,840,000 tons, 0.04% MoS ₂ , 0.09% Cu, 0.044 opt Ag, (indicated resource); 196,760,000 tons, 0.3% MoS ₂ , 0.09% Cu, 0.039 opt Ag, (inferred resource)	

NYE COUNTY

B and C Springs (Paradise Peak district)	Mo, Cu	1983: 131,000,000 tons, 0.12% Mo 2007 Open pit: 105,902,046 tons, 0.048% Mo, 0.068% Cu, (indicated resource); Underground: 2,846,524 tons, 0.234% Mo, 0.334% Cu (indicated resource)	
Bisoni McKay (Gibellini District)	V	2008: Area A North: 8,073,844 tons, 0.43% V ₂ O ₅ (indicated resource); Area A North: 4,744,214 tons, 0.48% V ₂ O ₅ (inferred resource); Area A South: 5,490,356 tons, 0.48% V ₂ O ₅ (inferred resource) 2015: Area A North: Oxide: 5,623,556 tons, 0.347% V ₂ O ₅ ; Reduced: 7,447,730 tons, 0.429% V ₂ O ₅ (indicated resource); Oxide: 773,522 tons, 0.374% V ₂ O ₅ ; Reduced: 521,468 tons, 0.378% V ₂ O ₅ (inferred resource); Area A North and South combined: Oxide: 4,579,268 tons, 0.347% V ₂ O ₅ ; Reduced: 7,300,322 tons, 0.429% V ₂ O ₅ (indicated resource); Oxide: 2,893,104 tons, 0.324% V ₂ O ₅ ; Reduced: 4,154,952 tons, 0.498% V ₂ O ₅ (inferred resource)	
Liberty (formerly known as Hall-Tonopah) (San Antone district)	Mo Mo, Cu Mo, Cu	2007 (April 2008): 432,951,000 tons, 0.071% Mo, 0.07% Cu (proven and probable reserves); 109,336,000 tons, 0.052% Mo, 0.11% Cu (measured and indicated resource); 127,200,000 tons, 0.051% Mo, 0.08% Cu (inferred resource) 2011: 541,420,000 tons, 0.068% Mo, 0.08% Cu (proven and probable reserves, 0.02% Mo cut-off grade) 105,194,000 tons, 0.052% Mo, 0.05% Cu (measured and indicated resource, 0.02% Mo cut-off grade) 252,647,000 tons, 0.04% Mo, 0.13% Cu (inferred resource, 0.02% Mo cut-off grade) 2014: 309,216,000 tons, 0.078% Mo, 0.098% Cu, (proven and probable reserves); 566,159,000 tons, 0.067% Mo, 0.084% Cu, (measured and indicated resource); 148,598,000 tons, 0.052% Mo, 0.115% Cu, (inferred resource)	1982-91: 50,000,000 tons, 0.11% Mo
Tonopah (San Antone district)	Cu	1999: 98,000,000 tons, 0.343% Cu (proven reserve); 137,800,000 tons, 0.314% Cu (resource)	1999-2001: N/A

PERSHING COUNTY

Black Diablo (Black Diablo district)	Mn	1942: 75,000 tons, 30% Mn; 75,000 tons, 5-8% Mn	1929-54: 5,497 long tons, 36.3% Mn; 54,485 long tons, 28.5% Mn
Buena Vista (Mineral Basin district)	Fe	1958: 45,517,153 tons, 29.24% Fe, (assured ore); 21,557,550 tons, 26.57% Fe, (possible ore); 55,934,000 tons, 24.95% Fe, (prospective ore); 123,008,703 tons, 26.83% Fe, (total)	
Fencemaker (Table Mountain district)	Sb	1981: 100,000 tons (probable reserve) 400,000 tons (possible reserve) 2012: 34,125 tons, 2.92% Sb (inferred resource)	1880s: 1 ton Sb metal 1940: 2 tons ore, 50% Sb 1966-81: N/A 2013-2014: 500 tons ore
Gold Banks (Goldbanks district)	Hg	1965: 71,000 tons, 5.87 lbs. per ton (probable); 24,000 tons, 8.07 lbs. per ton (possible)	
Humboldt (Mill City district)	W	1958: est. 50,000-70,000 units WO ₃	1917-18: 8,075 tons, 2% WO ₃ , milled 1918-19: 15,220 tons, 0.68% WO ₃ , milled
Majuba Hill (Antelope district)	Cu, Ag, Sn	1965: 30,000 tons, 3% Cu, 2 opt Ag, 0.18% Sn (resource)	1915-19: 5,000 tons, 12% Cu, 5 opt Ag 1942-45: 12,000 tons 3.9% Cu, 1.4 opt Ag; 350 tons, 3.4% Sn

OTHER METALLIC DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Rose Creek (Rose Creek district)	W	1940: 6,000 tons, 15% WO ₃ (reserve)	1943-45: 1,898 tons, 1% 1943-44, 1952-56: 3,690 units WO ₃
Springer (Mill City district)	W	1983: 3,590,000 tons, 0.446% WO ₃ (historical General Electric resource) 2009 (Sutton beds): 274,000 tons, 0.619% WO ₃ (indicated resource) 1,097,000 tons, 0.562% WO ₃ (inferred resource) 2013 Sutton I and II: 355,000 tons, 0.537% WO ₃ (indicated resource), 1,616,000 tons, 0.459% WO ₃ , (inferred resource); Springer West: 318,600 tons, 0.663% WO ₃ , (inferred resource); George: 143,950 tons, 0.423% WO ₃ , (inferred resource); O'Byrne: 173,670 tons, 0.862% WO ₃ , (inferred resource), 2016 Sutton I and II: 246,117 tons, 0.43% WO ₃ (indicated resource); 1,450,368 tons, 0.44% WO ₃ , (inferred resource); Springer West: 318,600 tons, 0.663% WO ₃ , (inferred resource)	1917-19: 1,356 tons, 1.32% WO ₃ 1920-58: N/A
WASHOE COUNTY			
Red Bluff (Pyramid district)	U	1991: 200,000 tons, 0.13% U ₃ O ₈ (resource, 0.05% U ₃ O ₈ cut-off grade); 100,000 tons, 0.24% U ₃ O ₈ (resource, 0.1% U ₃ O ₈ cut-off grade)	
WHITE PINE COUNTY			
Bald Mountain (Bald Mountain District)	W	1942: 6,500 tons, 0.95% WO ₃ , 4,600 tons, 0.45% WO ₃ (reserves)	1942: N/A 1954-55: 1,000 tons ore 1979: 5,000 tons ore
Monte Cristo (White Pine District)	W, Mo	1980: 5,500,000 tons, 0.3% WO ₃ , 0.2% Mo (estimated reserve)	
Mt. Wheeler (Lincoln District)	Be, W, Fluorspar	1959: 100,000 tons, 0.75% BeO 1969: 200,000 tons, 0.75% BeO, 0.3% WO ₃ , 22% CaF ₂ (ore reserves) 1972: 59,625 tons (proven ore), 30,200 tons (probable ore), 191,900 tons (possible ore)	
Robinson (Robinson district)	Cu, Mo	See Major Precious Metal Deposits	

INDUSTRIAL MINERALS

by David A. Davis

The total value of industrial minerals produced in Nevada was estimated to be at least \$522,000,000, an increase of 10% from 2015. Minus the value of aggregate, the total value was about \$223,500,000, a decrease of 16% from 2015. Much of the decrease was due to a 56% decrease in barite production and a 25% drop in the production of lithium compounds. Aggregate was the only industrial mineral with a production value of more than \$100,000,000. Industrial minerals with production values of \$10,000,000 to \$100,000,000, in decreasing order of value, were diatomite, gypsum, lime and limestone, lithium, silica, dimension stone/landscape rock, and barite. Industrial mineral commodities with production values of less than \$10,000,000 were clay, magnesia, dolomite, alunite, perlite, iron ore, salt, gems, and pozzolan. Zeolite was processed in Nevada but mined in California, and as such was not included in the estimate of total value of industrial minerals. Data used for these estimates, and data reported for individual commodities below, were obtained from: the Nevada Division of Minerals (NDOM), the Nevada Department of Taxation (NDT), the U.S. Bureau of Land Management (BLM), the U.S. Geological Survey (USGS), or directly from companies that produced the commodities. Garrett Wake, Chief of Southern Nevada Operations, Nevada Division of Minerals in Las Vegas, helped with the aggregate section. Data are given in short tons unless otherwise noted. Unless otherwise noted, individual and compiled state production data are from NDOM. The gross proceeds are from NDT. USGS data (mostly domestic production, consumption, prices, and trends) cited are from commodity reports on the agency's website at <http://minerals.usgs.gov/minerals/pubs/commodity>.

Aggregate (Sand and Gravel, Crushed Stone)

The estimated domestic production of construction sand and gravel was 1,113,000,000 tons (1,010,000,000 tonnes) valued at \$8,900,000,000, increases of 8% and 11% respectively from 2015. The estimated domestic production of crushed stone was 1,630,000,000 tons (1,480,000,000 tonnes) valued at \$16,200,000,000, increases of 11% and 2016 marked the sixth annual increase since 2010 and the highest production since 2008 but was still 24% below the 2006 peak of 1,460,000,000 tons (1,320,000,000 tonnes). 2016 marked the fifth annual increase since 2011, but was still 17% below the 2006 peak of 1,962,000,000 tons (1,780,000,000 tonnes). The estimated apparent

consumption of construction sand and gravel increased 7% to 1,113,000,000 tons (1,010,000,000 tonnes). This marked the sixth annual increase, but was still 23% below the 2006 peak of 1,962,000,000 tons (1,780,000,000 tonnes). The estimated apparent consumption of crushed stone increased 10% to 1,700,000,000 tons (1,540,000,000 tonnes). This marked the fifth annual increase after two years, but was still 14% below the 2006 peak of 1,973,000,000 tons (1,790,000,000 tonnes). The average price of construction sand and gravel increased less than 3% to \$7.98 per ton (\$8.80 per tonne) from \$7.78 per ton (\$8.58 per tonne) in 2015. The average price of crushed stone increased 4% to \$9.96 per ton (\$10.98 per tonne) from \$9.59 per ton (\$10.57 per tonne) in 2015. Production, consumption, and prices are driven by the construction market and followed the construction boom up through 2006 and subsequent crash thereafter. Increases starting around 2010 reflect improvements in the construction market, with growth in the construction sector not seen since 2015. Operations forcibly closed or moved away from densely populated areas due to concerns with environmental, health, permitting, safety, or zoning regulations continued, which resulted in local shortages and increased transportation costs.

Nevada produced an estimated 23,810,000 tons (21,600,000 tonnes) of construction sand and gravel valued at \$172,000,000 and 14,000,000 tons (12,700,000 tonnes) of crushed stone valued at \$126,600,000. The production and value of construction sand and gravel increased 35% and 47% respectively, and crushed stone increased 49% and 69% respectively from 2015. Production from sand and gravel deposits accounted for about 63% of aggregate production statewide, with crushed stone and lightweight aggregate making up the balance. The total estimated production value of \$298,600,000 (an increase of 44% from 2015) made construction aggregate the third most valuable commodity produced in the state surpassing the value of silver for the first time in recent years.

An estimated 21,760,000 tons (19,740,000 tonnes) of construction aggregate were produced in the Las Vegas area with sand and gravel operations accounting for about 61% of the aggregate production. The Lone Mountain area in northwest Las Vegas accounted for about one-fifth of the production and continued to be the area's most important source of sand and gravel. Significant production also came from sand and gravel pits and stone quarries south and northeast of Las Vegas and in Ivanpah Valley south-southwest of Las Vegas. Portable crushers at construction sites were also important producers of base aggregate in Las Vegas.

The major producers in the Las Vegas area in descending order of production were as follows: Las Vegas Paving, a major producer of asphalt concrete,

produced sand and gravel from their Blue Diamond, Lone Mountain, and Primm pits and some crushed stone from the Apex Landfill pit. Aggregate Industries, through its subsidiary Frehner Inc., mined and crushed limestone from its Sloan property a few miles south of Las Vegas. Impact Sand and Gravel Inc., under CTC Crushing LLC, mined sand and gravel from its Jericho and Boulder Ranch pits at the north end of Eldorado Valley. Their other pits, such as Cactus and Inspirada, which the company has mined in the past, were not mined in 2015 or 2016. Nevada Ready Mix, a subsidiary of the Mitsubishi Corp., mined most of its aggregate from a complex of pits in alluvium in the Lone Mountain area, with minor production coming from quarries in adjacent bedrock. Wells Cargo mined mostly sand and gravel from its Spring Mountain pit, which straddles Spring Mountain Road between South Buffalo Way and South Tenaya Way and is now surrounded by residential housing and some businesses. Wells Cargo also commenced mining operations at Lone Mountain. Sierra Ready Mix mined washed concrete sand at its pit in the Ivanpah Valley. These operations alone accounted for about half of the aggregate production in the Las Vegas area. Community pits and other aggregate mining facilities administered by the BLM and operated by a number of companies, including some of those already mentioned, annually account for between 10% and 20% of the total production of the Las Vegas and the rest of southern Nevada.

The Lone Mountain Community pit covers 4,053 acres, of which 1,620 acres are in the current mine plan, and 620 acres have currently been disturbed. Annual production at the Lone Mountain area peaked at more than 10,000,000 tons in 2005 and 2006, but declined rapidly from 2007 onward with the construction downturn. However, with the recent uptick in construction activity, annual production has increased to around 4,000,000 tons.

The Cind-R-Lite Block Company shipped lightweight aggregate to the Las Vegas market from their operation in a Quaternary basaltic cinder cone near Amargosa Valley in Nye County. Most of the material shipped was minus 3/8-inch aggregate for the manufacture of cinder blocks and pavers. Cind-R-Lite has two manufacturing sites in the Las Vegas Valley and one in Amargosa Valley.

An estimated 8,300,000 (7,530,000 tonnes) of construction aggregate were produced in the Reno-Sparks-Carson City area with crushed rock accounting for about 60% of the aggregate production. This figure is in the low end of the 60%–80% range common for the last ten years. The largest producers in the Reno-Sparks-Carson City area in rough order were as follows. The Lockwood pit operated by Granite Construction was the largest producer, at almost 1,000,000 tons (900,000 tonnes), which was their highest production for any one

year. The company produces crushed andesite and granitic rock. Production was down considerably in 2013 and 2014, but rebounded in 2015 and set a record in 2016. The company also produced sand gravel from the Wade Pit. At over 600,000 tons (540,000 tonnes) each, Martin Marietta Materials, Inc., and Rilite Aggregate Co. were the second and third largest producers. Martin Marietta Materials, Inc., operated the Spanish Springs (Rocky Ridge) Quarry north of Sparks, which produced crushed granitic rock and some decomposed granite. Rilite Aggregate Co. produced sand and crushed stone at its pit on the southeast end of the Truckee Meadows.

Of the smaller producers, CEMEX and Basalite Concrete Products mined lightweight aggregate, which is an important component of crushed rock production in the area. CEMEX owned the former All-Lite Aggregate crushed rhyolite pit, and also ran the sand and gravel operation at the Paiute Pit, which is currently leased from the Pyramid Lake Paiute Tribe. Sierra Nevada Construction Inc. produced aggregate from its Mustang pit, and Gopher Construction Inc. produced aggregate from its Trico pit in Storey County. A small amount of decorative rock and sand and cinder for deicing was mined from the Black and Red Cinder pits northeast of Carson City. Over 400,000 tons (380,000 tonnes) of decomposed granite was produced from the Donovan Pit and Spanish Springs Quarry in Washoe County and the Goni pit in Carson City.

About 7,850,000 tons (7,120,000 tonnes) of aggregate were produced outside of the major metropolitan areas, much of it from BLM administered pits on public lands. About 90% of the aggregate was sand and gravel. At over 1,230,000 tons (1,120,000 tonnes) of mostly sand and gravel, Nye County was the largest rural producer. About 60% of this production came from the Pahrump area, which in part supplied the demand of the Las Vegas area. Lyon County produced over 940,000 tons (837,000 tonnes) was the second largest rural producer and in part supplied the Reno-Carson City area. Elko and Douglas Counties produced over 700,000 tons (635,000 tonnes) each, with Humboldt County producing about 670,000 tons (606,300 tonnes). Pershing County producing about 512,000 tons (465,000 tonnes). The remaining counties each produced less than 300,000 tons (270,000 tonnes).

In early 2016, Ames Construction Inc. commenced extending the USA Parkway/State Route 439 with a tentative completion date of late 2017. In 2015, construction of the paved section had left off about six miles southeast of Patrick. The new construction will extend the pavement about 13 miles (21 km) over the Virginia Range to Opal Avenue in Silver Springs. An estimated 1,700,000 cubic yards (1,300,000 cubic meters) of material will be excavated and mostly reused as fill. Little roadway construction material is expected

to be imported from outside the area, but two adjacent sites were included in the study for any extra material needed. By mid-October 2016, the major earthwork had been 50% completed with 1,300,000 cubic yards (1,000,000 cubic meters) of material moved (Environmental Assessment, USA Parkway SR 439 project, FHWA-NV-EA 13.02, 9/2014; Nevada Department of Transportation Project Update, 12/14/2015; NDOT Begins Paving of USA Parkway, State Route 439 extension, CarsonNOW.org, 10/11/2016).

Fisher Sand and Gravel Co. continued construction on two concurrent phases of the Boulder City by-pass. Crushing equipment was used for producing aggregate on site with none expected to be needed from off site. Phase I involves upgrading U.S. 93 and building 2.5 miles (4 km) of freeway on the west end of the by-pass at a cost of \$83,000,000. About 2,300,000 cubic yards (1,750,000 cubic meters) of earth was expected to be moved for Phase I. Phase II involves construction of 12.5 miles (20 km) of freeway designated Interstate 11 from U.S. 93 west of Hoover Dam, bending south around Boulder City, and to the east end of Phase I at a cost of \$235,000,000. Phase I was more than 50% complete at year's end and was expected to be fully completed by August 2017. Phase II was expected to be completed in 2018 (Las Vegas Business Press, I-11 Bypass Job Includes Some Tricky Work, 3/16/2015; ConstructionEquipmentGuide.com, Crews Work to Fill Interstate Gap between Vegas, Phoenix, 2/23/2016; First phases of Interstate 11 race to completion in 2018, Las Vegas Sun, 3/2/2017; Opening of 1st Stretch of Interstate 11 in Nevada Delayed; Associated Press, 8/14/2017; <http://i-11nv.com>).

Alunite

Heart of Nature, LLC, a subsidiary of Advanced Bio-Minerals Technologies, LLC, of Henderson, Nevada, processed material from its Alum/Sulfur pit (formerly the Rulco Potassium Sulfate project) in the Alum Mining district in Esmeralda County. The company campaign produced 24,632 tons (22,346 tonnes) of material, and the gross proceeds were \$2,042,782, declines of 11% and 43% respectively from 2015. The mineral assemblage mined includes alunite, potassium alum (kalinite), jarosite, gypsum, native sulfur, and potassium feldspar. The alunite occurs with kalinite and sulfur as veins, stringers, and fracture fillings in either a dike or neck of rhyolite intruded into folded rhyolitic tuffs of the Tertiary Esperanza Formation. Reddish, iron-stained jarosite occurs locally in the pit. The material is mined, crushed, and stockpiled with the stockpiled material being processed as necessary. Alunite and sulfur are the main essential minerals with thiobacillus bacteria added. The final

product is sold as an agricultural soil amendment, as an odor control for manure, and as an odor and algae control for ponds under the trade name SK Microsource™. (Heart of Nature, LLC, website, <http://www.heartofnature.biz>)

Barite

Domestic production and value of barite decreased 26% and 59% respectively to an estimated 348,000 tons (316,000 tonnes) (crude) valued at about \$37,700,000 (for grinding). This was the lowest production since 347,000 tons (315,000 tonnes) were produced in 1993. Production is down 56% since a recent high in 2013. Most of this production came from Nevada, and the remainder came from a mine in Georgia. Production reported by the NDOM is considerably lower than what is reported by the USGS. The difference is because the USGS reports run-of-mine, flotation, or other beneficiated material that is sold or used by the producer, while the NDOM reports only shipped barite, which may include some material from stockpiles. Estimated apparent consumption decreased 26% to 1,600,000 tons (1,450,000 tonnes). Consumption has decreased for two years in a row, and is down 58% from a recent high in 2012. Imported barite, mostly from China and some from India, Morocco, and Mexico decreased 28% to about 1,320,000 tons (1,200,000 tonnes). China, India, and Morocco combined accounted for 63% of the world's production and China, India, Iran, Kazakhstan, and Turkey combined accounted for 65% of the world's reserves. The estimated average price of barite remained high at \$180 per ton (\$198 per tonne) free on board from the mine, only about \$0.90 higher than in 2015. The price has increased 790% since 2001. The most recent rise in prices and peaks in consumption in 2012 production in 2013 was mainly due to strong demand during worldwide oil and gas drilling boom. From mid-2014 onward, an oil glut with prices down to and at times below \$40 per barrel, resulted in a major drop in drilling and demand for barite.

More than 90% of the barite sold in the United States is used as a weighting agent for drilling. Barite mined in Nevada was sold mainly to customers drilling in Colorado, New Mexico, North Dakota, Utah, and Wyoming. Imported barite came through Louisiana and Texas ports mostly for use in oil and gas drilling offshore in the Gulf of Mexico and onshore drilling in Louisiana, Oklahoma, and Texas.

Demand is tied to oil and gas drilling, and the drill rig count has traditionally acted as a barometer of where production is headed, though the demand can be underestimated due to some rigs completing multiple holes from a single pad. Demand due to oil drilling increased in 2011, but then softened some through 2012

and 2013 as companies stockpiled barite to assure an adequate future supply. The rig count was 664 at the start of 2016 and decreased 39% to 404 in May, before increasing again and ending the year at 658, nearly the same as at the start. This generally followed the price of oil, which averaged above \$100 per barrel in mid-2014 before declining steeply to \$30.32 per barrel in February 2016, and then increased \$51.97 per barrel at the end of 2016. An average of 19.6% of the rigs were used in drilling for gas, down from 24% in 2015. That count averaged 100, a decrease of 56% from 2015. The rig count for gas started at 148 in 2016 and ended the year at 132. The count generally followed gas prices which continued to decrease until March and then showed an increase by the end of 2016. The average combined weekly rig count for the five main states making up the market for barite produced in Nevada averaged 87, a 59% decrease from 214 in 2015. (Baker Hughes website: <http://www.bakerhughes.com>)

Nevada's barite production comes from four operations, though one operation only sold from stockpiles. They shipped 230,114 tons (208,758 tonnes), a 56% decrease from 2015. Also, the gross proceeds were \$19,981,158, a decrease of 69% from 2015. The most recent production peak of 811,334 tons (736,042 tonnes) shipped came in 2012 during high demand for oil and gas drilling and a fracking boom. This had been highest since 1,765,000 tons (1,601,000 tonnes) were produced in 1982, though it is only 33% of the high of 2,482,000 tons (2,251,670 tonnes) produced in 1981.

M-I SWACO, a subsidiary of Schlumberger, Ltd., was the largest Nevada barite producer. The company shipped 114,808 tons (104,153 tonnes) of crude and ground barite from the Greystone Mine and Battle Mountain plant, both in Lander County, a 56% decrease from 2015. Conventional open pit mining with front-end loaders is used to remove the barite ore with concurrent reclamation. The ore is either stockpiled at an adjacent mill site or trucked to the Battle Mountain Grinding Plant for concentration. The mill consists of a three-stage crushing and screening circuit and a jig circuit for gravity separation to do the concentrating. Barite concentrates intended for use as a drilling mud must contain between 65% and 75% BaSO₄ with a specific gravity greater than 4:1. The barite of the Greystone Mine is hosted in the Middle to Late Devonian Slaven Chert which consists of black chert with minor argillite and shale.

M-I SWACO, also mined barite from the nearby Mountain Springs Mine in 2016. In past years barite was only taken from stockpiles for blending at the plant. The company shipped 62,487 tons (56,688 tonnes). The mine had last produced in 1986. Like at the Greystone Mine, the barite and Mountain Springs is also hosted in the Devonian Slaven Chert.

Baroid Drilling Fluids, a subsidiary of Halliburton Co., is the operator of the Rossi Mine and jig and the Dunphy mill facility. Due to the decreased demand, the mine was temporarily closed at the end of 2015, and the mill facility was temporarily closed on April 14, 2016. The mill facility consists of two grinding plants, one built in 1964 and the other in 2014. The latter is the largest barite grinding plant in North America. The property is in sections 25, 35, and 36, T31N, R46E and section 1, T30N, R46E. The barite at the Rossi Mine occurs in structurally complex chert and argillite of Ordovician Vinini Formation and Silurian to Devonian Elder Sandstone. (IMFORMED Industrial Mineral Forums and Research, Halliburton Idles Nevada Plant; Starts New Source in Kazakhstan, 4/26/2016; Halliburton Co. website, <http://www.halliburton.com>).

Baker Hughes Oilfield Operations, Inc., formerly Baker Hughes Drilling Fluids, shipped 33,533 tons (30,421 tonnes) of barite from its Argenta plant near Battle Mountain in Lander County, a 17% decrease from 2015. The company produced intermittently from the mine, which had been shut down from December 2014 through 2015 due to market conditions. The barite is hosted in the Devonian Slaven Chert.

National Oilwell Varco shipped 19,286 tons (17,496 tonnes) of ground barite from its Osino grinding plant, a 33% decrease from 2015. The company's Big Ledge Mine was shut down in 2014 with production coming from stockpiles. The Dry Creek jig plant last shipped concentrates in 2015. The barite at the Big Ledge Mine occurs in argillite and chert of the Ordovician Valmy Formation.

Baker Hughes, Inc., submitted a Plan of Operation to the BLM for the company's Scruffy Oz Project located about 13 miles southeast of Battle Mountain. The main project area covers 2,180 acres (882 hectares) and is located mainly in portions of the eastern part of T31N, R46E and the western part of T31N, R47E in the Argenta Mining district. The project also includes the barite on the adjacent Shoshone Pediment property owned by Bravada Gold Corp. Baker Hughes Inc. had acquired the rights to the barite on the Shoshone Pediment property, which consists of 70 claims mainly within section 24, T31N, R47E. The Plan of Operation proposes to mine up to 300,000 tons (272,000 tonnes) of barite annually from three open pits for up to five years. Two of the pits, which contain most of the known barite mineralization, are on the Shoshone Pediment property. The immediate area contains several deposits with up to 1,000,000 tons (900,000 tonnes) of past production. The barite occurs in beds at least 10 feet (3 meters) thick hosted in black chert, limestone, and argillite of the Devonian Slaven Chert. (LR-2000 BLM Database; Mine Permit Submitted for Bravada's Shoshone Pediment Barite-Royalty Property in Nevada; Provides

Corporate Update,
<http://finance.yahoo.com/news/mine-permit-submitted-bravadas-shoshone-220303848.html>, 6/1/2016; NBMG Bulletin 98; Bravada Gold Corp., news release, 6/1/2016; Bravada Gold Corp., website, <http://www.bravadagold.com>)

The U.S. Forest Service is working with the BLM on permitting the Ann Barite Mine project for Halliburton Energy Services, Inc. The project covers about 2,500 acres (1,000 hectares) in T12-13N, R46E in the Northumberland district, Nye County. The company proposes the construction of open pits, waste rock dumps, a jig plant for the production of barite concentrate, access roadways, and support facilities. A paleontological resource impact evaluation report was recently completed. The area of the deposit has been extensively trenched and drilled since at least 1967, and some material was stockpiled from shallow pits, but nothing was shipped. The barite is hosted in Devonian dark gray chert, grayish-orange claystone, and light gray mudstone that are possibly correlative to the Slaven Chert. (U.S. Forest Service, Paleontological Resource Impact Evaluation Report, 5/2014; Elko Free Press, 6/10/2017; NBMG Bulletin 98)

The descriptions of 181 Nevada barite deposits are compiled in NBMG Bulletin 98, *Barite in Nevada*, 1984, by Keith Papke. A collection of Nevada barite samples acquired by Keith Papke is also available at the NBMG Great Basin Science Sample and Records Library.

Cement

Domestic cement production increased 2% to an estimated 94,140,000 tons (85,400,000 tonnes) from 2015 valued at \$10,700,000,000. Estimated apparent consumption increased 3% to 106,400,000 tons (96,200,000 tonnes) with the difference between production and consumption made up by imports from Canada, South Korea, Greece, and China. Imports increased 16% to 13,200,000 tons (12,000,000 tonnes) from 2015. Production, consumption, and prices are driven by the housing market and followed the construction boom up through 2005 and the crash down afterwards. Both have increased annually since 2010, though production and consumption were still 14% and 25% below the 2005 peak. The estimated average mill price increased 5% to \$100.70 per ton (\$111.00 per tonne) from 2015. 2016 marks the fifth annual price increase since then. Domestic production grew at a slower rate in 2015 and 2016 due to 1) an increase in imports partly in response to the technical, economic, and environmental problems in restarting long idled kilns at some plants, and 2) the decrease in oil prices and slowdown in drilling requiring well cements.

The only cement producer in Nevada is Nevada Cement Co. (a subsidiary of Eagle Materials, Inc. of Dallas, Texas), which has a plant in Fernley in Lyon County. The plant's annual capacity is 500,000 tons (450,000 tonnes) of cement and 560,000 tons (510,000 tonnes) of clinker. The plant produces Type I/II, low alkali, moderate sulfate-resistant cement; Type II/V, low alkali, high sulfate-resistant cement; IP portland-pozzolan moderate sulfate-resistant cement; and Class N pozzolan. The cement is manufactured from limestone mined from three areas, pozzolan from the nearby Mustache pit, iron oxide from the Barth Mine in northern Eureka County, and clay from the Terraced Hills north of Pyramid Lake. A small amount of gypsum from an undisclosed source is also added during the clinker stage of production. Most of the limestone comes from the company quarry a few miles south of Fernley, a quarry in the Trinity Range about 40 miles east of the plant, and a quarry near the inactive Relief Canyon gold mine in the southern Humboldt Range about 70 miles northeast of the plant. Overall, the company has at least 50 years of limestone reserves including 14,400,000,000 tons (13,100,000,000 tonnes) on company-owned land and 70,600,000,000 tons (64,000,000,000 tonnes) on leased land. The gross proceeds were \$9,406,090 for the combined clay, pozzolan, iron ore, and limestone mines and the cement plant, a 17% decrease from 2015. The gross proceeds of the clay, iron ore, and limestone mines are also included in those sections below (Eagle Materials Inc., 10-K Report, 5/25/2016; Nevada Cement website, <http://www.nevadacement.com>).

Nevada Cement serves markets in northern Nevada and California, and the company has a rail terminal in Sacramento. Overall, for their fiscal year ending March 31, 2017, Eagle Materials reported their total cement sales volume and overall cement sales revenue were up 2% and 7% respectively from the previous year. Their average price was \$101.60 per ton (\$92.17 per tonne), a 4% increase from the previous year and 1% above the USGS estimated average (Eagle Materials Inc., 10-K Report, 5/24/2017; Eagle Materials Inc., website, <http://www.eaglematerials.com>).

Clay and Pozzolan

Domestic clay production increased 1% to an estimated 28,300,000 tons (25,700,000 tonnes) with a sales value of \$1,430,000,000 from 2015. The USGS divides output into: ball clay, bentonite, common clay, fire clay, fuller's earth, and kaolin. Estimated apparent consumption increased 7% to 25,800,000 tons (23,400,000 tonnes) from 2015. The difference between production and consumption was mainly attributable to exports, mainly from Brazil. Nevada has never been a large clay producer, and the state's 2016 clay production only accounts for 0.35% of domestic production. The

state's production (not including clay produced from stockpiles) increased 37% to 100,447 tons (91,125 tonnes). The gross proceeds for all Nevada clay production decreased 5% to \$8,068,977 from 2015.

IMV Nevada, a subsidiary of Lhoist North America, produced 48,385 tons (43,895 tonnes) of sepiolite and 20,485 tons (18,584 tonnes) of combined bentonite and saponite from deposits in the Ash Meadows-Amargosa Flat area of Nye County, a combined 123% increase from 2015. The bentonite is a white to off-white, calcium-based montmorillonite with an unusually well-developed dioctahedral crystalline structure and an extremely high cation exchange capacity. Saponite is similar to sodium bentonite (montmorillonite) except that magnesium has replaced all or most of the aluminum and exchangeable sodium. It is a swelling clay with a trioctahedral structure and a flat tubular mica-like crystal and a low cation exchange capacity that imparts thixotropy to aqueous solutions. Saponite has the same uses as bentonite but is more stable due to a much lower cation exchange capacity. Sepiolite is a hydrous magnesium silicate in the same clay family as attapulgite. It is structurally similar to bentonite and saponite, but the crystals are much more highly ordered and contain very few of the imperfections which give rise to cation exchange capacity. The nearly perfect crystal structure, which forms long "ribbons", contributes to high thermal stability, and helps impart viscosity to aqueous suspensions. Unlike bentonite and saponite, sepiolite is unaffected by electrolytes and can gel salt solutions. While similar to attapulgite, it is more efficient in some applications, such as asbestos replacement and reinforcing systems and is also an excellent binder. The clays occur in shallow, flat-lying deposits in Pliocene lacustrine rocks. It is processed at the company's Amargosa Valley plant, and clay products are exported worldwide for use in drilling mud, construction, and animal feed. The sepiolite and saponite deposits have unusual geology and are considered to have originated in a Pliocene playa with an area of at least 22 square miles (57 square km). The sepiolite, which yields most of the profits for the operation, occurs in an almost continuous bed with an average thickness of about seven feet (2 meters). IMV Nevada is the only commercial producer of sepiolite and saponite in North America. (IMV Nevada website, <http://www.imvnevada.com>).

Two companies intermittently mine and ship minor amounts of Nevada smectite from several sites for use in high-value specialty products. At its White Caps Mill near Beatty in Nye County, Vanderbilt Minerals Co. processes small amounts of clay stockpiled from several deposits in Nevada, Arizona, and California. The mine had been shut down since November 2011. In 2016, the company did not mine from the its Discovery Mine just south of Beatty, its Blanco Mine located about 40 miles

(64 km) west-southwest of Tonopah in the Coaldale mining district in Esmeralda County nor its Buff and Satin Mines about 10 miles (16 km) northeast of Lovelock in the Willard mining district in Pershing County. The company shipped 3,236 tons (2,936 tonnes) after processing from stockpiles from all three mines. The clay at the New Discovery Mine is derived from altered perlite and perilitic pitchstone interbedded in Tertiary tuff-breccia. The clay at the Blanco Mine is derived from altered tuff and tuffaceous sedimentary rocks of the late Miocene to early Pliocene Esmeralda Formation. The clay at the Satin and Buff Mines is derived from late Miocene to early Pliocene altered welded and non-welded tuffs.

The American Colloid Co. intermittently produces calcium bentonite from its Nassau property in Coal Canyon in the Willard mining district for use in specialty clay products. The company mined 4,486 tons (4,070 tonnes) and shipped 1,062 tons (963 tonnes) in 2016. The mine had been temporarily shut down in February 2014. The clay is hosted in altered rhyolite tuff-breccia of probable Miocene-Pliocene age.

The Nevada Cement Co., mined 25,391 tons (23,035 tonnes) of halloysite on an as-needed basis from its company-owned Flanagan pit in the Terraced Hills about 8 miles northwest of Pyramid Lake, a 41% decrease from 2015. Because of its high alumina content, halloysite is used in the production of Portland cement at the Nevada Cement Co. plant at Fernley. The halloysite occurs in partly altered, lapilli tuff in a pyroclastic unit separating late Miocene to Pliocene andesitic and basaltic flows. In the past, the Art Wilson Co. was contracted to mine the clay, but Nevada Cement Co. employees have mined the clay since 2014.

Precious Minerals Mining and Refining Corp. sells a volcanically derived clay-based mineral under the trade name Orykta™ as a soil and animal feed additive. The two main components reported in Orykta™ are natrojarosite and gypsum. The company produced 3,000 tons (2,700 tonnes) of material from East Walker Clay Mine in the Washington Mining District in Lyon County in 2014, but no production was reported for 2015 or 2016. The company's 1998 approved plan of operation allowed for annual production of up to 36,500 tons (Precious Minerals Mining and Refining Corp. website, <https://www.oryktamineralgoods.com>).

Lithium Americas Corp. (formerly Western Lithium USA Corp.) owns the Nevada Lithium Project (formerly Kings River Valley project). The property is within the McDermitt caldera, and contains high-lithium clays, including hectorite, with significant amounts of clay formed by hydrothermal alteration of volcanoclastic sedimentary rocks making up the moat deposits in the western part of the caldera. Also, Cypress Development Corp., which owns the Clayton Valley Lithium Project containing of the Glory and Angel claim blocks, was

experimenting with extracting lithium from lithium rich clay on its property. Both sites are discussed in detail in the lithium section.

The Art Wilson Co. restaked ten lode claims around the Jupiter clay mine in T16N, R24E, section 12, in the Desert Mountains district, Lyon County. The company most recently staked it in 2015, and mined the deposit between 1991 and 1993 before letting those earlier claims lapse. The clay is a montmorillonite-type formed by hydrothermal alteration of a host Miocene–Pliocene andesite porphyry. (LR-2000, BLM Database, 2016; NBMG Bulletin 76).

The descriptions of 31 Nevada clay deposits are compiled in NBMG Bulletin 76, *Montmorillonite, Bentonite, and Fuller's Earth Deposits in Nevada*, 1970, by Keith Papke. A collection of Nevada clay samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

The NDT includes pozzolan with clay. The only pozzolan producer is the Mustache Quarry near Fernley owned by the Nevada Cement Co. Shale within the Pliocene Chloropagus Formation is the source of the pozzolan. No production was reported for 2014 through 2016, but the NDT reported gross proceeds of \$21,454, the same as in 2015.

Sunrise Resources, PLC, staked 15 placer claims over and began testing the CS pozzolan-perlite deposit which is mainly in T4N, R39E, sections 4 and 5, and T5N, R39E, sections 29 and 32 in the Crow Springs District, Esmeralda County. The deposit is composed of glassy, pumiceous rhyolite and consists of a Main, Northeast, and Tuff Zones. Four samples assayed 83.9%–87.7% silicon dioxide plus aluminum oxide plus iron oxide; 0.01%–0.04% sulfur trioxide; and 3.3%–5.2% loss on ignition, which are well within the ASTM C618 chemical requirements for natural pozzolan. X-ray diffraction analyses of three samples showed them to be 97.1%–99.1% amorphous (glass) and 0.9%–2.9% quartz. Also, a sample in a 20% substitution test for Portland cement resulted in a high 7-day Strength Against Index (a measure of pozzolanic reactivity) of 97% with water demand within the normal range for a good natural pozzolan (Sunrise Resources, PLC, news releases, 11/14/2016, 12/23/2016; Sunrise Resources, PLC, website, www.sunriseresourcesplc.com).

Diatomite

The United States is the world's largest producer of diatomite. Domestic production increased 2% to an estimated 937,000 tons (850,000 tonnes) valued at \$250,000,000, a 3% increase from 2015. Estimated apparent consumption increased 4% to 873,000 tons (792,000 tonnes), and exports decreased 12% to 73,000 tons (66,000 tonnes), the fifth annual decrease in a row.

Production was from six companies with 12 mining areas and nine processing facilities in California, Nevada, Oregon, and Washington, with California and Nevada accounting for most of it. Nevada produced 222,844 tons (202,163 tonnes) of diatomite, a decrease of 16% from 2015. The gross proceeds increased 2% to \$44,195,420 from 2015. About two-thirds of the diatomite produced in Nevada is used in filtration and the remainder is largely used in absorbents, fillers, and cement. Emerging small-scale uses include pharmaceutical processing and nontoxic insecticides. The estimated average price of unrefined diatomite materials increased 2% to \$267 per ton (\$294 per tonne) from 2015.

EP Minerals, LLC, produced most of Nevada's diatomite. EP Minerals' Colado plant and mine in Pershing County is the company's largest Nevada operation and produced 194,974 tons (176,880 tonnes), a 25% increase from 2015. It consists of a plant at Lovelock that mostly makes filtration products from diatomite mined from a series of pits about 15 miles to the northwest in the Velvet mining district. The diatomite occurs as thick beds interbedded with freshwater tuffaceous sedimentary rocks of probable Miocene age. The diatomite has to be dry before processing. Most diatomite contains about 3% water, but the diatomite at the Colado mine is 50% water. It is mined in the summer and laid out in the sun to dry. Despite the wetness of the diatomite, there is no ground water for at least 2,000 feet (600 meters) below the pit, and what water that is needed for the operation has to be hauled in from Lovelock (Elko Daily Free Press Mining Quarterly, Winter 2016).

EP Minerals, LLC, processed diatomite used in fillers and absorbents at its Clark plant in the Clark mining district, Storey County, about 20 miles (32 km) east of Reno. The nearby Clark Mine, which had production in 2014 but not in 2015 or 2016, shipped 62,972 tons (57,128 tonnes) of diatomite. The diatomite at Clark contains about 90% of the diatom *Melosira granulata*, and is interbedded with Neogene diatomaceous shale and thin beds of lacustrine volcanic tuff. The company also produced 31,486 tons (28,564 tonnes) at its Fernley mine and mill, a 1% decrease from 2015. The Fernley diatomite was processed into absorbent products, cat litter, and soil conditioner. The mine and mill (acquired from the Moltan Company in 2013) are located about 20 miles northeast of Fernley in the Desert mining district. The company also produced 9,343 tons (8,476 tonnes) from its Hazen pit on the Lyon/Churchill County line, a 0.6% increase from 2015.

Imerys Minerals of California, Inc., (formerly Celite Corp. and World Minerals, Inc.) operated a plant in Fernley that produced functional fillers from 21,950 tons (19,913 tonnes) mined from the company's Nightingale deposit north of Fireball Ridge in Churchill

County, a 21% decrease from 2015. The company's Hazen pit, which had been mined since 1950 and still has reserves, has been on standby since 2009. The diatomite deposits mined at both Nightingale and Fernley are interbedded with Neogene lacustrine tuffaceous shale, sandstone, and limestone, and siliceous tuff.

The Grefco Minerals, Inc. diatomite operation near the Esmeralda/Mineral County line is small relative to other Nevada diatomite companies but has been producing diatomite for many years, mainly for fillers. The company campaign mines and then processes material from the resulting stockpiles. The mine was idle from 2004 through 2011, with mining resuming in 2012. The company mined 4,851 tons (4,401 tonnes), a 188% increase from 2015. The deposit is in Miocene–Pliocene lacustrine sedimentary rocks consisting of diatomite, argillaceous and calcareous diatomite, clay, sand, and volcanic ash, and the main diatoms are *Melosira granulata*, *Stephanodiscus aslraea*, and *Eunotia robusta*.

Sunrise Resources, PLC, of Macclesfield, England, had reached an agreement with EP Minerals, LLC, for the latter to obtain a 25-year lease on the former's County Line Diatomite project on the Mineral and Nye County line in the Bell mining district. Sunrise Resources had conducted initial reconnaissance work and laboratory tests on the property. EP Minerals, LLC, terminated the agreement in early 2017 (LR-2000, BLM Database, 2016; NBMG Bulletin 65; Sunrise Resources, PLC, news release 12/3/2015, 8/15/2016, 2/14/2017; Sunrise Resources, PLC, website, <http://www.sunriseresourcesplc.com>).

Dimension Stone and Landscape Rock

Domestic production of dimension stone decreased 6% to 2,710,000 tons (2,460,000 tonnes) valued at \$468,000,000, a 2% increase from 2015. Estimated value of apparent consumption increased 9% to \$3,000,000,000 from 2015. Nevada supplied local and regional markets, and produced 9,166 tons (8,315 tonnes) of dimension stone and at least 260,000 tons (235,000 tonnes) of crushed landscape and decorative rock. The estimated value was at least \$20,000,000.

Mt. Moriah Stone Quarries LLC, quarried flaggy quartzite of several colors from the Cambrian Prospect Mountain Quartzite at a quarry about 15 miles (24 km) north of Baker in White Pine County. The company produced 2,831 tons (2,568 tonnes), a decrease of 65% from 2015. This material, which naturally splits into large slabs, is used for flagstone, ashlar (uncut facing stone), and other types of uncut building stone. The operation commonly shuts down during the last month of the year through the first quarter of the following year.

Las Vegas Rock produced 6,335 tons (5,747 tonnes) of cut decorative slabs, flagstone, ashlar, boulders, and 60,000 (54,000 tonnes) of crushed landscape rock from its Rainbow Quarries near Goodsprings, about 32 miles southwest of Las Vegas at the base of Mount Potosi. The operation consists of a main quarry and a number of satellite quarries located according to the color of the stone. The stone is mined from the Jurassic Aztec Sandstone, and technical data including hardness, strength, and composition are available on the company's website (Las Vegas Rock website <http://vegasrock.com>).

Kalamazoo Materials Inc. of Tucson, Arizona produced 122,390 tons (111,031 tonnes) of crushed stone for landscaping from the Beatty Quarry located about 5 miles (8 km) north of Beatty. The company's Modoc Quarry about 16 miles west of Searchlight was mined in 2015 but not in 2016. The company produced 122,390 tons (111,031 tonnes). In 2010, D and H Mining leased the pits making up the Beatty Quarry to Kalamazoo. These pits produce from Pliocene tuff, which in the past, D and H Mining mined and sold under the name of "Spicerite" (strong, bright white, hydrothermally altered tuff used to make bricks and blocks). The Modoc Quarry is mainly in Precambrian gneiss, schist, and granitic rocks (Kalamazoo Materials website, <http://www.kalamazoomaterials.com>).

3D Concrete, Inc., produced 79,387 tons of decorative and landscaping stone from the Dayton Materials pit in Lyon County. The amount of landscape rock produced is likely greater than the estimate given above. Vista Landscape Center, Inc., of Henderson, Nevada, sold decorative stone mined from quarries near Searchlight and Crescent Peak 20 miles (30 km) west of Searchlight. R.T. Donovan Co. and Reno Rock Transport of Reno, Cheyenne Rock of North Las Vegas, and others also sold decorative rock produced in Nevada.

Fluorspar

The USGS reports only U.S. production of fluorspar equivalent (equivalent to 92% fluorspar) derived as a by-product in the form of fluorosilicic acid from phosphate rock processed for phosphoric acid. Domestic production was an estimated 116,000 tons (105,000 tonnes) of fluorspar equivalent, the same as in 2015. Apparent consumption decreased 2% to 442,000 tons (401,000 tonnes) from 2015. Consumption recently peaked at 741,000 tons (672,000 tonnes) in 2011 followed by an overall decrease since then. Imports, mostly from Mexico and China and some from South Africa, and Mongolia made up the difference between production and consumption. The average price for acid grade filtercake ranged between \$235–\$280 per

ton (\$260–\$310 per tonne), the same as in 2015. Prices peaked at between \$365–\$410 per ton (\$400–\$450 per tonne) in 2012 and have decreased annually since then.

China accounted for 66% of the world's fluorspar production making that country by far the world's largest producer. China had diverted fluorspar from export to internal consumption to feed increased domestic hydrofluoric acid production capacity. Exports of fluorspar as well as other raw materials was restricted through quotas and/or taxes.

According to NBMG Bulletin 93, *Fluorspar in Nevada*, Nevada produced an estimated 556,000 tons between 1928 and 1976, 91% of which came from four mines. Production from Nevada mines continued through 1991 and then production came from stockpiles for several years afterwards. The demise in Nevada production was not from the depletion of reserves but due other factors including cheaper imports, largely from China; the closing and replacing of open hearth steel furnaces with improved steel production methods requiring less fluorspar; and the ban on the production of chlorofluorocarbons.

Tertiary Minerals, PLC, drilled the MB project in 2015 but not in 2016. However, the company continued conducting project modelling, metallurgical test work and economic evaluation. The company also evaluated the potential for industrial filler grade mica as a by-product. "Ore-grade" molybdenum was intercepted near the bottom of one drill hole. The MB project in sections 13, 24, and 25, T18N, R52E, in the Fish Creek mining district in Eureka County is owned Nevada Fluorspar, Inc. The mineralization occurs in pegmatitic quartz veins, skarn veins, greisen veins, and quartz veins spatially associated with late Cretaceous granite porphyry dikes intruding dolomitized limestone of the Ordovician Antelope Valley Formation. Fluorite is the ore mineral, which occurs with sphalerite, molybdenite, beryl, and scheelite. Recent drilling data enlarged the known size of the deposit and proved the lateral and depth extension of the fluorspar mineralization in the Western Area, which still remained open in all directions (NBMG Bulletin 93; Tertiary Minerals, PLC, news release, 12/13/2016; Tertiary Minerals, PLC, annual report, 9/30/2016; Tertiary Minerals, PLC, half yearly report, 5/26/2017; Tertiary Minerals, PLC, website, <http://www.tertiaryminerals.com>).

The descriptions of 62 Nevada fluorspar deposits are compiled in NBMG Bulletin 93, *Fluorspar in Nevada*, 1979, by Keith Papke. A collection of Nevada fluorspar samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

Gemstones

Precious opal is produced from several small mines in the Virgin Valley area of northern Humboldt County. Virgin Valley is a well-known source of gemstones in North America. The best known mines are the Royal Peacock, Rainbow Ridge, and Bonanza Mines, which produce about 500 pounds (225 kg) of opal annually from pay-to-dig operations. The opal occurs in lacustrine sedimentary rock, volcanic ash and tuff, and bentonite of the Miocene Virgin Valley Beds of Merriam. Lone Mountain Mining, LLC, produced about 500 pounds (225 kg) of turquoise from the Lone Mountain Mine in T1N, R41E, sections 7 and 18 in the Lone Mountain District in Esmeralda County. The last production from the Lone Mountain Mine was by Lone Star Mining LLC in 2009. The turquoise is present as nodules associated with silicification and argillization in thinly bedded calcareous shale. A few pounds of variscite was produced from the Bluebridge Mine operated by the Wintle family. The Bluebridge Mine is in T28N, R47E, sections 19, 20, 29, 30 in the Bullion District of Lander County. Gemfield Gem produced chalcedony from a pay-to-dig operation on five claims in T2S, R42E, sections 29 and 39 in the Montezuma District, Esmeralda County. The reported gross proceeds for gemstones decreased 10% to \$144,115 from 2015. The descriptions of 68 mines and districts are compiled in NBMG Report 17, *Turquoise Deposits of Nevada*, 1968, by Frank R. Morrissey.

Graphite

Natural graphite was not produced in the United States during 2015, though 26,000 tons (24,000 tonnes) valued at \$25,600,000 were consumed. One use of graphite is as the anode in lithium ion batteries, and the Gigafactory being built by Tesla Motors at Patrick (see Lithium) is expected to need up to 103,000 tons (93,000 tonnes) of flake graphite once full production gets underway. In 2015, Ravenline Explorations, Ltd., a subsidiary of Matica Enterprises, Inc., conducted an extensive mapping and sampling program on a series of scattered prospects collectively called the Grumpy Lizard Graphite Project. The project consists of 96 lode claims covering 1,920 acres (777 hectares) in T29N, R26-27E in the Bluewing Mining District of Pershing County and T18N, R45E in the Birch Creek Mining District of Lander County. In the Bluewing District, the area of interest is a zoned complex covering an area of about six miles by nine miles (10 km by 15km) with the graphite in andalusite schist zones between six feet and 140 feet (2 meters and 42 meters) thick and up to two miles (3 km) along strike. Little work was reported for 2016.

GeoXplor Corp. and Thelon Diamonds, Ltd., issued a technical report on the Chedic Graphite Project in T15N, R19E sections 25 and 26 in the Voltaire district, Carson City. GeoXplor Corp. owns the claims, and Thelon Diamonds, Ltd., can earn a 100% interest by paying GeoXplor Corp. \$50,000 upon execution of the agreement, performing \$1,100,000 of work over four years, deliver to GeoXplor Corp. a resource an inferred resource of at least 100,000 tons (91,000 tonnes) of 5% graphite, and then \$3,000,000 more in cash or stock by the sixth year. GeoXplor Corp. already had submitted a plan of operation and was preparing a scoping document for drilling. The graphite is hosted in Upper Triassic to Lower Jurassic metasedimentary rocks intruded by the Sierra Nevada batholith, and is thought to have been carbonaceous sediments metamorphosed to graphite. The property contains the Chedic graphite mine, also known as the Voltaire Mine and Carson Black Lead Mine, opened by Walter Chedic in the early 1900s. A graphite body between 10 feet and 35 feet (3 m and 11 m) was mined from a pit 120 feet (36 m) wide by 20 feet (6 meters) deep. Graphite was also exposed in small cuts 200 feet (60 m) and 600 feet (180 m) east of the pit (LR-2000, BLM Database, 2016; GeoXplor Corp., Plan of Operation, 9/5/2013; GeoXplor Corp., technical report, 12/30/2016; GeoXplor Corp., Scoping document, 6/2017; Thelon Diamonds, Ltd., news release, 2/17/2017; Andalusite var Chiestolite, by James Carr, 2010, <http://www.minrec.org/pdfs/CHIASTOLITE%20ARTICLE.pdf>; Matica Enterprises, Inc., news releases, 1/14/2015, 7/20/2015; Matica Enterprises, Inc., consolidated financial statements, 10/26/2016; Matica Enterprises, Inc., website, <http://www.maticaenterprises.com>).

Gypsum

Domestic crude gypsum production was 17,090,000 tons (15,500,000 tonnes) valued at \$140,000,000, increases of 2% and 3% respectively from 2015. Synthetic gypsum produced from scrubbed emissions from coal-fired power plants, offset the production of crude gypsum. Except for decreases in 2009 and 2013, the production of synthetic gypsum has increased every year since 2003. Production of synthetic gypsum surpassed that of crude gypsum in 2010 and 2011 and since 2014. The production of synthetic gypsum was 12,680,000 tons (17,000,000 tonnes), a 6% from 2015. Estimated apparent consumption of all gypsum increased 5% to 40,900,000 tons (37,100,000 tonnes) from 2015. Overall production and consumption have increased annually since 2009. The difference between production and consumption was mostly made up with imports from Canada, Mexico, and Spain, which increased 15% to 5,110,000 tons (4,640,000 tonnes).

The estimated price of crude gypsum increased 1% to \$8.16 per ton (\$9 per tonne) from the mine from 2015. The U.S. has the largest known gypsum reserves at almost 800,000,000 tons (700,000,000 tonnes), China accounts about half of the world's gypsum production of 290,000,000 tons (263,000,000 tonnes).

Nevada ranked second in the list of six states that produce 76% of the country's crude gypsum. The state's gypsum production was 3,250,872 tons, (2,949,172 tonnes) a 4% decrease from 2015. The reported gross proceeds was \$37,247,488, a slight 0.1% decrease from 2015.

PABCO Gypsum in Clark County northeast of Las Vegas was the largest Nevada producer with production of 1,375,612 (1,247,947 tonnes), a 10% increase from 2015. PABCO Gypsum processes its gypsum to make wallboard at a plant adjacent to their mining operation. The plant has an annual capacity of 1,260,000,000 square feet (117,000,000 square meters) of wallboard. The gypsum ore occurs in a nearly flat-lying late Miocene gypsite blanket atop a 5-square-mile (13-square-km) mesa. Drilling indicates the gypsum is at least 120 feet (37 m) thick in the area of current mining (NBMG Bulletin 103; PABCO Gypsum website, <http://www.pabcogypsum.com>).

Gypsum Resources Materials, LLC, mined 1,290,640 (1,170,861 tonnes) of gypsum from the Blue Diamond pit, a 19% decrease from 2015. The operation covers over 3,000 acres (1,200 hectares), and the company processes the gypsum for wallboard, cement, and agricultural soil amendments at its plant adjacent to the mine. The operation serves Nevada, Arizona, and southern California, and is looking to expand markets into Oregon and Washington. The gypsum is interbedded with limestone, dolomite, and red shale of the Lower Permian Kaibab Formation. The gypsum is used for wallboard and cement with about two-thirds being shipped to California's Central Valley for agricultural use, largely as a soil amendment. Before the collapse of the housing market in the mid-2000s, BPB, PLC, was mining gypsum at Blue Diamond. Because it was in the path of metropolitan growth, the company ended production in 2004. In 2002, up to 8,400 homes were proposed for the site. Jim Rhodes acquired the property around that time and Gypsum Resources materials, LLC, was set up. His intention was to develop the property into master community and mine the gypsum in the meantime. Concerns of the project's impact in a still rural area and on the nearby Red Rock Canyon Conservation Area, rezoning of the area for rural housing (maximum of 1,500 homes), and the collapse of the housing market shortly thereafter put the project on hold. Recently, Mr. Rhodes has again proposed to develop the area and this time have the area rezoned to construct 5,025 homes at the site, while continuing to mine gypsum as the homes were being

built. He again is facing opposition. (Las Vegas Sun, The Battle to Build Near Red Rock Canyon is Coming to a Head—Again, 2/20/2017; NBMG Bulletin 103; Gypsum Resources, LLC, website, <http://www.bdhgypsum.com>).

The Art Wilson Co. of Carson City produced 416,898 tons (378,207 tonnes) of gypsum and anhydrite from the Adams Mine in Lyon County, a 20% decrease from 2015. It is mainly used as a soil amendment and livestock feed additive. The company also produces some limestone. The Adams deposit is a folded body associated with limestone in Triassic metavolcanic rocks. The company has its own transportation system including the Appian siding along the Union Pacific tracks about 30 miles (48 km) east of the mine. In 2015, the Art Wilson Company was acquired by ACG Materials (formerly Harrison Gypsum Co.) of Norman, OK (ACG Materials, news release, 8/5/2015; ACG Materials, website, <http://www.acgmaterials.com/art-wilson-company>).

H. Lima Nevada, LLC, produced 72,000 tons (65,300 tonnes) of gypsum from its Lima Nevada Gypsum Quarry, a 187% increase from 2015. The company acquired the Pioneer Mine, located about 10 miles (16 km) east of Las Vegas, from the Pioneer Gypsum Mining Co. in February 2015 and renamed it. The Lima Nevada Gypsum Quarry mines the same late Miocene gypsite deposit as the PABCO operation. The gypsum is used as a soil enhancer and cement retarder.

The newly formed Empire Mining Co. LLC produced 11,564 tons (10,491 tonnes) of gypsum and 84,158 tons (76,348 tonnes) of anhydrite from its Empire Mine. In May 2016, USG Corp. sold its Empire Mine and adjacent company town of Empire to Empire Mining Co. LLC for \$11,380,000. The company commenced mining on September 15 and was expecting to hire 12 to 15 employees by year's end. The gypsum and anhydrite was shipped to companies that make fertilizer and cement, and for lithium extraction. The company was also looking for a partner or another company to lease the existing mill and manufacturing plant. The gross proceeds were \$1,480,648. The gypsum and anhydrite occur in the Triassic or Jurassic Nightingale sequence and form ten ore bodies within an area 2 miles (3.2 km) in diameter. The 4,400-foot by 2,200-foot (1,340-m by 670-m) Selenite orebody in the largest. The gypsum is white, fine-grained, and nonfriable. It occurs in beds grading 85% to 95% gypsum in limestone, marble, and metasiltstone (NBMG Bulletin 103; Washoe County Assessor, 2016; Nevada Business Search, 2016; Reno Gazette-Journal, Empire Mining Co. will only restore part of ghost town, 3/19/2016).

Georgia-Pacific Gypsum LLC operated a plant at Apex using synthetic gypsum and crude gypsum shipped from Saint George, Utah, for the production of

drywall and related products. The plant has an annual capacity of 270,000,000 square feet (25,000,000 square meters) of wallboard. It also owns the Weiser Ridge quarry about 10 miles (16 km) west of Overton, which has not been actively mined since 1995. The quarry is in gypsum interbedded with limestone of the Permian Toroweap and Kaibab Formations. The company issued a technical support report for the renewal of its operating permit for the county (Georgia-Pacific Gypsum LLC, Technical Support Document, 11/2015; Georgia-Pacific Gypsum LLC, website, <http://www.gp.com>).

CertainTeed Gypsum Manufacturing Inc. produced gypsum board, land plaster (soil amendment), and plaster products from its plant at Blue Diamond, Clark County. The plant has an annual capacity of 700,000,000 square feet (65,000,000 square meters) of wallboard. The plant has two sources of gypsum. The company acquires gypsum from the nearby Blue Diamond Hill Mine operated by Gypsum Resources Materials LLC and from the Black Rock Mine in Mohave County, Arizona, about 120 miles (190 km) south of Blue Diamond, which trucks the gypsum to the plant. (Las Vegas Sun, The Battle to Build Near Red Rock Canyon is Coming to a Head—Again, 2/20/2017; Water Conservation Plan, CertainTeed Gypsum Manufacturing, Inc., 6/5/2015; CertainTeed website, <http://www.certainteed.com>).

The Art Wilson Co. restaked nine placer claims and mill sites around the Ludwig gypsum deposit in T13N, R24E, sections 27, 28, 33, and 34, in the Yerington district, Lyon County. The company has since allowed all but two mill sites to lapse (LR-2000, BLM Database, 2016).

The descriptions of 26 Nevada gypsum deposits are compiled in Nevada Bureau of Mines and Geology Bulletin 103, *Gypsum Deposits in Nevada*, 1987, by Keith Papke. A collection of Nevada gypsum samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

Iron Oxide

The USGS reports iron ore that is not used in general iron and steel production as iron oxide pigments (IOP). This includes use in concrete and other construction materials (36%); coatings and paint (29%); foundry uses (14%); and animal food, magnetic tapes, and other uses (21%). The estimated combined production of finished natural and synthetic IOP increased 3% from 2015 to 60,600 tons (55,000 tonnes) valued at \$78,000,000 decreases. Estimated apparent consumption of combined naturally and synthetically produced IOP decreased 2% to 240,000 tons (218,000 tonnes). About 80% of IOP consumed was imported. The estimated average price remained the same as in

2015 at \$1,325 per ton (\$1460 per tonne). Nevada's production of IOP was small and not reported. The gross proceeds decreased 14% to \$707,479 from 2015.

Saga Exploration Co. was the only company to produce IOP (reported as iron oxide) in Nevada, and that was shipped from stockpiles at the Nevada Barth Mine in Eureka County. The iron ore consists mostly of hematite and some magnetite, and is used in the manufacturing of cement by the Nevada Cement Company in Fernley. The American Smelting and Refining Company leased the property from the Central Pacific Railroad Company and mined 544,295 tons (439,780 tonnes) of iron ore between 1903 and 1918 for use as flux in their lead smelter in Salt Lake City. Lessees continued to work the property off and on afterwards with some mining in the 1960s and 1970s. Saga Exploration has shipped iron ore from stockpiles since 1993.

Lime, Limestone, and Dolomite

Domestic production of quicklime and hydrate was an estimated 18,700,000 tons (17,000,000 tonnes) valued at \$2,100,000,000, decreases of 7% each from 2015. Apparent consumption decreased 7% to 18,700,000 tons (17,000,000 tonnes) from 2015. Peak production of 23,100,000 tons (21,000,000 tonnes) and consumption of 23,400,000 tons (21,200,000 tonnes) occurred in 2006, and generally fell off afterwards. Both had 2014 peaks of 21,500,000 tons (19,500,000 tonnes) and 21,600,000 tons (19,600,000 tonnes) in production and consumption respectively and have declined annually since then. The average price at the plant remained the same as in 2015 for quicklime at \$109 per ton (\$120 per tonne), and decreased 2% from 2015 to \$131 per ton (\$144 per tonne) for hydrate. The USGS rolls its production figures of limestone and dolomite not used in lime production into the figure for crushed stone, and in 2016, 70% of the crushed stone produced nationwide was from limestone and dolomite.

Nevada limestone production was 3,215,506 tons (2,917,088 tonnes), a 59% decrease from 2015. Recent production has experienced wide annual swings. This seems to be due in part with new Nevada Cement Co. pits increasing production, and a one-time spike in production at Blue Diamond Hill. Nevada dolomite production was 325,166 tons (294,989 tonnes), a 2% decrease from 2015. The gross proceeds decreased 7% to \$34,456,964 for limestone (including cement), and increased 8% to \$4,194,360 \$3,880,818 for dolomite from 2015.

Nevada's largest lime producer, Lhoist North America (formerly Chemical Lime Co.), produced lime at Apex in the Apex mining district about 20 miles northeast of Las Vegas. The operation produced 1,260,000 tons (1,143,000 tonnes) of limestone and

283,000 tons (256,700 tonnes) of dolomite, decreases of 1% and 14% respectively from 2015. In prior years dolomite was reported as dolomitic limestone. The operation makes high-calcium quicklime used in metallurgical processing, paper manufacturing, and environmental markets. The company's Henderson plant processes Type S hydrated dolomitic lime for building and home construction. In addition to lime, Lhoist North America has shipped crushed limestone in the past, but not in 2016. Production is from the Devonian Sultan Limestone.

Nevada's other lime producer, the Pilot Peak high-calcium lime operation of Graymont Western US, Inc. (formerly Continental Lime, Inc.) is in the Toano Range about 10 miles (16 km) northwest of Wendover in Elko County. In most years, Pilot Peak is the State's largest lime producer. The operation produced 1,236,227 tons (1,121,498 tonnes) of limestone, a 2% decrease from 2015. The plant has three kilns with a combined capacity of more than 700,000 tons (635,000 tonnes) of quicklime per year and a hydrated lime plant capable of producing 350 tons (320 tonnes) per day. Pilot Peak mainly markets lime to gold-mining operations for use in cyanide-solution pH control. Production is mainly from the Devonian Devils Gate Limestone. During the year, the company staked 22 20-acre placer claims adjacent to its Pilot Peak operation (LR-2000, BLM Database, 2016; Graymont Western US, Inc. website, <http://www.graymont.com>).

As noted in the Cement section, Nevada Cement Co. mines limestone from three quarries. The company's main production came from its Churchill mine in the Trinity Range about 40 miles east of the plant. There the company mined 544,048 tons (493,557 tonnes) from Mesozoic marble. The company mined 104,999 tons (95,254 tonnes) from Tertiary lacustrine limestone deposits in its main quarry a few miles south of Fernley. The company also mined 60,164 (54,580 tonnes) from massive limestone beds in the Upper Triassic Natchez Pass Formation near Relief Canyon in the southern Humboldt Range about 70 miles (110 km) northeast of the plant. These mark increases of 5%, 19%, and 108% respectively from 2015.

Aggregate Industries produced over 2,016,753 tons (1,829,586 tonnes) of crushed limestone, a 9% decrease from 2015, from its Sloan Quarry a few miles south of Las Vegas. The crushed limestone is used as aggregate along with Portland cement, sand, and water to produce ready mixed concrete. As part of its South West Region Concrete Division, Aggregate Industries has a series of ready mix plants in North Las Vegas, Sloan, and Summerlin. Since it is used as aggregate, the Sloan production is included with that for crushed stone in the Aggregate section (Aggregate Industries website: <http://www.aggregate-us.com/products-services/Ready-mixed-concrete/las-vegas>).

Of Nevada's specialty dolomite and limestone producers, the Nutritional Additives Corp. produces agricultural and nutritional dolomite products along the northwest edge of the Sonoma Range about five miles (8 km) south of Winnemucca. The company processed 1,683,163 tons (1,527 tonnes), a 3% decrease from 2015, produced from the Triassic Dun Glen Formation. Min-Ad, Inc., a subsidiary of Inter-Rock Minerals Inc. of Toronto, Canada, also produced 40,483 tons (36,726 tonnes), a 12% increase from 2015, from the Dun Glen Formation about three miles south of the Nutritional Additives Corp. operation. Their dolomite is mostly sold to Midwestern states and as far as New York and Alberta for use in beef and dairy feed. Art Wilson Company of Carson City produced 10,068 tons (9,134 tonnes) of pure calcitic limestone from the Adams Mine, a 42% decrease from 2015. The limestone is used for soil pH control and reportedly contains no detectable magnesium.

Kelzyme Research and Development, LLC, was developing a small mine in T32N, R35E, Section 8 to produce calcium carbonate containing trace elements for soil, plant, and animal and poultry feed nutritional additives. Although, no mining was reported for 2015 or 2016, 35.5 tons (32.2 tonnes) of samples for marketing were shipped, and then the mine was temporarily shut down in March. The deposit is hosted in massive limestone and dolomite of the Triassic Natchez Pass Formation (Kelzyme Research and Development, LLC, website: <http://www.kelzyme.com>).

Lithium

The U.S. Geological Survey keeps production and actual consumption confidential. The estimated domestic consumption of lithium averaged 3,100 tons (2,800 tonnes) in the late 1990s to 2000 and then fluctuated between 1,200 and 2,750 tons (1,090 and 2,300 tonnes) through 2010. Consumption was stable afterwards at 2,200 tons (2,000 tonnes) through 2015 and has risen since then. Nevada is the only state with domestic production of lithium raw materials. Subsurface brines were the dominant raw material for lithium carbonate production worldwide because of low production costs as compared with the mining and processing costs for hard-rock ores, largely spodumene. However, with the growth of demand from China over the last few years, mineral-sourced lithium (operations in Australia, Brazil, Canada, and China) is estimated to have supplied about half the market since 2014. A spodumene operation in Australia along with two brine operations in Chile dominated world production in 2016. New brine operations under development in Argentina, Bolivia, Chile, and China; new spodumene mines were under development in Australia, Canada, China, and Finland; and a jadarite mine was under development in Serbia.

Lithium was produced as a by-product from brine in California since 1938, but the Nevada operation, initiated at Silver Peak in Esmeralda County in 1966 by Cyprus Mines, was the first to extract lithium as the sole commercial product from brine. This operation was the world's dominant lithium producer until the late 1980s, when a Chilean lithium brine operation started up, followed by brine operations in Argentina and China. U.S. lithium imports have fluctuated in recent years, increasing to 38,600 tons (35,000 tonnes) in 2016. Most of the increase was due to lithium-based rechargeable battery sales, which accounted for 39% of the global lithium market, up from 35% in 2015. Ceramics and glass account for 30% and lubrication grease for 8% of the market. The remainder includes air treatment, metallurgy, polymers, pharmaceuticals, aluminum production, and other uses.

The U.S. price for lithium started increasing steadily in early 2015, ending the year at \$2.81–\$3.18 per pound (\$6.20–\$7 per kg) for lithium carbonate and \$3.63–\$4.08 per pound (\$8–\$9 per kg) for lithium hydroxide. Demand, and consequently prices, accelerated through mid-2016 due to China subsidizing electric vehicle purchases, but a subsequent tightening of the policy slowed the demand. By late 2016, spot prices were stable around \$8.16–\$9.53 per pound (\$18–\$21 per kg) for lithium carbonate and \$9.30–\$10.89 per pound (\$20.50–\$24 per kg) for lithium hydroxide. (*Industrial Minerals*).

Tesla Motors, Inc., began construction of its Gigafactory at Patrick in Storey County in June 2014 with full production expected to begin in 2018. The plan is to produce lithium-ion batteries for Tesla electric cars and for home, commercial, and business use. The Gigafactory will more than double the present world production of lithium-ion batteries but also produce batteries for significantly less cost using the economies of scale, innovative manufacturing, reduction of waste, and vertical integration—having most manufacturing processes under one roof. Tesla is projecting producing 500,000 electric cars annually by 2020, which will require an annual production of 27,000 tons (24,500 tonnes) of lithium compounds on top of the present annual world production of almost 40,000 tons (36,000 tonnes). The company stated that it prefers to have lithium sourced as close as possible to its Gigafactory, preferably North America, but will go abroad if necessary. Nevada is well placed as a supplier with the current operation at Silver Peak as well as the potential of the Kings Valley and other projects. Besides lithium, the batteries will also require significant amounts of graphite and cobalt. Panasonic Corp. of Japan presently manufactures the batteries and has not disclosed the exact composition, but it has been estimated that each kilowatt-hour will require 0.23–0.46 lbs. (104–208 g) of cobalt, 1.3–1.8 lbs. (590–820 g) of lithium, and 2.6–3.5

lbs. (1.2–1.6 kg) of graphite. Graphite, which is used on the anode, may also be replaced with lithium titanate, which reduces battery charging times and has the potential of increasing the lithium market even more (Tesla Motors, Inc., website, <http://www.teslamotors.com>; *Industrial Minerals*; Lithium-titanate Batteries, https://en.wikipedia.org/wiki/Lithium%E2%80%93titanate_battery).

Rockwood Lithium, Inc. (formerly Chemetall Foote Mineral Co.) owned and operated the Silver Peak lithium facility through to January 2015, when it was bought out by and became a subsidiary of bromine products manufacturer Albemarle Corp. The Silver Peak operation produced lithium carbonate and lithium hydroxide anhydrous. The former is used in the production of aluminum and ceramics, and the latter is used carbon dioxide scrubbers. The lithium chemicals are produced by solar evaporation pre-concentration and subsequent refining techniques of lithium chloride brine pumped from beneath the Clayton Valley playa. The brine varies between 100 and 300 ppm lithium. The operation shipped 9,334,628 pounds (4,434 tonnes) of lithium compounds, a 20% decrease from 2015. The gross proceeds decreased 10% to \$23,253,978 from 2015. The operation covers 15,301 acres (6,192 hectares), and the company estimates that at an annual production rate of 6,600 tons (6,000 tonnes), about 20 years' worth of reserves remain. The company also extracted a precursor of potash and bischofite as a by-product of the lithium extraction process, but potash and bischofite were not produced from it as it is at the operation in Chile (Albemarle Corp., 10-K Report, 2/20/2017; Albemarle Corp., website, <https://www.albemarle.com>; *Industrial Minerals*).

Early in the year, Cypress Development Corp. acquired 100% ownership in the Clayton Valley Lithium project, which consists of the Glory and Angel claim blocks totaling 1,520 acres (615 hectares) adjoining the east boundary of Pure Energy Minerals' Lithium Brine project. The company conducted several phases of surface sampling programs. In the first phase, an initial collection of 15 random samples collected along the contact between Cambrian bedrock and basin fill had lithium concentrations ranging between 43 ppm and 2,010 ppm and averaging 672 ppm. A second 300-foot (91-meter) traverse across claystone with systematic collection of samples resulted in a lithium range of 810 ppm to 3,070 ppm with an average of 1,663 ppm. During the second phase, samples were collected from different areas. Ten samples from the North Area ranged between 190 ppm and 1,680 ppm. Ten samples from the Central Area ranged between 500 ppm and 830 ppm. Seventeen samples from the Southeast Area ranged between 420 ppm and 870 ppm. Forty-four samples from the Southwest Area ranged between 130 ppm and 1,290

ppm. Thirty-one samples from the Northeast Area ranged between 710 ppm and 2,660 ppm. A zone of strong lithium mineralization 1.9 miles long by 0.9 miles (3 km long by 1.5 km) wide is present at surface of the Glory claims. A third phase of sampling in the Glory claims consisted of 239 samples being collected on a 330-foot by 330-foot (100 m by 100 m) grid. Of the 239, 133 samples assayed greater than 900 ppm lithium. A new zone was discovered with a high grade of 3,830 ppm lithium. Several other open zones of 1,400 ppm to greater than 2,000 ppm lithium were also identified. The data supports an idea that the lithium is from uplifted and exposed lake bed sediments. The company also experimented with process for extracting lithium from clay with a 95% recovery rate. In August, Pure Energy Minerals, Ltd., signed an option to earn up to a 70% interest in the project. (Cypress Development Corp. news releases, 1/25/2016, 2/3/2016, 2/22/2017, 4/5/2016, 4/12/2017, 5/10/2017, 8/24/2016, 9/27/2016, 11/16/2016; Cypress Development Corp. website, www.cypressdevelopmentcorp.com)

In September, Cypress Development Corp. signed an agreement to earn 100% interest in the Dean property, which consists of 35 association placer claims covering 2,700 acres (1,093 hectares) immediately north of the company's Clayton Valley Lithium project. The company conducted two phases of surface sampling. The first phase consisted of collecting 55 samples from the abundant, green evaporite-rich volcanoclastic claystone on the property adjacent to the property's boundary with the Silver Peak operation to the west and that entity's brine wells. The lithium in the samples ranged between 340 ppm and 2,940 ppm and averaged 925 ppm. The second phase involved collection of another 72 samples of claystone and mudstone. Of the 72, 29 assayed greater than 1,000 ppm lithium, and eight assayed greater than 2,000 ppm lithium. This sampling identified a 0.8-square-mile (2-square-km) high grade area called the Frontera Verde Zone, which is open to the north and south. Several chip channel samples showed mineralization extending to at least a depth of 10 feet (3.3 meters). The company applied to the BLM for drilling permits, and drilling commenced in early 2017. (Cypress Development Corp. news releases, 9/6/2016, 10/6/2016, 12/1/2016, 2/4/2017; Cypress Development Corp. website, www.cypressdevelopmentcorp.com)

In December 2015, Iconic Minerals, Ltd., entered into an agreement to earn 100% interest from Great Basin Oil, LLC, 303 placer claims covering 6,060 acres (2,452 hectares) in Sarcobatus Flat southeast of Bonnie Claire in Nye County. The agreement required (a) reimbursing Great Basin Oil for all documented expenses not to exceed US\$20,000; (b) spending an estimated \$76,500 in initial and annual claim filing fees; and (c) spending another \$1,200,000 over the

succeeding four years. The property is referred to as the Bonnie Claire Lithium project, and through several phases of staking, it was expanded to 1,190 placer claims covering 23,100 acres (7,454 hectares). The property covers the gravity low within the basin, with an estimated depth to bedrock ranging between 1,500 feet to 2,000 feet (460 meters to 610 meters).

The company conducted 17.3 miles (27.8 km) of MagnetoTelluric (MT) geophysical survey consisting of six east-west lines spaced 0.9 miles to 1.25 miles (1.5 km to 2 km) apart and stations about 656 feet (200 meters) apart. The target was 5 miles (km) long north-south. The results showed two well-defined, very low resistivity (often below 5 ohm meters) zones starting about 656 feet (200 m) below the surface and gently deepening eastward. The zones are continuous and appear to be offset by what may be north-northwest-striking, east-northeast-dipping high angle normal faults. The zones are interpreted as being a brine filled reservoir unit. The company then initiated a three-hole drilling program to test the brine zone. The company completed two vertical mud rotary holes totaling 3,450 feet (1,079 m) by years end. Sediment assays varied between 440 ppm and 1,790 ppm lithium. Leachates of the same samples using dilute acid assayed between 1,130 ppm and 2,260 ppm lithium with between 87% and 98% recovery. (BLM LR2000 Database; Stockwatch, Iconic Minerals Nevada property agreement, 12/15/2015; Iconic Minerals, Ltd., news releases, 12/15/2015, 4/20/2016, 6/16/2016, 6/19/2016, 7/7/2016, 7/14/2016, 7/20/2016, 8/25/2016, 11/21/2016, 12/15/2016, 2/22/2107; Iconic Minerals, Ltd., website, <http://www.iconicmineralsltd.com>)

In April, Dajin Resources Corp. conducted an auger program with holes up to 12.5 feet (3.8 meters) on the northwestern part of the playa on its Teels Marsh property in the Teels Marsh mining district (mostly T4N, R32-33E) of Mineral County. The details were not disclosed, but 20 samples were taken. Brines samples contained lithium contents of up to 71 ppm and averaging 19 ppm and boron contents up to 930 ppm and averaging 227 ppm. Sediments associated with the brines samples contained lithium contents of up to 740 ppm and averaging 475 ppm and boron contents up to 11,800 ppm and averaging 2,600 ppm. The lithium content appears to increase from east to west across the playa, and the elevated content in the northwest is thought to be due to concealed geothermal waters that are known to exist in the subsurface along the northwestern, western, and southwestern margins of the playa. The company conducted a 12-mile (19 km) high resolution seismic survey to help define targets for drilling and assist in defining any inferred mineral resource. The results from this and earlier surveys indicate the basin is well over 6,500 feet (2,000 meters) deep. From shallow to deep, a number of strong

reflectors were present. They may indicate interstratified accumulations of volcanic ash with sands, gravels, evaporites, and other types of sedimentary deposits. The ash deposits are likely from the Bishop Tuff, which have proven to be productive brine sources in Clayton Valley. The survey also indicated the deeper part of the basin extended a mile (1 km) further to the northwest, and the company staked an extra 66 placer claims to cover this area. The company was preparing an NI 43-101 technical report on the property. (Dajin Resources Corp. NI 43-101 technical report, 3/30/2017; Dajin Resources Corp. news releases, 4/27/2016, 6/9/2016, 7/7/2016, 9/15/2016, 2/17/2017; Dajin Resources Corp., website, <http://dajin.ca>)

Late in 2016, Dajin Resources Corp. staked 690 placer claims covering 13,800 acres (5,600 hectares) in Gabbs Valley north of the Don Campbell geothermal plant. The claims are in the lower elevation of the western part of the valley where a playa with surface salt (salar) and mud flats occur. The company then completed six push-pull holes ranging between 150 and 181 feet (47.5 to 55.2 m). Details were not released but the saline groundwater was of low to moderate salinity and the highest lithium content was 1.1 milligrams per liter. (Dajin Resources Corp. news releases, 11/22/2016, 12/6/2016, 12/15/2016, 1/11/2017; Dajin Resources Corp., website, <http://dajin.ca>)

In March, Lithium Corp. optioned its Fish Lake Valley lithium brine property in Esmeralda County to 1065604 BC Ltd. The latter company would earn an 80% interest in the Fish Lake Valley project by making staged cash and stock payments, and incurring \$1,100,000 worth of exploration expenditures over the next three years. In May, Lithium Corp. also optioned its San Emidio lithium brine property in Washoe County to 1065604 B.C., Ltd., for a similar agreement. In June 2016, American Lithium Corp. bought out 1065604 BC Ltd, which included both properties and their respective agreements. The Fish Lake Valley property was last drilled in 2012 and 2013 and consisted of 98 80-acre association placer claims covering 7,840 acres (3,173 hectares) mostly within T1N, R36E and T1S, R36E. American Lithium Corp. completed 54 shallow auger holes and three sonic holes on the North Playa of Fish Lake Valley. The brine was assayed for lithium, boron, potassium, and magnesium. While the results of the auger holes were reported starting in August, errors caused by the assay process were discovered, and the samples were still being re-assayed at year's end. (Lithium Corp. news releases, 3/10/2016, 5/11/2016, 6/8/2016, 8/16/2016; Lithium Corp. website: <http://www.lithiumcorporation.com>; American Lithium Corp. news release 9/20/2016, 10/12/2016, 10/21/2016, 11/3/2016, 12/1/2016, 12/6/2016; American Lithium Corp. website, <http://www.americanlithiumcorp.com>).

Lithium X Energy Corp. (formerly Royce Resources Corp.) completed one hole to totaling 1,218 feet (371 m) at its Clayton Valley North Lithium project. The company is permitted to drill four holes. The program is designed to intercept the aquifer, which is projected to be in gravel in the lower part of the basin at a depth of about 1,150 feet (350 m). The Clayton Valley North Lithium project covers about 5,500 acres (2,226 hectares) adjacent to the northeast end of the Albemarle Silver Peak operation, and the hole was drilled about a half of a mile (800 m) north of a producing brine well. The hole intercepted the targeted gravel aquifer, which had a vertical thickness of about 260 feet (79 m) starting at a depth of about 938 feet (286 m). The maximum lithium value in the aquifer was 61 milligrams per liter. Other aquifers were intercepted above the targeted one, including the main ash layer which is thought to be one of the production horizons of the nearby Silver Peak wells. In February, the company acquired the CVL Lithium Property (Clayton Valley South Expansion). This property consisted of 471 placer claims covering 15,020 acres (6,078 hectares) originally staked by LT Capital Holdings LLC in September 2015. The property is in portions of T2-3S, R39E, and is contiguous with properties of the Silver Peak operation to the north, the Clayton Valley Project of Pure Energy Minerals, Ltd., to the east, and the Neptune Project of Nevada Sunrise Gold Corp. to the west. The company recently sold its interests in the Clayton Valley area to Pure Energy Minerals Ltd. for 19.99% of that company's common stock and warrants, if exercised, would bring ownership up to 22.5%. (Lithium X Energy Corp., news releases, 2/25/2016, 3/23/2016, 7/28/2016; Lithium X Energy Corp., Annual Information Form, 11/18/2016; Lithium X Energy Corp., Management Discussion and Analysis, 11/28/2016, 2/28/2017, 5/11/2017, 5/31/2017; Lithium X Energy Corp., website, <http://www.lithium-x.com>).

In several phases, Uranium Resources Inc. staked 567 placer claims covering 11,220 acres (4,541 hectares), in two noncontiguous claim blocks in and around the Columbus Salt Marsh in portions of T2-3N, R35-36E. The property was first called the Nina project and later the Columbus Basin project. The company conducted a surface sediment grid geochemical sampling program across the entire project area, and 348 samples limited to the uppermost 6 inches (15 cm) of sediment were collected. The details were not released, but the samples averaged 100.2 ppm lithium with 21 samples assaying over 200 ppm lithium, and the highest value being 392 ppm lithium. The company also acquired the license to a large amount of geophysical data from a couple of mining companies that explored the area in the recent past. The data is from gravity surveys and a MT survey which cover the southern part of Columbus Salt Marsh. The project area does cover significant two gravity lows. (Uranium Resources, Inc.,

form 10-K, 3/2/2017; Uranium Resources, Inc., news releases, 8/23/2016, 10/26/2016, 2/22/2017, 3/6/2017; Uranium Resources, Inc., website, <http://www.uraniumresources.com>)

In March, Caeneus Minerals, Ltd., signed a binding heads of agreement to acquire Nevada Metals for 600,000,000 shares at a deemed issue price of 0.1c per share and 300,000,000 unlisted options to be exercised at 0.3c each at the end of 2020. The acquisition included Nevada Metals' two lithium properties: Lida Valley and Muddy Mountain. Caeneus Minerals, Ltd., conducted a detailed ground gravity program at the Lida Valley Brine project, which covers 2,620 acres (1,060 hectares) within 25 miles (40 km) south of the Silver Peak Operation. The basin is thought to be up to 1,000 feet (300 meters) deep and contain 24,700,000,000 cubic feet (700,000,000 cubic meters) of fill which may contain lithium-rich brines. The company commenced drilling of the project in 2017.

Caeneus Minerals, Ltd., also conducted a surface sampling and mapping program on its Muddy Mountain Lithium Clay project, which covers 2,542 acres (1,029 hectares) about 30 miles (50 km) northeast of Las Vegas. Sampled intervals averaged 6 feet (1.8 m) so as to avoid misleading higher grade spot sample results. 118 samples were collected grading up to 1,060 ppm lithium or 5,639 ppm lithium carbonate equivalent. Of the 118, 27 assayed above 700 ppm and five above 1,000 ppm lithium. The project area contains a 4.4-mile (7 km) strike length of the Tertiary Horse Springs Formation, which locally contains up to 5,000 ppm lithium anomalies in clays. Representative sections contain partially continuous to continuous intervals of composite grades over 800 ppm lithium up to 42.6 feet (13 m) in width for individual beds of claystone, siltstone, and other carbonaceous sediments. The best section averaged 830 ppm lithium across 40.7 feet (12.4 meters) of true thickness. The property may also contain mineable borate. (Creamer Media's Mining Weekly, Australian junior Caeneus joins Nevada lithium rush, 3/30/2016; Mining Capital, Caeneus Minerals Ltd to explore near only U.S. producing lithium mine, 4/27/2016; Mining Capital, Caeneus Minerals Ltd completes gravity survey at U.S. lithium hotspot, 6/14/2016; Mining Capital, Caeneus Minerals Ltd starts sampling for lithium in Nevada, 10/5/2016; Mining Capital, Caeneus Minerals eyes large lithium clay deposit in Nevada, 10/5/2016; Mining Capital, Caeneus Minerals gets lithium drilling underway in Nevada, 6/17/2017; Caeneus Minerals, Ltd., website, <http://www.caeneus.com.au>)

In December, Geoscience Global commenced drilling its Rhyolite Ridge lithium-boron property about 25 km west of the Silverpeak Operation. Lithium is present in brine, pegmatite, and mineralization hosted in sedimentary rocks. The mineralized sedimentary rocks

are thick, shallow, and flat lying. The project contains two sedimentary basins—North Basin and South Basin—about 2.5 miles (4 km) apart. The program was completed in mid-January 2017, with two holes drilled in the North Basin and three holes in the South Basin. While the results were pending, a resource for the South Basin was calculated. The South Basin also contains the Searlesite Zone with its own calculated resource. Searlesite is a relatively rare borosilicate with the chemical composition of $\text{NaBSi}_2\text{O}_5(\text{OH})_2$. The Searlesite Zone has an average grade of 1% 1,910 ppm lithium and 1.6% boron and averages 65 feet (20 m) thick over an area of 3,300 feet (1 km) by 6,000 feet (1.8 km). It is shallow and outcrops along the western margin of the basin. It is open in three directions and will probably increase in size with step-out drilling. (Geoscience Global, news release, 12/12/2016; Geoscience Global, Quarterly Activities Reports, 10/31/2016, 1/31/2017; Geoscience Global website, www.globalgeo.com.au)

Through its wholly owned subsidiary Macarthur Lithium Nevada, Ltd., Macarthur Minerals entered into an assignment agreement with Voltaic Minerals Corp. to acquire the Stonewall project for a payment of \$50,000 within six months and 2,000,000 shares of ordinary stock. The company then staked more claims adjacent to the initial claim block. The property covers 12,019 acres (4,864 hectares) and includes parts the Eastern Lida Valley and Northwestern Stonewall Flat basins in Esmeralda and Nye counties. These basin were developed in and overlies parts of the moat area of the Stonewall Mountain caldera. As part of its due diligence, the company drilled nine auger holes ranging between 3.5 feet (1.07 m) and 7 feet (2.13 m) in depth. The results ranged between 34.6 ppm and 145.5 ppm lithium. (Voltaic Minerals Corp. news releases, 8/17/2016, 10/21/2016; Macarthur Minerals Management Discussion and Analysis, 2/23/2017; Macarthur Minerals news releases, 10/21/2016, 10/26/2016, 11/4/2016; Macarthur Minerals, website, <http://www.macarthurminerals.com>)

Early in the year, Matica Enterprises sampled its McGee Lithium project and began acquiring drilling permits for its Elon block of claims in Clayton Valley. The samples were taken from mostly claystones over an area about 4,900 feet (1,500 meters) long by 2,300 feet (700 m) wide. The samples ranged between 50 ppm and 1,420 ppm and averaged 750 ppm lithium. In July, Matica Enterprises sold its McGee and Elon properties to Privateco for stock in that company. Privateco, in turn, was acquired by Spearmint Resources Inc. Spearmint Resources began its own sampling program in the McGee claim block late in the year. Ninety-one five-foot (1.5 m) channel samples of lithium-bearing green volcanic clay were collected. The samples ranged between 285 ppm and 1,630 ppm lithium and averaged

843 ppm with 23 samples assaying over 1,000 ppm lithium. (Matica Enterprises, news releases 3/3/2016, 4/4/2016, 4/21/2016, 7/26/2016; Matica Enterprises, website <http://www.maticenterprises.com>; Spearmint Resources, Inc. news releases, 7/13/2016, 11/8/2016, 11/16/2016, 12/1/2016, 12/6/2016, 3/6/2017, 3/13/2017; Spearmint Resources, Inc. website, <http://www.spearmintresources.ca>)

Nevada Energy Metals, Inc., (formerly Southern Sun Minerals, Inc.) acquired 160 placer claims covering 3,200 acres (1,295 hectares) and referred to the property as the Big Smokey Valley (North) project, (a.k.a. BSV Lithium Project). The property is in T13N R43E in the Spaulding Marsh mining district in Nye County. The valley fill is about 5,100 feet (1,555 m) thick with subsurface closure of the valley as it approaches Round Mountain a short distance south of the claim block. The basin is fed by anomalous lithium bearing geothermal fluids. The property is near McLeod's Ranch and Charnock (Big Blue) springs, which are warm springs to the north and east, and Darrough's Hot Springs to the south. The company conducted a surface sampling program across the playa evaporites on a grid pattern of 11 east-west lines spaced 1,300 feet (400 m) apart with samples taken every 660 feet (200 m). The program covered 3,000 acres (1,200 hectares) and was designed to test the lithium content of the evaporites and surface soils. Of the 170 samples collected, 150 assayed above 100 ppm lithium. The samples ranged between 53 ppm and 147 ppm and averaged 116 ppm lithium. (NBMG Bulletin 91; Nevada Energy Metals, Inc., news releases, 5/19/2016, 8/4/2016, 8/31/2016; Nevada Energy Metals, Inc., Management Discussion and Analysis, 2/23/2017; Nevada Energy Metals, Inc., website: <http://nevadaenergymetals.com>)

Nevada Energy Metals Inc. acquired 128 placer claims covering 2,560 acres (1,036 hectares) and referred to the property as the Black Rock Lithium Project. It covers the playa in the western arm of the Black Rock Desert just northeast of Gerlach. Under the property, the unconsolidated basin fill is about 3,600 feet (1,100 m) thick and includes clays, clastic silts and sands, evaporite deposits, and volcanic ash. Except for the clays, these rocks are potentially permeable. The company conducted a surface sampling program across the playa evaporites on a grid pattern of 11 lines spaced 1,300 feet (400 m) apart with samples taken every 660 feet (200 m) resulting in 171 samples being collected. The results ranged between 88.2 ppm and 520 ppm and averaged 182 ppm lithium. Twelve samples assayed over 300 ppm lithium. The positive results of this program resulted in the staking of another 71 placer claims bringing the total to 3,980 acres (1,610 hectares). The company issued an NI 43-101 technical report, which included the geology and work done to date. In November, an option agreement was signed whereby

LiCo Energy Metals, Inc., can earn a 70% interest in the property for \$170,000 in cash, 4,500,000 shares over two years, and \$1,250,000 exploration commitment within three years. (Nevada Energy Metals, Inc., NI 43-101 technical report, 10/26/2016; Nevada Energy Metals, Inc., news releases, 5/13/2016, 8/29/2016, 9/22/2016, 11/11/2016, 12/15/2016, 1/6/2017; Nevada Energy Metals, Inc., Management Discussion and Analysis, 2/23/2017; Nevada Energy Metals, Inc., website: <https://nevadaenergymetals.com>)

Nevada Energy Metals, Inc., staked 100 placer claims covering 2,000 acres (809 hectares) at Teels Marsh and referred to the property as Teels Marsh West. The company completed a program of 27 shallow auger holes up to 9.5 feet (2.9 m) deep designed to collect playa sediment samples near to a thermal anomaly located on and adjacent to the range front fault system along the west side of Teels Marsh. The values ranged between 8.9 ppm and 104.5 ppm. The values tended to increase towards the playa margin with the lower values in the alluvial fan to the southwest. (Nevada Energy Metals, Inc., news releases, 2/22/2016, 3/29/2016, 5/10/2016, 5/26/2016; Nevada Energy Metals, Inc., website: <https://nevadaenergymetals.com>).

Nevada Energy Metals, Inc., staked 86 placer claims covering 1,720 acres (696 hectares) in the San Emidio Desert. The property adjoins that of the Empire geothermal plant, which produces 4.6 megawatts of electricity from a 155°C resource. The San Emidio Desert basin contains an alkali playa underlain by mostly sedimentary fill including clay, which is fed by lithium-bearing geothermal fluids. The geothermal fluids have been noted in the faults and bore holes along the east side of the basin. Also, the rocks in a 2-mile- (3 km)-long zone about 100 feet (30 m) wide trending north-south along eastern edge of the basin have undergone extensive hydrothermal alteration since the mid-Tertiary. The company conducted a surface sampling program across the playa evaporites on a grid pattern of 18 lines spaced 1,300 feet (400 m) apart with samples taken every 660 feet (200 m) resulting in 172 samples being collected. The results ranged between 30.3 ppm and over 600 ppm and averaged 215 ppm lithium. Thirty-two samples assayed over 300 ppm lithium. The number of placer claims was increased to 143 covering 2,856 acres (1,156 hectares). (NBMG Bulletin 91; Nevada Energy Metals, Inc., news releases, 3/23/2016, 10/4/2016, 10/27/2016; Nevada Energy Metals, Inc., website: <https://nevadaenergymetals.com>)

Nevada Sunrise Gold Corp. completed three reverse circulation holes totaling 5,040 feet (1,537 meters) on its Clayton Northeast (Clayton NE) project in Clayton Valley, Esmeralda County. Nevada Sunrise Gold Corp. has an option to acquire 100% interest in the Clayton NE project from Advantage Lithium Corp. The exploration program was budgeted at \$642,000. The

general stratigraphy penetrated by the holes going downhole includes: Main Ash; Lower Aquifer System, and Lower Gravel Aquifer. The assays were generally highest in drill hole CNE-16-03 where it included: Main Ash, 676 to 807 feet (209.23 to 246.15 m) containing total dissolved solids ranging between 72,150 to 84,970 milligrams per liter and lithium ranging between 114 ppm and 130 ppm and averaging 124 ppm; Lower Aquifer System, 807 to 1,433 feet (246 to 437 m) containing total dissolved solids ranging between 87,400 to 199,000 milligrams per liter and lithium ranging between 139 ppm and 322 ppm and averaging 300 ppm; and Lower Gravel Aquifer, 1,433 to 1,958 feet (437 to 597 m) containing total dissolved solids ranging between 120,000 to 165,000 milligrams per liter and lithium ranging between 181 ppm and 316 ppm and averaging 296 ppm. The company also conducted an 11.0 line-km Volterra 3D Resistivity ground geophysical survey, which successfully imaged highly-conductive zones. These zones are considered to be brine formations that extend to the survey limit of about 2,600 feet (800 m) depth. The northeast trending Angel Island fault appears to bound the conductive zones proximal to and parallel with the Project's eastern boundary. The Clayton NE Project consists of 55 placer claims covering about 1,080 acres (437 hectares) in the Clayton Valley sedimentary salar and is contiguous to the eastern boundary of the Silver Peak operation. Several of the Silver Peak operation's lithium brine production wells are situated within approximately 330 feet (100 m) west of the Clayton NE claim boundary. (Advantage Lithium Corp. news release, 9/1/2016, 10/18/2016, 11/1/2016, 12/5/2016, 12/21/2016; Advantage Lithium Corp. Annual Information Form, 12/22/2016; Advantage Lithium Corp. website, <http://www.advantagelithium.com>; Nevada Sunrise Gold Corp., news release, 7/25/2016, 10/18/2016, 11/1/2016, 12/5/2016, 12/21/2016; Nevada Sunrise Gold Corp., website, <http://www.nevadasunrise.ca>)

In 2015, Nevada Sunrise Gold Corp. signed an option to acquire 100% interest in the Neptune Property from Nevada Alaska Mining Co., Inc., for 1,000,000 shares of stock. The Neptune Property is located near the common corners of T3-4S, R38-39E. It was part of a larger block of Neptune claims staked in 2015 by Nevada Alaska Mining Co., Inc., and includes the former Clayton Deep Project of the now defunct AmeriLithium Corp. Nevada Sunrise Gold Corp. re-staked and expanded the Neptune Property to 316 20-acre placer claims totaling 6,320 acres (2,557 hectares). On March 4, Resolve Ventures, Inc. signed a letter agreement with Nevada Sunrise Gold Corp., and by May earned an initial 25% interest in the property by making cash and share payments and funding exploration expenditures. In September, Advantage Lithium Corp. signed an agreement to earn a 50% interest in the

property by spending at least \$700,000 on exploration through 2019 and making annual common share payments to Nevada Alaska Mining Co., Inc.

Nevada Sunrise Gold Corp. completed three reverse circulation holes totaling 3,760 feet (1,146 m) on the Neptune Property. The second hole was actually abandoned at 500 feet (152 m) due to poor ground conditions. The rig was moved 50 feet (15 m) over and the hole re-drilled. Preliminary analyses showed the water from the two completed holes contained sub-economic amounts of lithium. However, composited samples of lithium-bearing sediments intersected over 215 feet (65.5 m) from 1,285 feet (392.7 m) to the bottom of hole N-2016-1 averaged 156 ppm lithium and peaked at 217 ppm lithium between 1,365 feet to 1,385 feet (416.2 m to 422.3 m). Also, a sharp increase in acidity in the last water samples taken from that hole suggested a fertile leaching environment for the creation of lithium-bearing brines. A geophysical survey ran in 2016 indicated a site about one mile (1.6 km) to the east may be a potential trap for denser, lithium-bearing brines to migrate and pool. The property covers part of the 2,200-acre (890 hectares) Southwest Gravity Low and is underlain by the upper Miocene to Pliocene Esmeralda formation which consists of lacustrine tuffaceous sediments including poorly sorted conglomerates and sandstones, limestone, and mudstones, which geophysical data indicates may contain a 3,630-foot (1,200 m) deep basin. The company released an NI 43-101 technical report, which included descriptions of the property, geology, and activities, but no resources. (Advantage Lithium Corp. website, <http://www.advantagelithium.com>; LR-2000, BLM database, 2017; USGS Open-File Report 82-415; Nevada Sunrise Gold Corp. news releases, 1/4/2016, 3/2/2016, 4/19/2016, 5/4/2016, 5/19/2016, 5/31/2016, 8/29/2016; Nevada Sunrise Gold Corp. Management Discussion and Analysis, 1/30/2017; Nevada Sunrise Gold Corp. NI 43-101 technical report, 2/29/2016; Nevada Sunrise Gold Corp. website, <http://www.nevadasunrise.ca>).

Noram Ventures, Inc. acquired several blocks of placer claims near the Silver Peak Operation. The initial block, referred to as Li Group a.k.a. North Block, consisted of two non-contiguous blocks of 201 claims covering 3,998 acres (1,618 hectares) just northwest of the Silver Peak Operation. The company bought the claims from Stadnyk and Partners USA Corp. for \$190,000 and a 2.5% NSR. The company then staked a series of contiguous claim blocks which adjoined the east side of the Silver Peak Operation and extended southward. This was referred to as the South Block Extension and contained the Zeus, Zeus Extension, Hades, and Spartan Groups and consists of 700 placer claims covering about 14,000 acres (5,666 hectares). Most of the South Block Extension groups were staked

by the company's wholly owned subsidiary Green Energy Resources. In June, the company conducted an initial Phase I sampling of claystone outcrops on the Zeus and Spartan claims. The claystone outcrops were in the Miocene-Pliocene Esmeralda Formation. Sixteen grab samples ranged between 49 ppm and 760 ppm and averaged 289 ppm lithium. A Phase II sampling of claystone over 3,900 foot by 2,600 foot (1,200 m by 800 m) area on the Zeus claims was then completed in July. Seventy-three grab and chip samples ranged between 206 ppm and 1,670 ppm and averaged 780 ppm lithium. Also, three bulk samples taken from the spoils pile adjacent to an historical 4-foot (1.2-m)-wide, ~200-foot (60-m)-deep bore hole on the Hades claims ranged between 750 ppm and 1,030 ppm and averaged 933 ppm lithium. In December, the company commenced a drilling program to still underway at year's end. The main target area was 2.5 miles (4.1 km) long by 1.5 miles (2.4 km) wide on the Zeus claims and the boundary with the Zeus Extension claims. Forty-five holes with an average depth of 47 feet (14.3 meters) would eventually be drilled on the Zeus claims and one on the Hades claims. The company released an NI 43-101 technical report describing the property but containing no resources. (Noram Ventures, Inc., NI-43-101 Technical report, 10/24/2016; Noram Ventures, Inc., news releases: 4/25/2016, 4/27/2016, 5/26/2016, 6/7/2016, 6/9/2016, 6/14/2016, 6/16/2016, 6/21/2016, 6/23/2016, 7/20/2016, 7/22/2016, 7/26/2016, 8/18/2016, 8/24/2016, 8/25/2016, 8/31/2016, 9/30/2016, 11/4/2016, 11/10/2016, 12/8/2016, 1/4/2017, 2/6/2017; Noram Ventures, Inc., website, <http://www.noramventures.com>)

In early 2016, Pure Energy Minerals Ltd. of Vancouver, British Columbia, completed three holes totaling 4,460 feet (1,360 meters), on its Nevada Lithium Brine Project also known as the Clayton Valley South Lithium Brine Project. The project is mostly in T3S, R39E, just south of the Albemarle Corp.'s Silver Peak Operation. The project consists of placer claims leased from GeoXplor Corp. (the company's operator) and Nevada Alaska Mining Company Inc., plus claims staked by the company. The wells step out a total of about 3.8 miles (6 kilometers) southward from the previous drilling and span about two miles (3.2 km) along the property's axis. They are aligned from north-northeast to south-southwest along the deepest part of the Clayton Valley Basin. The drilling targeted lower grade brines in the southern resource area from 500 to 1,600 feet (150 to 500 meters) below the surface. The results showed no significant lithium values, but the data indicated the presence of an active geothermal system that may have a significant impact on fluid compositions in parts of the southern resource area.

In June, the company completed another hole to 2,000 feet (610 m). This hole was done by both rotary

mud and core drilling and is the deepest known hole in the southern part of the basin. It was designed to provide geological, hydrogeological, and geochemical information for the planning of future drilling. Samples were taken at 12 intervals between 800 feet and 1,850 feet (244 m and 564 m). The brine averaged 175 milligrams per liter lithium, 478 milligrams per liter magnesium, 1,462 milligrams per liter calcium, 87 milligrams per liter strontium, 2,692 milligrams per liter potassium, and 42,692 milligrams per liter sodium. Two more core holes were being drilled at year's end.

Lithium exists as a solute in a mostly sodium chloride brine, and in the solid matrix of finer clay and silt and ash/tuff interbeds in the basin infill deposits within grabens. It is hypothesized that strong exchange reactions occur between the solid matrix materials in the sediments and the brines releasing the lithium from the solid phase into the aqueous phase, which supplements the resource. In the northern half of Clayton Valley, where the main Silver Peak operation is, the zone of lithium bearing sediments and aquifers is about 7.5 miles (12 km) long by two (3.2 km) miles wide, and 300 feet to 1,000 feet (90 m to 305 m) deep. The southern half of the valley, which contains the Clayton Valley South project, the zone is about 10 miles (16 km) long by 1.8 miles to 2.2 miles (2.9 km by 3.5 km) wide and at least 820 feet (250 m) thick. (Pure Energy Minerals, Ltd., Management Analysis and Discussion, 10/26/2016, 11/28/2017, 2/24/2017; Pure Energy Minerals, Ltd., news releases, 1/25/2016, 2/16/2016, 2/18/2016, 4/14/2016, 5/10/2016, 9/14/2016; Pure Energy Minerals, Ltd., website, <http://www.pureenergyminerals.com>).

Ultra Lithium, Inc., completed two core holes on its wholly-owned South Big Smoky Valley property, which consists of 659 20-acre placer claims covering about 12,500 acres (over 5,000 hectares) in T1-2N, R38-38.5E in Esmeralda Valley. Twenty-two samples were taken from hole BSH16-01 down to 1,000 feet (305 meters). The assays were: lithium ranging between 0 ppm and 270, boron ranging between 13 ppm and 410 ppm, potassium ranging between 540 ppm to 10,000 ppm, and magnesium ranging between 130 ppm and 12,000 ppm. Drilling of the second hole commenced in July with a proposed depth of 2,200 feet (671 meters) but no details or results have been released. (Ultra Lithium, Inc., news releases, 3/7/2016, 3/14/2016, 7/7/2016, 7/13/2016; Ultra Lithium, Inc., website, <http://www.ultralithium.com>)

Lithium Americas Corp. (formerly Western Lithium USA Corp.) continued with testing and evaluating the lithium resources on its Nevada Lithium Project (formerly Kings River Valley project), Nevada, and issued an NI 43-101 technical report with an updated resource for the Stage I Lens. No drilling was reported on the property for 2016. The company owns

the Lith, Beta, BPE, Neutron, Neutron Plus 1 and Neutron R claims that cover 37,641 acres (15,233 hectares) mainly in the Disaster Mining District in northern Humboldt County. The property is within the McDermitt caldera, and covers several areas containing inferred uranium resources and broader zones of uranium, molybdenum, and lithium mineralization. The lithium largely occurs in high-lithium clays, including hectorite, with significant amounts of clay formed from the hydrothermal alteration of the volcanoclastic sedimentary rocks making up the moat deposits in the western part of the caldera. These moat deposits extend north through the western Montana Mountains and Disaster Peak into Oregon. Significant lithium mineralization has been defined in five areas referred to as: PCD, South Lens, South Central Lens, North Central Lens, and North Lens by Chevron (who drilled the area in 1985) and Stages I through V respectively by Lithium Americas Corp. In each area, the high lithium clay occurs in thick, apparently continuous accumulations with the zones of mineralization varying between about 3 and 300 feet (0.9 meters and 91 meters) thick.

Since 2011, the company has been developing processes for extracting lithium carbonate and making drilling mud additives. The three main Project areas involved are: 1). the Stage I Lens (formerly PCD Lens); 2). the Stage II Lens (formerly the South Lens); and 3). the organoclay operations. In 2016, the company completed its most recent pilot program at its demonstration plant in Germany. While this improved the understanding of the processing and engineering requirements, it also showed that additional specific engineering work is needed to optimize the beginning of the process for commercial scale lithium hydroxide monohydrate production. Also, the company was watching the recent advances in technologies for producing lithium compounds from brines and was considering if and how these advances may be incorporated into the Nevada processing plant design.

RheoMinerals, Inc. (formerly Hectatone, Inc.), a subsidiary of Lithium Americas Corp., operated its 10,000-ton (9,000-tonne) annual capacity organoclay plant at the company-owned industrial complex in Fernley adjacent to rail and freeway access. Production had commenced in December 2014, but the plant was not fully operational until April 1, 2016. Sales prior to then amounted to \$700,000, but sales afterwards through to year's end amounted to \$1,200,000. The company had developed methods to process hectorite into a drilling mud additive and entered the specialty drilling mud business. Hectorite was processed using an extruder combined with several additives to produce an organoclay initially under the trade name Hectatone™. The company eventually developed six drilling related products under several trade names including RheoMinerals™ and Hectagel™. The decline in drilling

for oil and gas hampered demand at first, but the company redirected product development and successfully entered the environmental, animal feed, and industrial coatings markets. (Lithium Americas Corp. Management Discussion and Analysis, 3/29/2017; Lithium Americas Corp. Annual Information Form, 3/29/2017; Lithium Americas Corp. news releases, 3/22/2016, 6/22/2016; Lithium Americas Corp. NI43-101 Technical Report, 5/31/2016; Lithium Americas Corp. website, <http://lithiumamericas.com>)

Magnesia

Domestic production of magnesium compounds increased 3% to an estimated 430,000 tons (390,000 tonnes) valued at \$195,000,000. Until 2016, the U.S.G.S. reported volume as magnesium content. Starting for 2016, the USGS reported the volume as magnesium oxide content. Production in 2016 increased for the third consecutive year. About 67% of domestic magnesia production came from seawater and natural brines, and the rest was produced from mining magnesite and minor brucite (Nevada) and olivine stockpiles (Washington). Estimated apparent consumption decreased 7% to 915,000 tons (830,000 tonnes), with most of the difference between consumption and production being made up by imports, mostly from China, Brazil, and Canada. About 60% of the magnesium compounds are used in agricultural, chemical, construction, environmental, and industrial operations. The remainder is used for refractories in the form of dead-burned magnesia, fused magnesia, and olivine.

Prices in this section have generally been for 92% MgO calcined magnesia. In the literature, prices are usually reported for several types and grades of magnesia, but they all trend about the same. The prices are given for Chinese magnesia, since China accounts for almost 70% of the world production of magnesia and provides more half the imports into the U.S. Through 2016, the average price for calcined magnesia declined about 10% ending the year around \$177 per ton (\$195.10 per tonne). The decrease was due to weak demand from steel markets, oversupply, and undercutting by anonymous bidders with huge inventories (*Industrial Minerals*).

Premier Chemicals, LLC, of Cleveland, Ohio, owned the Gabbs magnesia operation in Nye County, is the only mine in the country that produces magnesite. Magnesite and some brucite (<5%) have been mined at Gabbs since 1935, and in the 1940s were processed in Henderson, Nevada, to make magnesium metal. From the 1950s to the 1980s, mining and processing was by Basic Industries, a major producer of refractory magnesia. During the 1990s, the availability of cheap foreign refractory magnesia caused production at Gabbs

to be switched to light-burned (caustic calcined) magnesia that is mainly marketed for wastewater treatment and agricultural uses.

The company shipped 110,000 tons (99,800 tonnes) of magnesium compounds, an increase of 1% from 2015. Production has varied annually between 101,557 tons and 113,928 tons (92,133 tonnes and 103,355 tonnes) since 2010. The plant capacity is rated at 150,000 tons (136,000 tonnes) per year. The gross proceeds increased 1% to \$6,780,237 from 2015. The magnesite and brucite occur as complex replacement bodies in Triassic dolomite in an area of about 1,300 acres (530 hectares) in the Paradise Range just east of the town of Gabbs. The resource is thought to be sufficient for more than 50 years of production at present mining.

Perlite

Domestic production and value of perlite was 521,000 tons (473,000 tonnes) valued at \$28,500,000, increases of 3% and 5% respectively from 2015. Until 2003, the U.S. was the world's largest producer of perlite, but has been surpassed by Greece, Turkey, and China. Estimated apparent consumption increased 6% to 645,000 tons (585,000 tonnes) from 2015, the difference between production and consumption being made up by imports mostly from Greece. The estimated average price increased 2% to \$55 per ton (\$61 per tonne) from 2015. About 53% of perlite production is used in building construction products. About 15% is used for horticultural aggregate and most of the rest is used in fillers, filters, and horticulture.

Nevada has large perlite resources, and several deposits in central Pershing, northern Lincoln, and southern Clark Counties were mined extensively. However, the state now produces only minor amounts of perlite. Current perlite production in Nevada is restricted to relatively small-scale mining of two deposits for niche markets, and the state produced less than 4% of the domestic total in 2015. 19,461 tons (17,655 tonnes) were processed and shipped, a 17% decrease from 2015. The gross proceeds decreased 51% to \$1,359,539 from 2015.

Wilkin Mining and Trucking Inc. produced 2,408 tons (2,184 tonnes), a 10% increase from 2015, from the Tenacity Perlite Mine in the South Pahroc Range Mining District about 25 miles (40 km) west of Caliente, Lincoln County. The company has mined perlite in the area for more than 25 years. The company has a small popping plant in Caliente, and sales were almost exclusively of expanded perlite used for horticultural purposes. The deposit consists of a large, flat-lying, 20-foot (6-meter) thick perlite flow with obsidian pellets in Tertiary rhyolitic volcanic rocks.

EP Minerals processed and shipped 17,053 tons (19,403 tonnes) of expanded perlite, a 20% increase from 2015, from its Colado diatomite plant in Pershing County. The product is marketed as a filter aid. The crude perlite comes from the Popcorn Mine about 15 miles (24 km) south of Fallon, Churchill County, which is usually mined a week or two per year. The company also staked six new lode claims adjacent to Popcorn Mine. The perlite occurs as glassy flows associated with rhyolitic flows (NBMG Bulletin 83).

Salt

Domestic production of salt increased 7% to 46,300,000 tons (42,000,000 tonnes) valued at \$2,000,000,000. Nevada's only producer, the Huck Salt Co., produced 16,000 tons (14,500 tonnes) of salt. While the company had shipped salt in 2015 from stockpiles, it had mined no salt that year due to summer rains that prevented the playa from going dry. The gross proceeds increased 35% to \$611,526 from 2015. The salt is mainly used for de-icing roads, the production levels of which are dependent on weather, and for water softeners. The salt is mined from the playa on Fourmile Flat about 25 miles southeast of Fallon, Churchill County, where it has been harvested almost continuously since the 1860s, when it was hauled to the mills that processed Comstock silver and gold ore. The descriptions of brine and evaporite deposits are compiled in Nevada Bureau of Mines and Geology Bulletin 87, *Evaporites and Brines in Nevada Playas*, 1976, by Keith Papke.

Silica

The USGS includes silica under *Industrial Sand and Gravel*. The U.S. is by far the world's largest silica sand producer, and the estimated domestic production was 10,100,000 tons (91,700,000 tonnes) valued at \$4,300,000,000, decreases of 11% and 12% respectively from 2015. About 3% of the production is exported. The estimated average price decreased 1% to \$42.29 per ton (\$46.62 per tonne) in 2016. The uses of silica are: hydraulic fracturing sand and well-packing and cement sand, 72%; other whole grain silica, 8%, manufacturing glass, 7%; foundry sand, 4%; foundry sand, and fillers and building products, golf course sand, and other uses, 9%. Nevada shipped 905,442 tons (821,411 tonnes) of silica, a 7% increase from 2015 and less than 1% of the national total. The gross proceeds (excluding Southern Nevada Liteweight) decreased 4% to \$20,412,834 \$21,186,659 from 2015. No Nevada sand was used for hydraulic fracturing in 2016.

Nevada's main silica producer, Simplot Silica Products at Overton, Clark County, shipped 754,852 tons (684,797 tonnes). The sand is mined from a large

open pit in the relatively friable Cretaceous Baseline Sandstone, washed in the pit, and transported via a 5-mile slurry pipeline to a plant where it is screened and bagged. The facility produces four grades of sand based on coarseness, AFS 55, 60, 70, and 100. AFS 70, which is used mainly in manufacturing glass and foundry castings.

Southern Nevada Liteweight produced and shipped 150,590 125,693 tons (114,039 tonnes) of silica sand, a 20% increase from 2015, from the Hidden Valley South (former Money pit) quarry about 20 miles (32 km) south of Las Vegas. The quarry produced mostly plaster and concrete sand for stucco and masonry block.

Zeolites

Domestic production and apparent consumption of zeolite increased 7% and 8%, respectively, to an estimated 88,100 tons (80,000 tonnes) and 87,000 tons (78,900 tonnes) in 2015. Prices varied between \$100 and \$860 per ton (\$110 and \$950 per tonne) in 2015 and 2016, depending upon the zeolite. Seven companies mined chabazite in Arizona and clinoptilolite in five other states. Almost 80% of the zeolites sold is used in animal feed, pet litter, odor control, drill hole cement, and water treatment.

Nevada contains large known resources of zeolite; however, zeolite production has been small, and no zeolite is currently mined in Nevada. Saint Cloud Mining Co. of Winston, New Mexico, operated the Ash Meadows plant and shipped 214 tons (194 tonnes) of clinoptilolite and 256 tons (232 tonnes) of chabazite in 2016. Clinoptilolite was mined from a small open pit just over the state line in Inyo County, California, in a large area of zeolite deposits that extends into Nevada. It was processed at the company's 40,000-ton (36,000-tonne) annual capacity plant in Amargosa Valley, Nye County, for use in water filtration, odor control, nuclear clean-up, zeolite-based cement for building materials, and oil and gas projects. The plant was permanently shut down on March 28, 2016 (Saint Cloud Mining Co. website, <http://www.stcloudmining.com>).

KMI Zeolite, Inc. shipped 11,528 tons (10,458 tonnes) of clinoptilolite to its new plant near Ash Meadows in Amargosa Valley. The source is a large deposit of mainly clinoptilolite eight miles (13 km) west of Death Valley Junction in California about 18 miles (29 km) from the plant. The company completed the new mill, which is closer to the mine to cut down transportation costs. The old Shenandoah Mill in Sandy Valley was about 85 miles (136 km) from the mine. Also, the new mill is larger and more efficient than old mill, which was capable of producing 55,000 tons (50,000 tonnes) per year (KMI Zeolite, Inc., website, <http://www.kmizeolite.com>).

Zeolite minerals (most of which are rare) reportedly found in Nevada include analcime, chabazite, clinoptilolite, epistilbite, erionite, ferrierite, heulandite, mordenite, natrolite, offretite, phillipsite, scolecite, and stilbite, and reported locations of these minerals are given in Nevada Bureau of Mines and Geology Special Publication 31, *Minerals of Nevada*, 2004, by Stephen B. Castor and Gregory C. Ferdock. The descriptions of a few Nevada zeolite deposits are also compiled in Nevada Bureau of Mines and Geology Bulletin 79, *Erionite and Other Associated Zeolites in Nevada*, 1972, by Keith Papke. A collection of Lovelock, Nevada, zeolite samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

INDUSTRIAL MINERAL DEPOSITS

by David A. Davis

This is a compilation, in progress, of industrial mineral deposits. The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of active mines and contact information are listed in the Directory of Mining and Milling Operations.

Deposit name	Minerals	Reserves/resources	Production
CHURCHILL COUNTY			
Carson Sink Salt Project (Carson Sink district)	NaCl	1978: 3,600,000 tons (recoverable NaCl)	
Fallon Bentonite Project (Sand Springs Marsh district)	Bentonite	2012: 34,000,000 tons, Na-Bentonite (proven reserves)	2012: 7,000 tons stockpiled
Hot Springs Mtn. (Desert district)	Limestone	1964: 2,500,000 tons, 91.4-97% CaCO ₃ , 0.84-2.11% MgCO ₃ , 1.46-4.75% SiO ₂ (estimated reserves)	
CLARK COUNTY			
Anderson (January) (Moapa district)	Gypsum	1936: 1,500,000 tons, (estimated reserve)	
Anniversary (Muddy Mountains district)	Colemanite	1936: 400,000 tons, (estimated reserve)	1921-1928: 25,000 tons B ₂ O ₂
Blue Diamond (Arden district)	Gypsum	2014: >25,000,000 tons, (proven and probable reserves)	1909-1988: N/A 1962: >300,000 tons annually 1989-2004: 8,287,349 tons 2012: 43,120 tons 2013: 314,141 tons 2014: 1,116,784 tons 2015: 1,602,431 tons 2016: 1,290,640 tons
Chapparral (Moapa district)	Limestone	2012: 182,000,000-200,000,000 tons, 80-95% CaCO ₃ (resource, <2.5% MgO)	
Lone Mountain	Aggregate	2008: Public Lands: 177,000,000 cubic yards; Private Property: 63,000,000 cubic yards (proposed for extraction)	1980-2016: N/A
Mica Peak (Gold Butte district)	Vermiculite	2007: 2,000,000-3,000,000 tons, (estimated recoverable reserve)	
Mount Vista (Arden) (Arden district)	Gypsum	2014: 200,000,000 tons, (resource)	1909-1931: N/A
Overton (Moapa district)	Magnesite	1936: 850,000 tons 38% MgO; 3,700,000 tons 34% MgO; 5,100,000 tons 30% MgO (resource)	1920s: small
Pabco (Apex) (Muddy Mountains district)	Gypsum	1958: 750,000,000 tons (estimated reserves)	1940s: N/A 1959-1988: N/A 1989-2005: 12,712,287 tons 2006: 1,438,886 tons 2007: 1,148,624 tons 2008: 829,801 tons 2009: 715,701 tons

INDUSTRIAL MINERAL DEPOSITS, CLARK COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Pabco (cont.)			2010: 682,000 tons 2011: 710,033 tons
Searchlight Insulation (Searchlight district)	Perlite	1951: 10,581,000 tons (indicated reserves)	1940s-1955: N/A
Sloan (Sloan district)	Dolomite	1952: 48,000,000 tons (indicated ore) 22,000,000 tons (inferred ore)	1928-2012: N/A 2013: 1,287,000 tons 2014: 1,500,000 tons 2015: 2,200,000 tons 2016: 2,016,753 tons
Sloan Hills (Sloan district)	Dolomite Limestone	2011: 126,000,000 tons (material proposed to be mined)	

ELKO COUNTY

Camp Creek	Barite	1974: 90,000 tons, 90% BaSO ₄ (resource)	
Ivanhoe Creek (Ivanhoe district)	Bentonite	2007: 2,200,000 tons, Ca-Bentonite (inferred resource)	
Lakes (Beaver district)	Barite	1982: 8,000,000 tons, 4.1 sp. gr. (resource)	1959-1965; 1973-1981: <1,000,000 tons
Southern Pequop Mtns. (Pequop district)	Phosphate	1987: 250,000 tons, 16.4% P ₂ O ₅ (resource)	

ESMERALDA COUNTY

Clayton Valley South	Li	2015: Northern Zone, upper part of Main Ash Aquifer saturation thickness: 118 feet, 11,350 Tons Li, 102 mg/L; Northern Zone, Main Ash Aquifer saturation thickness: 102 feet, 34,940 tons Li, 370 mg/L; Northern Zone, Lower Aquifer System saturation thickness: 981 feet, 179,700 tons Li, 194 mg/L; Southern Zone, Main Ash Aquifer saturation thickness: 141 feet, 270,100 tons Li, 102 mg/L; Southern Zone, Lower Ash Aquifer saturation thickness: 581 feet, 403,400 tons Li, 37 mg/L; Total: 899,500 tons Li (Lithium Carbonate Equivalent inferred resource) 2017: 272,000 tons Li [Lithium Hydroxide Monohydrate (240,000 tons Lithium Carbonate Equivalent inferred resource)	
Diatom Hill	Diatomite	2014: 192,000,000 tons (proven indicated); 232,000,000 tons (probable indicated)	
Monte Cristo (Gilbert district)	Diatomite, Silica	2014: >220,000,000 tons (reserve)	
Rhyolite Ridge (Red Mountain district)	Li, B, K	2016: South Basin: 177,400,000 tons 1,550 ppm Li, 1.2% LCE, 2,180,000 tons Cont. LCE, 0.8% Li ₂ CO ₃ , 1,470,000 tons Cont. LC, 3.3% H ₂ BO ₃ , 5,876,000 tons Cont. Boric, 1.7% K ₂ SO ₄ , 2,990,000 tons Cont. Pot. (measured resources, 0.6% LCE cut-off grade); 71,200,000 tons 1,700 ppm Li, 1.2% LCE, 3,160,000 tons Cont. LCE, 0.9% Li ₂ CO ₃ , 2,314,000 tons Cont. LC, 2.6% H ₂ BO ₃ , 6,636,000 tons Cont. Boric, 1.7% K ₂ SO ₄ ,	

INDUSTRIAL MINERAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Rhyolite Ridge (cont.)		4,442,000 tons Cont. Pot. (inferred resources, 0.6% LCE cut-off grade); Searlesite Zone: 26,800,000 tons 1,820 ppm Li, 2% LCE, 529,000 tons Cont. LCE, 1% Li ₂ CO ₃ , 265,000 tons Cont. LC, 9.4% H ₂ BO ₃ , 2,513,000 tons Cont. Boric, 2% K ₂ SO ₄ , 551,000 tons Cont. Pot. (measured resources, 1.8% LCE cut-off grade); 44,400,000 tons 1,960 ppm Li, 2% LCE, 904,000 tons Cont. LCE, 1% Li ₂ CO ₃ , 462,000 tons Cont. LC, 9% H ₂ BO ₃ , 3,990,000 tons Cont. Boric, 2.3% K ₂ SO ₄ , 1,014,000 tons Cont. Pot. (inferred resources, 1.8% LCE cut-off grade)	
Silver Peak (Silver Peak Marsh district)	Li	1975: 775,000 tons Li to 1,200 feet (brine reserves) 44,500 tons Li (recoverable) 2008: 44,000 tons (economic reserves)	1966-1997: N/A 1998: 1,200,000 lbs LiCO ₃ , 500,000 lbs LiOH 1999-2014: N/A 2015-2016: 21,051,116 lbs Li compounds

EUREKA COUNTY

Bisoni (Fish Creek) (Fish Creek district)	Fluorspar	1970s: "many 100,000s" tons, 10% CaF ₂ 1987: >120,000,000 tons, 10% CaF ₂ 2014: 9,800,000 tons, 10.3% CaF ₂ (indicated mineral resource, 8% CaF ₂ cut-off); 32,500,000 tons, 10.4% CaF ₂ (inferred mineral resource, 8% CaF ₂ cut-off) 2015: MB: 6,700,000 tons, 10.8% CaF ₂ (indicated mineral resource, 9% CaF ₂ cut-off); 88,500,000 tons, 0.7% CaF ₂ (inferred mineral resource, 9% CaF ₂ cut-off)	
Unnamed (29N, 46E, S7) (Lewis district)	Silica	1964: 1,000,000 cu. yds. quartzite	
Unnamed (29N, 46E, S25) (Bullion district)	Silica	1964: 150,000,000 cu. yds. chert	
Unnamed (30N, 46E, S7) (Lewis district)	Silica	1964: 4,000,000 cu. yds. quartzite 99.2% SiO ₂ , 0.3% Fe ₂ O ₃ , 0.1% Al ₂ O ₃	

HUMBOLDT COUNTY

Kings Valley (Disaster district)	Li, K, Na	2011: 16,465,000 tons, 0.4% Li, 3.85% K, 3.7% Na (proven reserves); 13, 445,000 tons, 0.388% Li, 3.93% K, 3.93% Na (probable reserves, 0.327% Li cut-off grade)	
	Li, K, Na	2012: 13,396,000 tons, 0.405% Li, 3.83% K, 1.46% Na (proven reserves); 1, 980,000 tons, 0.396% Li, 3.77% K, 1.45% Na (probable reserves, 0.32% Li cut-off grade)	
	Li, K, Na	2016: Stage I Lens: 55,945,000 tons, 0.312% Li, 929,000 tons Li, 3.27% K, 1,830,000 tons K, 1.13% Na, 633,000 tons Na (measured resource, 0.2% Li cut-off grade); 184,224,000 tons, 0.285% Li, 2,744,000 tons Li, 3.07% K, 5,551,000 tons K, 1.04% Na, 1,881,000 tons Na (indicated resource, 0.2% Li cut-off grade); 137,666,000 tons, 0.294% Li, 2,154,000 tons Li, 3.04% K, 4,180,000 tons K, 1.1% Na, 1,515,000 tons Na (inferred resource, 0.2% Li cut-off grade)	

INDUSTRIAL MINERAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Lone Tree Hill (Potosi district)	Silica	1964: 60,000,000 cu. yds. quartzite	
Unnamed (36N, 41E, S17) (Potosi district)	Marble	1964: 10,000,000 tons, 93.39% CaCO ₃ , 1% MgCO ₃ , 4.24% SiO ₂ , 1% Al ₂ O ₃ , 0.43% Fe ₂ O ₃ , 0.33% P ₂ O ₅ (reserves)	

LANDER COUNTY

Blazer (Iowa Canyon district)	Fluorspar	1970s: 300,000 tons, 30% CaF ₂ 1974: 437,500 tons, 25.8% CaF ₂	
Bradshaw (Bullion district)	Barite	1975: 78,760 tons (reserve, shipping grade 4.22 sp. gr.); 5,100 tons (low grade resource)	1975-1982: N/A
Nevada Fluorspar (Iowa Canyon district)	Fluorspar	1974: 924,000 tons, 26% CaF ₂	1945-1975: N/A
Unnamed (32N, 42E, S23) (Buffalo Valley district)	Silica	1964: 50,000,000 cu. yds. chert	

LINCOLN COUNTY

Acoma (Acoma district)	Perlite	1951: 38,700,000 tons (indicated reserves) 21,850,000 tons (inferred reserves)	
Blue Nose (Viola district)	Limestone	2011: 227,725,000 tons (indicated resource; low, <5%, MgO); 30,595,000 tons (inferred resource, low; <5%, MgO); 16,649,000 tons (indicated resource, high MgO); 2,086,000 tons (inferred resource, high MgO)	
Boyd (Boyd district)	Clay	1936: 800,000 cubic feet	1920-1930: N/A
Eccles and Minto (Acoma district)	Perlite	1951: 15,281,000 tons (indicated reserves) 9,640,000 tons (inferred reserves)	
Deposit name	Minerals	Reserves/resources	Production
Fairview (Silverhorn district)	Perlite	1951: 4,038,000 tons (indicated reserves) 2,000,000 (inferred reserves)	Bef. 1951: 5,000 tons
Free (Wilson Creek Range district)	Perlite	1951: 450,000 tons (indicated reserves) 1,000,000 (inferred reserves)	
Hollinger (Wilson Creek Range district)	Perlite	1951: 1,150,000 tons (indicated reserves) 3,000,000 (inferred reserves)	1940s-1968: over 250,000 tons
Johnson-Fitchett	Perlite	1951: 2,680,000 tons (indicated reserves) 1,000,000 tons (inferred reserves)	
Kopenite (South Pahroc Range district)	Perlite	1951: 10,460,000 tons (indicated reserves) 5,000,000 tons (inferred reserves)	Bef. 1951: several 1,000 tons

INDUSTRIAL MINERAL DEPOSITS, LINCOLN COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Leech (Wilson Creek Range district)	Perlite	1951: 1,150,000 tons (indicated reserves) 3,000,000 (inferred reserves)	
Panaca (Panaca district)	Diatomite	1936: 2,000,000 cubic feet (estimated reserves)	
Robb (South Pahroc Range district)	Perlite	1951: 16,000,000 tons (indicated reserves) 8,000,000 (inferred reserves)	
Snow (Eagle Valley district)	Perlite	1951: 29,615,000 tons (indicated reserves)	
Tenacity (South Pahroc Range district)	Perlite	1950s: 15,000,000 tons (reserves)	1950-2009: N/A 2010: 1,417 tons 2011: 1,699 tons 2012: 2,120 tons 2013: 2,199 tons 2014: 1,784 tons 2015: 2,184 tons 2016: 2,408 tons

LYON COUNTY

Adams Claim (Mound House district)	Gypsum	2016: 6,000,000 tons gypsum and anhydrite; 300,000 tons limestone (reserves)	1996-2009: 2,312,342 tons 2010: 148,000 tons 2011: 238,802 tons 2012: 342,985 tons 2013: 441,129 tons 2014: N/A 2015: 520,530 tons 2016: 416,898 tons
East Walker Clay Mine (Washington district)	Clay	2000: 938,522,358 cu. yds. (resource)	1998-2012: 5,000 tons 2014: 3,000 tons
Nevada Cement	Limestone	2014: Company land: 13,700,000 tons; Leased land: 71,700,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties) 2015: Company land: 14,400,000 tons; Leased land: 70,600,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties)	1964-2013: N/A 2014: 723,789 tons 2015: 636,587 tons 2016: 709,211 tons
North of Rosetta Mine (Red Mountain district)	Limestone	1959: 1,000,000 tons (estimated)	
South of Rosetta Mine (Red Mountain district)	Limestone	1959: 400,000 tons (estimated)	
Unnamed (20N, 24E, S7) (Olinghouse district)	Gravel	1964: 3,700,000 cubic yards	
Unnamed (20N, 24E, S11)	Sand	1964: 200,000,000 tons	

MIINERAL COUNTY

Deposit name	Minerals	Reserves/resources	Production
Fluftrok (Aurora district)	Perlite	1950s: 300,000 tons (resource)	

INDUSTRIAL MINERAL DEPOSITS, MINERAL COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Fluorspar King and Blue Bell (Buena Vista district)	Fluorspar	1945: 25,000-37,500 tons, 65% CaF ₂	1929: 200 tons
NYE COUNTY			
Carrara (Bare Mountain district)	Marble	2003: 60,000,000 tons	1914-1934: ~10,000 tons
Horseshoe (Quinn Canyon district)	Fluorspar	1956: 410,000 tons, abt. 40% CaF ₂ (estimated reserves)	
Mammoth (Quinn Canyon district)	Fluorspar	1956: 3,125,000 tons, 30-35% CaF ₂ (estimated reserves)	
Premier (Gabbs district)	Mg	2010: 64,000,000 tons (resource)	1935-2009: N/A 2010: 422,261 tons 2011: 421,969 tons 2012: 344,552 tons 2013: 435,072 tons 2014: 430,385 tons 2015: 360,612 tons 2016: 1,000,000 tons
Railroad Valley (Butterfield Marsh district)	Sodium Carbonate	1967: 196,000,000 tons, 17.3% sodium carbonate (reserve)	
Shannon Queen (Quinn Canyon district)	Fluorspar	1956: 12,000 tons, abt. 51% CaF ₂ (estimated reserves)	
Spar (Quinn Canyon district)	Fluorspar	1956: 33,000 tons, abt. 80% CaF ₂ (estimated reserves)	
Union Canyon (Sea Bee) (Union district)	Fluorspar	1974: 433,000 tons, 18.5% CaF ₂ (estimated open pit mineable) 20,000 tons, 16% CaF ₂ (stockpiled)	1953-1954: 360 tons Early 1970s: mined and stockpiled: 20,000 tons
PERSHING COUNTY			
Lovelock (Muttelbury district)	Gypsum	1964: 3,000 tons gypsite	1890s: N/A
Nassau (Nevada district)	Bentonite	2012: 535,000 tons, Ca-Bentonite (wet tons of reserves)	1981-2009: <2,000 tons annually 2010: 2,000 tons 2011: 2,000 tons 2012: <2,000 tons 2013: <2,000 tons 2014-2015: 0 tons 2016: 4,486 tons
Unnamed (31N, 30E, S11) (Nevada district)	Perlite	1964: >1,000,000 tons (source of commercial quality)	
Unnamed (31N, 30E, S35) (Nevada district)	Perlite	1964: 250,000 tons (source of commercial quality)	
Unnamed (31N, 36E, S11) (Willow Creek district)	Marble	1964: 30,000,000 tons, 89.22% CaCO ₃ , 8.21% MgCO ₃ , 24% SiO ₂ , 0.17% Al ₂ O ₃ , 0.004% P ₂ O ₅	

INDUSTRIAL MINERAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Valery (Imlay district)	Fluorspar	1965: 800,000 tons, 25% CaF ₂	1953-1955: 1,932 tons

WASHOE COUNTY

Marble Bluff	Limestone	1965: 200,000,000 tons, >95% CaCO ₃ (reserve)	
Spanish Springs Quarry (Nevada district)	Aggregate	2012: 139,849,000 tons, hard rock (reserve) 2013: 139,342,000 tons, hard rock (reserve)	1984-2012: N/A 2013: 618,233 tons 2014: 663,749 tons 2015: 543,848 tons 2016: 618,233 tons
Terraced Hills (Sand Pass district)	Halloysite	1965: >50,000,000 tons (reserve)	1968-2014: N/A 2010: 18,856 tons 2011: 19,232 tons 2012: 10,031 tons 2013: 27,569 tons 2014: 17,534 tons 2015: 43,232 tons 2016: 25,391 tons
Winnemucca Lake Silica (Nightingale district)	Quartz	1964: 1,000,000 tons	

WHITE PINE COUNTY

Hampton Creek Garnet (Mount Moriah district)	Garnet	1990: 12,000 to 60,000 tons (1-5% alluvial resource)	Early 1960s: test lots
Mount Wheeler (Lincoln district)	Be, W, Fluorspar	1969: 200,000 tons, 0.75% BeO, 0.3% WO ₃ , 22% CaF ₂ (ore reserves)	
Tami-Mosi (Nevada district)	Mg	2011: 454,000,000 tons, 12.3% Mg, 111,000,000,000 lbs. Mg metal content (inferred resource, 12% cut-off grade)	

GEOTHERMAL ENERGY

By Bridget Ayling

OVERVIEW

Although no new geothermal plants came online in 2016, gross geothermal production in Nevada increased to almost 500 MWe (megawatts electric) (up from ~465 MWe in 2015), associated with the ramping up of the Phase 2 McGinness Hills and Don A. Campbell geothermal plants. The McGinness Hills geothermal field is now Nevada's largest geothermal producer, producing almost 104 MWe gross in 2016: the Steamboat geothermal system is now Nevada's second-largest producer, with approximately 86 MWe gross generation in 2016 (table 1, 2; figure 1).

The total geothermal power generation in Nevada in 2016 was 4,377,127 megawatt-hours (MWh) gross and 3,344,233 MWh net, equal to a ~7% increase in generation from 2015, and contributing to almost 8% of Nevada's total electricity generation in 2016. Data obtained from the Nevada Department of Taxation indicate that the total gross 2016 proceeds from geothermal operators in Nevada (including the direct use projects) were \$258,187,349 (approximately \$18 million greater than in 2015). The reported adjusted gross proceeds for 2016 (taking into account the cost of operating and maintaining plant and transmission line, depreciation of capital investment in these, amortization of each long-term PPA, and other factors) were \$91,269,742.

In October 2016, the BLM offered up 22 parcels for geothermal exploration: 14 of these were sold at a price of \$2 an acre for a total of 32,000 acres of land, and \$64,156 in bonus bids. Total monies received to the BLM were \$130,552 (including the bonus bid, administrative fees, and first year lease rental at \$2/acre). Ormat Nevada Inc., bought 13 of the 14 parcels sold, acquiring ~9224 acres near their McGinness Hills geothermal plant and 1920 acres adjacent to their Don A. Campbell geothermal plant. Additionally, Ormat Nevada Inc. bought leases over the Dixie Comstock geothermal system (Churchill county), Colado geothermal system (near Lovelock, Pershing County), Black Warrior geothermal area (Churchill county), northern Clayton Valley (Esmeralda county), and Rhodes Marsh (Mineral county) (figure 2, table 3).

In 2016, the Nevada Division of Minerals (NDOM) permitted 14 wells, and 16 new geothermal wells were drilled (tables 4 and 5). Nine of these were industry production wells drilled by Ormat Nevada Inc. in the

Carson Lake, Dixie Meadows, Tungsten Mountain and Tuscarora geothermal fields (table 4). Permitted depths ranged between 91–1524 m (298–5000 ft). Figure 3 illustrates these trends more clearly and highlights the boom in geothermal leasing and associated number of drilling permits issued in the late 2000s, as well as the decline in exploration activity since 2012. The number of production wells drilled has not varied as much between 2007–2016.

Trends

In 2016, average wellhead fluid production temperatures ranged from 97–187°C (207–369°F) for electricity generation, and three reported direct-use applications utilized geothermal fluids ranging between 77–95°C (170–203°F) (figure 4). Production flow rates for an individual well averaged 125 liters/second (l/s; ~1,988 gallons/minute (gpm)) for electricity generation, with the highest production flowrates measured at the Steamboat geothermal field (332 l/s; 5,262 gpm). Reviewing trends in production over time, it is apparent that some fields have experienced periods of production decline in the past but have apparently stabilized in recent years (e.g., Blue Mountain, Desert Peak, Brady Hot Springs, and Soda Lake), whereas others appear to be currently experiencing production decline (e.g., Steamboat Hot Springs, Stillwater) (figure 5a, 5b, 5c). Several fields demonstrate long-term stable production, including Dixie Valley, Wabuska, Steamboat Hills, and Beowawe.

Since around 2007, geothermal generation capacity has been increasing at a near constant rate (figure 6) to the current installed capacity of 683 MWe. This is almost a tripling of installed capacity since the mid 2000s, although the net power to market has only doubled in this time. The estimated price for geothermal electricity has remained relatively stable in recent years and is estimated to be around 7.72 cents/kilowatt-hour (kWh) in 2016 (calculated by dividing the total gross proceeds by the annual net electricity production)—almost the same as the estimated price in 2015 (7.71 c/kWhr) (figure 7).

Table 1. Nevada geothermal power plants, and production figures, 2016.

Plant name	Nameplate Capacity (MW) ¹	Flash or Binary	Commission Year	2016 Production (MWhr)		2016 Production (MW) ²		Operator
				Gross	Net	Gross	Net MW	
Beowawe	18.0	F/B	1985	125,338	104,584	14.3	11.9	Terra-Gen Power
Blue Mountain	49.5	B	2009	328,822	234,904	37.5	26.8	AltaRock Energy
Brady Hot Springs	26.1	F/B	1992	95,666	53,597	10.9	6.1	Ormat Nevada Inc.
Desert Peak II	23.0	B	2006	109,959	84,404	12.6	9.6	Ormat Nevada Inc.
Dixie Valley	64.7	F	1988	534,981	479,103	61.1	54.7	Terra-Gen Power
Dixie Valley Binary Unit	6.2	B	2012			0.0	0.0	
Don A. Campbell	22.5	B	2013	216,956	176,647	24.8	20.2	Ormat Nevada Inc.
Don A. Campbell II	25.0	B	2015	218,075	174,477	24.9	19.9	
Jersey Valley	23.5	B	2011	108,646	72,473	12.4	8.3	Ormat Nevada Inc.
McGinness Hills	48.0	B	2012	459,851	383,868	52.5	43.8	Ormat Nevada Inc.
McGinness Hills II	48.0	B	2015	448,443	379,430	51.2	43.3	
Patua	48.0	B	2012	201,463	115,973	23.0	13.2	Cyrq Energy
Salt Wells	23.6	B	2009	140,863	103,410	16.1	11.8	Enel North America
San Emidio	11.75	B	2012	100,802	75,049	11.51	8.57	U.S. Geothermal Inc.
Soda Lake No. 1	5.1	B	1987	17,216	9,800	2.0	1.1	Cyrq Energy
Soda Lake No. 2	21.0	B	1991	105,761	60,202	12.1	6.9	
Steamboat II	23.9	B	1992	100,883	64,090	11.5	7.3	Ormat Nevada Inc.
Steamboat III	23.9	B	1992	107,740	70,813	12.3	8.1	
Galena 1	30.0	B	2005	179,930	148,541	20.5	17.0	
Galena 2	13.5	B	2007	64,693	38,524	7.4	4.4	
Burdette (Galena 3)	30.0	B	2008	188,753	145,139	21.5	16.6	
Steamboat Hills	13.2	F	1988	107,861	90,237	12.3	10.3	
Total MW at Steamboat	134.5					85.6		
Stillwater 2	47.2	B	2009	211,451	135,369	24.1	15.5	Enel Stillwater
Tuscarora	32.0	B	2012	186,135	134,476	21.2	15.4	Ormat Nevada Inc.
Wabuska	5.6	B	1984	16,840	9,125	1.9	1.0	Homestretch Energy
Total:	683.25			4,377,128	3,344,233	499.7	381.8	

¹ Nameplate capacity is the manufacturer's rating of equipment output capacity as reported to the Nevada Division of Minerals by the plant operators and does not necessarily reflect the capability of the currently developed resource. These nameplate capacities are estimates, and several different values can be found in the literature. Generator nameplate capacity actually refers to the size of the actual generator, but not to the turbine size or the actual capacity of the power plant. There are no public documents breaking down nameplate capacity of the turbines or gross power so these numbers may not adequately reflect actual generation.

² Production values were calculated by dividing annual megawatt hours (MWhr) produced by the number of hours in a year.

Table 2. Geothermal power plant operator contact information.

Company Address	Local Contact	Project	MWe
AltaRock Energy 4010 Stone Way North, Suite 400 Seattle, WA 98103 (206) 729-2400 http://altarockenergy.com/	NGP Blue Mountain 1 15250 Blue Mountain Road Winnemucca, NV 89445 (775) 786-4322	Blue Mountain (Faulkner 1)	49.5
Cyrq Energy 136 S. Main Street, Suite 600 Salt Lake City UT 84101 (801) 875-4200 http://www.cyrqenergy.com/	Patua Geothermal Power Plant 17388 Patua Road Hazen, NV 89408 (775) 217-2650 Soda Lake Power Plant 5500 Soda Lake Road Fallon, NV, 89406, USA (775) 867-5093	Patua Soda Lake No. 1 Soda Lake No. 2	48 5.1 21
Enel North America 1755 East Plumb Lane, Suite 155 Reno, NV 89502 (775) 329-0700 https://www.enelgreenpower.com/country-north-america	(775) 423-5374 (775) 423-0322	Salt Wells Stillwater	23.6 47.2
Homestretch Energy 1147 N. Daybreak Drive Washington, UT 84780 (435) 668-6003 http://homestretchgeo.com/	Homestretch Geothermal 15 Julian Lane Yerington, NV 89447 (775) 463-4633	Wabuska	5.6
Ormat Nevada Inc. 6225 Neil Rd #300 Reno, NV 89511 (775) 356-9029 http://www.ormat.com/	(775) 322-7782 (775) 423-5800 (775) 852-1444 (775) 384-7807 (775) 852-1444 (775) 852-1444 (775) 384-7807	Brady Hot Springs Desert Peak Jersey Valley McGinness Hills (1 & 2) Steamboat Tuscarora Don Campbell (Wild Rose)	26.1 23 23.5 96 134.5 32 47.5
Terra-Gen Power, LLC 9590 Prototype Ct., #220 Reno, NV 89521 (775) 850-1125 http://www.terra-gen.com/	(775) 635-2130 (775) 423-6535	Beowawe Dixie Valley	18.0 70.9
U.S. Geothermal Inc. 390 E Parkcenter Blvd, Suite 250 Boise, Idaho 83706 (208) 424-1027 http://www.usgeothermal.com/	U.S. Geothermal Inc. P.O. Box 10 Empire, NV 89405 (775) 557-2015	Empire (San Emidio)	11.75
Total Installed MWe (nameplate capacity)			683.25

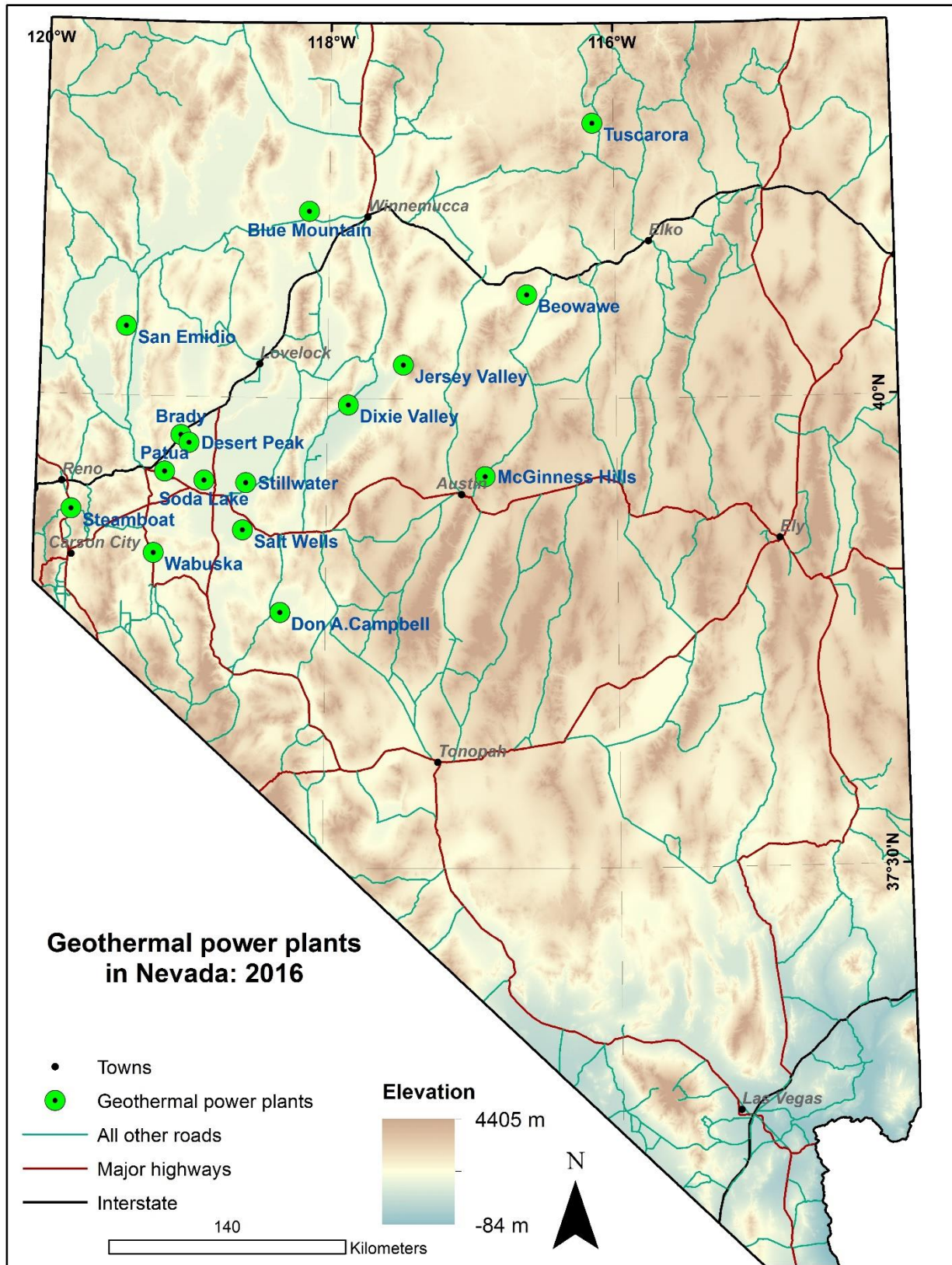


Figure 1. Location of geothermal power plants in Nevada in 2016.

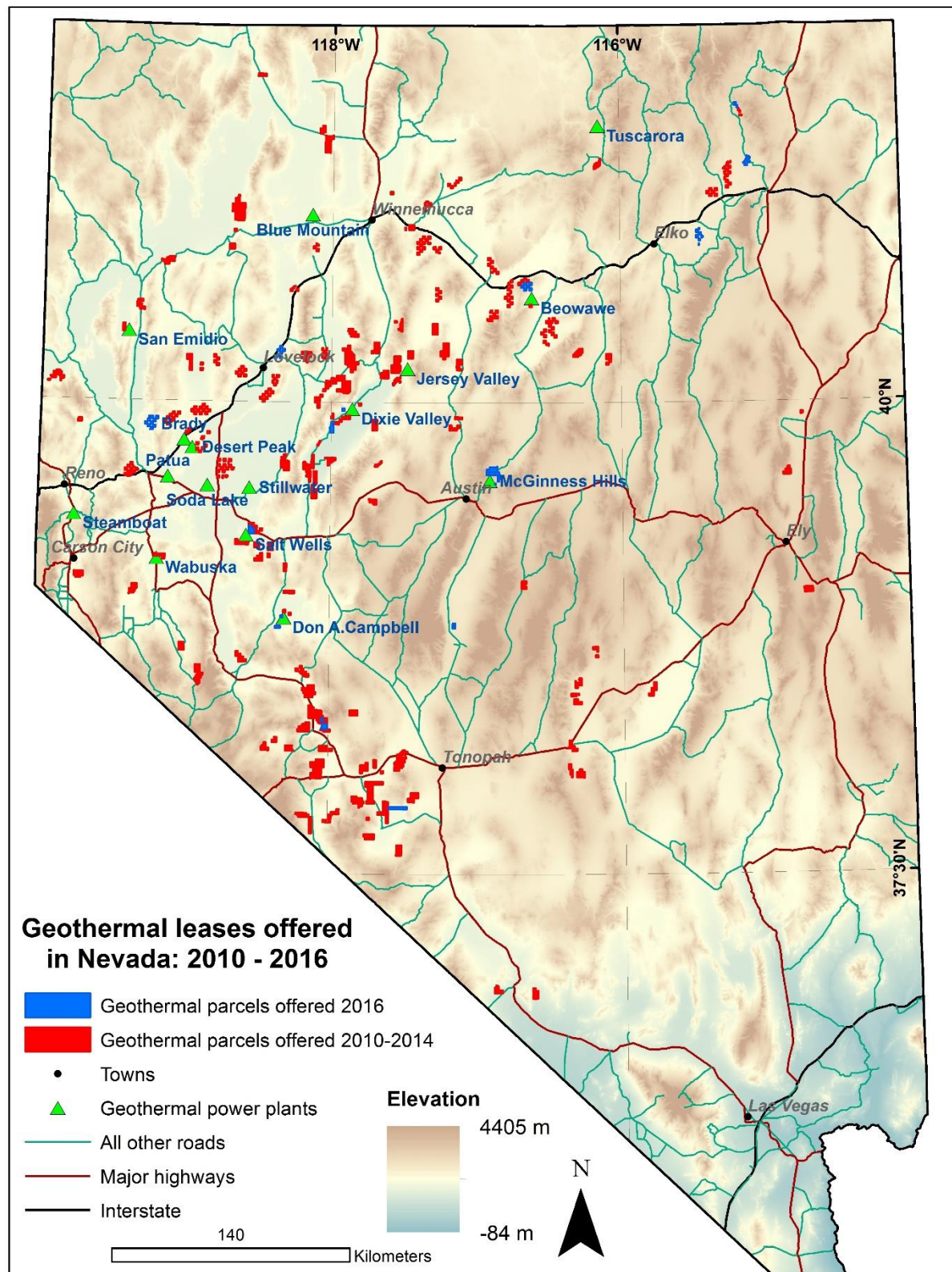


Figure 2. Geothermal leases offered by the BLM between 2010 and 2016.

Table 3. Geothermal competitive leasing activity in Nevada, 2007–2016.

Year	Parcels Offered	Acres Offered	Parcels Sold	Acres Sold	Total Receipts ¹	Highest bid per acre	Avg bid per acre	% Acres Sold	% Parcels Sold
2007	43	122,849	43	122,849	\$11,669,821	\$95.00	\$92.90	100%	100%
2008	35	105,212	35	105,212	\$28,207,806	\$268.00	\$266.00	100%	100%
2009	108	323,222	82	243,727	\$8,909,445	\$3,800.00	\$34.50	75%	76%
2010	114	328,020	75	212,370	\$2,762,292	\$1,000.00	\$10.95	65%	66%
2011	51	151,119	17	42,627	\$456,353	\$60.00	\$8.65	28%	33%
2012	33	94,829	8	27,834	\$112,540	\$2.00	\$2.00	29%	24%
2013	13	16284	9	10373	\$42,870	\$2.00	\$2.00	64%	69%
2014	2	3,438	1	40	\$315	\$2.00	\$2.00	1%	50%
2015	0	0	-	-	-	-	-	-	-
2016	22	46976	14	32075	\$ 130,552	\$2.00	\$2.00	68%	64%
Totals:	421	1,191,949	284	797,107	\$52,291,994	\$581.22	\$46.78	-	-

¹ Includes first year lease rental at a price of \$2 per acre, and administration fees (\$160 per parcel).

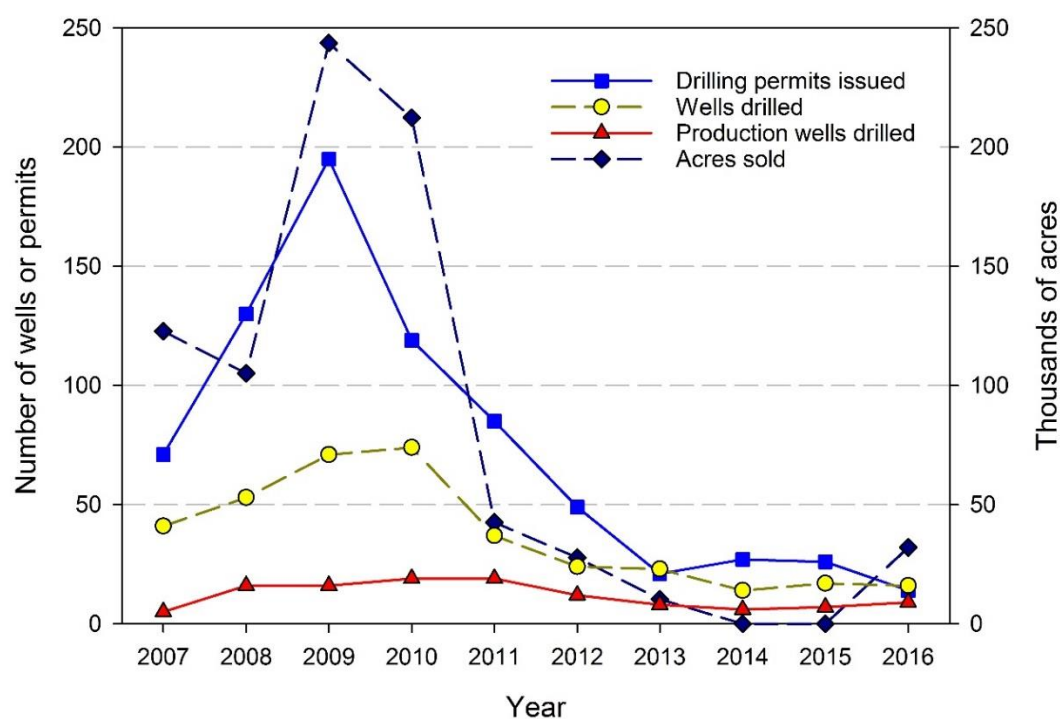


Figure 3. Trends in geothermal leasing and drilling activities in Nevada: 2007–2016.

Table 4. Geothermal wells reported as drilled, re-drilled or completed in 2016.

County	Area	Permit #	Operator Name	Well Number	Well Type ¹	Permitted depth (m)	UTM_Easting ²	UTM_Northing ²	Land Type
Churchill	Tungsten Mountain	1407	ORNI 43 LLC	75A-22	Ind-Prod	1524	441058	4391485	Federal BLM / USFS
Churchill	Carson Lake	1406	ORNI 16 LLC	81(86-6)-7	Ind-Prod	1217	357632	4357840	Federal BLM / USFS
Churchill	Tungsten Mountain	1403	ORNI 43 LLC	84B-22	Ind-Prod	1064	441212	4391634	Federal BLM / USFS
Churchill	Tungsten Mountain	1404	ORNI 43 LLC	56A-22	Ind-Prod	1064	440550	4391323	Federal BLM / USFS
Churchill	Tungsten Mountain	1400	ORNI 43 LLC	84A-22	Ind-Prod	956	441202	4391636	Federal BLM / USFS
Churchill	Dixie Meadows	1401	ORNI 32 LLC	24A-8	Obs	305	407728	4404983	Federal BLM / USFS
Churchill	Tungsten Mountain	1398	ORNI 43 LLC	45A-22	Ind-Prod	1113	440557	4391536	Federal BLM / USFS
Churchill	Dixie Meadows	1399	ORNI 32 LLC	23A(22)-8	Ind-Prod	1372	407888	4405289	Federal BLM / USFS
Churchill	Dixie Meadows	1397	ORNI 32 LLC	24-8	Ind-Prod	1524	407734	4404986	Federal BLM / USFS
Elko	Tuscarora	1396	HSS II	35A-8	Ind-Prod	1524	570460	4590680	Private
Lander	McGinness Hills	1408	ORNI 39 LLC	57C-22	Ind-Inj	1067	508366	4380930	Private
Washoe	Incline Village	1391	Cascade Beach LLC	EH-2	Dom	91	243168	4348674	Private
Washoe	Incline Village	1390	Cascade Beach LLC	EH-1	Dom	91	243100	4348690	Private
Washoe	Incline Village	1393	Cascade Beach LLC	EH-4	Dom	91	243256	4348627	Private
Washoe	San Emidio	1384	USG Nevada	25-21 (SES 9)	Obs	>672	294695	4470464	Federal BLM / USFS
Washoe	San Emidio	1381	USG Nevada	17-21 (ESE 8)	Obs	>538	295124	4470919	Federal BLM / USFS

¹ Abbreviations as follows: Ind-Production = Industry Production well, Ind-Inj = Industry Injection well, Obs = Observation well, Dom = Domestic well.

² North American 1983 Datum UTM 11N (in meters).

Table 5. Geothermal drilling activity in Nevada, 2007–2016.

Year	Number of permits issued	Number of wells drilled ¹	Number of production wells drilled
2007	71	41	5
2008	130	53	16
2009	195	71	16
2010	119	74	19
2011	85	37	19
2012	49	24	12
2013	21	23	8
2014	27	14	6
2015	26	17	7
2016	14	16	9

¹ Includes wells permitted in previous years

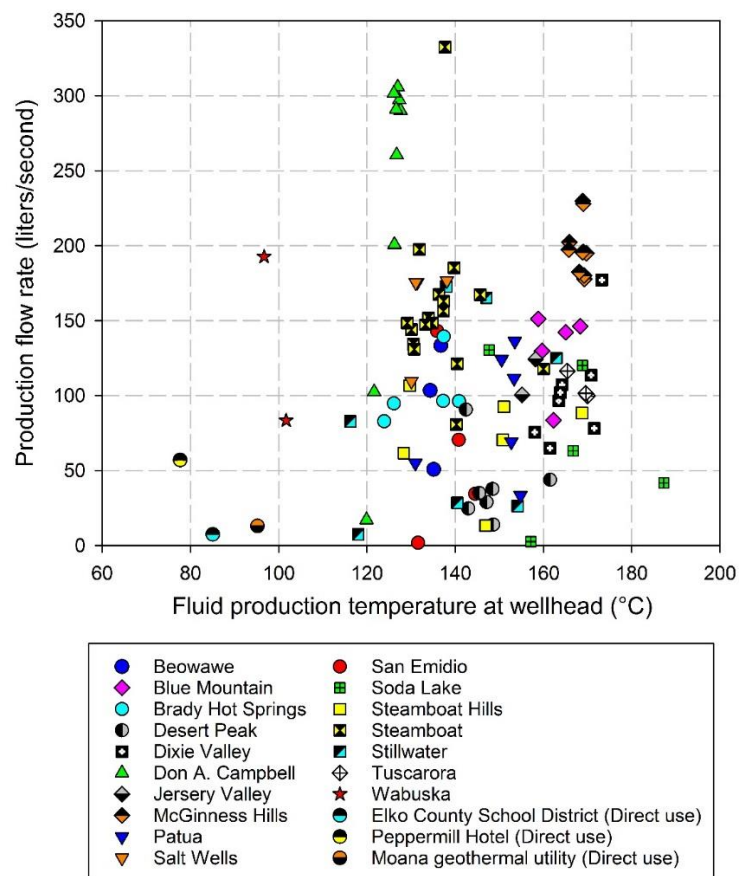


Figure 4. Average production flow rates of geothermal wells in Nevada in 2016, and their associated temperatures as measured at the wellhead. Data based on information provided to the Nevada Division of Minerals, 2016.

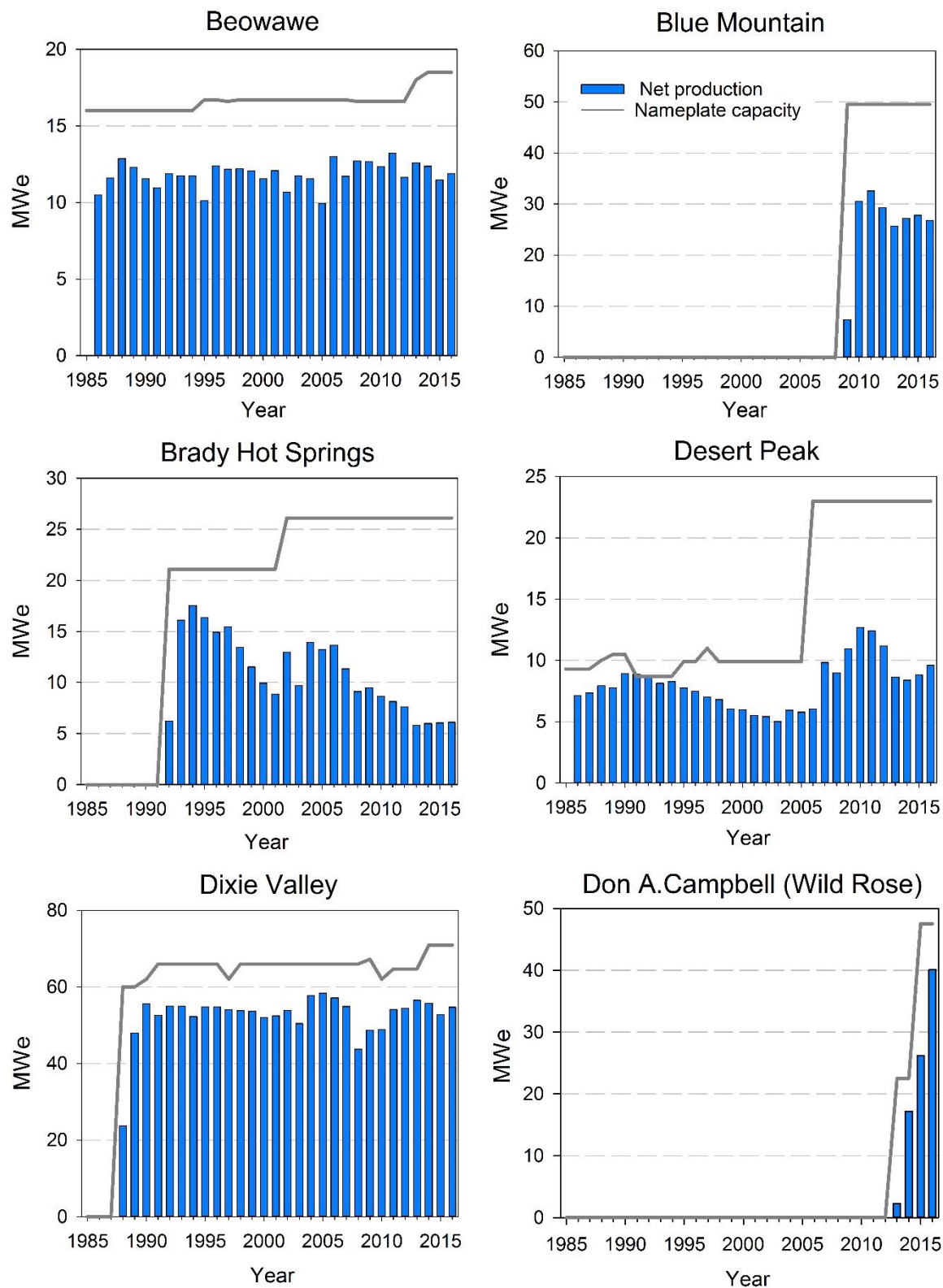


Figure 5a. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

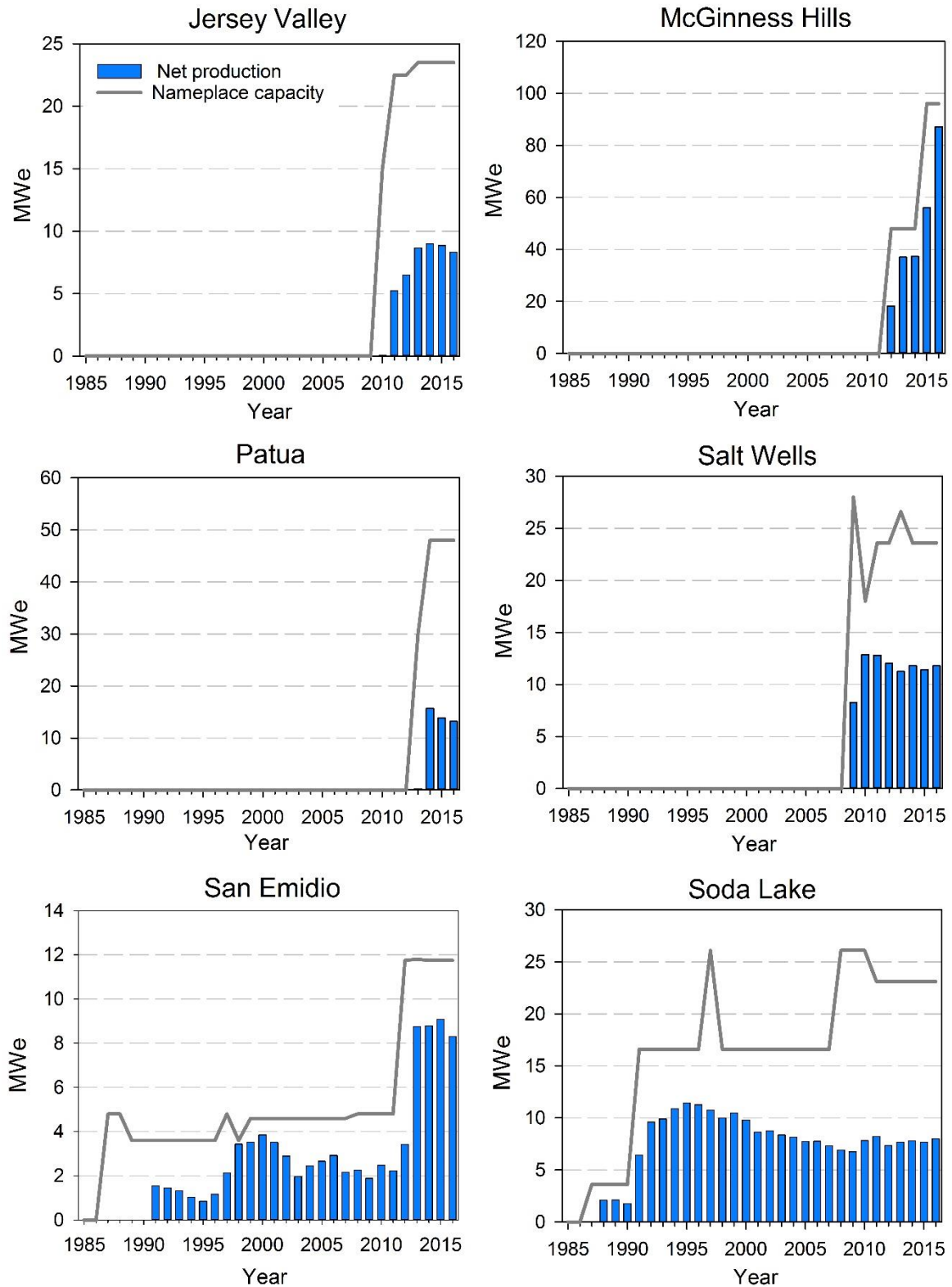


Figure 5b. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

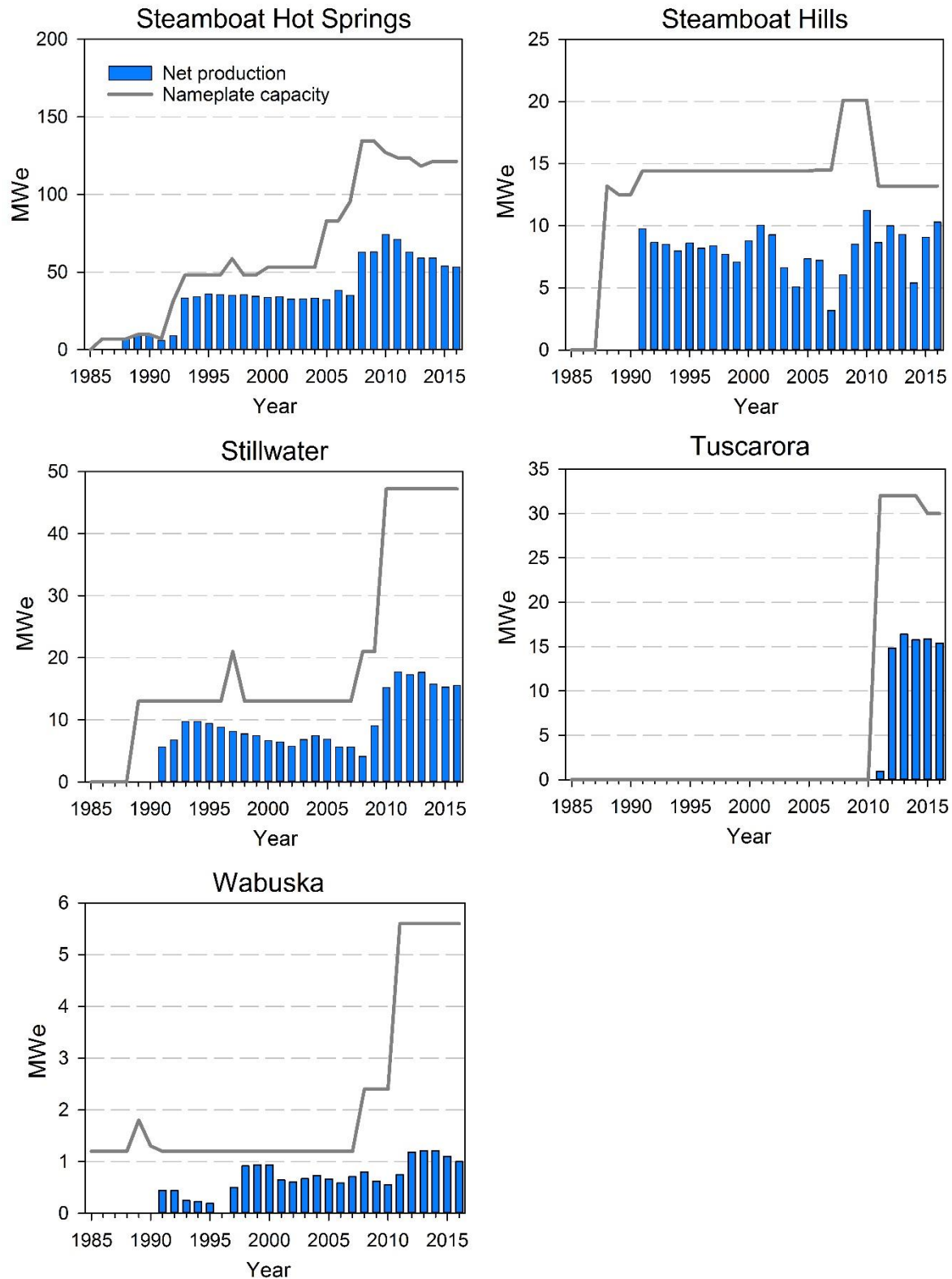


Figure 5c. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

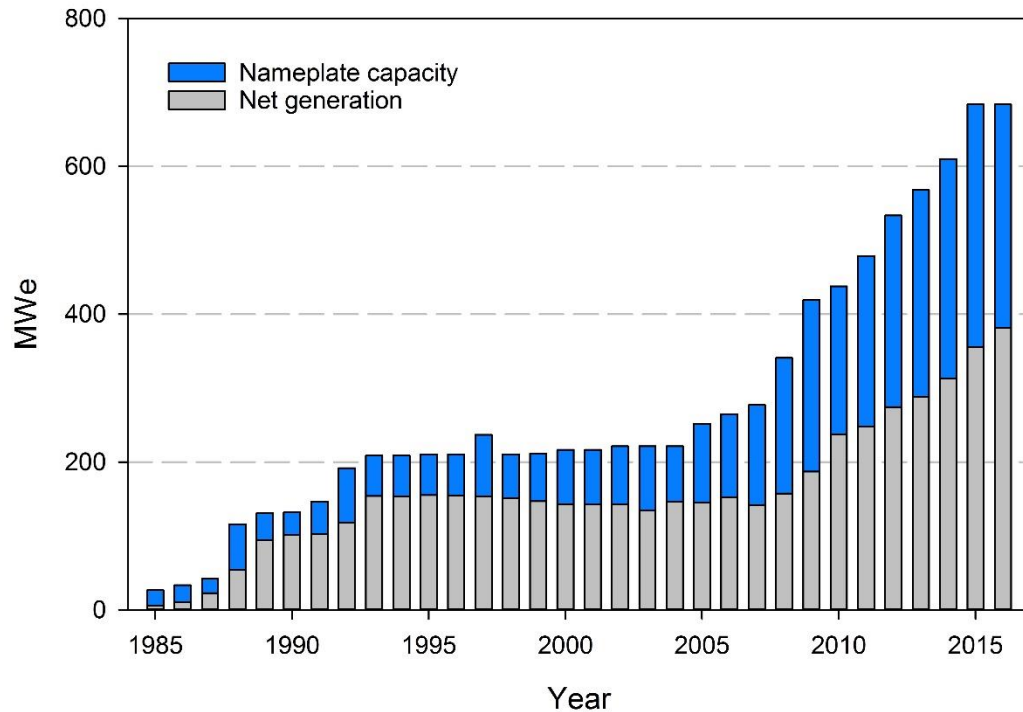


Figure 6. Cumulative nameplate generating capacity and net geothermal power production in Nevada between 1985–2016, as reported to the Nevada Division of Minerals. Net generation is calculated by dividing annual net generation in megawatt-hours by the number of hours in a year.

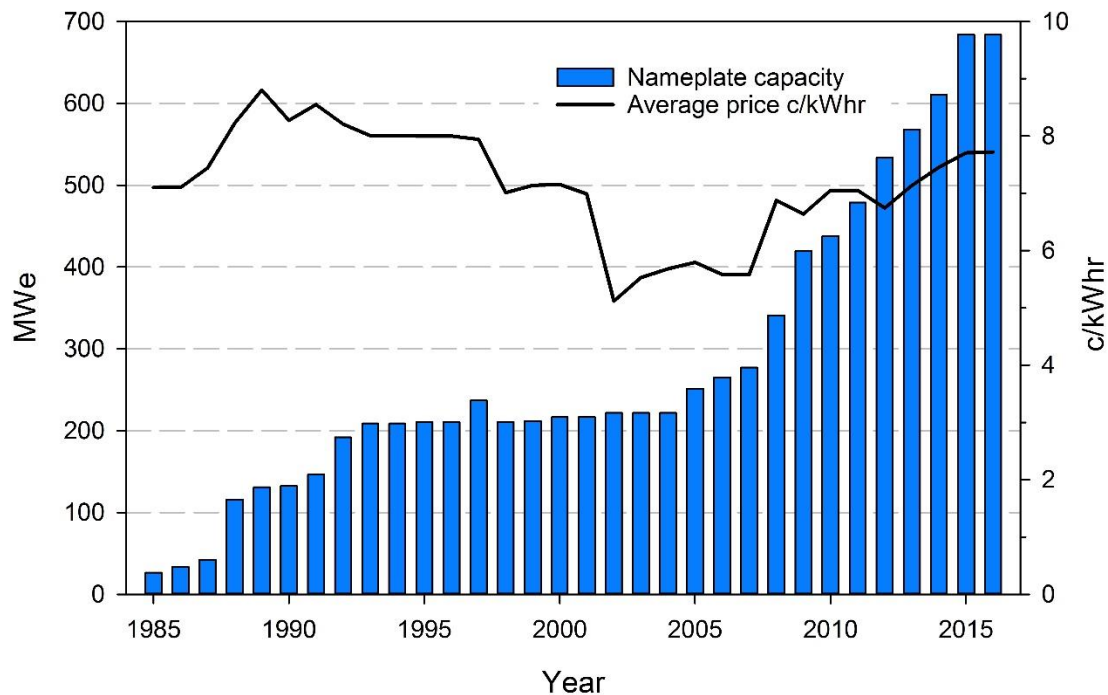


Figure 7. Trends in annual, net geothermal electricity generation and the estimated average price of geothermal electricity (calculated from gross proceeds and reported net production through 2016). The actual price for any individual power plant may be different and is held confidential by the State Energy Office.

Significant federally funded geothermal research projects in Nevada in 2016

In 2016, the U.S. Department of Energy (DOE) funded several geothermal research projects in Nevada. Four key projects are briefly reviewed as follows:

1. Nevada Play Fairway project: Phase 2

- Project PI: Dr. James Faulds, University of Nevada, Reno
- Project duration: 18 months: 1 April 2016–30 September 2017.
- Total project funding: Phase 2: \$825,000
- Project goals and activities: Develop a methodology that will predict the locations of potential blind hydrothermal geothermal systems (i.e., systems with no surface hot springs or steam vents) and distinguish the most promising systems for development. In Phase 1 of the Nevada play fairway project, an extensive suite of existing geological, geophysical and geochemical data were compiled and evaluated, in support of locating new areas with geothermal potential and developing a workflow to reduce geothermal exploration risk (Faulds et al., 2015a; Faulds et al., 2016). Outputs of Phase 1 included the identification of multiple locations with apparent geothermal resource potential. In Phase 2, 25 sites were prioritized from the Phase 1 results, from which 5 sites were selected for more detailed characterization: Gabbs Valley, Sou Hills, Granite Springs Valley, Crescent Valley, and Steptoe Valley. Key activities for Phase 2 included additional data collection such as shallow temperature surveys, more detailed structural mapping, reprocessing of existing seismic data, geological modeling, and water sampling for geochemical analysis.

2. Fallon Frontier Observatory for Research in Geothermal Energy (FORGE): Phase 2a,b

- Project PI: Sandia National Laboratories
- Project duration: Phase 2a,b: 18 months, October 2016 to March 2018.
- Total project funding: Phase 2a,b: \$9,500,000
- Project goals and activities: Select and demonstrate site viability to host the eventual FORGE field research laboratory, where the scientific and engineering communities can conduct research and test technologies to make Engineered Geothermal Systems (EGS) commercially viable. In Phase 1, the Fallon FORGE site was selected as a potential candidate for experiments related to developing

deep, engineered geothermal reservoirs. Phase 1 activities included substantial compilation and review of the existing geological, geochemical, geophysical, environmental, logistical, and hydrological data from the Fallon site to determine the suitability of the site to host FORGE. The site was demonstrated to meet the criteria required to progress to Phase 2, including: (1) reservoir temperatures between 175–225°C, (2) target reservoir depth between 1.5–4 km, (3) low permeability rocks (<10–16 mD), (4) crystalline basement lithology, (5) favorable stress regime, and (6) no hydrothermal system present (Faulds et al., 2015b; Siler et al., 2016). The Fallon FORGE project advanced to Phase 2, in which environmental permitting will be completed and additional geoscientific data will be collected to further characterize the site and reduce the geological uncertainty.

3. A Novel Approach to Map Geothermal Permeability Using Passive Seismic Emission Tomography and Joint Inversion of Active Seismic and EM Data: Subsurface Technology and Engineering Crosscut Initiative (SubTer)

- Project PI: U.S. Geothermal Inc.
- Project duration: 2 years: 1 October 2016 – September 2018.
- Project funding: \$1,500,000 (DOE); \$400,000 (U.S. Geothermal cost share)
- Project goals and activities: U.S. Geothermal Inc. will develop new subsurface technologies at both San Emidio and Crescent Valley geothermal fields in Nevada to identify fluid flow paths in the geothermal resource. Multiple geophysical techniques (passive seismic emission tomography, and joint inversion of active seismic and electromagnetic (EM) data) will be used to map subsurface fluids and associated permeability in their two geothermal prospects in Nevada. If the subsurface testing is successful, a second phase that involves drilling will be completed to validate the Phase 1 findings.

4. Quantifying EGS Reservoir Complexity With an Integrated Geophysical Approach—Improved Resolution Ambient Seismic Noise Interferometry

- Project PI: Dr. John Louie, University of Nevada, Reno.
- Project duration: 3 years, 9 months: October 2014–June 2018.

- **Project funding:** \$408,195
- **Project goals and activities:** Improve the resolution (from 2 km to 0.1 km, to 3 km depth) of seismic interferometry-estimated parameters such as seismic attenuation, temperature and lithology, relative to prior work on the Dixie Valley geothermal system. Also, assess the possibility of using seismic analysis in combination with other geophysical techniques for EGS target identification, to characterize the subsurface.

ACTIVITY DURING 2016

The following section outlines new activity at geothermal power plants and major exploration sites in 2016. For historical information about geothermal sites in Nevada, refer to previous Mineral Industry reports published by NBMG (MI2010–2015¹).

Carson Lake (Ormat Nevada Inc.)

In 2016, Ormat Nevada Inc. drilled a production well in their Carson Lake geothermal prospect. The well (81(86-6)-7) had a permitted depth of 1217 m (3993 ft) (true-vertical depth; TVD) and was drilled in an area approximately 10 km northwest of the Salt Wells geothermal field. The Carson Lake geothermal prospect is located 2–3 km to the south-east of the Fallon FORGE EGS project. Ormat has drilled two other wells in the area since 2008: well 84-31 was drilled in 2008 as a production well to approximately 1810 m (5938 ft) depth, and well 18-5 was drilled in 2012 as an observation well, to approximately 910 m (2985 ft) depth. Well 84-31 has a measured bottom hole temperature of 129°C (264°F) at 1811 m (5941 ft) depth.

Dixie Meadows (Ormat Nevada Inc.)

Ormat has continued work at the Dixie Meadows geothermal prospect in central Nevada, which is located approximately 28 km south-west of the Dixie Valley geothermal system. After drilling an observation well and a production well at the site in 2015, two additional production wells (permitted TVD's of 1372 m (4500 ft) and 1524 m (5000 ft)) and another observation well (permitted depth of 305 m (1000 ft)) were drilled in 2016 (table 4). Ormat report that the anticipated capacity of a

geothermal plant at Dixie Meadows would be 15–20 MWe, with expected commissioning before the end of 2018².

McGinness Hills (Ormat Nevada Inc.)

In 2016, Ormat successfully acquired 5 additional geothermal exploration leases for their McGinness Hills project in support of their planned Phase 3 expansion. The parcels are located to the north of the currently producing field, and total 9224 acres. One injection well (57C-22) was drilled in 2016 in the existing field, and had a permitted depth of 1067 m (3500 ft).

San Emidio (U.S. Geothermal Inc.)

In 2016, U.S. Geothermal Inc. conducted further exploration at their San Emidio project, deepening two (wells 17-21 and 25-21) of the five thermal gradient wells that were drilled in the southwestern part of the field in 2015 as part of their Phase 2 development program. The wells are approximately 518 meters (1700 ft) apart along a structural trend identified in the southwest zone of the field. After drilling was completed in July/August 2016, the wells were flow tested in September and early October with promising results. Well 17-21 produced a stabilized, artesian flow of 28 l/s (452 gpm) at a flowing temperature of 162°C (323°F), and well 25-21 produced a stabilized, artesian flow of 29.5 l/s (467 gpm) at a flowing temperature of 162°C (324°F)³. These temperatures are almost 20°C higher than the hottest producing well (61-21) in the currently producing Phase 1 wellfield. During the tests, pressure monitoring between the two wells and across the currently producing wellfield showed very low pressure response, suggesting that production from the southwest zone would not adversely impact the existing facility. The flow test data from wells 17-21 and 25-21 were incorporated into a probabilistic power density model to estimate potential resource capacity. Results of this modelling suggested a 50% probability that the southwest zone could support 47 MWe net generation⁴.

U.S. Geothermal submitted permits to the Bureau of Land Management and Nevada Division of Minerals in late December 2016 to deepen the three other thermal gradient wells drilled in 2015. Subject to weather

¹ <https://pubs.nbmgs.unr.edu/Mineral-Industry-s/1860.htm>

² <http://investor.ormat.com/Cache/1500093004.PDF?Y=&O=PDF&D=&fid=1500093004&T=&iid=4087066>

³ http://files.shareholder.com/downloads/AMDA-7QAWZ6/5467075671x0x930958/BB5162F7-0839-4DFA-8179-47AA4CB38E52/NR_11-02-2016.pdf

⁴ http://files.shareholder.com/downloads/AMDA-7QAWZ6/5467075671x0x930954/4B328D2D-F876-4409-9240-B09FEA00BB09/NR_01-11-2017.pdf

conditions and permit approval, drilling to deepen those wells was planned for the first quarter of 2017.

Soda Lake (Cyrq Energy Inc.)

Cyrq signed a \$36 million engineering, procurement and construction contract with Ormat Nevada Inc. for one new air-cooled Ormat Energy Converter (OEC) at their Soda Lake geothermal plant⁵. The new unit will replace the current plants 1 and 2 that were commissioned by Ormat in the late 1980s and early 1990s respectively, and is anticipated to reduce plant operating costs and increase generation. The new plant is expected to come online in 2018.

Tungsten Mountain (Ormat Nevada Inc.)

Following submission of an Environmental Impact Assessment (EIA) to the BLM in late 2015, the BLM issued a decision of no significant impact for Ormat's Tungsten Mountain geothermal development project in March 2016⁶. In conjunction with this, Ormat stepped up activity at their Tungsten Mountain geothermal prospect, drilling 5 commercial-scale production wells in 2016 (table 4). The maximum permitted depth of these wells was approximately 1524 m (5000 ft) (TVD). Additionally, ORNI 43 (a subsidiary of Ormat Technologies, Inc.) stated that they plan to file an application to build a 230 kilovolt transmission line to support the planned 24 MWe gross geothermal plant at Tungsten Mountain⁷. The transmission line would extend 26.5 km (16.5 miles) southwest from the project site, to connect with existing transmission lines owned by NV Energy.

In 2016, the Nevada Governor's Office of Energy also granted Ormat a tax incentive to develop the Tungsten Mountain geothermal project, after Ormat met the State and local statutes requiring that the project provide employment to Nevadans, a living wage with comprehensive health benefits, and major capital investment in Nevada⁸. The incentive is \$11.8 million over 20 years. The State expects to receive approximately \$113 million from the successful development of the Tungsten Mountain project via employee wages, property and school support taxes, and \$94 million in capital investment. The project is expected to create 69 full-time construction jobs, and 5 full-time operational jobs.

Tuscarora (Ormat Nevada Inc.)

Ormat drilled another production well at their Tuscarora plant in Elko county. The well (35A-8) was drilled in the central-western part of the field, and had a permitted depth of 1524 m (5000 ft) (TVD). Three wells were used for production in 2016, with the hottest well (65A-8) producing at an average temperature of 170°C (338°F). Production temperatures from this well, and the other two production wells (65B-8 and 65C-8), are between 1.5–2°C cooler in 2016 compared to 2015, suggesting that the field is still experiencing some thermal drawdown that Ormat tried to mitigate in 2015 (Chabora et al., 2015).

ACKNOWLEDGMENTS

Lowell Price and Linda Wells at the Nevada Division of Minerals, Marina Fennel at the Bureau of Land Management, and Matthew Tomich at the Nevada Department of Taxation are thanked for providing updated information on geothermal leases, gross proceeds, drilling permits, and production information. Dr. James Faulds is thanked for his comments and review of the draft document.

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⁵ <http://investor.ormat.com/file/Index?KeyFile=36985787>

⁶ <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=55998&dctmId=0b0003e880a77b96>

⁷ <http://www.elp.com/articles/2016/02/ormat-unit-files-notice-in-nevada-for-230-kv-line-and-geothermal-project.html>

⁸ http://energy.nv.gov/Media/Press_Releases/2016/GOE_Incentive_to_Power_Construction_of_New_Geothermal_Facility/

development. *Geothermal Resource Council Transactions*, Vol. 39, p. 293–301.

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Siler, D.L., Faulds, J. E., Blankenship, D., Hinz, N.H., Sabin, A., Nordquist, J., Hickman, S., Glen, J., Kennedy, M., Robertson-Tait, A., Williams, C., Drakos, P., and Calvin, W., 2016, The geologic framework of the Fallon FORGE site: *Geothermal Resource Council Transactions*, Vol. 40, p.573–584.

WEB LINKS TO OTHER GEOTHERMAL INFORMATION

For further information on geothermal resources in Nevada check the following Websites or contact David Davis at (775) 682-8766 or via e-mail at ddavis@unr.edu:

The Nevada Bureau of Mines and Geology ARC-GIS Open Data page: <https://data-nbmg.opendata.arcgis.com/>

Map of Geothermal Resources in Nevada, NBMG Map 161, available online in PDF-file format: <http://www.nbmg.unr.edu/Geothermal/PublishedMaps.html> (includes zipped file of GIS layers)

Nevada Bureau of Mines and Geology Geothermal Resources of Nevada Website at <http://www.nbmg.unr.edu/Geothermal/index.html>. This site contains geothermal exploration data, interactive maps, lease and information, and numerous geothermal digital data sets. These data are increasingly being made available through the National Geothermal Data System (www.geothermaldata.org)

Nevada Commission on Minerals, Nevada Division of Minerals at <http://minerals.state.nv.us/> and <http://minerals.nv.gov/Programs/Geo/Geo/>.

GEO-HEAT CENTER, at <http://geoheat.oit.edu/>, Oregon Institute of Technology, Klamath Falls, Oregon. This site focuses on direct use applications of geothermal energy.

The Renewable Resource Data Center (RReDC) provides access to an extensive collection of renewable

energy resource data, maps, and tools. Geothermal, biomass, solar, and wind resource data for locations throughout the United States on the RReDC site at <http://www.nrel.gov/rreDC/>.

Southern Methodist University Geothermal Lab, specializing in geothermal gradient data and maps of the entire country, posts information at <http://www.smu.edu/geothermal/>.

Summary of Supporting Data for USGS Regional Heat-flow Studies of the Great Basin, 1970–1990, by John H. Sass, Susan S. Priest, Arthur H. Lachenbruch, S. Peter Galanis, Jr., Thomas H. Moses, Jr., John P. Kennelly, Jr., Robert J. Munroe, Eugene P. Smith, Frederick V. Grubb, Robert H. Husk, Jr., and Charles W. Mase; USGS Open-File Report 2005-1207 online version 1.0 on the Web at <http://pubs.usgs.gov/of/2005/1207/>.

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://pubs.usgs.gov/of/1999/of99-425/webmaps/home.html>.

The Bureau of Land Management Land and Mineral Records-LR2000 system Web address is <http://www.blm.gov/lr2000/>. Provides reports on BLM land and mineral use authorizations for oil, gas, and geothermal leasing, rights-of-ways, coal and other mineral development, land and mineral title, mining claims, withdrawals, classifications, and more on federal lands or on federal mineral estate.

The U.S. Department of Energy (DOE) Geothermal Technologies Program's (<https://energy.gov/eere/geothermal/geothermal-energy-us-department-energy>) Office of Scientific and Technical Information (OSTI) have scanned approximately 3,300 agency and national lab technical reports. These files are in a PDF, full-text-searchable format and accessible online at <http://www.osti.gov/scitech/> and <https://www.osti.gov/home/collections>.

OIL AND GAS

by David A. Davis

PRODUCTION

According to the Nevada Division of Minerals, Nevada's net oil production decreased 1% in 2016 to 278,599 barrels, which is just 0.009% of total domestic production. Production decreased 1% from 281,382 barrels in 2015 and the lowest since 143,101 barrels were produced in 1976 (NBMG Bulletin 104). Production came from 57 actively producing wells in eight fields in Railroad Valley, Nye County, which accounted for 84% of the state's production, seven wells in two fields in Pine Valley, Eureka County. Five other minor fields were shut-in throughout 2016 and three other minor fields are plugged and abandoned. Nevada ranked 27 out of the 31 oil-producing states (<http://www.eia.gov>). The average per barrel net wellhead price for Nevada crude oil for 2016 was \$37.09, a decrease of 17% from \$44.72 in 2015. The sales volume (or gross yield) decreased 18% to \$10,333,936.11 in 2016 from \$12,606,643.87 in 2015 (2016–2017 Net Proceeds of Minerals Bulletin).

Production from Nevada's 64 actively producing wells (a decrease of 7 wells from 2015) ranged up to 88 barrels of oil per day and up to 3,192 barrels of water per day. The daily averages were 12 barrels of oil, up from 11 barrels per day in 2015, and 257 barrels of water per day for the 61 water producers, up from 251 barrels per day in 2015 for the 63 water producers. Twenty-six wells produced less than ten barrels of oil per day, and 11 produced more than 30 barrels of oil per day. Twenty-eight wells produced less than 300 days and 22 produced less than 100 days during the year. Twenty-nine other wells listed as producers were shut-in for the entire year.

For the sixth year in a row, Grant Canyon No. 10 was Nevada's most productive well. It averaged 88 barrels of oil and 939 barrels of water per day. It went into production in May 2010 after being plugged and abandoned for 17 years. Nevada's second highest continuous volume producer for the third year in a row was Kate No. 1A. It produced for 305 days and averaged 50 barrels of oil and 643 barrel of water per day. Kate No. 1 actually produced 57 barrels of oil per day, but was in production for only 61 days. Also, several other wells had higher production, but only produced for several days during the year.

The Bacon Flat Field produces from dolomite in the Devonian Guilmette Formation between about 4,960 and 5,350 feet (1,511 and 1630 m). The field averaged 16 barrels of oil and 13 barrels of water per day and accounted for less than 2% of Nevada's total oil production. Oil and water production increased 5%, and 155% respectively from 2015. Only one well has been active in the field since 1993, and it produced for 320 days in 2016, down from 325 days in 2015. The field also had two inactive producers.

The Blackburn Field produces from the Oligocene Indian Well Formation (tuff and tuffaceous sandstone),

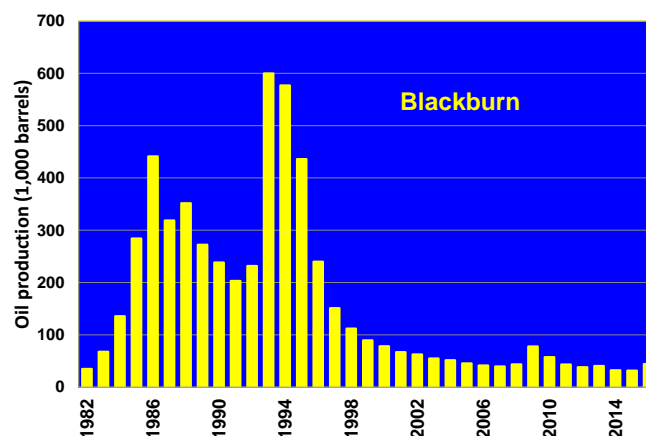


Figure 1. Oil production from the Blackburn Field in Pine Valley, Eureka County, from 1982 to 2016.

Mississippian Chainman Shale (sandstone), and Devonian Nevada Group (dolomite) between about 6,700 and 6,750 feet (2,042 and 2,057 m). The field had five active wells, which averaged 340 days of production each. Spread over the year, production for the field averaged 121 barrels of oil and 4,376 barrels of water per day, and accounted for 16% of Nevada's total oil production. Oil and water production increased 40%, and 17% respectively from 2015. Daily per well oil production ranged between 16 and 49 barrels and averaged 24 barrels. Daily per well water production ranged between 53 and 2,313 barrels and averaged 875 barrels. Oil production increased in three wells and decreased in two wells. The field also had two inactive producers.

The Eagle Springs Field produces from Oligocene ignimbrites, the Eocene Sheep Pass Formation (lacustrine carbonates) and the Pennsylvanian Ely Limestone between about 5,780 and 7,360 feet (1761 and 2243 m). The field had 10 active producers which averaged 118 days of production each. Spread over the year, production for the field averaged 73 barrels of oil and 1,031 barrels of water per day and

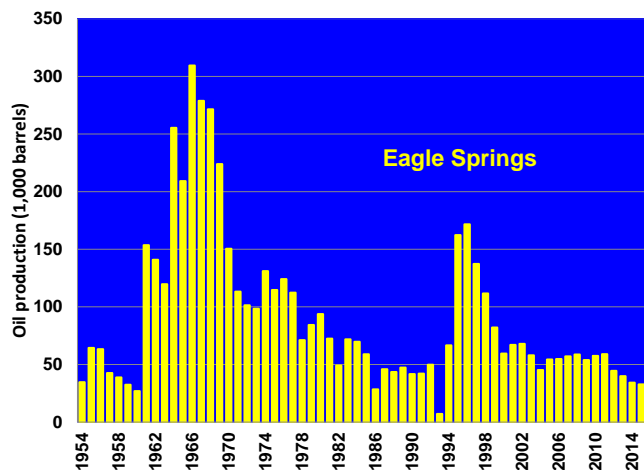


Figure 2. Oil production from the Eagle Springs Field in Railroad Valley, Nye County, from 1954 to 2016.

accounted for less than 10% of Nevada's total oil production. Oil and water production decreased 18% and 32% respectively from 2015. Daily per well oil production ranged between less than 1 and 36 barrels and averaged 23 barrels. Daily per well water production ranged between 0 and 1,212 barrels and averaged 317 barrels. Oil production increased in only one well and decreased in the rest. The field also had ten inactive producers, and a producer now used as a water disposal well.

The Ghost Ranch Field produces from dolomites of the Devonian Guilmette Formation between about 4,350 and 4,620 feet (1,326 and 1,408 m). The field had four active producers, three of which produced for the entire year, and one for 346 days. The field averaged 38 barrels of oil and 1,236 barrels of water per day and accounted for 5% of Nevada's total oil production. Oil and water production decreased 8% and 19% respectively from 2015. Daily per well oil production ranged between six and 14 barrels and averaged less than 10 barrels. Daily per well water production ranged between 268 and 350 barrels and averaged 313 barrels. Oil production decreased in all four wells.

The Grant Canyon Field also produces from dolomites of the Devonian Guilmette Formation between about 2,160 and 4,300 feet (658 and 1,311 m). The field had three active producers that each averaged 352 days of production. Spread over the year, production for the field averaged 114 barrels of oil and 1,565 barrels of water per day and accounted for 15% of Nevada's total oil production. Oil production decreased 3% and water production increased 5% from 2015. Daily per well oil production ranged between 11 and 90 barrels and averaged 49 barrels. Daily per well water production ranged between 1 and 939 barrels and averaged 542 barrels. Oil production decreased in all three active producers. The field also had two inactive producers.

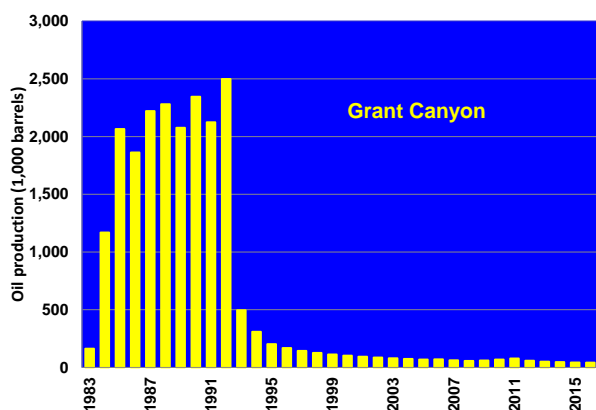


Figure 3. Oil production from the Grant Canyon Field in Railroad Valley, Nye County, from 1983 to 2016.

The Kate Spring Field produces from the Tertiary Horse Camp Formation (breccia) and the Devonian Guilmette Formation between about 4,450 and 4,820 feet (1,356 and 1,469 m). The field had five active producers. One of these wells had been shut-in for years and only

produced for two days. Not counting that one, the remaining four wells averaged 223 days of production each. Spread over the year, production for the field averaged 72 barrels of oil 940 barrels of water per day, and accounted for less than 10% of Nevada's total oil production. Oil production and water production decreased 0.7% and 14% respectively from 2015. Oil production increased in three and decreased in two wells. The one well that was briefly returned to production was NDOM Permit No. 592, Western General, Inc., Kate Spring No. 1C, which was completed in 1991 and shut-in from 1997 until a day each in August and September 2016. The field also contains one inactive producer. All five active wells also produce natural gas. A total of 3,154,000 cubic feet of gas was produced, a 2% increase from 2015. The gas is used to operate production and related equipment at the lease sites of Makoil, Inc., and Western General, Inc.

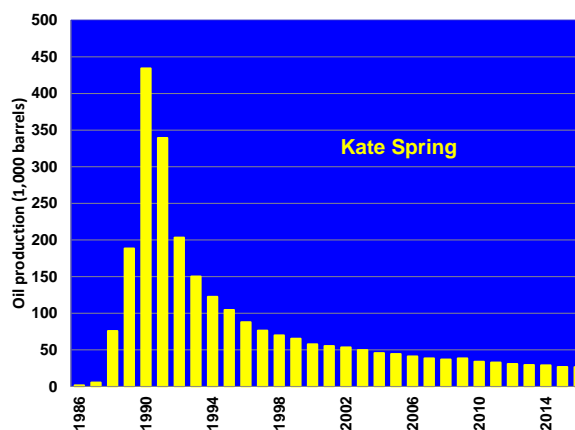


Figure 4. Oil production from the Kate Spring Field in Railroad Valley, Nye County, from 1986 to 2016.

The Sand Dune Field produces from Permian and Pennsylvanian limestones between about 5,970 and 6,200 feet. It's only well was active for 10 days and averaged 20 barrels of oil and 37 barrels of water per day and accounted for less than 0.1% of Nevada's total oil production. Oil and water production decreased 92% and 93% respectively from 2015. After producing one to two days per month, the well was shut-in after September.

The Sans Spring Field produces from the Oligocene Garrett Ranch Group (volcaniclastic rocks and ignimbrites) between about 5,640 and 5,770 feet (1,719 and 1,759 m). It's only active well produced for 5 days in August and averaged 49 barrels of oil per day with no water. It accounted for less than 0.1% of Nevada's total oil production. Production decreased 81% from 2015. The field also contains two inactive producers.

In the Tomera Ranch Field, the latest production is from an unnamed conglomerate unit. Past production from three now plugged and abandoned wells was from the Oligocene Indian Well Formation (tuffaceous sandstone) between about 1,150 and 1,950 feet (351 and 594 m). The field had two active producers and totaled about 60 days of production. During that time, the field averaged 16 barrels per day of oil and no water. Oil production declined 21% from 2015, and the field accounted for about 0.35% of Nevada's total oil production.

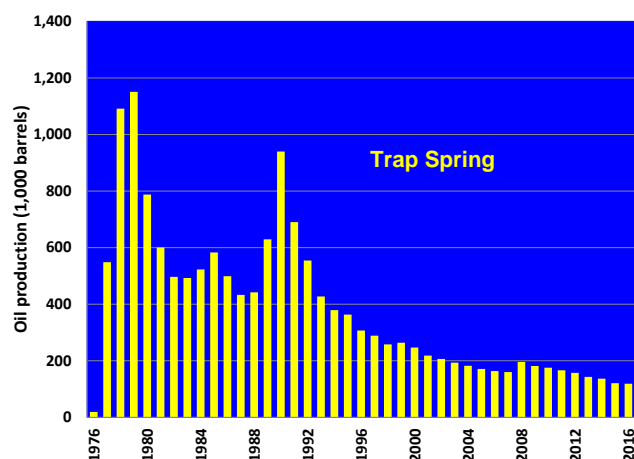


Figure 5. Oil production from the Trap Spring Field in Railroad Valley, Nye County, from 1976 to 2015.

The Trap Spring Field produces from the Oligocene Tuff of Pritchards Station between about 3,210 and 4,950 feet (978 and 1,509 m). The field had 32 active producers which averaged 260

days of production each. Spread over the year, production for the field averaged 325 barrels of oil and 6,543 barrels of water per day and accounted for 43% of Nevada's total oil production. Daily per well oil production ranged between less than two and almost 40 barrels and averaged 14 barrels. Daily per well water production ranged between less than two and 3,193 barrels and averaged 288 barrels. Oil production decreased less than 2%, and water production increased 3% from 2015. Oil production increased in 16 wells and decreased in 19. This included three wells that produced in 2015 but not in 2016 and one well that was returned to production in 2016. The latter well was NDOM Permit No. 622, Makoil, Inc., Munson Ranch No. 13-11, which had been completed as a producer in 1991 and shut-in from 2003 until May 2016. Including those wells, the field contains nine inactive producers.

Three minor fields that produced in 1,644 barrels of oil in 2015 did not produce in 2016. Each has one well, and in 2015, the Currant Field produced from the Eocene Sheep Pass Formation between about 6,850 and 7,080 feet (2,088 and 2,158 m); the Duckwater Creek Field produced from the tuffs of the Oligocene Garrett Ranch Group between about 5,680 and

Production from Nevada's oil fields (barrels of oil)

Compiled from producers' reports filed with the Nevada Division of Minerals

Field (year discovered)	1954-2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Eagle Springs (1954) (Railroad Valley)	5,218,259	56,992	58,683	53,851	57,394	58,900	44,422	39,818	34,217	32,675	26,872	5,682,083
Trap Spring (1976) (Railroad Valley)	13,753,354	159,821	196,089	181,320	175,352	166,415	156,991	143,909	136,651	120,762	118,847	15,309,512
Currant (1979) (Railroad Valley)	1523	81	108	111	109	119	159	194	143	25	0	2,572
Bacon Flat (1981) (Railroad Valley)	997,509	8,301	7,968	7,764	7,427	6,358	5,690	6,447	6,223	5,000	5,261	1,063,948
Blackburn (1982) (Pine Valley)	5,183,966	39,477	43,600	77,730	57,260	43,198	38,004	40,392	32,217	31,605	44,180	5,631,629
Grant Canyon (1983) (Railroad Valley)	20,938,790	62,236	56,247	60,036	68,927	77,683	58,897	50,517	46,263	42,810	41,631	21,504,037
Kate Spring (1986) (Railroad Valley)	2,256,573	38,411	36,863	38,347	33,825	32,719	30,833	29,402	28,934	26,672	26,486	2,579,064
Spencer Lease (1986) (Railroad Valley)	86	0	0	0	0	0	0	0	0	0	0	86
Tomera Ranch (1987) (Pine Valley)	36,472	0	0	0	0	0	11,705	3,757	2,016	1,224	961	56,135
North Willow Creek (1988) (Pine Valley)	50,529	1,256	56	0	0	0	0	0	0	0	0	51,841
Three Bar (1990) (Pine Valley)	23837	0	0	0	0	0	0	0	0	0	0	23,837
Duckwater Creek (1990) (Railroad Valley)	18310	150	120	120	118	115	117	119	124	45	0	19,338
Sans Spring (1993) (Railroad Valley)	265,457	2,971	2,407	1,419	1,493	1,404	1,498	1,318	1,604	1,268	246	281,085
Ghost Ranch (1996) (Railroad Valley)	502,022	26,070	23,615	24,011	21,630	18,605	17,022	17,232	15,564	15,106	13,914	694,791
Deadman Creek (1996) (Elko County)	367	0	0	0	0	0	0	0	0	0	0	367
Sand Dune (1998) (Railroad Valley)	116,626	10,562	10,467	9,883	3,687	2,483	2,656	2,567	7,467	2,606	201	169,205
Toano Draw (2007) (Elko County)		1,916	48	0	0	0	0	0	0	0	0	1,964
Humboldt (2014) (Elko County)									2,756	0	0	2,756
Huntington (2014) (Elko County)									2,248	1,584	0	3,831
Total	49,363,680	408,244	436,271	454,592	427,222	407,999	367,994	335,672	316,426	281,382	278,599	53,078,081
Change from previous year		-4%	7%	4%	-6%	-4%	-10%	-9%	-6%	-11%	-1%	

Production of water from Nevada's oil fields (barrels of water)

Compiled from producers' reports filed with the Nevada Division of Minerals

Field (year discovered)	1994-2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Eagle Springs (1954) (Railroad Valley)	5,051,886	804,428	842,435	699,950	699,147	644,703	361,101	375,711	429,749	557,326	377,316	10,843,752
Trap Spring (1976) (Railroad Valley)	32,175,923	2,371,513	2,356,016	2,307,911	2,289,505	2,450,742	2,460,099	2,429,108	2,382,353	2,325,601	2,394,821	55,943,592
Currant (1979) (Railroad Valley)	0	0	0	0	2	0	0	0	0	0	0	2
Bacon Flat (1981) (Railroad Valley)	376,471	2,153	10,204	33,664	5,331	1,810	1,765	1,685	1,825	1,625	4,152	440,685
Blackburn (1982) (Pine Valley)	24,191,314	1,582,937	1,558,039	1,588,194	1,623,338	1,334,105	1,418,780	1,284,774	1,117,893	1,373,509	1,601,484	38,674,367
Grant Canyon (1983) (Railroad Valley)	4,750,814	442,826	638,822	624,493	709,918	644,303	640,311	637,840	621,172	547,166	572,710	10,830,375
Kate Spring (1986) (Railroad Valley)	6,173,310	437,983	416,983	520,099	494,605	450,155	426,896	337,981	368,722	398,138	343,883	10,368,755
Spencer Lease (1986) (Railroad Valley)	0	0	0	0	0	0	0	0	0	0	0	0
Tomera Ranch (1987) (Pine Valley)	505,881	0	0	0	0	0	0	0	0	0	0	505,881
North Willow Creek (1988) (Pine Valley)	3,983	0	0	0	0	0	773	360	0	0	0	5,116
Three Bar (1990) (Pine Valley)	5,958	0	0	0	0	0	0	0	0	0	0	5,958
Duckwater Creek (1990) (Railroad Valley)	67,491	1,350	1,080	1,080	1,080	1,080	1,080	1,080	990	0	0	76,311
Sans Spring (1993) (Railroad Valley)	3,743,479	244,756	217,288	0	0	0	0	0	0	0	0	4,205,523
Ghost Ranch (1996) (Railroad Valley)	2,553,357	690,599	711,865	496,553	529,423	514,379	479,013	600,429	537,388	561,107	452,521	8,126,634
Deadman Creek (1996) (Elko County)	0	0	0	0	0	0	0	0	0	0	0	0
Sand Dune (1998) (Railroad Valley)	289,702	31,044	32,684	29,998	37,399	50,857	55,225	49,525	14,308	5,211	365	596,318
Toano Draw (2007) (Elko County)		25,614	3,507	0	0	0	0	0	0	0	0	29,121
Humboldt (2014) (Elko County)									0	0	0	0
Huntington (2014) (Elko County)									0	4,589	0	4,589
Total	79,889,569	6,635,203	6,788,923	6,301,942	6,389,748	6,092,134	5,845,043	5,718,493	5,474,400	5,774,272	5,747,252	140,656,979
Change from previous year		7%	2%	-7%	1%	-4%	-4%	-2%	-4%	5%	-1%	

9,290 feet (1,731 and 2,832 m). One minor field, the Humboldt Field, produced from the Elko Formation between 7,906 feet and 8,210 feet (2,410 and 2,502) in 2014 but not in 2015 or 2016.

The following four minor fields produced in the past but are all now plugged and abandoned. Three Bar contained three wells which produced from the Miocene Humboldt Formation, the Oligocene Indian Well Formation, and the Cretaceous Newark Formation between 5,720 and 7,070 feet (1,731 and 2,155 m). Deadman Creek had only one well that produced briefly from the Humboldt Formation between 8,165 and 8,850 feet (2,489 and 2,697). Toano Draw had only one well that produced from the Humboldt Formation between 8,250 and 8,950 feet (2,515 and 2,728). While not considered a field, 86 barrels of oil were sold from the Spencer Lease in Railroad Valley before it was plugged and abandoned in 1986.

Most of Nevada's 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 in batches by trucks to the 8,000-barrel-per-day capacity refinery near Currant in Railroad Valley, which is owned by Foreland Refining Corporation.

NEW PRODUCERS

No new producers were completed in 2015.

EXPLORATION

Three wells were permitted for oil and gas in 2016, down from four permitted in 2015. Only one well was spudded in 2016. Grant Canyon Oil and Gas LLC well Blackburn Unit 22 was drilled to 7,355 feet (2,242 m) in July but was waiting to be completed at year's end. Of the four permitted in 2015, two remained to be drilled, and one lease (NVN-079238) owned by Roy Barton closed before Petro-Hunt LLC, which held the permit, could drill it. Of 12 wells completed between 2003 and 2014, eight were shut-in, two were temporarily abandoned, one was being tested, and one had been waiting for a plugging and abandoning plan since 2005. In this section, the shut-in wells were never listed as producers. Based on reports filed with the state for 2016, one drill rig operated in the state during the July–August periods and none were operated otherwise. No wells were hydraulically fractured in Nevada in 2015, but a table of wells hydraulically fractured in the past is provided.

In 2016, 1,276 oil leases covering 2,540,114 acres (1,027,970 hectares) were in effect on public lands in Nevada. This represents decreases of 25% and 31% respectively in the number of leases and acreage. The acreage covers 5.3% of the 47,300,000 acres (19,242,000 hectares) of public lands managed by the U.S. Bureau of Land Management (BLM) in Nevada, down 7.8%

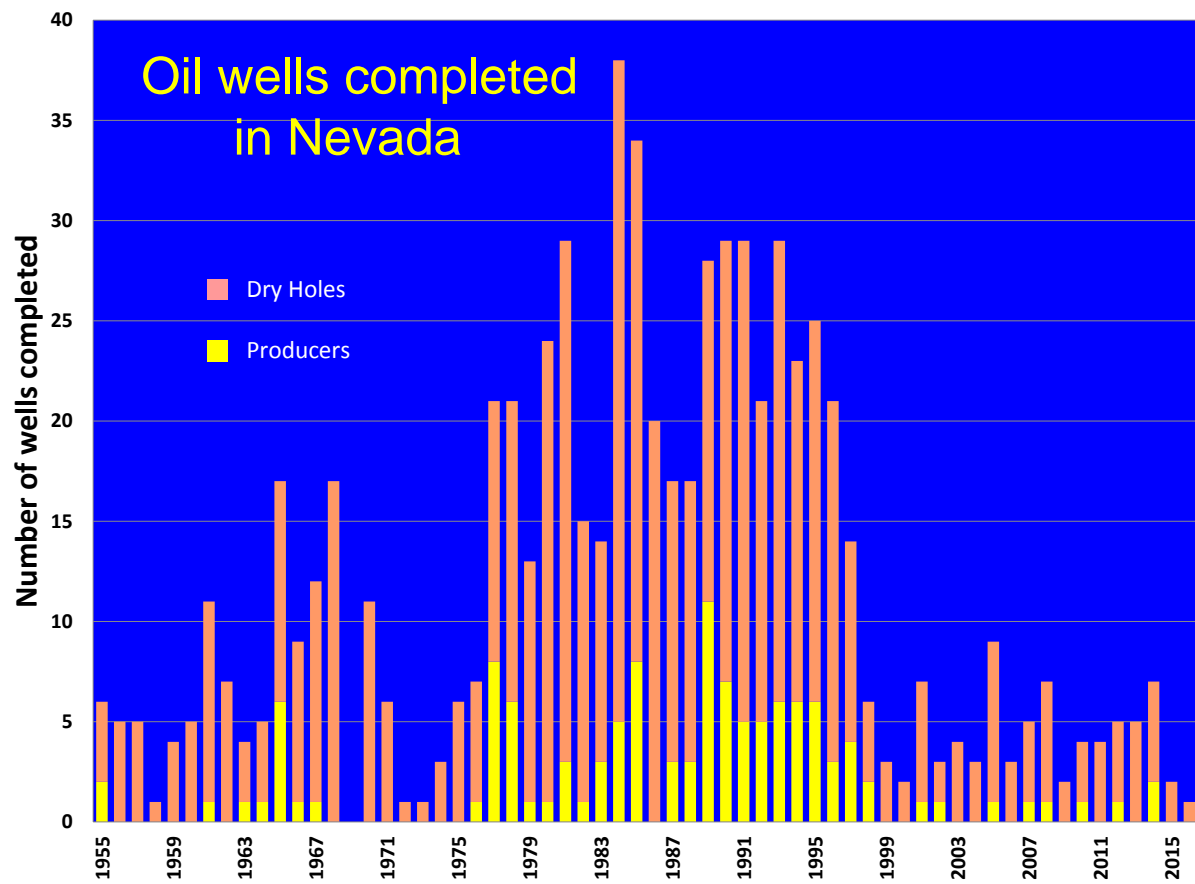


Figure 6. Number of completed wells and how many were producers, from 1976 to 2016.

Federal oil and gas leases in effect for 2015 and 2016

County	NUMBER OF LEASES ¹						ACREAGE ¹					
	Competitive		Noncompetitive		Simultaneous ²		Competitive		Noncompetitive		Simultaneous ²	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Carson City	0	0	0	0	0	0	0	0	0	0	0	0
Churchill	0	2	4	3	0	0	0	5,100	24,242	23,602	0	0
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	165	131	138	141	0	0	275,179	187,054	425,286	294,590	0	0
Esmeralda	10	8	5	1	4	0	19,095	16,609	8,636	10,215	0	0
Eureka	70	65	78	30	0	0	107,484	157,185	209,956	65,191	0	0
Humboldt	0	0	0	0	0	0	0	0	0	0	0	0
Lander	1	1	0	10	0	0	204	204	0	42,996	0	0
Lincoln	69	59	87	82	0	0	140,350	112,968	294,910	270,042	0	0
Lyon	0	0	0	0	0	0	0	0	0	0	0	0
Mineral	2	0	3	1	0	0	4,149	0	6,511	2,355	0	0
Nye	368	301	223	127	23	23	587,059	467,466	667,383	325,055	8,157	8,157
Pershing	7	7	0	2	0	0	13,430	13,430	0	3,362	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	134	95	311	193	0	0	222,588	164,982	693,791	377,708	0	0
Total	826	663	849	590	23	23	1,369,538	1,124,998	2,330,715	1,415,116	8,157	8,157

¹Data from the U.S. Bureau of Land Management for the calendar year.

²These 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.

Oil well drilling activity in 2016

Company	Well	Permit No.	Location	Permit Date	Spud Date	Completion Date	Depth (Ft.)	Status
CHURCHILL COUNTY								
Gary Borgna	MB No. 1	937	SE/4, SE/4, S36, T18N, R30E	JAN 13			*5,000	Not Drilled/Extended
ELKO COUNTY								
Noble Energy, Inc.	MR S25G-S25-33A	955	NW/4, SE/4, S25, T38N, R60E	JUN 14	OCT 14	NOV 14	11,136	Shut in
Noble Energy, Inc.	MR S25G-S25-22B	956	SW/4, NE/4, S25, T38N, R60E	JUN 14			*14,380	Expired
Noble Energy, Inc.	MR S12J-S12-23A	957	NW/4, SE/4, S12, T38N, R60E	JUN 14			*14,062	Expired
Noble Energy, Inc.	MR S12J-S12-33B	958	NW/4, SE/4, S12, T38N, R60E	JUN 14			*14,000	Expired
Noble Energy, Inc.	K1L-2D	959	SW/4, SW/4, S1, T29N, R55E	JUL 14			*12,000	Expired
Noble Energy, Inc.	K2J-2D	961	NW/4, SE/4, S2, T29N, R55E	JUL 14			*12,000	Expired
Noble Energy, Inc.	K2J-1V	963	NE/4, NE/4, S2, T29N, R55E	JUL 14			*10,015	Expired
Noble Energy, Inc.	G18C-1V	964	NE/4, NW/4, S18, T30N, R56E	JUL 14			*11,762	Expired
Noble Energy, Inc.	G20L-1V	965	NW/4, SW/4, S20, T30N, R56E	JUL 14			*10,869	Expired
EUREKA COUNTY								
Andromeda Oil, LLC	Tomera Ranch No. 6X	934	SE/4, SW/4, S33, T31N, R52E	SEP 12	NOV 12	NOV 13	1,550	Shut in
Grant Canyon Oil and Gas, LLC	Blackburn Unit No. 22	971	NW/4, SW/4, S8, T27N, R52E	MAY 16	JUL 16	JUL 16	7,355	Drilled
LINCOLN COUNTY								
Makoil, Inc.	Murphy Gap 14-23	970	SW/4, SE/4, S14, T1S, R59E	MAR 16			*7,500	Not Drilled
NYE COUNTY								
Grant Canyon Oil and Gas, LLC	Federal No. 12-14	673	NW/4, SW/4, S14, T7N, R56E	APR 93	MAY 93	JUN 93	6,106	TA
Wester Oil Co.	Gigante No. 1-4	837	NW/4, NE/4, S4, T12N, R35E	MAY 01	AUG 01	DEC 03	7,707	TA
Tri Valley Oil and Gas	Midland Trail No. 1-32	861	SW/4, SW/4, S32, T6N, R56E	SEP 04	JUN 05	JAN 06	7,063	Testing
Makoil, Inc.	Radio No. 6-31	865	NE/4, NW/4, S6, T9N, R57E	SEP 04	MAY 05	MAY 05	3,433	Drilled
Makoil Inc.	Trap Spring No. 27-41	899	NE/4, NE/4, S27, T9N, R56E	APR 08	DEC 08	JAN 09	7,294	Shut in
Desert Discoveries, LLC	Paradise Unit No. 2-12	916	SE/4, NE/4, S12, T12N, R34E	APR 10	JUL 10	NOV 10	4,250	Shut in
HBF Exploration, Inc.	Well No. 2	920	SW/4, NW/4, S33, T7N, R61E	APR 11	JUL 11	AUG 11	1,020	Shut in
Major Oil International	Eblana No. 1	925	NE/4, NE/4, S25, T7N, R50E	MAY 12	MAY 12	JUN 12	8,550	Shut in
Bestoso Oil and Gas, Inc.	Well No. 1	940	NW/4, SE/4, S20, T5N, R61E	APR 13			*14,000	Not Drilled
True Oil, LLC	DY Federal 13-31	954	NW/4, SW/4, S31, T7N, R57E	JAN 14			*6,200	Not Drilled
Makoil Inc.	Munson Ranch No. 12-23X	968	NE/4, SW/4, S12, T9N, R56E	JUN 15			*5,000	Not Drilled
Makoil Inc.	Munson Ranch No. 13-34	969	SW/4, SE/4, S13, T9N, R56E	JUN 15			*5,200	Not Drilled
Makoil Inc.	Soda Spring 1-22	972	NE/4, SW/4, S22, T8N, R57E	OCT 16			*8,000	Not Drilled
WHITE PINE COUNTY								
Geyser Petroleum	Pipeline Canyon No. 1	870	NE/4, SW/4, S28, T15N, R62E	JAN 05	MAR 05	AUG 05	5,280	Shut in
Grant Alliance, LLC	FLT-1	918	NE/4, NW/4, S11, T16N, R55E	OCT 10	JAN 11	MAY 11	4,875	Shut in
Petro-Hunt, LLC	Jakes Valley No. 1	966	SE/4, NW/4, S6, T16N, R60E	JAN 15			*11,599	Expired

P&A: Plugged and abandoned; TA: Temporarily abandoned; *: Permitted depth given when the actual depth is not available

Partial list of Nevada oil wells that were stimulated in the past

Modified and compiled from well records and data from consultant Jerry Walker

Permit	Company	Well Name	Year Completed	Perfs (gross)	Fluid	Proppant	Date Fracked	Present Status	Formation
203	Northwest Exploration Co.	Trap Spring No. 13	1977	4976'-5078'	10,122 gal lease oil	55,000 lbs. 8/12 sand	6/21/1977	WD	Garrett Ranch Volcanics
189	Northwest Exploration Co.	Trap Spring No. 4	1977	4018'-4389'	53,000 gal. oil	37,000 lbs. 8/12 sand	8/19/1977	P&A	Garrett Ranch Volcanics
196	Northwest Exploration Co.	Trap Spring No. 8	1977	4408'-4575'	72,300 gal. lease oil	100,000 lbs. 10/20 sand	9/11/1977	Producer	Tertiary volcanic rock
233	Northwest Exploration Co.	Trap Spring No. 20	1978	3932'-3987'	62,000 gal. lease oil	75,000 lbs. 10/20 sand	8/4/1978	WD	Pritchards Station Volcanics
196	Northwest Exploration Co.	Trap Spring No. 8	1979	4408'-4575'	1,795 gal. lease oil	100,000 lbs. 10/20, 8/12, 4/8 sand	6/23/1979	Producer	Tertiary volcanic rock
263	Wexpro Co.	Jiggs 10-1	1980	10,060'-10,080'	Hy-gel	1.5 ppg 100 mesh sand	3/6/1980	P&A	Paleozoic rock
324	Amoco Production Co.	Blackburn No. 3	1982	6274'-6345'	Jellied lease crude	30,000 lbs. 20/40 sand	1982	Shut in	Indian Well Formation
342	Sun Exploration and Production Co.	Southern Pacific No. 3-13	1983	8386'-8432'	53,090 gal. diesel; 1500 SCF CO ₂	53,620 lbs. 20/40 sand	1/28/1983	P&A	Humboldt Formation
350	Amoco Production Co.	Blackburn No. 10	1983	5660'-5870'	87,500 gallons foamed oil	120,000 lbs. 20/40 sand	9/22/1983	Producer	Indian Well Formation
210	MAPCO Oil and Gas Co.	Trap Spring No. 17	1985	3570'-3610'	10,000 gal. foam	12/20 sand	1985	P&A	Horse Camp Volcanics
856	DY Exploration	Toano Draw 15-19	2005	8800'-8950'	75,000 gal. gel; 6,400 gal. slickwater	115,000 lbs. 20/40 PR6000 sand	8/30/2005	P&A	Humboldt Formation
856	DY Exploration	Toano Draw 15-19	2006	8800'-8950'	61,967 gal. water, solvents, gels, and other additives	30,900 lbs. 20/40 PR6000 sand	6/1/2006	P&A	Humboldt Formation
942	Noble Energy, Inc.	M2C-M2-21B	2014	7906'-8210'	250,057 gal. water; 2% by mass solvents, gels, and other additives	9% by mass PRC Sand; 0.7% by mass Premium white sand	3/17-24/2014	Shut in	Elko Formation
946	Noble Energy, Inc.	M10C-M10-11B	2014	8620'-8889'	343,919 gal. water; 2.5% by mass solvents, gels, and other additives	10% by mass PRC Sand; 0.6% by mass Premium white sand	6/3-4/2014	Shut in	Elko Formation
458	Grant Canyon Oil and Gas	Blackburn No. 16	1985	6959'-7012'	209,600 gal. water; 2.4% by mass solvents, gels, and other additives	12% by mass Premium white sand; 2.4% by mass PRC Sand	6/5/2014	Producer	Nevada Formation
928	Makoil, Inc.	Portuguese Mtn. 14A-2	2014	N/A	29,949 gal. water; 14% by mass solvents, gels, and other additives	32% by mass Premium white sand	11/23/2014	P&A	N/A
960	Noble Energy, Inc.	K1L-1V	2014	N/A	300,537 gal. water; 0.3% by mass solvents, gels, and other additives	7% by mass Premium white sand; 1.5% by mass SSA-2	12/5/2014	Producer	N/A

Abbreviations: Perf (gross) - larger interval containing one or more smaller perforated intervals; P&A - plugged and abandoned; gal. - gallons; WD - water disposal

from 2015.

The one well drilled in 2016 was NDOM Permit No. 971, Grant Canyon Oil and Gas, LLC, Blackburn Unit No. 22. The well is about 900 feet (275 meters) north-northwest of NDOM Permit No. 324, Blackburn No. 3. The latter well was completed to 7,955 feet (2,425 meters) in 1982 and produced from the Mississippian Chainman Formation and overlying Oligocene Indian Well Formation before being shut-in in 1998. The new well is the first drilling in the

Blackburn Field area since the now defunct Stream Energy Inc. completed Stream No. 1-7 to 8,871 feet (2,705 meters) before plugging and abandoning it in September 2001. It also intercepted the Chainman and Indian Well Formations.

In 2015, Noble Energy Inc. of Houston, TX, re-evaluated the commercial viability of its Wilson Project in Elko County in the then-present low commodity price environment and discontinued the project including not following through on a remaining three-well obligation.

This was in spite of a net book value of \$112,000,000 and spending \$95,000,000 on the project in 2015. At that point, the Wilson Project contained leases covering 372,000 contiguous acres (150,500 hectares) between Elko and Wells, 66% of which are on private property. It consisted of three areas—Humboldt (east of Elko), Huntington (southwest of Elko), and Marys River (northeast of Elko). The company drilled four wells, two of which were completed as producers. These two wells were shut-in after producing a combined 6,587 barrels of oil with one well also producing 1,026,000 cubic feet of gas. The company allowed its remaining permits to expire, which included five in 2015 and eight in 2016. A number of leases were still current under the company's name at the end of 2016. The cuttings, core, and sidewall samples have been submitted to the Nevada Bureau of Mines and Geology, Great Basin Science Sample and Records Library. (BLM LR2000 Database; Noble Energy Inc. Form 10-K, 2/17/2016, 2/14/2017; Noble Energy website www.nobleenergyinc.com).

On March 6, 2016, the Nevada State Office of the Bureau of Land Management (NSO-BLM) held a competitive oil and gas lease sale covering 39 parcels covering 50,416 acres (20,426 hectares) in Elko and Eureka Counties. No bids were offered resulting in neither competitive nor non-competitive sales. (<https://edit.blm.gov/basic/programs-energy-and-minerals-oil-and-gas-leasing-regional-lease-sales-nevada-2016-block>, March 8, 2016 Lease Sale).

On June 14, 2016, the NSO-BLM held an oil and gas lease sale on 42 parcels covering 74,702 acres (30,231 hectares) in Lander and Nye counties. None of the acres had been deferred from the preliminary sage grouse list. Four bids were entered for the competitive sales. The highest bid was \$21 per acre by David M. Evans of Reno for parcel 72 covering 760 acres (307.6 hectares) in portions of sections 8 and 9, T7N, R57E in Railroad Valley. The remaining bids were by Reagan Smith Energy Solutions of Oklahoma City, OK. These included \$4 per acre for parcel NV-16-6-001 covering 765 acres (309.6 hectares) in portions of sections 5 and 15, T12N, R43E; \$3 per acre for parcel NV-16-6-007 covering 1,240 acres (501.8 hectares) in portions of sections 25, 35, and 36, T15N, R43E; and \$2 per acre for parcel NV-16-6-041 covering 1,000 acres (404.7 hectares) in portions of sections 17, 30, and 21, T14N, R45E, all in Smoky Valley. For the non-competitive sales, only American General Energy Exploration of Austin, TX, made offers, which totaled \$23,312.50, excluding \$3,280 in filing fees, for eight parcels covering 13,353 acres (5,404 hectares). Nevada Leasing Services of Las Vegas bid on four parcels covering 13,353 acres (5,404 hectares). These included NV-16-6-003 covering 1,658 acres (671 hectares) in all or portions of sections 4, 5, 8, 17, 20, 21, T13N, R43E; NV-16-6-024 through NV-16-6-024 covering 4,638 acres (1,877 hectares) in all or portions of sections 4, 6-9, and 16-18, T14N, R44E; and NV-16-6-030 through NV-16-6-033 covering 7,057 acres (2,856 hectares) in all or portions of sections 19-21, and 27-36, T15N, R44E, all in Smoky

Valley. All of the parcels are in Nye County. (<https://edit.blm.gov/basic/programs-energy-and-minerals-oil-and-gas-leasing-regional-lease-sales-nevada-2016-block>, June 14, 2016 Lease Sale)

The quarterly oil and gas lease sale was not held September 13, 2016, due to no Expressions of Interest being submitted. The NSO-BLM postponed the sale until September 12, 2017. (<https://edit.blm.gov/basic/programs-energy-and-minerals-oil-and-gas-leasing-regional-lease-sales-nevada-2016-block>, September 13, 2016 Lease Sale).

The quarterly oil and gas lease sale was not held December 13, 2016, due to pending formal Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service on the Ely District Programmatic Biological Opinion. The NSO-BLM postponed the sale until December 12, 2017. (<https://edit.blm.gov/basic/programs-energy-and-minerals-oil-and-gas-leasing-regional-lease-sales-nevada-2016-block>, December 13, 2016 Lease Sale).

TRANSFERS

On March 31, 2016, Makoil Inc. acquired the following wells in the Trap Spring Field from Frontier Exploration Co.: Munson Ranch Nos. 13-1, 13-45, 13-46, 14-33, 14-49, and 14-49X, and Trap Spring No. 14-42.

OTHER DEVELOPMENTS

In 2015, the BLM under Secretary of the Interior Sally Jewell released new rules covering hydraulic fracturing (fracking) on public and tribal lands. The rules included the protection of groundwater supplies by requiring a validation of well integrity and strong cement barriers between the wellbore and intercepted water zones; requiring companies to publicly disclose chemicals used in hydraulic fracturing to the BLM through the website FracFocus; higher standards for interim storage of recovered waste fluids; lowering the risk of cross-well contamination with chemicals and fluids used in the fracturing operation; and requiring companies to submit more detailed information on the geology, depth, and location of preexisting wells so the BLM can better evaluate and manage site characteristics. The rules also allow states and tribes to request variances from the provisions if they equal or exceed the regulations in place. The American Petroleum Institute stated that they would impose new costs and delays on energy development without improving state and federal regulations. Also, the rules would not affect private and state lands where 90% of the fracking is conducted. The rules were to take effect after 90 days, but after being pushed back several times were struck down in June 2016 by the District Court of Wyoming on the grounds that Congress had not given the Department of the Interior the authority to regulate fracking. (BLM Press Releases, 3/20/2015; HIS Drilling Wire, Four Corners Edition, Section 1, 3/25/2015; Obama Administration's Fracking Rules Struck Down by Federal Judge, The Washington Times, 6/21/2016).

On November 18, 2016, the BLM published its final Methane and Waste Reduction Rule, which is an attempt to reduce the perceived waste of natural gas from mineral leases administered by the BLM. The rationale is that much gas is lost during oil and gas production activities through venting or flaring and through equipment leaks. As well as not being regulated, the venting, flaring, and leaking of natural gas also contributes to regional and global air pollution problems of smog, particulate matter, and toxics (such as benzene, a carcinogen) and the loss of royalty revenues. The rule requires the operator to capture as much gas as is practical, and except in an emergency or certain other circumstances, must flare any gas that would otherwise be vented. The rules would partially go into effect in early 2017. The rule will only affect production on public lands which includes 5% of the oil and 11% of the natural gas production nationally. Most of Nevada's production is from public lands, but gas production is small and only from the Kate Spring field where it is used to run equipment.

The rule may have limited effect. Gas lost through flaring, venting, and leakage ranges between 1.2% and 1.6% and has been decreasing through the years. Gas is a valuable commodity which companies prefer to sell, but the infrastructure to transport it is lacking in many cases. New equipment is expensive, and marginal wells will likely be capped instead of upgraded. This will result in a loss of production, revenue, and royalties. Also, far from being unregulated, the states have been regulating gas and other field emissions for decades. Litigation involving the rule was pending in the U.S. District Court for the District of Wyoming, and Congress was reviewing the rule under the Congressional Review Act.

(<https://www.regulations.gov/document?D=BLM-2016-0001-9126>; <https://energyindepth.org/mtn-states/myth-vs-fact-on-the-blm-methane-venting-and-flaring-rule/>)

On December 1, 2016, the BLM released its final land use planning rule also known as Planning Rule 2.0. The rules for land use planning had last been updated in 1983. Since then, pressures have increased on BLM-administered lands and land managers to better balance often competing and increasingly conflicting uses of the public lands. This has resulted in more unexpected delays, higher expenses, and expanded legal challenges. Also, resource issues such as invasive species, wildfire, energy production and transmission, wildlife conservation, and crossing jurisdictional boundaries were making planning less efficient and more costly to implement. State, local, and tribal officials and the general public complained that they often felt left out from the resource management planning process, which has been hindered by long waiting periods punctuated by the short periods they have to digest and respond to large volumes of information. This can be exacerbated when new issues arise or additional information is required late in the planning process, and draft plans that have been in progress for years need to be supplemented. These delays were increasingly consuming staff capacity and resources and frustrating those depending on the BLM's

ability to develop and implement resource management plans and decisions in a timely manner.

Planning Rule 2.0 was to allow the BLM to more effectively address these issues in a timely manner and increase engagement. Public involvement will be enhanced through earlier solicitation of public comments and lengthening the comment period. Earlier public feedback should reduce the need for supplemental analysis and litigation by identifying and addressing concerns and conflicts earlier. Cooperation between the BLM and other Federal agencies and state, local, and tribal governments will be enhanced. If these entities choose not to cooperate with the BLM, the BLM will still consider their plans, policies, and management programs and assist in resolving any inconsistencies between their plans and BLM plans. The BLM will become more versatile and adaptable to change. The decision maker will generally remain the State Director, but provisions allow for a different arrangement if necessary. The oil industry and other entities opposed the rule, which they said allows the BLM to pick and choose what projects to concentrate on and to centralize control. Congress was reviewing the rule under the Congressional Review Act.

(https://www.blm.gov/sites/blm.gov/files/Planning2_0_Factsheet_FINAL.pdf;

<http://www.ogj.com/articles/2017/02/us-house-passes-cra-resolution-to-revoke-blm-land-use-planning-changes.html>)

On December 21, 2016, the BLM finalized its revision to Onshore Order 1 making online filing (e-filing) the default method of filing Applications for Permit to Drill and Notices of Staking, moving away from paper applications. E-filing is part of an ongoing effort by the BLM to increase efficiency and transparency of the drilling permit review and approval process and complements the recent upgrades to its permit processing system. The e-filing system automates aspects of the process, allows operators to receive real-time feedback on their permits, makes the process more transparent, and enhances management of workflows. The average processing time for permits was 220 days, but the BLM estimates that with the new rule, 90 percent of permits will be processed within 115 days. This new e-filing system is part of the BLM's upgraded Automated Fluid Mineral's Support System.

U.S. OIL PRODUCTION AND CONSUMPTION

According to the Energy Information Agency of the U.S. Department of Energy (<http://www.eia.gov>), the total petroleum products supplied to the U.S. averaged 19,631,000 barrels per day, a 0.5% increase from 19,531,000 barrels per day in 2015, but still 7% less than the all-time high of 20,788,000 barrels per day in 2005. Domestic crude oil production averaged 8,875,000 barrels per day, a 6% decrease 9,415,000 barrels per day in 2015. This was the first decrease in annual production in seven years. Production for 2015 had been the highest since 1972, when it peaked at 9,441,000 barrels per day. Imported crude

oil averaged 7,877,000 barrels per day, a 7% increase from 7,363,000 barrels per day in 2015, and but still down 22% from the all-time high of 10,126,000 barrels per day in 2005.

This also marked the second annual increase since 2005. Imported crude oil accounted for 47% of the total, up from 44% in 2015. The average price of domestic oil decreased 14% to \$38.29 per barrel.

Status of Nevada oil and gas production wells in 2016

This table gives the amount of oil and water produced and the number of production days in 2015. The sources of information include well records and statistics from the Nevada Division of Minerals.

Status abbreviations with dates of the action where applicable: BBL-barrels; MCF-thousand cubic feet; N/A-not available; PA-plugged and abandoned; Prod-production; SI-shut-in; WD-water disposal

FIELD/OPERATOR/WELL	NEVADA PERMIT	DATE COMPLETED	STATUS	LOCATION	PRODUCTION OIL (BBL)	PRODUCTION WATER (BBL)	PRODUCTION GAS (MCF)	PRODUCTION DAYS
EAGLE SPRINGS (Nye Co., 1954)								
Kirkwood Oil and Gas, LLC								
Eagle Springs Federal No. 44-35	813	05/98	SI 2004-2011, 2012	SE/4, NW/4, S35, T9N, R57E	0	0		0
Eagle Springs Federal No. 54-35	726	10/94	Prod	SW/4, NE/4, S35, T9N, R57E	2,506	50,349		273
Eagle Springs Unit No. 1-34	107	07/67	SI 1986	SE/4, NE/4, S34, T9N, R57E	0	0		0
Eagle Springs Unit No. 1-35	4	05/54	WD 1978	NE/4, NW/4, S35, T9N, R57E				
Eagle Springs Unit No. 1-36	76	02/65	SI 2008	SW/4, NE/4, S36, T9N, R57E	0	0		0
Eagle Springs Unit No. 2-36	80	07/65	Prod; SI 1996-2006	NW/4, SE/4, S36, T9N, R57E	0	0		0
Eagle Springs Unit No. 4-36	86	10/65	SI 1997	NW/4, SE/4, S36, T9N, R57E	0	0		0
Eagle Springs Unit No. 5-36	94	04/66	Prod	NW/4, NE/4, S36, T9N, R57E	11,508	15,027		318
Eagle Springs Unit No. 15-35	21	07/55	Prod; SI 1995-2002	NW/4, SW/4, S35, T9N, R57E	0	646		10
Eagle Springs Unit No. 35-35	17	03/55	Prod	NE/4, SW/4, S35, T9N, R57E	43	0		99
Eagle Springs Unit No. 43-36	83	08/65	Prod	NE/4, SE/4, S36, T9N, R57E	16	110		24
Eagle Springs Unit No. 62-35	46	01/60	SI 2012	NW/4, NE/4, S35, T9N, R57E	0	0		0
Eagle Springs Unit No. 73-35	69	10/63	Prod	SE/4, NE/4, S35, T9N, R57E	2,635	182,900		298
Eagle Springs Unit No. 74-35	71	04/64	Prod; SI 1998-2001	SE/4, NE/4, S35, T9N, R57E	5	432		1
Eagle Springs Unit No. 84-35	77	01/65	SI 1997	SE/4, NE/4, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 13-36	744	02/96	SI 2012	SW/4, NW/4, S36, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 23-36	733	10/95	Prod	SW/4, NW/4, S36, T9N, R57E	9,482	30,154		333
Eagle Springs/Plains Petroleum No. 24-36	737	11/94	SI 2013	SW/4, NW/4, S36, T9N, R57E	30	190		74
Eagle Springs/Plains Petroleum No. 55-35	761	11/95	SI 1997	SW/4, NE/4, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 64-35	755	09/95	SI 2012	SW/4, NE/4, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 82-35	734	10/94	Prod	NE/4, NE/4, S35, T9N, R57E	642	96,944		80
Eagle Springs/Plains Petroleum No. 83-35	754	07/95	Prod	SE/4, NE/4, S35, T9N, R57E	5	564		1
TRAP SPRING (Nye Co., 1976)								
J. N. Oil and Gas Federal No. 1	449	09/85	PA 1999	NE/4, NW/4, S34, T9N, R56E				
Munson Ranch No. 12-42	572	06/90	PA 2008	SE/4, NE/4, S12, T9N, R56E				
Munson Ranch No. 12-44X	445	07/85	PA 2008	SE/4, SE/4, S12, T9N, R56E				
Trap Spring No. 4	189	03/77	PA 1995	SE/4, NE/4, S27, T9N, R56E				
Makoi, Inc.								
Britton No. 13-21	224	04/78	SI 1991	NE/4, NW/4, S13, T9N, R56E	0	0		0
East Inselberg No. 36-33	860	04/05	SI 2006-2010	NW/4, SE/4, S36, T10N, R56E	0	0		1
Munson Ranch No. 12-14	688	05/95	Prod	SW/4, SW/4, S12, T9N, R56E	57	24		7
Munson Ranch No. 12-23	596	11/90	SI 1998	NE/4, SW/4, S12, T9N, R56E	0	0		0
Munson Ranch No. 12-24	432	04/85	Prod	SE/4, SW/4, S12, T9N, R56E	2,885	14,900		264
Munson Ranch No. 12-32	559	12/89	Prod	SW/4, NE/4, S12, T9N, R56E	5,538	17,209		365
Munson Ranch No. 12-33	423	03/85	SI 1996	NW/4, SE/4, S12, T9N, R56E	0	0		0
Munson Ranch No. 12-34	406	10/84	Prod	SW/4, SE/4, S12, T9N, R56E	3,392	3,507		357
Munson Ranch No. 12-43	880	03/08	Prod	NE/4, SE/4, S12, T9N, R56E	10,966	9,077		365
Munson Ranch No. 13-1	435	08/85	Prod	SE/4, NW/4, S13, T9N, R56E	609	540		91
Munson Ranch No. 13-11	622	11/91	SI 2003-2016	NW/4, NW/4, S13, T9N, R56E	1,594	109,075		222
Munson Ranch No. 13-11R	840	11/01	Prod	NW/4, NW/4, S13, T9N, R56E	3,322	32,769		364
Munson Ranch No. 13-14	623	09/91	Prod; SI 2001-2006	SW/4, SW/4, S13, T9N, R56E	4,546	95,027		315
Munson Ranch No. 13-21X	640	05/92	Prod	NE/4, NW/4, S13, T9N, R56E	3,673	17,868		362
Munson Ranch No. 13-24	218	08/79	Prod	SE/4, SW/4, S13, T9N, R56E	67	65		5
Munson Ranch No. 13-31	382	07/84	Prod	NW/4, NE/4, S13, T9N, R56E	3,633	22,806		335
Munson Ranch No. 13-32	373	08/84	Prod	SW/4, NE/4, S13, T9N, R56E	5,762	44,946		364
Munson Ranch No. 13-33	211	11/78	Prod	NW/4, SE/4, S13, T9N, R56E	1,362	3,448		364
Munson Ranch No. 13-41X	448	09/85	Prod	NE/4, NE/4, S13, T9N, R56E	9,937	70,963		364
Munson Ranch No. 13-42	222	11/78	Prod	SE/4, NE/4, S13, T9N, R56E	849	62,467		364
Munson Ranch No. 13-45	547	08/89	Prod	NW/4, SW/4, S13, T9N, R56E	142	76		7
Munson Ranch No. 13-46	548	07/89	SI 1992	NE/4, SW/4, S13, T9N, R56E	0	0		0
Munson Ranch No. 14-23	313	08/81	Prod	NE/4, SW/4, S14, T9N, R56E	2,186	20,491		364
Munson Ranch No. 14-24	354	10/83	SI 1996	SE/4, SW/4, S14, T9N, R56E	0	0		0
Munson Ranch No. 14-32	455	09/87	Prod	SW/4, NE/4, S14, T9N, R56E	5,063	72,911		365
Munson Ranch No. 14-33	513	07/89	Prod	NW/4, SE/4, S14, T9N, R56E	286	529		91
Munson Ranch No. 14-34	287	11/80	Prod	SW/4, SE/4, S14, T9N, R56E	0	0		0
Munson Ranch No. 14-34X	522	08/88	Prod	SW/4, SE/4, S14, T9N, R56E	1,383	7,053		364
Munson Ranch No. 14-41	538	07/89	Prod	NE/4, NE/4, S14, T9N, R56E	1,142	11,296		46
Munson Ranch No. 14-44	528	08/89	Prod	SE/4, SE/4, S14, T9N, R56E	3,966	129,827		364
Munson Ranch No. 14-49	550	08/89	Prod; SI 2010-2013	NE/4, SE/4, S14, T9N, R56E	275	364		91
Munson Ranch No. 14-49X	562	02/90	SI 2015	NE/4, SE/4, S14, T9N, R56E	0	0		0
Trap Spring No. 14-42	523	10/88	Prod	SE/4, NE/4, S14, T9N, R56E	92	529		48
Trap Spring No. 16	232	09/78	Prod	NW/4, SE/4, S23, T9N, R56E	1,789	137,263		360
Trap Spring No. 19	219	12/77	Prod	SE/4, NW/4, S23, T9N, R56E	13,429	2,771		364
Trap Spring No. 2	185	02/77	Prod	SE/4, SW/4, S27, T9N, R56E	5,924	897		363
Trap Spring No. 3	188	04/77	Prod	NW/4, NE/4, S34, T9N, R56E	9,635	1,158,939		363
Trap Spring No. 8	196	09/77	Prod	SE/4, SW/4, S23, T9N, R56E	70	18		15
Trap Spring No. 9	197	09/78	Prod	NW/4, NW/4, S26, T9N, R56E	14,383	346,554		361
Trap Spring No. 23-41	574	06/90	Prod	NE/4, NE/4, S23, T9N, R56E	890	592		260
Zuspann No. 24-1	198	06/77	SI 1986	NW/4, SW/4, S24, T9N, R56E	0	0		0
Zuspann No. 24-3	208	09/77	Prod	NE/4, NW/4, S24, T9N, R56E	0	0		0
CURRENT (Nye Co., 1979)								
Makoi, Inc.								
Current No. 1	241	10/78	Prod; SI 2005-2007	SE/4, SW/4, S26, T10N, R57E	0	0		0

Status of Nevada oil and gas production wells in 2016

FIELD/OPERATOR/WELL	NEVADA PERMIT	DATE COMPLETED	STATUS	LOCATION	PRODUCTION OIL (BBL)	PRODUCTION WATER (BBL)	PRODUCTION GAS (MCF)	PRODUCTION DAYS
BACON FLAT (Nye Co., 1981)								
Grant Canyon Oil and Gas, LLC								
Bacon Flat No. 1	316	07/81	SI 1988	C, SW/4, S17, T7N, R57E	0	0		0
Bacon Flat Federal No. 23-17	657	09/92	SI 1993	NE/4, SW/4, S17, T7N, R57E	0	0		0
Bacon Flat Federal No. 23-17A	710	01/94	Prod	NE/4, SW/4, S17, T7N, R57E	5,261	4,152		320
BLACKBURN (Eureka Co., 1982)								
Grant Canyon Oil and Gas, LLC								
Blackburn No. 3	324	03/82	SI 1998	SW/4, SW/4, S8, T27N, R52E	0	0		0
Blackburn No. 10	350	09/83	Prod	SW/4, NW/4, S8, T27N, R52E	5,732	17,804		338
Blackburn No. 14	442	07/85	Prod; SI 2001-2008	NE/4, SE/4, S7, T27N, R52E	9,070	18,598		330
Blackburn No. 16	458	12/85	Prod; SI 2009-2013	SE/4, NE/4, S7, T27N, R52E	5,422	68,641		332
Blackburn No. 18	660	11/92	Prod	NE/4, SE/4, S7, T27N, R52E	6,198	654,678		336
Blackburn No. 19	724	06/94	Prod	NW/4, SW/4, S8, T27N, R52E	17,758	841,763		364
Blackburn No. 21	802	09/97	Prod; SI 2014	NE/4, SE/4, S7, T27N, R52E	0	0		0
GRANT CANYON (Nye Co., 1983)								
Grant Canyon No. 4	376	07/84	PA 1992	NE/4, NW/4, S21, T7N, R57E				
Grant Canyon No. 5	400	08/84	PA 1995	E/2, NE/4, S20, T7N, R57E				
Grant Canyon Oil and Gas, LLC								
Grant Canyon No. 3	375	08/84	SI 1992	SW/4, SW/4, S16, T7N, R57E	0	0		0
Grant Canyon No. 7	625	08/91	SI 1993-2007, 2013	NW/4, NW/4, S21, T7N, R57E	0	0		0
Grant Canyon No. 9	642	04/92	Prod	NW/4, NW/4, S21, T7N, R57E	3,600	375		326
Grant Canyon No. 10	706	07/11	Prod; PA 1993-2010	NW/4, NW/4, S21, T7N, R57E	32,079	341,651		364
Grant Canyon No. 22-21	705	01/94	Prod	SE/4, NW/4, S21, T7N, R57E	5,952	230,684		366
KATE SPRING (Nye Co., 1986)								
Makoi, Inc.								
Kate Spring No. 12-2	544	08/89	Prod	NW/4, NW/4, S2, T8N, R57E	6,225	95,149	1,230	365
Western General, Inc.								
Kate Spring No. 1	436	01/86	Prod	W/2, SW/4, S2, T8N, R57E	3,400	32,000	202	61
Kate Spring No. 1A	560	12/89	Prod	NW/4, SW/4, S2, T8N, R57E	15,222	196,186	1541	305
Kate Spring No. 1C	592	09/91	SI 1997-2016	SW/4, SW/4, S2, T8N, R57E	150	500	4	2
Taylor Federal No. 1	497	10/87	Prod	NE/4, SE/4, S3, T8N, R57E	1,489	20,048	141	160
Taylor Federal No. 2	536	06/89	SI 1993	SE/4, NE/4, S3, T8N, R57E	0	0	0	0
SPENCER LEASE (Nye Co., 1986)								
Spencer Federal No. 32-29	446	12/85	PA 1986	SW/4, NE/4, S29, T9N, R57E				
TOMERA RANCH (Eureka Co., 1987)								
Tomera Ranch No. 33-1	591	10/90	PA 1997	SW/4, SW/4, S33, T31N, R52E				
Southern Pacific Land Co. No. 1-5R	647	05/92	PA 2007	NE/4, NE/4, S5, T30N, R52E				
Tomera Ranch No. 33-2RR	841	01/02	PA 2007	SW/4, SW/4, S33, T31N, R52E				
Andromeda Oil, LLC								
Tomera Ranch No. 3	923	02/12	Prod	SE/4, SW/4, S33, T31N, R52E	613	0		60
Tomera Ranch No. 33-1B	962	11/14	Prod	SW/4, SW/4, S33, T31N, R52E	348	0		4
Foreland Corp.								
Southern Pacific Land Co. No. 1-5	492	08/87	WD 1992	NE/4, NE/4, S5, T30N, R52E				
NORTH WILLOW CREEK (Eureka Co., 1988)								
North Willow Creek No. 5-27	646	06/93	PA 1998	SE/4, NW/4, S27, T29N, R52E				
Kirkwood Oil and Gas, LLC								
North Willow Creek No. 6-27	648	09/93	SI 2013	NE/4, SW/4, S27, T29N, R52E				
Southern Pacific Land Co. No. 1-27	633	01/92	SI 2002	NW/4, SE/4, S27, T29N, R52E				
THREE BAR (Eureka Co., 1990)								
Three Bar Federal No. 24-13A	566	09/90	PA 2000	SW/4, SW/4, S24, T28N, R51E				
Three Bar Federal No. 5	679	07/93	PA 2001	SE/4, NE/4, S25, T28N, R51E				
Three Bar Federal No. 25-A	556	10/90	PA 2001	C, NE/4, S25, T28N, R51E				
DUCKWATER CREEK (Nye Co., 1990)								
Makoi, Inc.								
Duckwater Creek No. 19-11	542	03/90	Prod	NW/4, NW/4, S19, T9N, R57E	0	0		0
SANS SPRING (Nye Co., 1993)								
Grant Canyon Oil and Gas, LLC								
Federal No. 5-14	635	02/93	SI 1998	SW/4, NW/4, S14, T7N, R56E				
Sans Springs No. 5-14A	792	05/97	Prod	SW/4, NW/4, S14, T7N, R56E	246	0		5
Federal No. 12-14	673	06/93	SI 1993	SW/4, SW/4, S14, T7N, R56E				
GHOST RANCH (Nye Co., 1996)								
Makoi, Inc.								
Ghost Ranch Springs No. 2-21X	800	08/97	Prod	NE/4, NW/4, S2, T8N, R57E	5234	107,497		365
Kirkwood Oil and Gas, LLC								
Ghost Ranch Springs No. 38-35	793	01/97	Prod	SE/4, SW/4, S35, T9N, R57E	2,389	127,885		365
Ghost Ranch Springs No. 47-35	799	03/97	Prod	SE/4, SW/4, S35, T9N, R57E	4,101	92,633		346
Ghost Ranch Springs No. 48-35	779	07/96	Prod	SE/4, SW/4, S35, T9N, R57E	2,190	124,506		366
DEADMAN CREEK (Elko Co., 1996)								
Deadman Creek No. 44-13	342	01/96	PA 1998	SE/4, SE/4, S13, T39N, R65E				
SAND DUNE (Nye Co., 1998)								
Kirkwood Oil and Gas, LLC								
Sand Dune Federal No. 88-35	816	07/98	Prod	SE/4, SE/4, S35, T9N, R57E	201	365		10
TOANO DRAW (Elko Co., 2007)								
Toano Draw No. 15-19	856	12/06	PA 2008	NW/4, SW/4, S19, T39N, R66E				
HUMBOLDT (Elko Co., 2013)								
Noble Energy, Inc.								
M2C-M2-21B	942	10/13	SI 2014	NE/4, NW/4, S2, T34N, R58E				0
HUNTINGTON (Elko Co., 2014)								
Noble Energy, Inc.								
K1L-1V	960	11/14	SI 2015	SW/4, SW/4, S1, T29N, R55E			1,026	0

Nevada oil producers and refineries

Compiled from Nevada Oil Patch; unpublished well files

Company	Field/Refinery	Contact	Addresses, Phone and FAX Numbers, and Websites
Andromeda Oil, LLC	Tomera Ranch	Justin Rammell	4055 South 700 East No. 203 Salt Lake City, UT 84107 Phone: 801-432-0632 E-mail: justin@rammell-law.com
Grant Canyon Oil and Gas, LLC	Bacon Flat Blackburn Grant Canyon Sans Spring	Michael O'Neal Rod Prosceno Steve Barnes	717 17th Street, No. 1400 Denver, CO 80202 Phone: 303-297-2777 FAX: 303-298-0049 E-mail: michael@onealrc.com E-mail: rod@4arocket.com E-mail: steve@breckenergy.com
Kirkwood Oil and Gas	Eagle Springs Ghost Ranch North Willow Creek Sand Dune	Robert Kirkwood	120 South Durbin Street P. O. Box 2859 Casper, WY 82602 Phone: 307-265-5178 FAX: 307-265-1791 E-mail: bradl@kirkwoodcompanies.com Website: http://www.kirkwoodcompanies.com
Makoil, Inc.	Currant Duckwater Creek Ghost Ranch Kate Spring Trap Spring	Gregg Kozlowski	25391 Commercentre Drive, No. 120 Lake Forest, CA 92630 Phone: 949-462-9010 FAX: 949-462-9012 E-mail: makoil@msm.com Website: http://www.makoil.com
Western General	Kate Spring	Richard Taylor	801 Noahs Star Street Las Vegas, NV 89145-0609 Phone: 702-233-1490 E-mail: richardtaylor@cox.net
Foreland Refining Corporation	Currant Refinery		HC 34 Box 34830 Ely, NV 89301 Phone: 775-863-0229

DIRECTORY OF MINING AND MILLING OPERATIONS

By David A. Davis

Compiled from information supplied by the Nevada Div. of Minerals, Mine Safety and Training Section of the Div. of Industrial Relations, and companies. Except for larger BLM community pits, aggregate 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, N/A: not available, OP: open-pit mine, OS: other surface, PL: placer, UG: underground

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CARSON CITY							
Black and Red Cinder Pits	Cinderlite Trucking, Inc.	S21, 22, T16N, R20E	cinder decorative stone	OP, ML	mining screening	4	1665 South Sutro Terrace Carson City, NV 89706 Phone: 775-882-4483 FAX: 775-882-1671 Web: http://www.cinderlite.com
Goni Pit	Cinderlite Trucking Corp.	S28, T16N, R20E	decomposed granite sand gravel	OP, ML	mining crushing screening	6	1665 South Sutro Terrace Carson City, NV 89706 Phone: 775-882-4483 FAX: 775-882-1671 Web: http://www.cinderlite.com
CHURCHILL COUNTY							
Fernley Operations Mill	EP Minerals, LLC	S29, T23N, R27E	diatomite	ML	calcining classification drying grinding	35	P.O. Box 860 I-80 Frontage Rd. Fernley, NV 89408-0860 Phone: 775-423-6668 FAX: 775-423-6411 Web: http://www.epminerals.com
Fernley Operations Mine	EP Minerals, LLC	S28, 32, T23N, R27E	diatomite	OP	mining	3	P.O. Box 860 I-80 Frontage Rd. Fernley, NV 89408-0860 Phone: 775-423-6668 FAX: 775-423-6411 Web: http://www.epminerals.com
Huck Salt	Huck Salt Co.	S11, 12, 13, T16N, R31E; S7, T16N, R32E	salt	OS	mining evaporation	9	2900 Phritzie Lane Fallon, NV 89406 Phone: 775-423-2055 FAX: 775-423-0467 Web: http://www.hucksalt.com
Churchill Mine	Nevada Cement Co.	S31, T25N, R29E	limestone	OP	mining	6 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.nevadacement.com
Nightingale Pit	Imerys Minerals California, Inc.	S17, 18, 19, 20, T24N, R26E	diatomite	OP	mining	15/5 (Mine and plant combined)	100 Front St. Fernley, NV 89408 Phone: 775-575-2536 FAX: 775-575-1507 Web: http://www.worldminerals.com
Popcorn Mine	EP Minerals, LLC	S24, T16N, R28E; S19, T16N, R29E	perlite	OP	mining	2	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7715 Web: http://www.epminerals.com
CLARK COUNTY							
Apex Landfill Pit	Las Vegas Paving Corp.	S19, T18S, R64E	sand gravel	OP, ML	mining crushing screening	25/3	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Apex Lhoist Quarry	Las Vegas Paving Corp.	S14, 22, 23, 26, 27, 34, 35, T18S, R64E	aggregate sand	OP, ML	stockpile	10	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Apex Lhoist Quarry	Lhoist North America	S14, 22, 23, 26, 27, 34, 35, T18S, R63E	limestone	OP, ML	mining calcining crushing screening	110/2 (Mine and plant combined)	12101 North Las Vegas Blvd. Las Vegas, NV 89165 Phone: 702-643-7702 Phone: 702-643-9517 Web: http://www.lhoist.us

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Blue Diamond Hill Mine	Gypsum Resources, LLC	S32, T21S, R59E	gypsum limestone	OP, ML	mining crushing screening	101/1	8912 Spanish Ridge Ave., Suite No. 200 Las Vegas, NV 89148 Phone: 702-334-4669 FAX: 702-586-3527 Web: http://www.bdhgypsum.com
Blue Diamond Pit	Las Vegas Paving Corp.	S26, T22S, R60E	sand gravel	OP, ML	mining crushing screening	8	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Boulder Ranch Quarry	CTC Crushing LLC	S15, 22, T23S, R63E	sand gravel	OP, ML	mining crushing screening	23/3	1045 Palms Airport Dr., Suite 110 Las Vegas, NV 89119 Phone: 702-597-1010 Web: http://www.impactsandandgravel.com
El Dorado Quarry	Portable Aggregate Producers, LLC	S14, T23S, R63E	sand gravel	OP, ML	mining crushing screening	17	250 East Chaparral Henderson, NV 89015 Phone: 702-558-9180 FAX: 702-558-9182
Georgia-Pacific Gypsum Plant	Georgia-Pacific Gypsum, LLC	S34, 35, T18S, R63E	gypsum	ML	crushing	110	P.O. Box 337350 11401 U. S. Highway 91 North Las Vegas, NV 89033 Phone: 702-643-8100 FAX: 702-643-2049 Web: http://www.gp.com
Henderson Community Pit	Various (U.S. Bureau of Land Management manages pit)	S14, T21S, R62E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov/nv/st/en.html
Henderson Plant	Lhoist North America	S12, T22S, R62E	lime	ML	calcining	110/2 (Mine and plant combined)	12101 North Las Vegas Blvd. Las Vegas, NV 89165 Phone: 702-643-7702 Phone: 702-643-9517 Web: http://www.lhoist.us
Jericho Quarry	CTC Crushing LLC	S2, T23S, R63E	sand gravel	OP, ML	mining screening	7	1045 Palms Airport Dr., Suite 110 Las Vegas, NV 89119 Phone: 702-597-1010 Web: http://www.impactsandandgravel.com
Las Vegas Plant	CertainTeed Gypsum Manufacturing, Inc.	S5, 8, T22S, 59E	gypsum	ML	processing	N/A	Highway 159 Blue Diamond, NV 89004 Phone: 702-875-4111 FAX: 702-875-4213 Web: http://www.certainteed.com
Lima Nevada Gypsum Mine	H. Lima Nevada LLC	S19, 20, 29, 30, T20S, R64E	gypsum	OP, ML	mining crushing screening	8/1	704 East Yosemite Manteca, CA 95336 Phone: 702-294-1156 FAX: 702-294-0676
Lone Mountain	Boulder Sand and Gravel, Inc.	S36, T19S, 59E	sand gravel	OP, ML	mining gravity	6	410 West Hacienda Ave., Suite 100 Las Vegas, NV 89118 Phone: 702-294-1156 FAX: 702-294-0676
Lone Mountain	Las Vegas Paving Corp.	S35, 36, T19S, R59E; S2, T20S, R60E	aggregate	OP, ML	mining crushing screening	6	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Lone Mountain	Mel Clark, Inc.	S36, T19S, R59E	sand gravel	OP, ML	mining	4	4680 Melvin St. Las Vegas, NV 89115 Phone: 702-643-1914 FAX: 702-643-1954 Web: http://www.melclarkinc.com
Lone Mountain	Nevada Ready Mix Corp.	S36, T19S, R59E	sand gravel	OP, ML	mining crushing screening	16	601 West Bonanza Las Vegas, NV 89106 Phone: 702-457-1115 FAX: 702-932-3992 Web: http://www.nevadareadymix.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Lone Mountain Community Pit	Various (U.S. Bureau of Land Management manages pit)	S36, T19S, R59E; S1, T20S, R59E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov/nv/st/en.html
Mesquite Community Pit	B.J. Rees's Enterprise	S20, T13S, R71E	sand gravel	OP	mining crushing screening	1	P.O. Box 358 Coalville, UT 84017 Phone: 435-336-5345 FAX: 435-336-5351
Mesquite Community Pit	Various (U.S. Bureau of Land Management manages pit)	S20, T13S, R71E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov/nv/st/en.html
Modoc Mine	Kalamazoo Materials, Inc.	S24, T28S, R60E	landscape rock	OP, ML	mining screening	1	6975 North Oracle Rd. Tucson, AZ 85704 Phone: 520-575-9601 FAX: 520-575-9604 Web: http://www.kalamazoomaterials.com
Money Pit	Southern Nevada Liteweight, Inc.	S9, T25S, R61E	silica sand	OP, ML	mining milling	10	4262 Blue Diamond Rd. Las Vegas, NV 89139 Phone: 702-399-8621 FAX: 702-633-4062 Web: http://www.snlsand.com
PABCO Gypsum-Apex Plant	Pacific Coast Building Products, Inc.	S7, T20S, R64E	gypsum	ML	crushing washing	17 (Mine and plant combined)	P.O. Box 364329 North Las Vegas, NV 89036 Phone: 702-407-3700 FAX: 702-643-6249 Web: http://www.paccoast.com
PABCO Gypsum-Apex Pit	Pacific Coast Building Products, Inc.	S7, 18, T20S, R64E	gypsum	OP	mining	17/1 (Mine and plant combined)	P.O. Box 364329 North Las Vegas, NV 89036 Phone: 702-407-3700 FAX: 702-643-6249 Web: http://www.paccoast.com
Pole Line Pit and Mill	Boulder Sand and Gravel, Inc.	S14, T20S, 62E	sand gravel	OP, ML	mining gravity	6	410 West Hacienda Ave., Suite 100 Las Vegas, NV 89118 Phone: 702-294-1156 FAX: 702-294-0676
Rainbow Quarries	Las Vegas Rock, Inc.	S34, T25S, R58E	landscape rock sand stone	OP, ML	mining crushing sawing	45	2 Prison Rd. P.O. Box 19118 Jean, NV 89019 Phone: 702-791-7625 FAX: 702-896-4533 Web: http://www.vegasrock.com
Sierra Ready Mix Quarry	Sierra Ready Mix, LLC	S6, 7, T25S, R60E	sand gravel	OP, ML	mining crushing screening	6	4150 Smiley Rd. North Las Vegas, NV 89081 Phone: 702-664-3000 FAX: 702-664-1736 Web: http://www.sierrareadymix.com
Simplot Silica Products Pit	J. R. Simplot Co.	S11, T17S, R67E	silica sand	OP	mining	8	P.O. Box 308 Overton, NV 89040 Phone: 702-397-2667 FAX: 702-397-2798 Web: http://www.simplot.com
Simplot Silica Products Plant	J. R. Simplot Co.	S30, T16S, R68E	silica sand	ML	drying flotation screening	33	P.O. Box 308 Overton, NV 89040 Phone: 702-397-2667 FAX: 702-397-2798 Web: http://www.simplot.com
Sloan Mill	Aggregate Industries	S13, T23S, R60E	sand gravel	ML	crushing screening	34 (Mine and plant combined)	3101 East Craig Rd. North Las Vegas, NV 89030 Phone: 702-649-6250 FAX: 702-642-2213 Web: http://www.aggregate-us.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Sloan Quarry	Aggregate Industries	S13, T23S, R60E	sand gravel	OP, OS	mining	34 (Mine and plant combined)	3101 East Craig Rd. North Las Vegas, NV 89030 Phone: 702-649-6250 FAX: 702-642-2213 Web: http://www.aggregate-us.com
South Jean Pit	Service Rock Products	S21, 28 T25S, R60E	sand gravel	OP	mining	9	151 Cassia Way Henderson, NV 89014 Phone: 702-798-0568 Phone: 702-798-0580 Web: http://www.servicerock.com
Spring Mountain Pit and Mill	Wells Cargo, Inc.	S10, 15; T21S, R60E	sand gravel	OP, ML	mining gravity	13	9127 West Russell Rd., Suite 210 Las Vegas, NV 891148 Phone: 702-876-5090 FAX: 702-876-3977 Web: http://www.wciltv.com
DOUGLAS COUNTY							
Bing Materials Pit and Mill	Bing Materials Co.	S16, T12N, R20E	sand gravel	OP, ML	mining crushing	13	P.O. Box 487 Minden, NV 89423 Phone: 775-265-3641
ELKO COUNTY							
Arturo Mine Project	Barrick Goldstrike Mines, Inc.	S3, T36N, R49E S34, 35, T37N, R49E	gold	OP, CIL,	mining	177	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Boehler Pit	Staker Parson Co.	S12, T34N, R62E	sand gravel	OP, ML	mining crushing	4	2755 Last Chance Rd. Elko, NV 89801 Phone: 775-738-8155 Web: http://www.stakerparson.com
Carlin Mill 5	Newmont Mining Corp.	S36, T34N, R51E	gold silver	ML	milling	2261/476 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Carlin Mill 6	Newmont Mining Corp.	S36, T34N, R51E	gold silver	ML	milling	2261/476 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Elburz Pit	Vega Construction and Trucking Co.	S9, T33N, R52E	sand gravel	OP, ML	mining crushing screening	26	P.O. Box 1630 Elko, NV 89803 Phone: 775-738-5381 FAX: 775-738-6311
Emigrant Mine	Newmont Mining Corp.	S2, T31N, R53E; S26, 35 T32N, R53E	gold	OP	mining	161	1655 Mountain Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Emigrant Plant	Newmont Mining Corp.	S12, T31N, R53E	gold	ML	milling	13	1655 Mountain Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Jerritt Canyon Mill	Jerritt Canyon Gold, LLC	S33, T41N, R54E	gold silver	ML, CIL	heap leach milling roasting	240/210 (Mine and mill combined)	HC31 Box 78 Elko, NV 89801 Phone: 775-738-5600 FAX: 775-758-9233 Web: http://www.yukon-nevadagold.com
Jerritt Canyon Mine	Jerritt Canyon Gold, LLC	S7, T39N, R53E; S10, 14, 23, T40N, R53E; S4, 7, 8, 18, T40N, R54E	gold silver	UG	mining	240/210 (Mine and mill combined)	HC31 Box 78 Elko, NV 89801 Phone: 775-738-5600 FAX: 775-758-9233 Web: http://www.yukon-nevadagold.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
ELKO COUNTY (continued)							
Long Canyon	Newmont Mining Corp.	S20, 21, 28, 29, 32, 32, T36N, R66E	gold	OP, HL	mining milling	216/110	1655 Mountain Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Meikle Mine	Barrick Goldstrike Mines, Inc.	S12, 13, T36N, R50E	gold silver	UG	mining	595	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Midas Mill	Klondex Mines, Ltd.	S22, T39N, R46E T39N, R46E	gold silver	ML	milling	140/114 (Mine and mill combined)	1250 Lamoille Highway, Suite 312 Elko, NV 89801 Phone: 775-738-6070 FAX: 775-738-5070 Web: http://www.klondexmines.com
Midas Mine	Klondex Mines, Ltd.	S21, 22, 27, 28, 33, 34; T39N, R46E	gold silver	UG	mining milling	140/114 (Mine and mill combined)	1250 Lamoille Highway, Suite 312 Elko, NV 89801 Phone: 775-738-6070 FAX: 775-738-5070 Web: http://www.klondexmines.com
Osino Grinding Plant	National Oilwell Varco	S10, T35N, R56E	barite	ML	shipping	12	247 Bluffs Ave. Elko, NV 89801 Phone: 775-738-7171 FAX: 775-738-7196 Web: http://www.nov.com
Pilot Peak Plant	Graymont Western US., Inc.	S14, T34N, R68E	limestone	ML	calcining rotary kiln	66 (Mine and plant combined)	P.O. Box 2520 West Wendover, NV 89883 Phone: 775-483-5463 FAX: 775-483-5149 Web: http://www.graymont.com
Pilot Peak Quarry	Graymont Western US., Inc.	S14, 15, 22, 23, 26, T34N, R68E	limestone	OP	mining	66 (Mine and plant combined)	P.O. Box 2520 West Wendover, NV 89883 Phone: 775-483-5463 FAX: 775-483-5149 Web: http://www.graymont.com
ESMERALDA COUNTY							
Basalt Mill	Grefco Minerals, Inc.	S29, T2N, R34E	diatomite	ML	drying milling	13	P.O. Box 278 Dyer, NV 89010 Phone: 775-573-2422 Web: http://www.dicalite.com
Basalt Mine	Grefco Minerals, Inc.	S29, T2N, R34E	diatomite	OP	mining	2	P.O. Box 278 Dyer, NV 89010 Phone: 775-573-2422 Web: http://www.dicalite.com
Blanco Mine	Vanderbilt Minerals Corp.	S22, T1N, R37E	clay	OP	stockpile	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879
Gemfield Gems	Gemfield Gems	S29, 30, T2S, R42E T2S, R42E	chalcedony	OP	mining	1	P.O. Box 5 Goldfield, NV 89013 Phone: 775-485-3789 Web: http://www.gemfieldnv.com
Heart of Nature Alum/Sulfur Mine	Heart of Nature, LLC	S32, T1N, R38.5E	alum sulfur	OP, ML	mining crushing processing screening	1/4	34710 7th Standard Rd. Bakersfield, CA 93314 Phone: 877-324-3278 FAX: 661-399-9758 Web: http://www.heartofnature.biz
Mineral Ridge	Mineral Ridge Gold, LLC	S1, T2S, R38E	gold silver	OP, HL, ML	mining heap leach	70/20	1515 7th St. Elko, NV 89801 Phone: 775-799-9273 FAX: 775-753-4780 Web: http://www.scorpigold.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
ESMERALDA COUNTY (continued)							
Silver Peak Operations	Rockwood Lithium, Inc.	T2S, R39-40E	lithium carbonate	OS, ML	mining evaporation precipitation	68/10	P.O. Box 98 Silver Peak, NV 89047 Phone: 775-937-2222 FAX: 775-937-2250 Web: http://www.rockwoodlithium.com
EUREKA COUNTY							
Barrick Goldstrike Mines Autoclave	Barrick Goldstrike Mines, Inc.	S29, T36N, R50E	gold silver	ML	autoclave	1045 (Mine and plant combined)	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Barrick Goldstrike Mines Roaster	Barrick Goldstrike Mines, Inc.	S13, T36N, R49E	gold silver	ML	roasting	1045 (Mine and plant combined)	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Betze/Post Mine	Barrick Goldstrike Mines, Inc.	S23-26, T36N, R49E; S12, 20, 29, 30; T36N, R50E	gold silver	OP, HL	mining heap leach	1045 (Mine and plant combined)	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Carlin North - Genesis Complex	Newmont Mining Corp.	S33, T36N, R50E	gold	OP, HL	mining bioleaching heap leach	2264/476 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Carlin North - Post and adjacent mines	Newmont Mining Corp.	S19, T36N, R50E	gold	OP, HL	mining bioleaching heap leach	2264/476 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Carlin South - Carlin and adjacent mines	Newmont Mining Corp.	S14, T35N, R50E	gold	UG, HL	mining bioleaching heap leach milling roasting	2264/476 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Carlin South - Gold Quarry and adjacent mines	Newmont Mining Corp.	S3, T33N, R51E	gold	OP, HL	mining bioleaching heap leach milling roasting	2185/431 (Combined Newmont Carlin Trend Operations)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Dunphy Mill	BAROID/Halliburton Energy Services, Inc.	S26, T33N, R48E	barite	ML	crushing gravity grinding	12	912 Dunphy Ranch Rd. Battle Mountain, NV 89820 Phone: 775-468-0515 FAX: 775-468-2060 Web: http://www.halliburton.com
Nevada Barth Iron Mine and Mill	Saga Exploration Co.	S7, T31N, R51E	iron	OP, ML	screening	4	2339 Dickerson Rd. Reno, NV 89503 Phone: 775-322-9994
Ruby Hill Mine	Homestake Mining Co. of California	S9-11, 14, 15, T19N, R53E	gold silver	OP, CIL, CIP, HL, ML	heap leach milling	14	P.O. Box 676 Eureka, NV 89316 Phone: 775-237-6060 FAX: 775-237-5408 Web: http://www.barrick.com
HUMBOLDT COUNTY							
Bonanza Opal Mine	Bonanza Opal Mines, Inc.	S6, 7, T45N, R26E	precious opal	OP	mining	N/A	P.O. Box 127 Denio, NV 89404 Phone: 775-375-5955 Web: http://www.bonanzaopals.net
Hycroft Merrill-Crowe Plant	Hycroft Resources and Development, Inc.	S19, T35N, R29E	gold silver	ML	milling	66/21 (Mine and plant combined)	P.O. Box 3030 Winnemucca, NV 89446 Phone: 775-623-5260 FAX: 775-623-0215 Web: http://www.alliednevada.com/

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
HUMBOLDT COUNTY (continued)							
Hycroft Mine	Hycroft Resources and Development, Inc.	S26, T35N, R29E	gold silver	OP, HL	mining heap leach	66/21 (Mine and plant combined)	P.O. Box 3030 Winnemucca, NV 89446 Phone: 775-623-5260 FAX: 775-623-0215 Web: http://www.alliednevada.com/
Lone Tree Mine	Newmont Mining Corp.	S1, 11, 13, 15, 23, T34N, R42E	gold silver	OP, HL, ML	heap leach milling	56/61	P.O. Box 388 Valmy, NV 89438-0388 Phone: 775-635-6423 FAX: 775-635-6460 Web: http://www.newmont.com
Marigold Mill and Refinery	Silver Standard Resources, Inc.	S9, T33N, R43E	gold silver	ML	milling	358/7 (Mine and plant combined)	P.O. Box 160 Valmy, NV 89438 Phone: 775-635-2317 FAX: 775-635-2551 Web: http://ir.silverstandard.com
Marigold Mine	Silver Standard Resources, Inc.	S8, 9, 18-20; T33N, R43E	gold silver	OP, HL	mining	358/7 (Mine and plant combined)	P.O. Box 160 Valmy, NV 89438 Phone: 775-635-2317 FAX: 775-635-2551 Web: http://ir.silverstandard.com
MIN-AD Mine	MIN-AD, Inc.	S28, T35N, R38E	dolomite	OP, ML	mining grinding	15	P.O. Box 39 Winnemucca, NV 89446 Phone: 775-623-5944 FAX: 775-623-9028 Web: http://www.min-ad.com
Rainbow Ridge Opal Mine	Rainbow Ridge Opal Mines, Inc.	S22, 23, T45N, R26E	opalized wood precious opal	OP	mining	1	P.O. Box 97 Denio, NV 89404 Phone: (Summer) 775-941-0270 Phone: (Winter) 541-312-2679 Web: http://www.nevadaopal.com
Royal Peacock Opal Mine	Walter Wilson	S30, T45N, R26E	precious opal	OP	mining	1	P.O. Box 165 Denio, NV 89404 Phone: 775-941-0374 FAX: 775-272-3395 Web: http://www.royalpeacock.com
Turquoise Ridge Joint Venture	Barrick Gold Corp.	S33, T39N, R42E	gold silver	UG	mining	529/89	2055 Getchell Mine Rd. Golconda, NV 89414-9702 Phone: 775-529-5001 FAX: 775-529-0753 Web: http://www.barrick.com
Twin Creeks Juniper and Sage Mills	Newmont Mining Corp.	S5, T39N, R43E	gold silver	ML	milling	490/241 (Mine and mill combined)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Twin Creeks Mine	Newmont Mining Corp.	S3-10, 15-22, 27-32, T39N, R43E	gold silver	OP, HL	mining heap leach	490/241 (Mine and mill combined)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
Twin Creeks Mine	Newmont Mining Corp.	S3-10, 15-22, 27-32, T39N, R43E	gold silver	ML	milling	490/241 (Mine and mill combined)	1655 Mountain Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmont.com
LANDER COUNTY							
Argenta Mill	Baker Hughes Oilfield Operations, Inc.	S6, T32N, R47E	barite	ML	gravity grinding	17/5 (Mine and plant combined)	P.O. Box 277 Battle Mountain, NV 89820 Phone: 775-635-5441 FAX: 775-635-5455 Web: http://www.bakerhughes.com
Argenta Mine	Baker Hughes Oilfield Operations, Inc.	S13, 14, T32N, R46E; S18, 19, T32N, R47E	barite	OP	stockpile	17/5 (Mine and plant combined)	P.O. Box 277 Battle Mountain, NV 89820 Phone: 775-635-5441 FAX: 775-635-5455 Web: http://www.bakerhughes.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
LANDER COUNTY (continued)							
Battle Mountain Grinding Plant	M-I Swaco	S18, T32N, R45E	barite	ML	gravity grinding	33	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Blueridge Mine	Jay Wintle	S19, 20, 29, 30, T28N, R47E	turquoise	OP	mining screening sorting	N/A	810 Sheep Creek Rd. Battle Mountain, NV 89820 Phone: 775-635-5231
Cortez Hills Open Pit Mine	Barrick Cortez, Inc.	S24, T27N, R47E	gold	OP	mining	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Cortez Hills Underground Mine	Barrick Cortez, Inc.	S24, T27N, R47E	gold	UG	mining	322/130	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Cortez Pipeline Mill	Barrick Cortez, Inc.	S31, T27N, R48E	gold	ML	milling	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Cortez Pipeline Mine	Barrick Cortez, Inc.	S31, T27N, R48E	gold	OP, HL	mining	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Fire Creek	Klondex Mines, Ltd.	S15, 22 T30N, R47E	gold silver	UG	mining development	76/111	360 Western Rd., Suite 1 Reno, NV 89523 Phone: 775-284-5757 FAX: 775-284-5756 Web: http://klondexmines.com
Greystone Mine	M-I Swaco	S35, T28N, R45E	barite	OP	mining	6	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Mountain Springs Mine	M-I Swaco	S8, 9, T28N, R44E	barite	OP	mining gravity	27	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Phoenix Mill	Newmont Mining Corp.	S33, T31N, R43E	gold silver	ML	milling	507/275 (Mine and mill combined)	P.O. Box 1657 Battle Mountain, NV 89820 Phone: 775-635-6423 FAX: 775-635-6460 Web: http://www.newmont.com
Phoenix Mine	Newmont Mining Corp.	S22, 27, 33, 34, T31N, R43E	gold silver	OP, HL,	mining heap leach	507/275 (Mine and mill combined)	P.O. Box 1657 Battle Mountain, NV 89820 Phone: 775-635-6423 FAX: 775-635-6460 Web: http://www.newmont.com
LINCOLN COUNTY							
Tenacity Perlite Mill	Wilkin Mining and Trucking Co., Inc.	S5 T4S, R67E	perlite	OP, ML	mining crushing	13 (Mine and mill combined)	HC 34 Box 199 Caliente, NV 89008 Phone: 775-728-4463 FAX: 775-728-4456
Tenacity Perlite Mine	Wilkin Mining and Trucking Co., Inc.	S34, T4S, R62E	perlite	OP, ML	mining crushing	13 (Mine and mill combined)	HC 34 Box 199 Caliente, NV 89008 Phone: 775-728-4463 FAX: 775-728-4456

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
LYON COUNTY							
Adams Claim Gypsum Mine	Art Wilson Co.	S25, T16N, R20E	gypsum limestone	OP	mining	48	P.O. Box 20160 Carson City, NV 89702-1160 Phone: 775-882-0700 FAX: 775-882-0790 Web: http://www.acgmaterials.com
Art Wilson Co. Mill	Art Wilson Co.	S25, T16N, R20E	gypsum limestone	ML	crushing grinding screening pelletizing	13	P.O. Box 20160 Carson City, NV 89702-1160 Phone: 775-882-0700 FAX: 775-882-0790 Web: http://www.acgmaterials.com
Celite Plant	World Minerals, Inc.	S11, T20N, R24E	diatomite	ML	classification drying grinding milling	15/5	100 Front St. Fernley, NV 89408 Phone: 775-575-2536 FAX: 775-575-1570 Web: http://www.worldminerals.com
Dayton Materials (Mustang Pit)	3D Concrete, Inc.	S23, T16N, R21E	aggregate landscape rock sand	OP, ML	mining crushing screening	10	No. 20 Ricci Rd. Dayton, NV 89403 Phone: 775-246-5440 FAX: 775-346-3911 Web: http://3dconcrete.com
Fernley Mine	Nevada Cement Co.	S3-6, 9, T19N, R25E; S31-33, T20N, R25E	limestone	OP	mining	6 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.nevadacement.com
Hazen Pit	EP Minerals, LLC	S6, 9, T19N, R26E	diatomite	OP	mining	2/4	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7715 Web: http://www.epminerals.com
Nevada Cement Plant	Nevada Cement Co.	S10, 11, T20N, R24E	limestone clay	ML	crushing dry milling rotary kiln	117	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.nevadacement.com
MINERAL COUNTY							
Borealis Mine	Borealis Mining Co., LLC	S8, 9, 16, 17; T6N, R29E	gold silver	OP, HL	heap leach	6	P.O. Box 549 Hawthorne, NV 89415 Phone: 775-341-0042 FAX: 604-608-3262
Denton-Rawhide Mine	Rawhide Mining, LLC	S4, 5, 8, 16, 17, T13N, R32E	gold silver	OP, HL	mining heap leach	66/8	P.O. Box 2070 Fallon, NV 89407 Phone: 775-945-1015 FAX: 775-945-1213
NYE COUNTY							
Ash Meadows Plant	Saint Cloud Mining Co.	S25, T18S, R50E	unaltered ash zeolite	ML	crushing screening packaging	5	HCR 70 Box 7006 East Spring Meadows Rd. Amargosa Valley, NV 89020 Phone: 775-372-5524 FAX: 775-372-5524 Web: http://www.stcloudmining.com
Amargosa Plant	Lhoist North America of Arizona	S29, T17S, R49E	clay	ML	classification crushing grinding screening	28/8 (Mine and plant combined)	P.O. Box 86 Amargosa Valley, NV 89020 Phone: 775-372-5341 FAX: 775-372-5320 Web: http://www.imvnevada.com
Beatty Quarry	Kalamazoo Materials, Inc.	S16, T11S, R47E	landscape rock	OP, ML	mining crushing screening	4	6975 North Oracle Rd. Tucson, AZ 85704 Phone: 520-575-9601 FAX: 520-575-9604 Web: http://www.kalamazoomaterials.com
Cinder Cone Pit	Allied Building Materials, Inc. and Cind-R-Lite Company	S36, T14S, R48E; S31, T14S, R49E; S1, T15S, R48E; S6, T15S, R49E	cinder	OP, ML	mining screening	5	4745 Mitchell St. North Las Vegas, NV 89081 Phone: 702-651-1550 FAX: 702-651-1551 Web: http://www.abmnv.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
NYE COUNTY (continued)							
Gold Hill Mine (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S19, 20, 29, 30, T10N, R44E	gold silver	OP, HL, ML	mining heap leach milling	795/27 (Gold Hill and Round Mtn. combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
IMV Pits	Lhoist North America of Arizona	S28, 29, T17S, R49E	clay	OP, ML	mining classification crushing grinding screening	28/8 (Mine and plant combined)	P.O. Box 86 Amargosa Valley, NV 89020 Phone: 775-372-5341 FAX: 775-372-5320 Web: http://www.imvnevada.com
KMI Zeolite, Ash Meadows	KMI Zeolite, Inc.	S25, T18S, R50E	zeolite silver	ML	milling processing	15	5390 East Nye County Rd., No. 266 Amargosa Valley, NV 89020 Phone: 775-372-5415 FAX: 775-372-5416 Web: http://www.kmizeolite.com
New Discovery Mine	Vanderbilt Minerals Corp.	S13, 24, T12S, R46E S18, 19, T12S, R47E	clay	OP	mining	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: http://www.rtvanderbilt.com
Pahrump Community Pit	Various (U.S. Bureau of Land Management manages pit)	S28, 29, T20S, R54E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: http://www.blm.gov
Premier Chemicals Mine	Premier Chemicals, LLC	S22, 23, 25-27, 34-36, T12N, R36E	magnesite	OP	mining	115/3 (Mine and plant combined)	P.O. Box 177 Gabbs, NV 89409 Phone: 775-285-2601 FAX: 775-285-4021 Web: http://www.premierchemicals.com
Premier Chemicals Plant	Premier Chemicals, LLC	S26, T12N, R36E	magnesite	ML	calcining sizing	115/3 (Mine and plant combined)	P.O. Box 177 Gabbs, NV 89409 Phone: 775-285-2601 FAX: 775-285-4021 Web: http://www.premierchemicals.com
Round Mountain ADR Plant (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S25 ,T10N, R44E	gold silver	ML	recovery	795/27 (Gold Hill and Round Mtn. combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
Round Mountain Mill (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S25 ,T10N, R44E	gold silver	ML	milling	795/27 (Gold Hill and Round Mtn. combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
Round Mountain Mine (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S19, 20, 29, 30, T10N, R44E	gold silver	OP, HL,	mining heap leach	795/27 (Gold Hill and Round Mtn. combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
Sterling Mine	Sterling Gold Mining Co.	S14, T13S, R47E;	gold	UG	mining	7	P.O. Box 549 Beatty, NV 89003 Phone: 866-608-4381 FAX: 775-981-9044 Web: http://www.imperialmetals.com
White Caps Mill	Vanderbilt Minerals Corp.	S19, T12S, R47E	clay	ML	bagging grinding screening	3	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: http://www.rtvanderbilt.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
NYE COUNTY (continued)							
Wulfenstein (BLM) Pit	Wulfenstein Construction	S28, 29, T20S,	sand gravel	OP, ML	mining crushing screening	6	2281 East Postal Dr. P. O. Box 38 Pahrump, NV 89048 Phone: 775-727-5900 FAX: 775-727-6010
PERSHING COUNTY							
Buff-Satin Mine	Vanderbilt Minerals Corp.	S2, T27N, R32E	clay	OP	bagging grinding screening	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: http://www.rtvanderbilt.com
Coeur Rochester Mine	Coeur Rochester, Inc.	S9-11, 15, 16, 21, 27, 28, T28N, R34E	silver gold	OP, HL,	mining heap leach	302/14 (Mine and plant combined)	P.O. Box 1057 Lovelock, NV 89419 Phone: 775-273-7995 FAX: 775-273-7423 Web: http://www.coeur.com
Coeur Rochester Plant	Coeur Rochester, Inc.	S15, T28N, R34E	silver gold	ML	milling	302/14 (Mine and plant combined)	P.O. Box 1057 Lovelock, NV 89419 Phone: 775-273-7995 FAX: 775-273-7423 Web: http://www.coeur.com
Colado Mine	EP Minerals, LLC	S6, 7, 16, 18, 21, 25, T28N, R29E	diatomite perlite	OP, OS	mining	35	P.O. Box 959 150 Coal Canyon Rd. Lovelock, NV 89419 Phone: 775-824-7591 FAX: 775-824-7595 Web: http://www.epminerals.com
Colado Plant	EP Minerals, LLC	S33, T28N, R32E	diatomite perlite	ML	calcining classification drying grinding	110	P.O. Box 959 150 Coal Canyon Rd. Lovelock, NV 89419 Phone: 775-824-7591 FAX: 775-824-7595 Web: http://www.epminerals.com
Florida Canyon Mine	Florida Canyon Mining, Inc.	S1-4, 9-15, T31N, R33E; S37-39, T31.5N, R33E; S33-35, T32N, R33E	gold silver	OP, HL, ML	mining heap leach milling	126/30 (Combined Florida Can. & Standard Mines)	P.O. Box 330 Imlay, NV 89418 Phone: 775-538-7300 FAX: 775-538-7324 Web: http://ryepatchgold.com
Nassau (Section 8) Mine	American Colloid Co.	S8, T27N, R33E	clay	OP	mining shipping	5/1	P. O. Box 428 Lovell, WY 82431 Phone: 307-548-5135 FAX: 307-548-6449 Web: http://www.colloid.com
Relief Canyon Quarry	Nevada Cement Co.	S13-16, 21-24, T27N, R34E	limestone	OP, ML	mining crushing	6 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.eaglematerials.com
Sexton Mine	Nutritional Additives Corp.	S5, T34N, R38E	dolomite	OP, ML	mining milling	2	415 Wellington Street Winnemucca, NV 89445 Phone: 775-623-1151 FAX: 775-623-1153 Web: http://www.nutritionaladditives.com
Standard Mine	Florida Canyon Mining, Inc.	S1, 12, T30N, R33E; S35, T31N, R33E	gold silver	OP, HL, ML	heap leach	126/30 (Combined Florida Can. & Standard Mines)	P.O. Box 330 Imlay, NV 89418 Phone: 775-538-7300 FAX: 775-538-7324 Web: http://ryepatchgold.com
Sunrise Gold Placer Mine	Sunrise Minerals, LLC	S17, T33N, R36E	gold	PL	mining gravity	5	7343 South Alton Way, Suite 100 Centennial, CO 80112 Phone: 303-779-1800 FAX: 303-770-1995

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
STOREY COUNTY							
Basalite Dayton Mill	Basalite Concrete Products	S16, T17N, R22E	sand gravel	ML	crushing milling	5 (Mine and mill combined)	2500 Boeing Way Carson City, NV 89701 Phone: 775-882-9336 FAX: 775-887-1025 Web: http://www.basalite.com
Basalite Dayton Pit	Basalite Concrete Products	S8, 9, 16, 17, T17N, R22E	sand gravel	OP	mining	5 (Mine and mill combined)	2500 Boeing Way Carson City, NV 89701 Phone: 775-882-9336 FAX: 775-887-1025 Web: http://www.basalite.com
Clark Mill	EP Minerals, LLC	S35, T20N, R22E	diatomite	ML	calcining classification drying grinding	58	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7633 Web: http://www.epminerals.com
Clark Mine	EP Minerals, LLC	S27, 33, 34, T20N, R23E	diatomite	OP	mining	4	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7633 Web: http://www.epminerals.com
Comstock Mining Mill	Comstock Mining, Inc.	S8, T16N, R21E	gold silver	ML	milling	25/2 (Mine and mill combined)	P.O. Box 1118 1200 American Flat Rd. Virginia City, NV 89440 Phone: 775-847-5272 FAX: 800-750-5740 Web: http://www.comstockmining.com
Lucerne Pit	Comstock Mining, Inc.	S8, T16N, R21E	gold silver	OP, HL,	mining heap leach	25/2 (Mine and mill combined)	P.O. Box 1118 1200 American Flat Rd. Virginia City, NV 89440 Phone: 775-847-5272 FAX: 800-750-5740 Web: http://www.comstockmining.com
Trico Pit	Gopher Construction Co.	S33, T20N, R22E	aggregate	OP, ML	mining crushing	9	1625 East Newlands Dr. P. O. Box 801 Fernley, NV 89408 Phone: 775-575-4333 FAX: 775-575-1137
USA Parkway Pit	Joy Engineering	S2, T19N, R22E	aggregate	OP	mining	5	81822 Highway 70 Beckworth, CA 96129 Phone: 530-832-5760 Web: http://www.joyengineering.com
WASHOE COUNTY							
Bella Vista Pit	A and K Earthmovers	S3, 4, T18N, R20E; S33, 34, T19N, R20E;	aggregate	OP, ML	mining crushing screening	5	515 Windmill Rd. Fallon, NV 89406 Phone: 775-423-6085 FAX: 775-423-8410 Web: http://www.akearthmovers.com
Donovan Pit	R.T. Donovan	S24, T21N, R20E	decomposed granite	OP	mining	11	11600 Pyramid Way Sparks, NV 89441 Phone: 775-843-5352 FAX: 775-425-0815 Web: http://www.rtdonovan.com
Golden Valley Pit	A and K Earthmovers	S11, 12, T19N, R20E	aggregate	OP, ML	mining screening	2	515 Windmill Rd. Fallon, NV 89406 Phone: 775-423-6085 FAX: 775-423-8410 Web: http://www.akearthmovers.com
Lockwood Plant	Granite Construction Co.	S17, T19N, R21E	aggregate	ML	crushing screening washing	27 (Mine and plant combined)	P.O. Box 2087 1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
WASHOE COUNTY (continued)							
Lockwood Quarry	Granite Construction Co.	S17, T19N, R21E	aggregate	OP	mining	27 (Mine and plant combined)	P.O. Box 2087 1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com
Mustang Plant	Sierra Nevada Construction, Inc.	S4, T19N, R21E	aggregate	ML	crushing screening	15 (Mine and plant combined)	P.O. Box 50760 2055 East Gregg St. Sparks, NV 89435-0760 Phone: 775-355-0420 FAX: 775-355-0535 Web: http://www.snc.biz
Mustang Quarry	Sierra Nevada Construction, Inc.	S4, T19N, R21E	aggregate	OP	mining	15 (Mine and plant combined)	P.O. Box 50760 2055 East Gregg St. Sparks, NV 89435-0760 Phone: 775-355-0420 FAX: 775-355-0535 Web: http://www.snc.biz
Paiute Pit	CEMEX	S2, 27, 34, T21N, R24E	sand gravel	OP	mining	10 (Mine and plant combined)	10 Hill Ranch Rd. Wadsworth, NV 89442 Phone: 775-575-1162 Web: http://www.cemex.com
Paiute Plant	CEMEX	S34, T21N, R24E	sand gravel	ML	crushing screening	10 (Mine and plant combined)	10 Hill Ranch Rd. Wadsworth, NV 89442 Phone: 775-575-1162 Web: http://www.cemex.com
Rilite Aggregate	Rilite Aggregate Co.	S23, T18N, R20E	sand rock	OP, ML	mining crushing	10	3025 Mill St. Reno, NV 89502 Phone: 775-329-8842 FAX: 775-329-3593
Terraced Hill Clay (Flanigan) Mine	Nevada Cement Co.	S13, 14, T27N, R19E	clay	OP, ML	mining milling	6 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.eaglematerials.com
Tracy Pit	BJ Rees's Enterprise	S27, 20N, 22E	sand gravel	OP, ML	mining crushing screening	8	1045 South Hoytsville Road Coalville, UT 84017-9741 Phone: 801-359-9781
Spanish Springs Plant	Martin Marietta Materials, Inc.	S15, T21N, R20E	aggregate	ML	crushing screening	17 (Mine and plant combined)	11059 Pyramid Lake Rd. Sparks, NV 89436 Phone: 775-425-4455 FAX: 775-425-5131 Web: http://www.martinmarietta.com
Spanish Springs Quarry	Martin Marietta Materials, Inc.	S15, 22, T21N, R20E	aggregate	OP	mining	17 (Mine and plant combined)	11059 Pyramid Lake Rd. Sparks, NV 89436 Phone: 775-425-4455 FAX: 775-425-5131 Web: http://www.martinmarietta.com
Wade Sand Pit	Granite Construction Co.	S3, T20N, R24E	sand	OP	mining screening	2	P.O. Box 2087 1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com

WHITE PINE COUNTY

Bald Mountain Mine	Barrick Gold U.S., Inc.	S14, 15, 19, 20, T24N, R57E	gold silver mercury	OP	mining heap leach	500/205 (Mine and plant combined)	P.O. Box 2706 Elko, NV 89803 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.barrick.com
Bald Mountain Mooney North Mooney Plant	Barrick Gold U.S., Inc.	S29, T24N, R58E	gold silver mercury	ML	milling	500/205 (Mine and plant combined)	P.O. Box 2706 Elko, NV 89803 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.barrick.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
WHITE PINE COUNTY (continued)							
Bald Mountain Mooney South Mooney Plant	Barrick Gold U.S., Inc.	S32, T24N, R58E	gold silver mercury	ML	milling	500/205 (Mine and plant combined)	P.O. Box 2706 Elko, NV 89803 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.barrick.com
Bald Mountain Plant No. 2	Barrick Gold U.S., Inc.	S14, T24N, R57E	gold silver mercury	ML	milling	500/205 (Mine and plant combined)	P.O. Box 2706 Elko, NV 89803 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.barrick.com
Mount Moriah Quarry	Mount Moriah Stone Quarries, LLC	S22, 23, 26, 27, 33-36, T16N, R70E	building stone landscape rock	OP	mining	34	P.O. Box 70 No. 10 Hatch Rock Rd. Baker, NV 89311 Phone: 435-855-2232 FAX: 435-855-2332 Web: http://mtmoriahstone.com
Pan Mine	GRP Pan, LLC	S36, T17N, R55E	gold silver	OP, HL	mining heap leach	26/127	8310 S. Valley Hwy., Suite 180 Englewood, CO 80112 Phone: 303-357-2486 FAX: 303-357-2499
Robinson Mine	KGHM International, Ltd.	S6, 8, 17, 18, T16N, R62E	copper gold molybdenum	OP	mining	570/8 (Mine and mill combined)	P.O. Box 382 Ruth, NV 89319 Phone: 775-289-7000 FAX: 775-289-7349 Web: http://kgm.com
Robinson Sag Mill and Concentrator	KGHM International, Ltd.	S8, T16N, R62E	copper gold molybdenum	ML	milling	570/8 (Mine and mill combined)	P.O. Box 382 Ruth, NV 89319 Phone: 775-289-7000 FAX: 775-289-7349 Web: http://kgm.com

For additional information on Nevada's mineral resources and mineral industries, please see the following:

Mining Applications on "Maps and Data" Web Page

<http://www.nbmng.unr.edu/Maps&Data/>

Mining District Database Files

Reno Mineral Resources

43-101 Reports

NBMG Publications (selected publications listed below)

<http://pubs.nbmng.unr.edu/>

Statewide Commodity Publications

Antimony (B61)

Barite (B98)

Fluorspar (B93)

Gypsum (B103)

Iron (B53)

Mercury (B41)

Montmorillonite, bentonite,
and fuller's earth (B76)

Nevada active mines and energy producers (OF17-1)

Oil and gas (B104, OF01-7, OF04-1,
OF11-2, OF11-6, M162)

Radioactive minerals (B81, OF06-19)

Talcose minerals (B84)

Thermal waters (B91, M161, M151)

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 (M149)

Geothermal resources (M161, M151, B91)

Industrial mineral deposits (M142)

Nevada oil and gas well database (OF04-1)

Major mines of Nevada 2015 (P-27)

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
- wilderness study area reports
- general geologic studies
- indexes and ordering information for maps, air photos, and remote sensing imagery

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