

OVERVIEW OF MINING

NEVADA LEGISLATURE—PRESESSION ISSUE BRIEFINGS DECEMBER 7, 2010

Federal Law: The General Mining Act of 1872, signed into law by President Ulysses S. Grant, is the primary federal statute that governs hardrock mining on federal land. Approximately 87 percent of Nevada is federally managed and thus federal mining law is especially relevant in Nevada. The law grants free access to individuals and corporations to prospect for minerals on public domain lands, and allows them, upon making a discovery, to stake (or “locate”) a claim on that deposit. A claim gives the holder the right to develop the minerals and may be “patented” to convey full title to the claimant. However, in 1994 Congress imposed a moratorium on patents which is still in effect. The moratorium does not prevent mining activities, just the conveyance of full title. Also, although federal mining law imposes certain fees, there are no royalties on hardrock mining on federal land.

The Mineral Leasing Act of 1920 is another federal law governing the leasing of public lands for development of coal, petroleum, natural gas, and certain other resources.

The United States Congress has been considering mining reform but, while there appears to be consensus that the 137-year-old law should be revised, debate continues on the details. At issue is how to balance mineral development with competing land uses and the question of federal royalties. Much of the recently introduced legislation has proposed 8 percent and 4 percent royalties on new and existing mines, respectively. One critical question is whether future royalties would be imposed on “gross” or “net” proceeds of mining and whether they would be imposed on existing operations.

State Law: In Nevada, oversight and regulation of mining is shared by the Division of Minerals (DOM) and the Division of Environmental Protection (DEP) in the State Department of Conservation and Natural Resources (SDCNR). Permits for water rights associated with mining are within the purview of the Division of Water Resources in the SDCNR.

- **The DOM** administers programs and activities to further the responsible development and production of the State’s mineral resources: minerals produced from mines; geothermal; and oil and gas. The DOM regulates drilling operations of oil, gas, and geothermal wells; administers a program to identify, rank, and secure dangerous conditions at abandoned mines; and manages the State reclamation performance bond pool.

The DOM is overseen by the Commission on Mineral Resources which consists of eight members appointed by the Governor. The Commission is charged with being informed about mining and making recommendations on policy to the Governor, as well as adopting regulations to carry out the duties of the DOM.

The DOM's Abandoned Mine Lands Program has discovered nearly 14,300 abandoned mining sites since 1987. To date, over 10,200 sites have been secured. The DOM has a variety of initiatives to educate the public and to accomplish on-the-ground projects that protect the public from the dangers of unsecured and abandoned mines.

- **The DEP** is responsible for issuing air and water quality permits for new and expanded mining operations. Mining operations must comply with both federal and State air and water quality regulations.

Regulation of mercury emissions has been an issue in Nevada. After implementation of a voluntary mercury reduction program by the DEP, mercury emissions from mining were reduced by 82 percent over three years. Currently, the DEP is implementing the Mercury Air Emissions Control Program to further reduce mercury emissions at mining facilities processing mercury-containing ore by means of thermal treatment.

Mining Reclamation: Responsibility for mining reclamation depends on whether the land is publicly or privately owned. The Bureau of Land Management (BLM), U.S. Department of the Interior, is responsible for mining reclamation and associated bonding requirements on federal lands. The State (DOM or DEP) is responsible for reclamation and bonding on private lands. The DOM handles oil, gas, and geothermal bonds, while the DEP handles hardrock and other mining bonds. Mining reclamation bonds held by the State of Nevada and federal land managers (primarily BLM) total approximately \$1 billion.

WEBSITES AND CONTACT INFORMATION

- Division of Environmental Protection
Acting Administrator: Colleen Cripps, Ph.D., at (775) 687-4670
www.ndep.nv.gov
- Division of Minerals
Administrator: Alan R. Coyner at (775) 684-7040 or (702) 486-4343
<http://minerals.state.nv.us>
- Nevada Bureau of Mines and Geology
State Geologist and Director: Jonathan G. Price, Ph.D., at (775) 784-6691 *5
www.nbmng.unr.edu
- Bureau of Land Management
State Director: Ron Wenker at (775) 861-6590
www.blm.gov/nv/



Major Mines of Nevada 2009

**Mineral Industries in
Nevada's Economy**



University of Nevada, Reno

NEVADA COMMISSION ON MINERAL RESOURCES

Division of Minerals

The Nevada Division of Minerals, a part of the Commission on Mineral Resources, is responsible for administering programs and activities to promote, advance, and protect mining and the development and production of petroleum and geothermal resources in Nevada. The Division's mission is to conduct activities to further the responsible development and production of the State's mineral resources to benefit and promote the welfare of the people of Nevada. The seven-member Commission on Mineral Resources is a public body appointed by the Governor that directs mineral-related policy for the Division and advises the Governor and Legislature on matters relating to mineral resources. The Division focuses its efforts on three main areas: industry relations and public affairs; regulation of oil, gas, and geothermal drilling activities and well operations; and abandoned mine lands.

The agency is involved in a wide array of activities relating to mineral development. Staff compiles annual data on all active mines in Nevada and maintains the State's mine registry. Information concerning mining operations and production is made available to the public through this yearly publication. Educational documents and materials concerning many aspects of the minerals industry are also produced. The Division participates in governmental activities affecting policies and laws concerning the minerals industry and resource development. The Division administers the State's reclamation bond pool.

The Division is responsible for permitting, inspecting, and monitoring all oil, gas, and geothermal drilling activities on both public and private lands in Nevada. Staff also monitors production of oil, gas, and geothermal resources to insure proper management and conservation. The Administrator is the Governor's official representative to the Interstate Oil and Gas Compact Commission.

The Division's abandoned mine lands program provides for public safety by identifying and ranking dangerous conditions at mines that are no longer operating, and by securing dangerous orphaned mine openings. The program continually urges the public to recognize and avoid hazardous abandoned mines.

Commission on Mineral Resources

Fred D. Gibson, Jr., Chairman (General Public)
Ron Parratt, Vice-Chairman (Exploration and Development)
Dennis Bryan (Small Scale Mining and Prospecting)
Richard DeLong (Large Scale Mining)
John Snow (Geothermal Resources)
Johnny Stout (Oil & Gas)
John Mudge (Large Scale Mining)

Division of Minerals Staff

Alan Coyner, Administrator, Division of Minerals
Doug Driesner, Deputy Administrator
Bill Durbin, Chief, Southern Nevada Operations
Lowell Price, Program Manager, Oil, Gas, and Geothermal
Mike Visher, Chief, Abandoned Mine Lands
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Deborah Selig, Program Assistant, Las Vegas Office
George Bishop, Field Specialist, Abandoned Mine Lands
Rachel Wearne, Field Specialist, Abandoned Mine Lands

Cover photo: Turquoise Ridge Joint Venture (*Mike Visher photo*).

The Nevada Bureau of Mines and Geology

The Nevada Bureau of Mines and Geology (NBMG) is a research and public service unit of the University of Nevada and is the State geological survey. NBMG is part of the Mackay School of Earth Sciences and Engineering at the University of Nevada, Reno.

NBMG scientists conduct research and publish reports on mineral resources, engineering geology, environmental geology, hydrogeology, and geologic mapping. Individuals interested in Nevada geology are encouraged to visit, call, write NBMG, or visit our homepage.

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

Most NBMG scientists (Director, research faculty, analytical laboratory) and cartographic and administrative staff are located on the University of Nevada campus, 775-794-6691.

U.S. Mail:
Nevada Bureau of Mines and Geology
Mail Stop 178
University of Nevada
Reno, NV 89557-0178

UPS or Federal Express:
Nevada Bureau of Mines and Geology
University of Nevada / Mail Stop 178
1664 N. Virginia Street
Reno, NV 89503

Publication Sales and Information Office

(new location on the campus of the Desert Research Institute)

Nevada Bureau of Mines and Geology
Great Basin Science Sample and Records Library
2175 Raggio Parkway
Reno, NV 89512

Please contact the Publication Sales Office to purchase NBMG geologic maps and reports and U.S. Geological Survey geologic maps, publications, and topographic maps. Walk-in customers, please note: **The cash register closes at 3:30 p.m. (M-F).**

Phone: (775) 682-8766 (Monday-Friday, 8:00 a.m.-4:00 p.m., PST)
E-mail: nbmg@unr.edu
Web: www.nbmng.unr.edu

Please contact the Information Office for information on aerial photographs; cuttings, core, and well records for oil, gas, and geothermal; and general geological information.

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Nevada Bureau of Mines and Geology

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Major Mines of Nevada 2009

Mineral Industries in Nevada's Economy

By Doug Driesner and Alan Coyner

The Nevada Division of Minerals

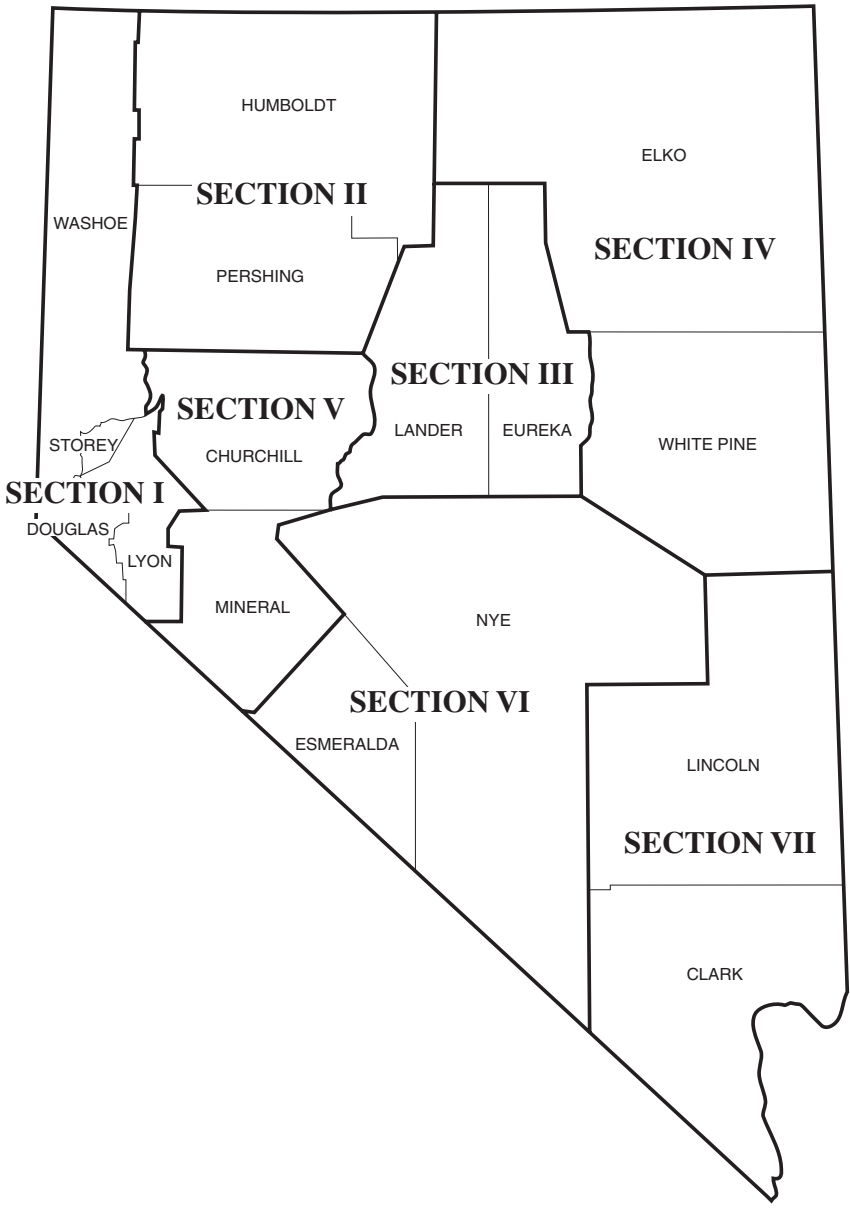
2010

This is the twenty-first of an annual series of summary reports on major mines of Nevada. Sand and gravel operations are not included. Information on employment and production for the calendar year 2009 was provided by the individual mine operators. The Nevada Division of Minerals maintains a complete register of Nevada mines. For further information, contact them at 400 W. King, Suite 106, Carson City, Nevada 89703 or call (775) 684-7040, fax (775) 684-7052, or visit their Web site at <http://minerals.state.nv.us>.

College of Science
Mackay School of Earth Sciences and Engineering



University of Nevada, Reno



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Section I

Lyon County

Adams Claim Gypsum Mine (1)

Operator:

Art Wilson Co.
P.O. Box 20160
Carson City, NV 89721
775-882-0700 Fax: 882-0790
Company employees: 45

Production:

Gypsum - 121,593 tons
Limestone

Celite Diatomite Mine (2)

Operator:

World Minerals, Inc.
100 Front Street
Fernley, NV 89408
775-575-2536 Fax: 575-1570
Company employees: 14
Contract employees: 1

Production:

Diatomite

Hazen Pit (3)

Operator:

EP Minerals, LLC
640 Clark Station Rd.
Sparks, NV 89434
775-824-7700 Fax: 824-7715
Company employees: 2

Production:

Diatomite

NCC Limestone Quarry (4) and Mill (4*)

Operator:

Nevada Cement Co.
P.O. Box 840
Fernley, NV 89408
775-575-2281 Fax: 575-4387
Company employees: 121

Production:

Limestone/Clay

Storey County

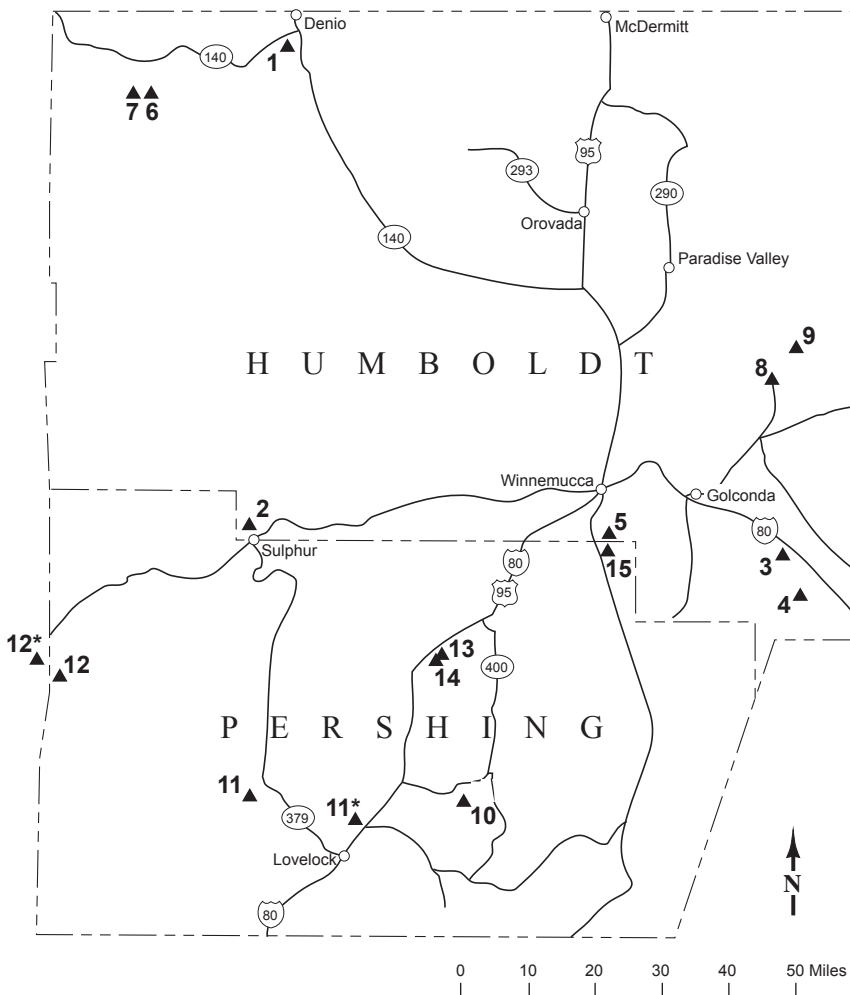
Clark Mine (5) and Mill (5*)

Operator:

EP Minerals, LLC
640 Clark Station Rd.
Sparks, NV 89434
775-824-7700 Fax: 824-7715
Company employees: 66

Production:

Diatomite



Section II

Humboldt County

Ashdown Mine (1)

Operator:

Win-Eldrich Mines Ltd.
Ashdown Project
202 North Avenue #102
Grand Junction, CO 81501

Production:

Molybdenum - 214,928 pounds

Hycroft Mine (2)

Operator:

Allied Nevada Gold Corp.
P.O. Box 3030
Winnemucca, NV 89446
775-623-5260 Fax: 623-0215
Company employees: 159

Production:

Gold - 53,189 oz
Silver - 65,753 oz

Lone Tree Mine (3)*Operator:*

Newmont Mining Corp.
P.O. Box 388
Valmy, NV 89438
775-635-6423 Fax: 635-6460
Company employees: 54
Gold - 12,011 oz
Silver - 2,309 oz

Marigold Mine (4)*Operator:*

Goldcorp, Inc.
P.O. Box 160
Valmy, NV 89438
775-635-2317 Fax: 635-2551
Company employees: 262
Contract employees: 69

Production:

Gold - 146,842 oz
Silver - 4,239 oz

MIN-AD Mine and Mill (5)*Operator:*

MIN-AD, Inc.
P.O. Box 39
Winnemucca, NV 89446
775-623-5944 Fax: 623-9028
Company employees: 20
Contract employees: 4

Production:

Dolomite

Rainbow Ridge Opal Mines (6)*Operator:*

Rainbow Ridge Opal Mines, Inc.
P.O. Box 97
Denio, NV 89404
775-941-0270 (summer)

Production:

Precious opal

Royal Peacock Opal Mine (7)*Operator:*

Walter Wilson
P.O. Box 165
Denio, NV 89404
775-941-0374 (summer)
775-272-3201 (winter)

Production:

Precious opal

Turquoise Ridge Joint Venture (8)*Operator:*

Barrick Gold Corporation
HC66 Box 220
Golconda, NV 89414
775-529-5001 Fax: 529-0753
Company employees: 318
Contract employees: 74

Production:

Gold - 177,333 oz

Twin Creeks Mine (9)*Operator:*

Newmont Mining Corp.
P.O. Box 69
Golconda, NV 89414
775-635-9400 Fax: 635-4602
Company employees: 581

Production:

Gold - 437,830 oz
Silver - 84,159 oz

Pershing County

Coeur Rochester Mine (10)

Operator:

Coeur Rochester, Inc.
P.O. Box 1057
Lovelock, NV 89419
775-273-7995 Fax: 273-7423
Company employees: 34

Production:

Gold - 12,663 oz
Silver - 2,181,788 oz

Colado Mine and Plant (11), Mill (11*)

Operator:

EP Minerals, LLC
150 Coal Canyon Road
Lovelock, NV 89419
775-824-7540 Fax: 824-7582
Company employees: 117

Production:

Diatomite, Perlite

Empire Mine (12), Mill (12*)-in Washoe County

Operator:

United States Gypsum Co.
P.O. Box 130
Empire, NV 89405
775-557-2341 Fax: 557-2212
Company employees: 101

Production:

Gypsum - 201,894 tons

Florida Canyon Mine (13)

Operator:

Florida Canyon Mining, Inc.
P.O. Box 330
Imlay, NV 89418
775-538-7300 Fax: 538-7691
Company employees: 138
(included with Standard Mine)
Contract employees: 30

Production:

Gold - 44,814 oz
Silver - 39,760 oz

Standard Mine (14)

Operator:

Standard Gold Mining, Inc.
P.O. Box 330
Imlay, NV 89418
775-538-7300 Fax: 538-7691
Company employees: 138
(included with Florida
Canyon Mine)

Production:

Gold - 1,510 oz
Silver - 3,270 oz

W. Glen Sexton Family Trust (15)

Operator:

Nutritional Additives Corp.
415 Wellington Street
Winnemucca, NV 89445
775-623-1151 Fax: 623-1153
Company employees: 3

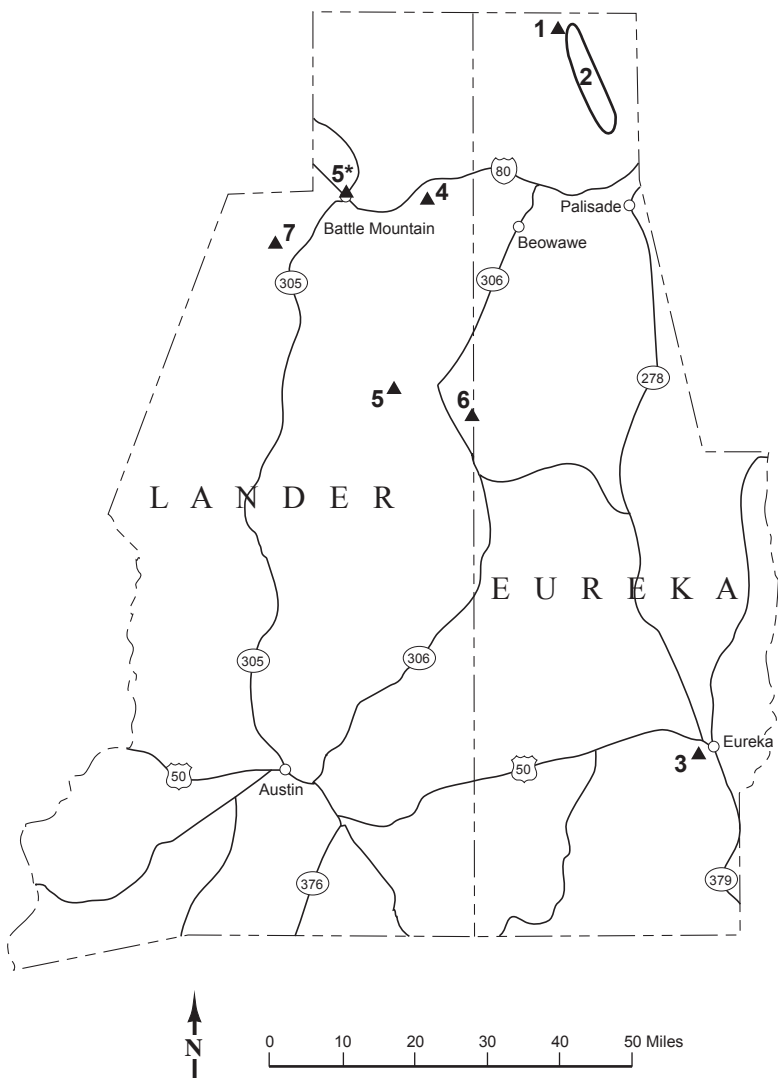
Production:

Dolomite



*Turquoise Ridge Joint Venture
(Mike Visher photos).*





Section III

Eureka County

Betze-Post Mine (1)

Operator:

Barrick Goldstrike Mines, Inc.
P.O. Box 29
Elko, NV 89803
775-748-1001 Fax: 748-1240
Company employees: 1,008

Production:

Gold - 901,992 oz
Silver - 120,736 oz

Eastern Nevada Operations

(Carlin Operations) (2)

Carlin N, 19 Locations

Carlin S, 6 Locations

Operator:

Newmont Mining Corp.
1655 Mountain City Highway
Elko, NV 89801
775-778-4000 Fax: 778-4751
Company employees: 2,175

Production:

Gold - 1,172,790 oz
Silver - 225,431 oz

Ruby Hill Mine (3)

Operator:

Barrick Gold Corporation
P.O. Box 676
Eureka, NV 89316
775-237-6060 Fax: 237-5408
Company employees: 127

Production:

Gold - 103,523 oz.
Silver - 39,110 oz.

Lander County

Argenta Mine and Mill (4)

Operator:

Baker Hughes Drilling Fluids
P.O. Box 277
Battle Mountain, NV 89820
775-635-5441 Fax: 635-5455
Company employees: 35
Contract employees: 8

Shipped:

Barite - 84,470 tons

Battle Mountain Grinding Plant (Greystone Mine) (5), Mill (5*)

Operator:

M-I Swaco
P.O. Box 370
Battle Mountain, NV 89820
775-635-5135 Fax: 635-2645
Company employees: 67

Shipped:

Barite - 220,650 tons

Cortez Hills/Pipeline Mines (6)

Operator:

Barrick Cortez, Inc.
HC66 Box 1250
Crescent Valley, NV 89821-1250
775-468-4400 Fax: 468-4496
Company employees: 799
Contract employees: 384

Production:

Gold - 517,512 oz
Silver - 74,080 oz

Phoenix Project (7)

Operator:

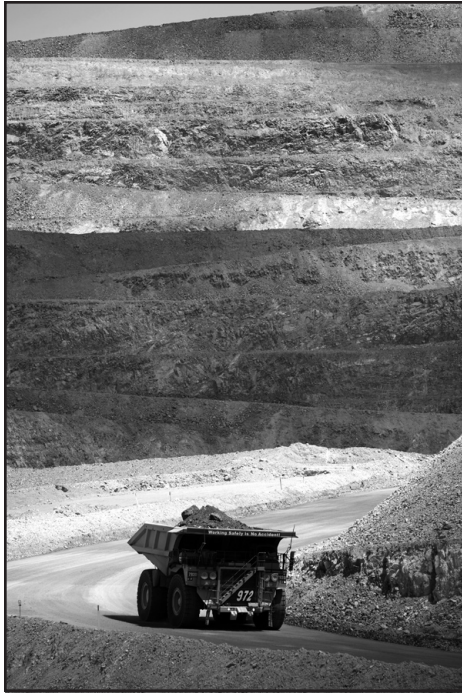
Newmont Mining Corp.
P.O. Box 1657
Battle Mountain, NV 89820
775-635-6423 Fax: 635-6460
Company Employees: 465

Production:

Gold - 218,732 oz
Silver - 1,212,153 oz
Copper - 23,733,389 pounds

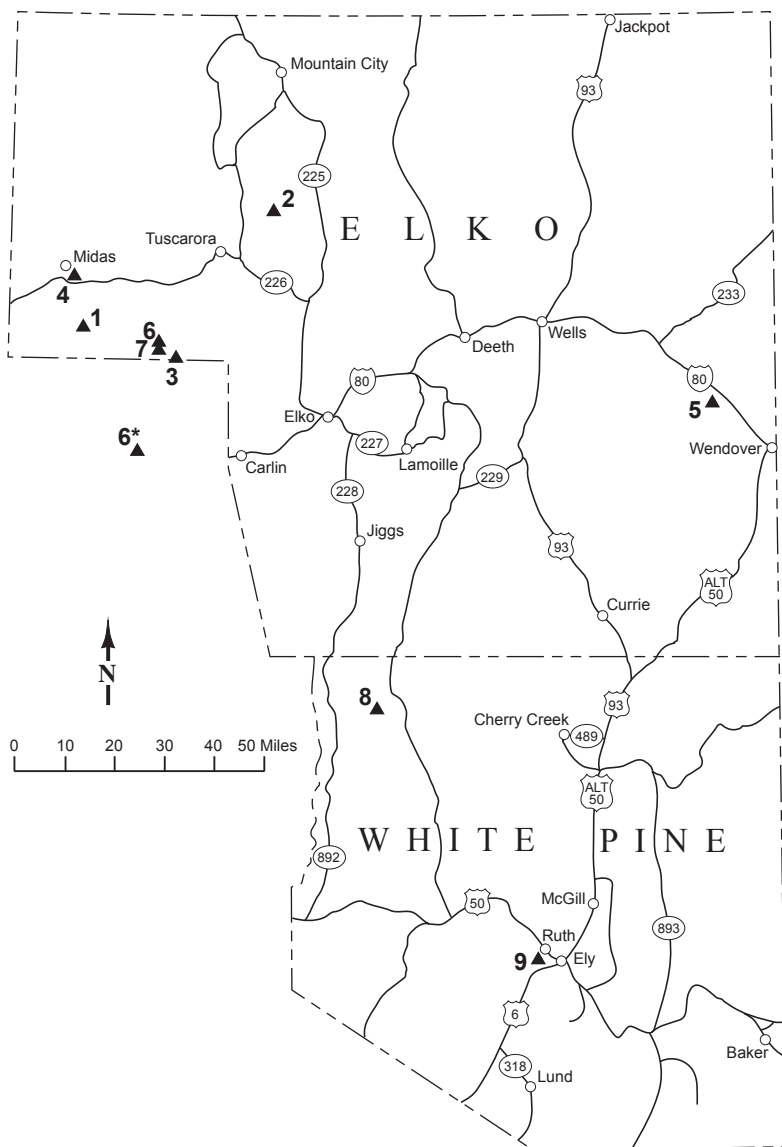


Cortez Hills Mine (Jon Price photo).



Phoenix Project (Mike Visser photos).





Section IV

Elko County

Hollister Mine (1)

Operator:

Rodeo Creek Gold, Inc. and
Great Basin Gold Inc.
P.O. Box 2610
Winnemucca, NV 89446
775-623-5760 Fax: 623-5759
Company employees: 159
Contract employees: 46

Production:

Gold - 31,174 oz
Silver - 243,148 oz

Jerritt Canyon Mine (2)

Operator:

Queenstake Resources USA, Inc.
HC31 Box 78
Elko, NV 89801
775-738-5006 Fax: 758-9231
Company employees: 120

Production:

Gold - 9,770 oz

Meikle Mine (3)

Operator:

Barrick Goldstrike Mines, Inc.
P.O. Box 29
Elko, NV 89803
775-778-8858 Fax: 778-8865
Company employees: 767

Production:

Gold - 388,548 oz
Silver - 30,198 oz

Midas Mine (4)

Operator:

Newmont Mining Corp.
HC66 Box 125
Midas, NV 89414
775-635-6423 Fax: 635-6460
Company employees: 262

Production:

Gold - 123,621 oz
Silver - 1,634,601 oz

Pilot Peak Lime Plant (5)

Operator:

Graymont Western U.S.
P.O. Box 2520
West Wendover, NV 89883
775-483-5463 Fax: 483-5149
Company employees: 54

Production:

Limestone, quicklime,
hydrated lime

Rossi Mine (6), Dunphy Mill (6*)-in Eureka County

Operator:

Halliburton/Baroid
912 Dunphy Ranch Rd.
Battle Mountain, NV 89820
775-468-0515 Fax: 468-2060
Company employees: 40
Contract employees: 22

Shipped: Barite - 171,331 tons

Storm Mine (7)

Operator:

Barrick Goldstrike Mines, Inc.
P.O. Box 29
Elko, NV 89803
775-748-1001 Fax: 748-1240
Company employees: 5
Contract employees: 80

Production:

Gold - 64,558 oz
Silver - 50,069 oz

White Pine County

Bald Mountain Mine (8)

Operator:

Barrick Gold U.S., Inc.
P.O. Box 2706
Elko, NV 89803
775-237-7100 Fax: 237-7101
Company employees: 186
Contract employees: 20

Production:

Gold - 75,037 oz
Silver - 12,389 oz

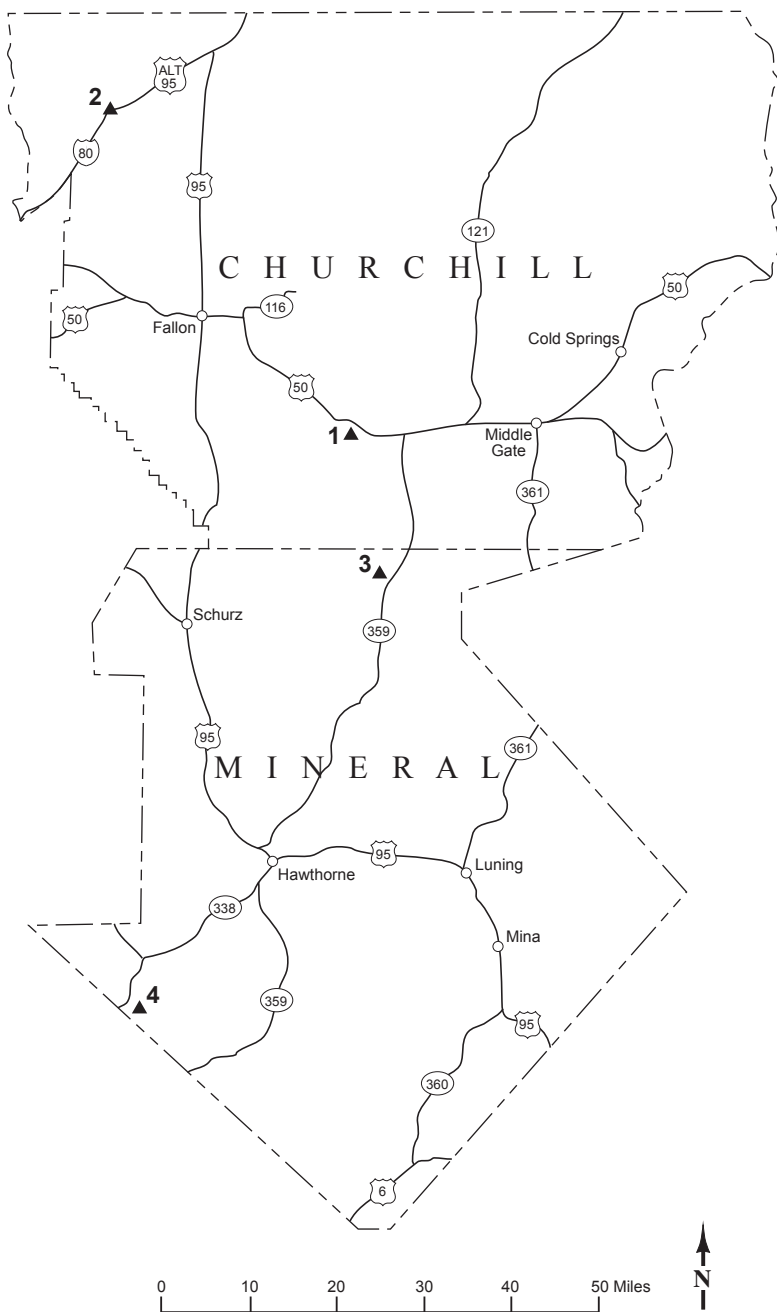
Robinson Mine (9)

Operator:

Robinson Nevada Mining Company
P.O. Box 382
Ruth, NV 89319
775-289-7000 Fax: 289-7349
Company employees: 525

Production:

Copper - 122,000,000 pounds
Gold - 98,970 oz
Silver - 200,819 oz
Molybdenum - 89,000 pounds



Section V

Churchill County

Huck Salt Company (1)

Operator:

Huck Salt Company
2900 Phritzie Ln.
Fallon, NV 89406
775-423-2055 Fax: 423-0467
Company employees: 9

Production:

Salt - 25,053 tons

Moltan Salt Company (2)

Operator:

Moltan Company
P.O. Box 860
Fernley, NV 89408
775-423-6668 Fax: 423-6411
Company employees: 44

Production:

Diatomite

Mineral County

Denton-Rawhide Mine (3)

Operator:

Kennecott Rawhide Mining Co.
P.O. Box 2070
Fallon, NV 89407
775-945-1015 Fax: 945-1213
Company employees: 16
Contract employees: 6

Production:

Gold - 19,370 oz
Silver - 209,528 oz

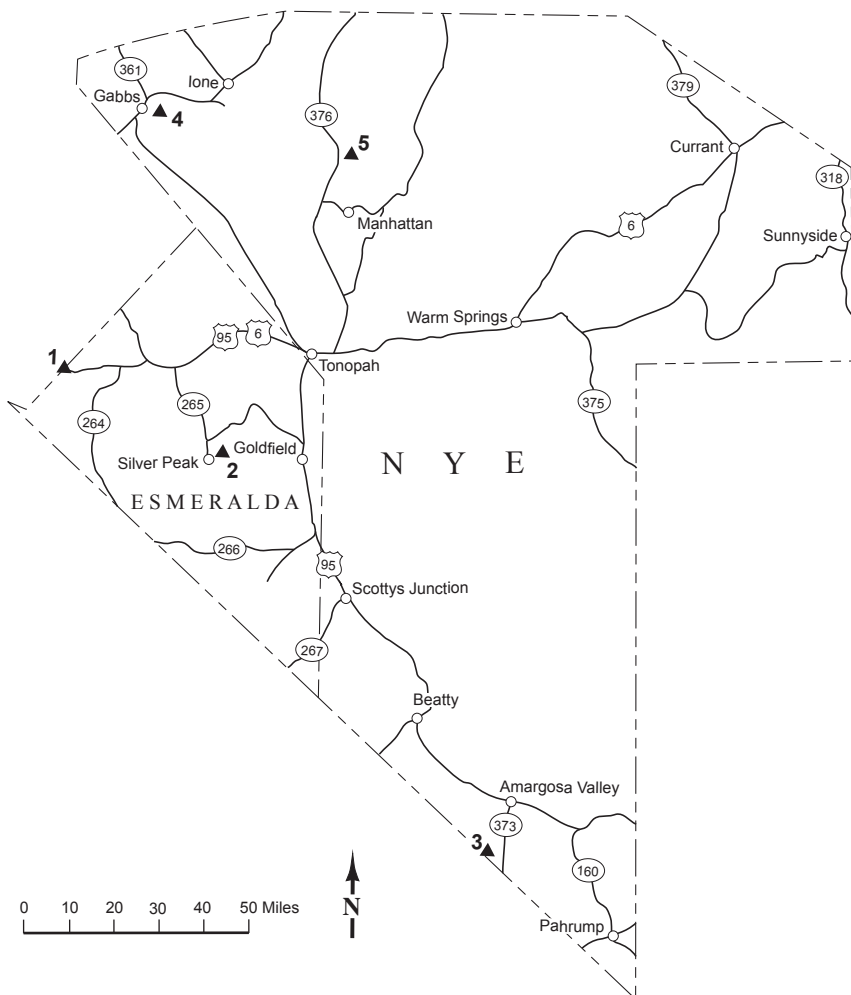
Esmeralda Mine (4)

Operator:

Antler Peak Gold, Inc.
P.O. Box 2570
Hawthorne, NV 89415
775-546-5010 Fax: N/A
Company employees: 24
Contract employees: 20

Production:

Gold - 5,212 oz
Silver - 24,980 oz



Smoky Valley Common Operation, Round Mountain (John Muntean photo).

Section VI

Esmeralda County

Basalt Mine and Mill (1)

Operator:

Grefco Minerals, Inc.
P.O. Box 278
Dyer, NV 89010
775-573-2422 Fax: 573-2422
Company employees: 5

Production:

Diatomite

Silver Peak Operations (2)

Operator:

Chemetall Foote Corp.
P.O. Box 98
Silver Peak, NV 89047
775-937-2222 Fax: 937-2250
Company employees: 27
Contract employees: 4

Production:

Lithium compounds

Nye County

IMV Nevada (3)

Operator:

Mud Camp Mining Co. LLC
HC 70 Route Box 549
Amargosa Valley, NV 89020
775-372-5341 Fax: 372-5640
Company employees: 28

Production:

Specialty clays - 20,000 tons

Premier Chemicals (4)

Operator:

Premier Chemicals, LLC
P.O. Box 177
Gabbs, NV 89409
775-285-2601 Fax: 285-4021
Company employees: 85

Production:

Magnesium compounds

Smoky Valley Common Operation (5)

Operator:

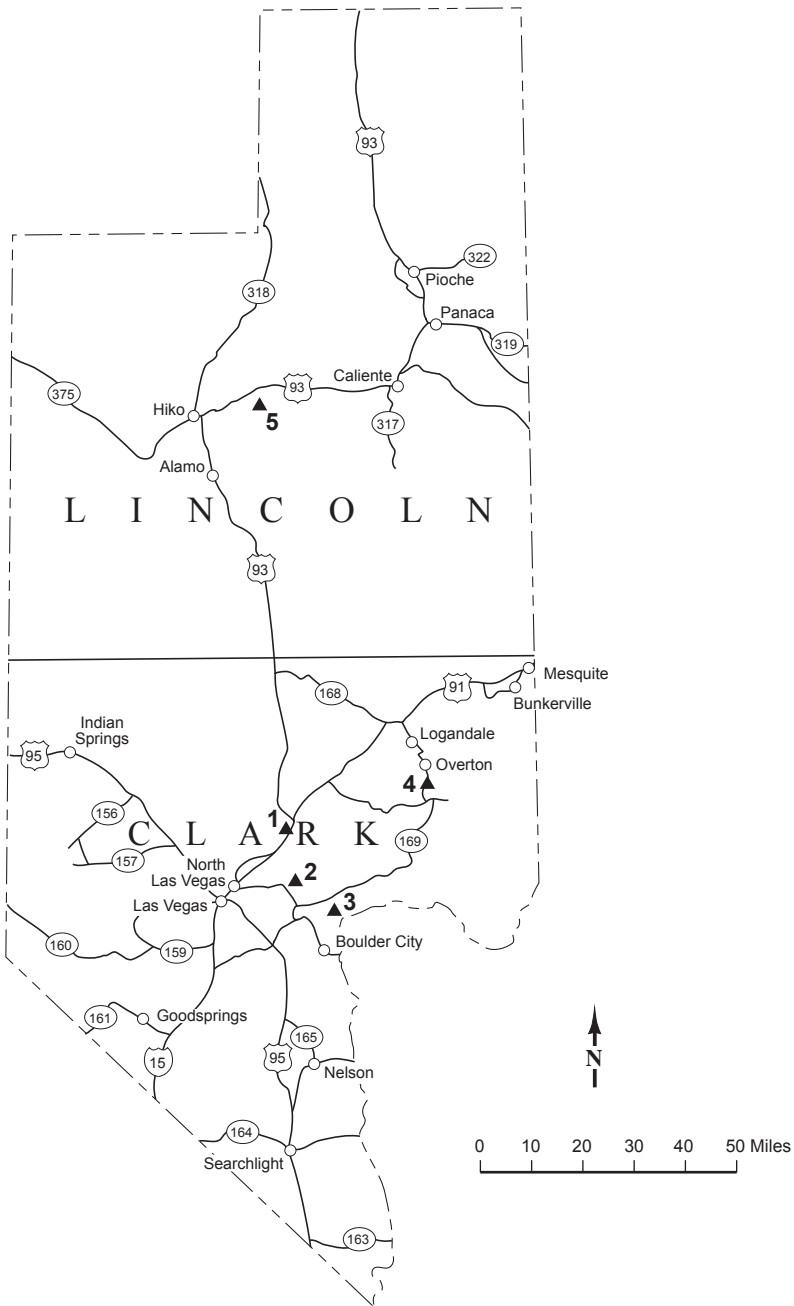
Round Mountain Gold Corp.
P.O. Box 480
Round Mountain, NV 89045-0480
775-377-2366 Fax: 377-3224
Company employees: 678
Contract employees: 63

Production:

Gold - 414,941 oz
Silver - 850,878 oz



Smoky Valley Common Operation, Round Mountain (John Muntean photo).



Section VII

Clark County

Apex Quarry and Plant (1)

Operator:

Chemical Lime Co.
P.O. Box 363068
North Las Vegas, NV 89036
702-643-7702 Fax: 643-9517
Company employees: 119

Production:

Dolomite, lime

PABCO Gypsum (2)

Operator:

PABCO Building
Products, LLC
P.O. Box 364329
Las Vegas, NV 89036
702-407-3700 Fax: 643-6249
Company employees: 106
Contract employees: 2

Production:

Gypsum - 715,701 tons

Pioneer Gypsum Mine (3)

Operator:

Pioneer Gypsum Mining, Inc.
4880 Donovan Way
North Las Vegas, NV 89081
702-399-5939 Fax: 399-8353
Company employees: 8

Production:

Gypsum - 158,605 tons

Simplot Silica Products (4)

Operator:

J.R. Simplot Company
P.O. Box 308
Overton, NV 89040
702-397-2667 Fax: 397-2798
Company employees: 37

Production:

Silica sand - 413,291 tons

Lincoln County

Tenacity Perlite Mine and Mill (5)

Operator:

Wilkin Mining & Trucking, Inc.
HC 34 Box 199
Caliente, NV 89008
775-728-4463
Company employees: 7

Production:

Perlite

SUMMARY OF 2009 PRODUCTION

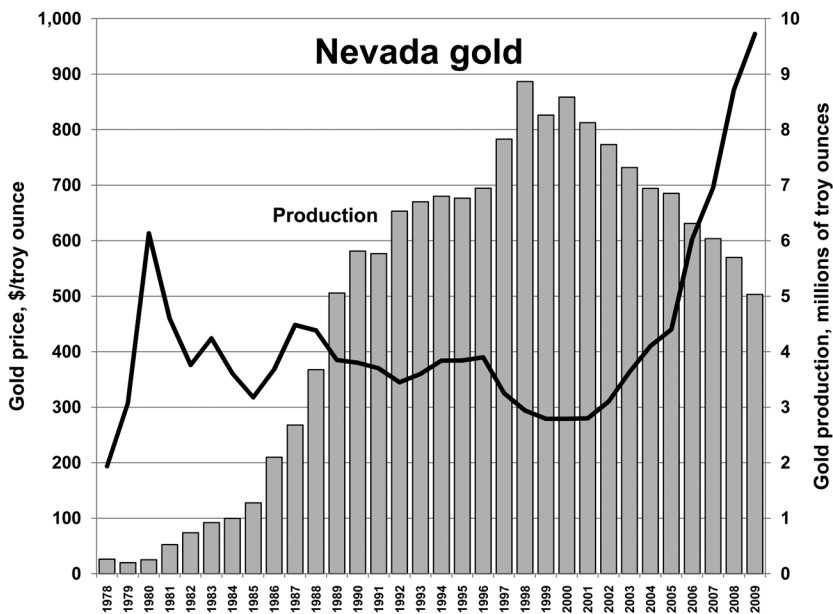
Gold	5,033,000	ounces
Silver	7,310,000	ounces
Barite (shipped)	476,500	tons
Copper	145,733,000	pounds
Diatomite	N/A	
Dolomite	N/A	
Gypsum	1,198,000	tons
Limestone	N/A	
Lithium compounds	N/A	
Mercury	N/A	
Molybdenum	303,000	pounds
Perlite	N/A	
Potassium sulfate	N/A	
Precious opal	70	pounds
Quartzite	3,600	tons
Salt	25,000	tons
Silica sand	413,000	tons
Specialty clay	25,000	tons
Turquoise	N/A	
N/A Not available publicly		

Economic Impacts of Mining in Nevada—2009

In 2009 Nevada's mining industry saw a setback in its total value of production. The total value of all mineral commodities produced, including oil and gas and geothermal energy, was about \$5.8 billion, a \$0.3 billion decrease from 2008. The value was driven by gold, which contributed about \$4.9 billion, based on an average price of \$972 per troy ounce. Nevada led the nation in 2009 in the production of gold, barite, and lithium as it has for several years. Nevada's mines produced a wide variety of other mineral and energy commodities such as aggregates, copper, diatomite, dolomite, geothermal energy, iron, lapidary and gem stones, lime and limestone, magnesium compounds, mercury, molybdenite, oil, perlite, potassium sulfate, salt, silica sand, silver, and specialty aggregates and clays.

Production Highlights

Nevada's gold production was 5,033,000 troy ounces in 2009. While the production level is down approximately 12% from 2008, Nevada remains the nation's top gold producer with about 75% of the U.S. total. Underground operations contributed about 24% of the total gold production in 2009. Silver production dropped to 7,310,000 troy ounces in 2009 compared to 7,965,000 in 2008. Copper production decreased to 145,733,000 pounds in 2008 compared to 175,538,000 pounds in 2008. Barite production was down to 476,000 tons in 2009 compared to 595,000 tons in 2008. Gypsum production was down to 1,198,000 tons in 2009 compared to 1,401,000 tons in 2008. Molybdenum production was 303,000 pounds in 2009 compared to 495,000 pounds in 2008.



Employment

According to the Nevada Department of Employment, Training, and Rehabilitation, the Nevada mining industry employed an average of 11,609 employees in 2009. The average pay for mineral industry employees during this time was \$78,727 per year, the highest average of any employment sector in the state. In addition, it is estimated there are about 49,000 jobs in the state related to providing goods and services needed by the mining industry. Mining employment has remained an important factor in Nevada.

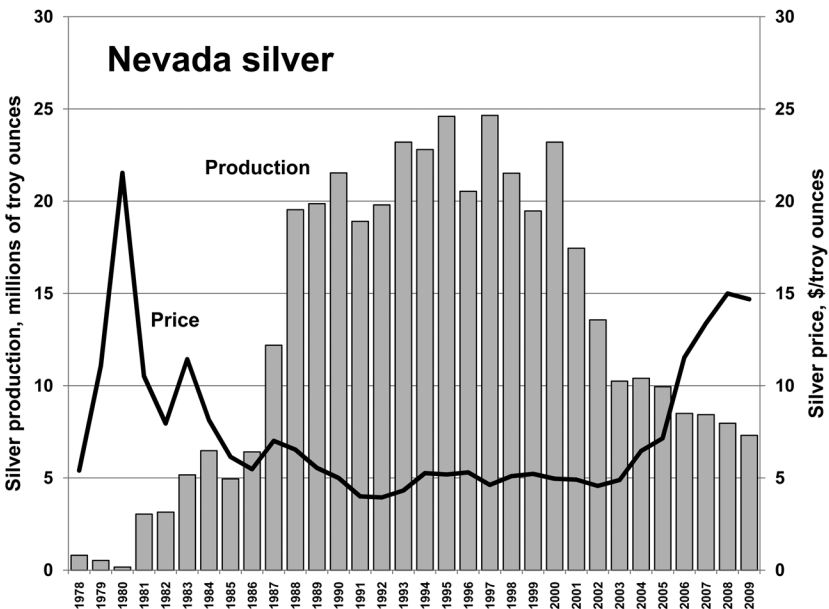
Permitting and Reclamation

Before mining can take place, plans of operation must be submitted and permits must be obtained from federal and state agencies to ensure that resources such as wildlife, air, and water are protected. Nevada and federal laws and regulations require that lands disturbed by mining activities must be rehabilitated so they

can be used for other activities once mining is completed. This process, called reclamation, returns mined areas to other productive uses such as livestock grazing, wildlife habitat, or other industrial applications. To ensure that reclamation is done, mine operators are required to post reclamation bonds that are held by government agencies. The bonds are released only after the mined area is stabilized and the reclamation goals have been met. According to the Nevada Division of Environmental Protection, approximately \$1,555 million in reclamation bonds are currently posted. Mine operators are proud of their efforts and are constantly seeking ways to enhance their reclamation technology.

Gold Reserves

Nevada's reported gold reserves at or near currently operating mines that can be mined at a profit under current economic conditions stood at about 65.2 million troy ounces at the end of 2009. The amount of reserves is always



in a state of flux, due to some reserves being lost to production, additions of new reserves through new discoveries, and changing economic conditions. The price of gold and the cost of production are the main factors in determining whether the resource in a mineral deposit is really a reserve or just a sub-economic resource. Extensive gold resources, not currently economic, are known to exist at or near many operations. An increase in the gold price with all else being equal would mean many companies would be able to reclassify their resources into a reserve category. An increase in the cost of regulatory compliance has the same effect as a lowering of the gold price, thus increasingly complex and expensive regulations can reduce reserves. Under current conditions, the existing proven reserves are sufficient to sustain gold production at current levels for about 13 years.

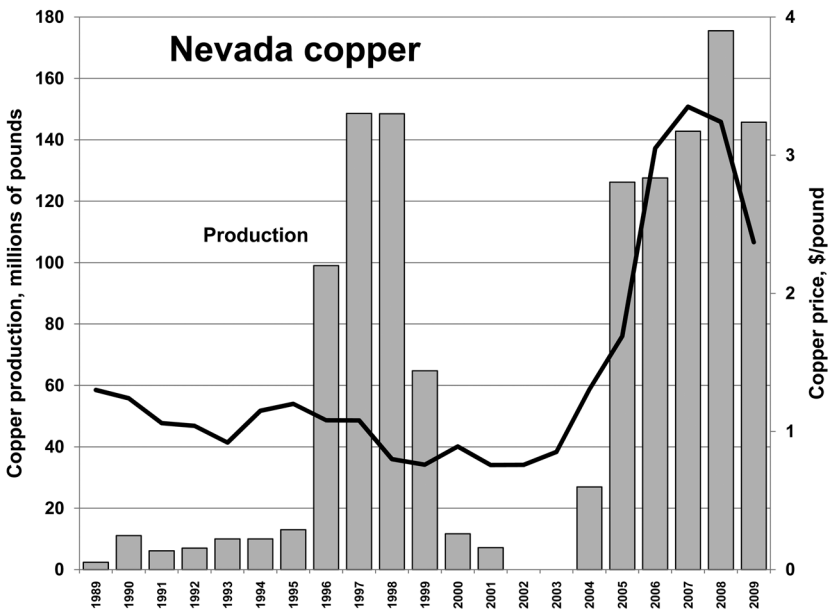
Exploration

Exploration for new deposits, particularly gold, is an ongoing effort by both the operating companies and many others

who do not operate mines in the state. Each year, the Division of Minerals conducts an exploration survey to determine the level of exploration activity and the factors that are responsible for those levels. The respondents to the latest survey indicated they spent \$110.9 million on exploration in Nevada in 2009, down from \$158.1 million in 2008. The respondents reported having 154 geologists on the payroll in 2009. Existence of favorable geology and commodity prices were cited as the most important factors influencing exploration levels. Exploration geologists and the drillers, assayers, and others who support their activities represent a significant positive economic impact, particularly in Nevada's rural areas.

Minerals Other Than Gold and Silver

Minerals other than gold and silver are also important to Nevada's economy. Copper ranked second behind gold in terms of value in 2009. Industrial minerals such as aggregates, barite,



diatomite, dolomite, gypsum, limestone, lithium compounds, magnesite, molybdenite, perlite, salt, and specialty clays are produced in this state.

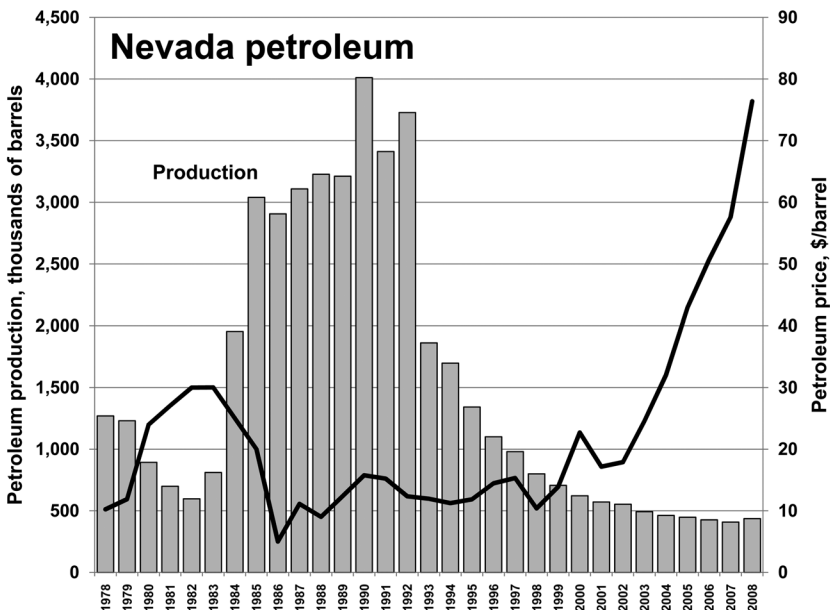
Oil and gas exploration and production are relatively minor when compared to mining, but are nonetheless important to the economy of east-central Nevada. In oil field terms, Nevada is considered a frontier, meaning its potential is yet to be realized. Oil production in 2009 was about 455,000 barrels (42 gallons per barrel).

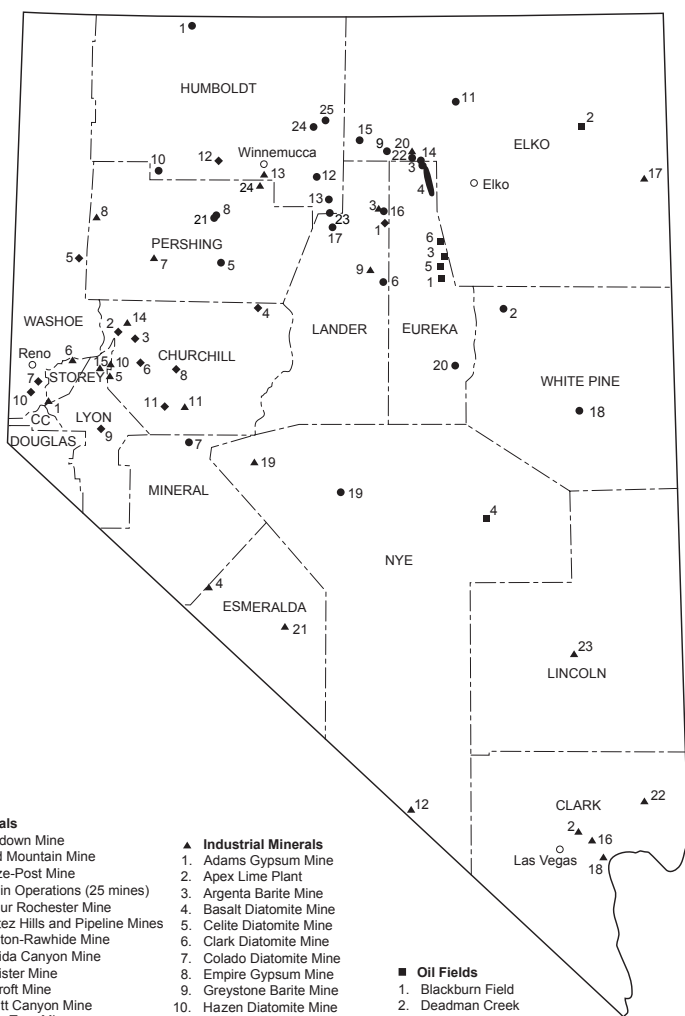
Nevada is rich in geothermal resources and is second only to California in the production of geothermal power. Currently, Nevada has 19 plants that sold approximately 1.7 million megawatt hours of electricity in 2009. This is enough to power about 85,000 typical homes. Geothermal heat is also directly used for a variety of commercial, domestic, and public applications in Nevada. Schools in

Elko County and homes in Lincoln and Washoe Counties are examples of public and private facilities using this renewable energy resource.

Conclusion

With a calculated value of about \$5.8 billion, Nevada's mineral industry continued to be a major economic force in the state in 2009. This situation should continue for many years to come. Challenges will exist, as they always have, but Nevada's mineral reserves and the potential to add to them will spur the creativity of the mineral industry. Prices of many mineral commodities have improved in recent years, allowing companies to increase their exploration and development efforts. The continued development of new projects will assure that the mining industry will remain strong in the future.





● Metals

1. Ashdown Mine
2. Bald Mountain Mine
3. Betze-Post Mine
4. Carlin Operations (25 mines)
5. Coeur Rochester Mine
6. Cortez Hills and Pipeline Mines
7. Denton-Rawhide Mine
8. Florida Canyon Mine
9. Hollister Mine
10. Hycroft Mine
11. Jerritt Canyon Mine
12. Lone Tree Mine
13. Marigold Mine
14. Meikle Mine
15. Midas Mine
16. Mule Canyon Mine
17. Phoenix Project
18. Robinson Mine
19. Round Mountain Mine
20. Ruby Hill Mine
21. Standard Mine
22. Storm Mine
23. Trenton Canyon Mine
24. Turquoise Ridge Joint Venture
25. Twin Creeks Mine

▲ Industrial Minerals

1. Adams Gypsum Mine
2. Apex Lime Plant
3. Argenta Barite Mine
4. Basalt Diatomite Mine
5. Celite Diatomite Mine
6. Clark Diatomite Mine
7. Colado Diatomite Mine
8. Empire Gypsum Mine
9. Greystone Barite Mine
10. Hazen Diatomite Mine
11. Huck Salt Mine
12. IMV Nevada Clay
13. MIN-AD Dolomite Mine
14. Molten Diatomite Mine
15. NCC Limestone Quarry
16. PABCO Gypsum
17. Pilot Peak Limestone Quarry
18. Pioneer Gypsum Mine
19. Premier Magnesite Mine
20. Rossi Barite Mine
21. Silver Peak Lithium Carbonate
22. Simplot Silica Products
23. Tenacity Perlite Mine
24. W.Glen Sexton Dolomite Mine

■ Oil Fields

1. Blackburn Field
2. Deadman Creek
3. North Willow Creek Field
4. Railroad Valley (Eagle Springs, Trap Spring, Currant, Sand Dune, Grant Canyon, Bacon Flat, Kate Spring, Duckwater Creek, Sans Spring, and Ghost Ranch Fields)
5. Three Bar Field
6. Tomera Ranch Field

◆ Geothermal Power Plants

1. Beowave
2. Bradys Hot Springs
3. Desert Peak 1 and 2
4. Dixie Valley
5. Empire
6. Soda Lake 1 and 2
7. Steamboat I, II, and III, Galena
8. Stillwater 1 and 2
9. Wabuska
10. Steamboat Hills
11. Salt Wells
12. Blue Mountain

Major mines, oil fields, and geothermal plants, 2009.

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Florida Canyon Mine	8	Smoky Valley Common Operation	19
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NEVADA

Mining Association

2010 Sustainability Report

February 2010





Photo: Mike Sevon, courtesy Nevada Natural Heritage Program

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President's Message

It is with great pleasure that the Nevada Mining Association provides you with our inaugural industry sustainability report. While many of our member companies regularly produce individual reports on their sustainability performance, this is the first attempt to produce a comprehensive overview of mining's impact in Nevada.

As the Silver State's founding industry, mining has been an integral part of Nevada's economic, social and cultural history for more than 150 years. Nonetheless, the industry is still greatly misunderstood and the contributions of the state's mining companies, suppliers, employees and their families are often under-appreciated. Mining has evolved tremendously over the past several years and Nevada is now not just a leading producer of precious metals and industrial minerals, but a global industry leader in safety and environmental responsibility.

Most of the state's primary ore bodies are located in rural areas, far from the urban populations. Although Las Vegas and Reno are home to many primary and regional headquarters as well as suppliers and vendors who support the mining industry, the physical distance between Nevada's most populous areas and mine sites means that most Nevadans lack direct experience with the mining industry or an understanding of its social and environmental responsibility practices.

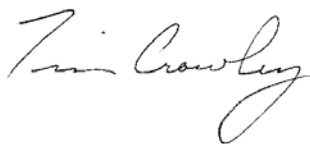
This report is intended to provide insight and information on mining and mining companies, and enhance its readers' understanding of the industry's current role in promoting sustainable development in our communities and the state as a whole. It has been prepared with reference to the Global Reporting Initiative's G3 Guidelines, an international standard for best practice in sustainability reporting.

We've attempted to be as transparent as possible about the opportunities and challenges that mining offers Nevada, and hope to showcase our achievements and areas for ongoing improvement in our approach to key social and environmental issues.

It is our hope that this report will become an annual publication and that, as we refine our approach and data collection processes, future editions of this report will be more comprehensive and detailed. We welcome your feedback on this effort and encourage you to contact us with your views on this year's report, and how we might improve it in future years by sending an email to: info@nevadamining.org.

Thank you for taking the time to read about this essential and historic industry.

Sincerely,



Tim Crowley
President,
Nevada Mining Association

At a Glance: Mining in Nevada

- **\$6.26 billion in total** production value (second largest in nation after Arizona)
- **Ranked third best region in the world for mining** development by the Fraser Institute (behind Québec and Wyoming), which rates the mineral development potential of a jurisdiction under its current policies
- **Minerals produced:** gold, silver, copper, aggregates, barite, diatomite, dolomite, gypsum, geothermal water, limestone, lithium carbonate, magnesium oxide, molybdenum, perlite, precious opals, salt, silica sand, and specialty clays.
- **More than 100 companies** are actively mining or exploring for mineral resources.
- **49 major metals and industrial minerals mines**, in all counties in Nevada
- **Six state and four federal regulatory agencies** overseeing mining activity
- **Nevada is the fourth largest gold-producing region in the world** (after China, South Africa, and Australia), accounting for **8 percent of total global gold production** each year.
- **Significant global source of lithium** (used in rechargeable batteries) and **barite** (used to drill for oil and natural gas).
- **75 percent of gravel and sand used for construction** in Las Vegas is produced in Nevada
- **Second only to California in geothermal energy production** in the United States

Mining in Nevada

Part of Nevada's History

Mining has been integral to Nevada's history, from Native American use of its mineral wealth to fashion arrowheads, spear points, and tools to today's modern industrial mining operations. In fact, Nevada's silver deposits were the key to statehood: A driving force in the state's economy in the mid-nineteenth century, they were a major reason for Nevada's admission into the United States in 1864. While gaming and tourism now dominate the state's economy, Nevada remains a nationally and internationally significant source of metals and minerals.

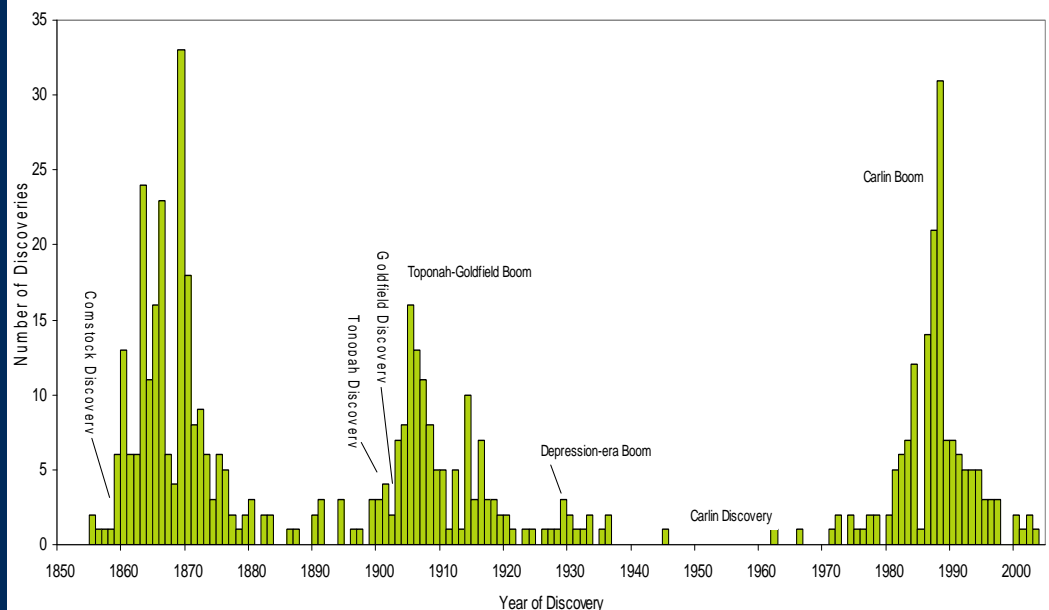
The history of mining in Nevada clearly illustrates the industry's cyclical nature (see figure below). Finding ways to translate the economic boost from mining operations into long-term, sustained economic development remains a key challenge for our industry.

Timeline of Mining Activities in Nevada

Early history	Native Americans mine deposits of obsidian, agate, jasper, and quartz to fashion arrowheads, spear points, and various cutting and scraping tools.
1849–1880s	The '49ers discover gold on their way to the California gold fields. Comstock Lode silver ore deposit is found in Virginia City.
1900s–1920s	The first mining renaissance begins. More silver and gold is discovered in Tonopah and Goldfield. Copper mining begins near Ely.
1903–1970s	World wars and industrial expansion revive significant demand for base metals. In 1962, the Carlin Trend gold deposit is discovered, sparking a resurgence in precious metals mining.
1980s–present	Current mining boom begins.

Nevada Mining Districts and Deposits Discovery Rate, 1850–2004

Source: Nevada Bureau of Mines and Geology



The Mining Industry Today

Mining has evolved significantly from the Gold Rush, when individual miners used simple technologies to extract metal from ore. The modern, industrial mining industry took shape in Nevada in the 1980s, when higher gold prices and new recovery technologies led to the development of several large gold mining operations in the central, northern, and eastern regions of the state. Since then, Nevada has been one of the world's major gold-producing regions, providing 8 percent of all gold produced annually and transforming the United States into a net exporter of gold.

While gold production accounts for the lion's share of the total value of mining production in Nevada, silver and copper continue to be produced in significant quantities. In fact, the state still provides 20 percent of U.S. silver (1.4 percent of total global production), living up to its nickname of "the Silver State."

Industrial minerals are a much smaller percentage of the revenues generated by mining in Nevada, several are of strategic national or international importance. For example, Nevada possesses one of only three lithium mines in the world. Lithium is a key ingredient in rechargeable batteries used to power electronics, including the batteries used in hybrid vehicles. Global demand for lithium is expected to grow in coming years as automobile manufacturers produce more hybrid cars.

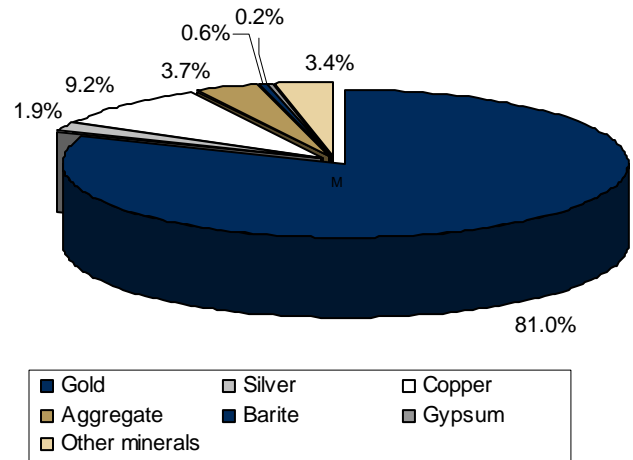
Barite, used as a weighting agent for oil and gas drilling rigs, is another significant industrial material. Most of the barite consumed in the U.S. comes from mines in Elko and Lander counties.

Geothermal energy is another important new resource. At present, geothermal plants in Nevada produce 1.38 million megawatt hours per year of electricity—or enough to power 80,000 homes. By some estimates, this figure could increase to as much as 2000 megawatt hours of electricity and more than a billion dollars in revenue for the state by 2025.

Over the past three decades, the mining industry has invested more than \$30 billion dollars in exploration, operations, and equipment in Nevada. This foundation for the industry, and the existence of vast, still-unexplored mineral resources, holds promise for continued mineral development in the state's future.

Minerals Mined in Nevada, By Value

Nevada Bureau of Mines and Geology, 2008



Nevada Active Mines and Energy Producers

Compiled by
David A. Davis and Ronald H. Hess
2009

INDUSTRIAL MINERAL MINES

- 1 3D Pit
- 2 Adams Claim Gypsum Mine
- 3 Apex Landfill Pit
- 4 Apex Quarry
- 5 Argenta Mine
- 6 Basaltite Dayton Pit
- 7 Bella Vista Pit
- 8 Big Ledge Mine
- 9 Bing Materials Pit
- 10 Black and Red Cinder Pits
- 11 Blue Diamond Pit
- 12 Boulder Ranch Quarry
- 13 Cactus Pit
- 14 Celite Mine
- 15 CEMEX Pailite Pit
- 16 Cinder Cone Pit
- 17 Clark Mine
- 18 Colorado Mines
- 19 Dayton Materials
- 20 Dressler Pit
- 21 East Pit
- 22 El Dorado Quarry
- 23 Elburz Pit
- 24 Empire Quarry
- 25 Gabbs Mine
- 26 Gamebird Pit
- 27 Golden Valley Pit
- 28 Goni Pit
- 29 Greystone Mine
- 30 Hazen Pit
- 31 Hazen Pit
- 32 Hidden Canyon Pit
- 33 Huck Salt
- 34 IMV Pits
- 35 Jean Pit
- 36 Jean Quarry
- 37 Kramer Hill Quartzite Quarry
- 38 Lahontan Pit
- 39 Lee Canyon Sand and Gravel Pit
- 40 Lockwood Quarry
- 41 Lone Mountain Pits
- 42 Mesquite Community Pit
- 43 MIN-AD Mine
- 44 Moapa (CEMEX) Pit
- 45 Moapa (Ready Mix) Pit
- 46 Molten Mine
- 47 Money Pit
- 48 Mount Moriah Quarry
- 49 Mull Lane Pit
- 50 Mustang Pit
- 51 Nassau Mine
- 52 Nevada Cement Mine
- 53 Nightingale Pit
- 54 North Jean Lake Pit
- 55 PABCO Gypsum-Apex Pit
- 56 Pahrump Community Pit

- 57 Pilot Peak Quarry
- 58 Pioneer Gypsum Mine
- 59 Pipes Pit
- 60 Pittman Detention Pit
- 61 Popcorn Mine
- 62 Providence Pit
- 63 Racetrack Pit
- 64 Rainbow Quarries
- 65 Rille Aggregate
- 66 Rossi Mine
- 67 Salt Lake Highway Pit
- 68 Salt Wells Gravel Pit
- 69 Sierra Ready Mix Quarry
- 70 Sierra Stone Quarry
- 71 Silver Peak Operations
- 72 Simplot Silica Products Pit
- 73 Sloan Quarry
- 74 Spanish Springs Quarry
- 75 Spanish Trails Pit
- 76 Speedway Pit
- 77 Spring Mountain Pit
- 78 Summerlin Pit
- 79 Tenacity Perlite Mine
- 80 Terraced Hill Clay Mine
- 81 Tracy Pit
- 82 Trico Pit
- 83 W. Glen Sexton Family Trust

GEOTHERMAL POWER PLANTS

- 1 Beowawe
- 2 Blue Mountain
- 3 Bradys
- 4 Desert Peak
- 5 Dixie Valley
- 6 Empire
- 7 Salt Wells
- 8 Soda Lake
- 9 Steamboat - Binary
- 10 Steamboat - Flash
- 11 Stillwater
- 12 Wabuska

GEMSTONE MINES

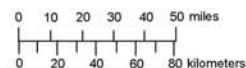
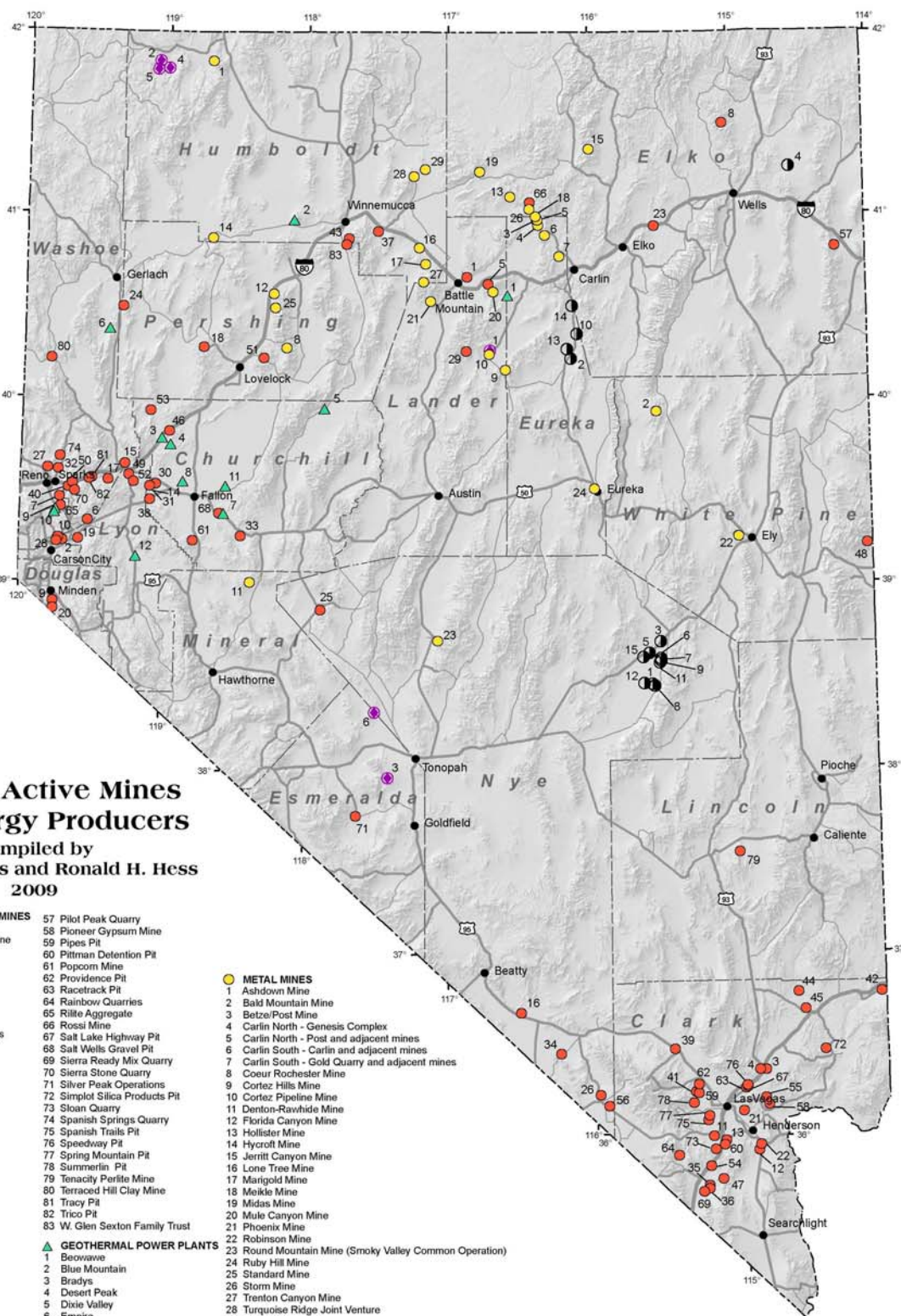
- 1 Blue Ridge Turquoise Mine
- 2 Bonanza Opal Mine
- 3 Lone Mountain Turquoise Mine
- 4 Rainbow Ridge Opal Mine
- 5 Royal Peacock Opal Mine
- 6 Royal Blue Turquoise Mine

METAL MINES

- 1 Ashdown Mine
- 2 Bald Mountain Mine
- 3 Betze/Post Mine
- 4 Carlin North - Genesis Complex
- 5 Carlin North - Post and adjacent mines
- 6 Carlin South - Carlin and adjacent mines
- 7 Carlin South - Gold Quarry and adjacent mines
- 8 Coeur Rochester Mine
- 9 Cortez Hills Mine
- 10 Cortez Pipeline Mine
- 11 Denton-Rawhide Mine
- 12 Florida Canyon Mine
- 13 Hollister Mine
- 14 Hycofield Mine
- 15 Jerritt Canyon Mine
- 16 Lone Tree Mine
- 17 Marigold Mine
- 18 Meikle Mine
- 19 Midas Mine
- 20 Mule Canyon Mine
- 21 Phoenix Mine
- 22 Robinson Mine
- 23 Round Mountain Mine (Smoky Valley Common Operation)
- 24 Ruby Hill Mine
- 25 Standard Mine
- 26 Storm Mine
- 27 Trenton Canyon Mine
- 28 Turquoise Ridge Joint Venture
- 29 Twin Creeks Mine

OIL FIELDS

- 1 Bacon Flat
- 2 Blackburn
- 3 Currant
- 4 Deadman Creek
- 5 Duckwater Creek
- 6 Eagle Springs
- 7 Ghost Ranch
- 8 Grant Canyon
- 9 Kate Spring
- 10 North Willow Creek
- 11 Sand Dune
- 12 Sans Spring
- 13 Three Bar
- 14 Tomera Ranch
- 15 Trap Spring



This map was printed on an electronic plotter directly from digital files. Dimensional calibration may vary between electronic plotters and X and Y directions on the same plotter, and paper may change size; therefore, scale and proportions may not be exact on copies of this map.

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Sustainability and Nevada's Mining Industry

What does “sustainability” mean for an industry that relies upon a finite resource? Sustainability, in its simplest form, is about working in ways that recognize the potential social, environmental, and economic opportunities and challenges created by mining operations and their supply chains and strive for a net positive benefit. Ultimately, it's about seeking ways to transform limited geological resources into sustained—and sustainable—development.

The Business Case for Sustainability

Good sustainability performance is critical to the success of the mining industry in Nevada. Poor management of our social, economic, and environmental impacts undermines our social license to operate and the corporate reputations of our member companies. It can increase our costs through litigation and fines, and can impact profitable development of mining operations. On the other hand, striving for improvement and innovation in addressing our social and environmental responsibilities can reduce costs, enhance relationships with our stakeholders, and leave a lasting positive legacy for our industry.

Material Issues

What sustainability issues matter most? To our member companies? To our stakeholders in Nevada? Table 1 summarizes the industry's material issues—and the opportunities and challenges they pose.

Sustainability Opportunities and Challenges		
	Opportunities	Challenges
Environment	<ul style="list-style-type: none">• Maintain compliance with Nevada's rigorous state and federal environmental regulations• Support development of renewable energy sources to meet operational energy needs and reduce carbon emissions• Support development and implementation of sustainable technologies for heavy equipment• Innovate in biodiversity management and water use	<ul style="list-style-type: none">• Continue to reduce the impacts of mining operations and their supply chains on water, air, and land• Protect valuable habitat and wildlife, and mitigate impacts where unavoidable• Continue to reduce, or even eliminate, atmospheric mercury emissions• Reduce the overall footprint of mining operations• Explore use of natural land forms when reclaiming land for mine closure
Workforce	<ul style="list-style-type: none">• Contribute directly to economic development through local recruitment and provide well-paid employment opportunities with comprehensive benefits	<ul style="list-style-type: none">• Recruit qualified employees with the necessary technical knowledge and skills• Continue to increase participation of women and minorities throughout the workforce

	Opportunities	Challenges
Workforce (cont'd)	<ul style="list-style-type: none"> • Provide excellent professional development and career advancement programs that build human capital 	<ul style="list-style-type: none"> • Help employees transition to new career opportunities after mine closure • Continually improve occupational health and safety performance
Economic Contributions	<ul style="list-style-type: none"> • Maintain a healthy and growing industry presence in Nevada that provides important, long-term contributions to state revenues • Purchase local goods and services and stimulate broader economic development • Advocate for regulatory change to allow use of site facilities for new economic opportunities during operations and after closure 	<ul style="list-style-type: none"> • Support economic diversification and comprehensive planning for sustainable communities beyond mine closure • Minimize the economic impacts associated with the cyclical nature of the industry
Community Impact	<ul style="list-style-type: none"> • Make high-impact social investments in consultation with local communities • Encourage employee volunteerism • Support and participate in partnerships for problem-solving and social and economic development • Contribute to infrastructure development in rural areas 	<ul style="list-style-type: none"> • Reduce strain on local government services in rural and remote areas • Support enhanced community vision and planning for long-term social and economic development • Improve relationships with indigenous peoples • Improve public understanding of the mining industry and its modern practices within an increasingly urban state

The members of the Nevada Mining Associations strive for sustainability in their own businesses. NvMA supports members by sharing best practices that strengthen these efforts and by providing a platform for collaboration to expand their impact.

Members of the Nevada Mining Association

Operating Members

Allied Gold, Ltd
Argonaut Gold Inc
Atlantic Richfield
Barrick Gold of North America
Chemical Lime Co.
Coeur-Rochester, Inc Mine
CR Reward Corp
EP Minerals, LLC
Firstgold Corp
Fronteer Development, USA, Inc
General Moly, Inc
Goldcorp-Marigold Mining Co
Graymont Western US, Inc
Gryphon Gold Corporation
Isabella Pearl, LLC
Jipangu International , Florida
Canyon Mining, Inc
Kennecott-Rawhide Mining
Company Denton-Rawhide Mine
Kinross Gold USA, Inc
Ledcor Industries (USA) Inc
Martin Marietta Materials
Meridian Gold Inc
M-I LLC
Mud Camp Mining
Nevada Copper Corp.
Newcrest Resources, Inc
Newmont Mining Corporation
Ormat Technologies, Inc
PABCO Building Products, LLC
Rodeo Creek Gold, Inc
Round Mountain Gold Corp
Royal Gold, Inc
Sierra Nevada Construction, Inc
Small Mine Development, LLC
U.S. Gold Corporation

About the Nevada Mining Association

The Nevada Mining Association (NvMA) strives to maintain a business environment that encourages exploration, development, and production of minerals in Nevada now, and in the future. We accomplish this by bringing the industry together to speak with one voice and follow best practices in the areas of regulatory affairs, policy, education, safety, environmental, human resources, and public outreach. By pooling our individual resources and working collectively with our stakeholders, we are able to strengthen our impact.

Our 250 members include precious metal, base metal, and industrial mineral mining companies; mineral exploration and development companies; geothermal energy companies; suppliers of goods and services to the mining industry; and individuals interested in mining in Nevada (see “Members of the Nevada Mining Association”).

“Many people know about the large mine operators in northeastern and central Nevada. The industry, however, is much broader and encompasses security specialists in Las Vegas, environmental engineers in Sparks, mine processors in North Las Vegas, machinists in Elko, heavy machinery distributors in Henderson, hydrogeologists in Carson City, tire vendors in Tonopah and many more.”

—Tim Crowley, President, Nevada Mining Association

History

The Nevada Mine Operators Association was founded in 1912 to improve labor and safety practices. Building on this success, the association took on its current form in 1952, when it expanded to include suppliers and service providers as well as mine operators.

NvMA Governance

The Nevada Mining Association is administered by a president and a small staff that oversees day-to-day operations. Nine member-led committees define and implement the association’s strategy and key activities in specific issue areas:

- Education Committee
- Environmental Committee
- Government Affairs Committee
- Human Resources Committee
- Mine Safety and Health Committee
- Public Lands Committee
- Public Outreach Committee
- Suppliers Club
- Taxation Committee

Sustainability Role

The Nevada Mining Association facilitates individual company and collective industry sustainability efforts by:

- **Providing a forum** for our members to share knowledge of best practices. For instance, the Mine Safety and Health Committee meets monthly to

“Recently, the suppliers committee decided to get more involved in sustainability. We’ve started to look for ways to make a contribution – through support for the McCaw School of Mines and NvMA’s education workshops, for example. We are talking with the chairs of other committees about things we can do to support the operating members as vendors. We’re ready to help where we can, and we’ve got the people power to do it.”

—Steve Antonini, Supplier Club Chair

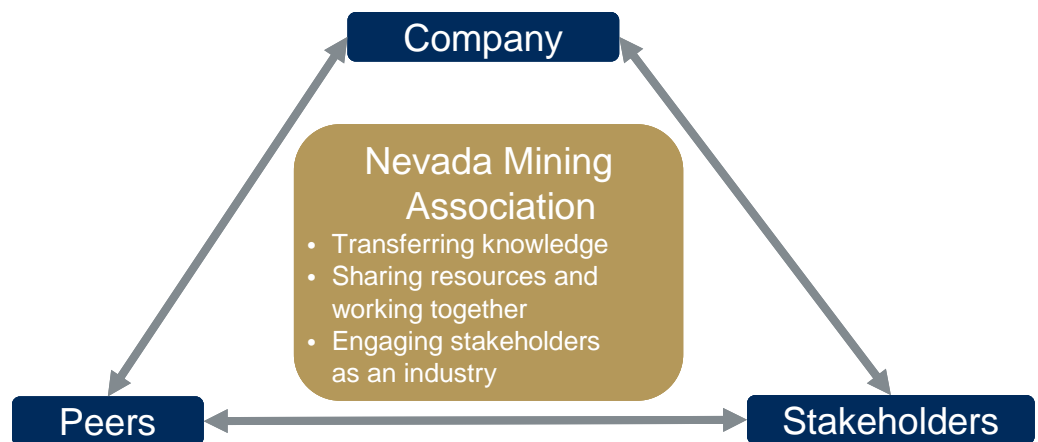
Members of the Nevada Mining Association

Vendor Members

3M Mining & Mineral Extraction EBO
 Ad Wear, Inc
 Adedge Technologies, Inc
 Advantage Flight Solutions, LLC
 Agru America, Inc
 Air Resource Specialists, Inc
 Ambassador IXL Manufacturing, Inc
 AMEC Earth & Environmental – Inc
 American Mining Insurance Co
 American Salvage, Inc
 Ames Construction, Inc
 Anglo-Gold Ashanti North America
 Aqua Hydrogeologic Consulting
 Arnold Machinery Co
 Atlantis Casino Resort Spa
 Baird Hanson Williams LLP
 Bakercorp
 Basic Chemical Solutions LLC
 Big R Manufacturing
 Blue Moon Promotions
 Bodell Construction Company
 Brag Crone & Rigging
 Brown & Caldwell
 Bucyrus International, Inc
 C.R. Drake & Sons
 Canyon Construction Company
 Cascade Earth Sciences
 Cashman Equipment Co.
 Cate Equipment Company
 Cemeration USA, Inc
 Centerra (U.S.) Inc
 Chambers Group, Inc
 Cherokee Chemical
 Conestoga-Rovers & Associates, Inc
 Contech Construction Products, Inc
 Craftsman Homes
 Crowell & Moring LLP
 Cyanco
 D & D Tire Inc
 Diepenbrock Harrison
 DMC Mining Services
 Duke Jets, LLC
 Dumas Contracting, USA, Inc

organize training opportunities for mining personnel and develop ways in the industry can enhance safety.

- **Sharing resources** to develop and implement collaborative initiatives to address sustainability challenges faced by the industry. For example, in 2008, the industry joined together to fund a study to better understand fugitive mercury emissions from mine sites.
- **Providing a platform** for industry-level communication and engagement with key stakeholders and participation in public policy advocacy. One example is the quarterly meetings with state and federal regulators hosted by NvMA committees to discuss environmental, health and safety, land use, and other issues.
- **Recognizing members' sustainability achievements.** For example, by paying tribute to the most incident free operations in the state. The association annual meeting also serves as the forum for the state reclamation awards for innovation in restoring mined lands.



Our Stakeholders

Our pursuit of sustainability requires that we listen to—and work with—a variety of stakeholders, including:

- | | |
|--|----------------------------|
| • Our host communities and local governments | • Our employees |
| • State and federal policy makers | • Nonprofit organizations |
| • State agencies | • Schools and universities |
| • Federal agencies | • The general public |

Participating in Public Policy

NvMA believes it is important for the industry to actively participate in developing sound legislation and regulation on the issues that affect us: taxation, environmental regulation, access to land and water, mine closure, primary and secondary education, health care, labor, and more. The Nevada state legislature is only convened every two years; we believe that the association should take these infrequent opportunities to inform legislators about the industry and the impacts of potential legislation. Because Nevada state legislators meet only

Vendor Members (Con't)

Elkhorn Holdings, Inc
Elko Convention & Visitors Authority
Elko Wire Rope & Mining Supply
Energy Laboratories, Inc
Environmental Management Associates
Environmental Support Services
Folsom Associates
Gemcom (USA) Inc
Geomega, Inc
Gold Canyon Mining and Construction
Gold Summit Corp, USA
Golden Gate Petroleum
Golden West Industries
Granite Construction Company
GroundProbe North America LLC
H2H Associates
Harrison Western Construction Corporation
HC Itasca Denver, Inc
High Desert Supply
High Voltage, Inc
Industrial Handling Equipment, Inc
Intermountain Electronics, Inc
Isabella Pearl, LLC
JS Redpath Corp
Jack Doheny Supplies and Rentals
Jackson Kelly, PLLC
JBR Environmental Consultants, Inc
JCH Environmental Insurance Brokers
Johnson Matthey, Inc
Kafoury, Armstrong & Company
Kappes, Cassiday & Associates
Kennametal Tricon Metals & Services
Kiewit Pacific Co
Kimley-Horn and Associates, Inc
Knight Piesold and Company
Lee Brothers Automotive, Inc
Legarza Exploration
Legend, Inc

biannually, we believe that the association should provide them with information about the industry and impact of potential legislation. When specific issues arise or bills are drafted, we develop a consensus on an industry position with our members, which we communicate to legislators. The NvMA Government Affairs Committee monitors legislative and regulatory issues and acts as a liaison with federal, state, and local officials.

NvMA also has a political action committee (PAC) that makes contributions to political candidates in Nevada who are open to engaging with our members—even if they hold opinions on key issues that differ from ours. The NvMA PAC raises funds separate from membership dues, and an advisory committee composed of contributing companies decides how to spend the money. In 2009, NvMA's PAC contributed roughly \$65,000 to political candidates.

The association generally considers federal government affairs to be beyond our scope of influence. However, we recognize that issues at the federal level can significantly affect our members and are of interest to Nevadans. When we offer an opinion on these issues, we typically communicate through the National Mining Association (www.nma.org), which represents the interests of the mining industry at the federal level.

LeTourneau Technologies America, Inc.
Lumos & Associates
McClelland Laboratories, Inc
Marphil-Monnett Associates, Inc
Mercury Waste Solutions
Modular Space
MWH
Nalco Company
National Security Technologies
Nevada Cement Company
Nevada Insurance Agency
Northern Nevada Equipment
OMG! Promotions
P & F Distributors
P & H MinePro Services
Parsons Behle & Latimer
Patton Boggs LLP
Pele Nevada LLC
Pinion Exploration & Construction, Inc
Pro Group Recycling Solutions
PSC Environmental Services
PSC Industrial Services
Q & D Construction
R.E. Monks Construction, LLC
Rain for Rent
Red Lion
Reliable Controls Corporation
Renewable Energy Group
Richied & Associates
Ritchie Bros Auctioneers
Rockland Manufacturing Co.
Sandvik Mining and Construction
Schlumberger Water Services

Sierra Geosynthetic Services, Inc
Smith Power Products, Inc
Soil-Tech, Inc
Southwest Energy LLC
SRK Consulting (U.S.) Inc
Stanley Convergent Security
Start Pac
Sukut Construction
Summit Engineering Corp
Sunrise Engineering Corp
Sure Steel, Inc
Teco Pneumatic, Inc
Tele-Fonika Cable Americas Corp.
Tetra Tech
The Mahoney Group
The Mines Group, Inc
Timberline Drilling, Inc
Timothy Olson Law Firm
URS Washington Division
Vslдор Fiber Optics
Valdor Technology International
Vision Building Systems, LLC
Volvo Construction Services
W.S. Tyler
Waters Vacuum Truck Service
Wear-Concepts, Inc
Wedco, Inc
Wells Fargo Insurance Services, Inc
Wes Construction
West Coast Environmental & Engineering
Western Cultural Resource Management, Inc.
Western Environmental Testing Laboratory

Our Position on Nevada's Tax Policy

The global financial crisis and a subsequent state budget gap in 2008 have made taxation policy in Nevada a high-profile issue. To make up for the budget shortfall and continue to provide necessary services to the state's growing population, some interest groups and individuals have proposed an increase in taxes on business, and specifically an increase in taxes on mining.

The NvMA has consistently supported adequate funding for education, social services, and public safety programs, and we believe that public needs should be sufficiently funded through a broad-based business tax. Currently, Nevada mines pay all the state taxes that most other businesses in Nevada pay plus an industry-specific property tax called the Net Proceeds of Minerals Tax (NPOMT). (For more information, see Economic Contributions, p. 27) The mining industry's support for broad-based taxes has existed since 2002 when it adopted the following tax policy, which the Nevada Mining Association stands behind today:

- The Nevada Mining Association recognizes that Nevada's state government faces future funding challenges because of its narrow tax base and increasing demands on state services caused by significant population growth. Under existing structures, the state's general fund will not keep pace with these new demands for state services.
- The association strongly believes that any new taxes must be broad-based, include all sectors of the Nevada economy, and apportioned according to the taxpayer's ability to pay.
- The state must not seek any new single-source taxes, such as new or increased taxes solely on the gaming, mining, or insurance industries.
- The mining industry will pay its fair share of any new taxes in the same manner, and to the same extent, as any other Nevada business.
- Finally, these new taxes should not be aimed at any individual citizens or companies, and appropriate safeguards or exemptions should be put in place to help Nevada's small business owners.

The Nevada Mining Association is committed to working with legislators to address the budget shortfall and modify the state's tax policy. To ameliorate the current strain on Nevada's economy and state budget, the mining industry is in the process of pre-paying its 2009 estimated tax at the time of publication.



At a Glance: Mine Permitting

Government agencies involved in permitting, approval, and oversight of mining projects in Nevada include:

County

County and city governments (building, business, planning, zoning, and special use)

State

Department of Business and Industry

Department of Conservation and Natural Resources, Division of Environmental Protection Bureaus

- Air Quality
- Mine Regulation and Reclamation
- Safe Drinking Water
- Waste Management
- Water Pollution Control
- Water Resources Bureau

Department of Transportation

Department of Wildlife

Division of Industrial Relations

Historic Preservation Office

Mine Safety and Training Sections

State Fire Marshal Division

State Health Division

The Nevada Commission on Mineral Resources provides information and administers the Nevada's abandoned mine lands program.

Federal

Mine Safety and Health Administration

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms, and Explosives

U.S. Fish and Wildlife Service

U.S. Forest Service

U.S. Army Corps of Engineers

Protecting the Environment

Environmental Management

The large footprint of mining operations makes environmental stewardship a key sustainability issue for the industry. Important aspects of this responsibility are addressing our actual and potential impacts to land, water, and air; reducing resource use; developing more sustainable technologies; applying best practice in mine closure; and working to maintain, enhance, and restore habitat.

COMPANY PRACTICES

Nevada Mining Association member companies strive to protect the environment and maintain ecosystem health through:

- Compliance with state and federal laws and regulations
- Management systems and procedures that help us meet legal and regulatory requirements, minimize impact, and monitor and continually improve our environmental performance
- Specific environmental performance improvement initiatives at our operations and with suppliers
- Effective reclamation of disturbed sites to leave healthy and productive post-mining landscapes as part of our environmental legacy
- Partnerships to address environmental issues with government agencies and other stakeholders, such as environmental NGOs

"We've gone from being an industry with minimal regulation to one of the most regulated in the country. Our on-the-ground performance is much better compared to even 20 years ago. We have incredible tools and technology now that enable us to evaluate and mitigate impacts and to reduce emissions and releases. We are always looking for opportunities to improve our operations. As technology evolves, we are continually researching how to best utilize it to improve the safety and efficiency of our operations."

—Doug Barto, Environmental Committee Chair

Compliance with Laws and Regulations

The mining industry in Nevada is heavily regulated and subject to a comprehensive set of federal, state, and county laws and regulations designed to prevent or minimize environmental impacts. Because of this high level of expectation and oversight, compliance with regulations is a critical aspect of individual company sustainability efforts.

This framework requires thorough analysis – before, during, and after operation - of potential impacts to surface and groundwater, air, soil, plants, wildlife, aquatic organisms, archaeological resources, human health, social conditions, and economic conditions by technical experts and scientists. The resulting data is used to develop plans to prevent or mitigate these impacts. All mining operations submit comprehensive environmental management plans and applications to regulatory agencies for review and approval prior to issuance of permits for exploration, construction, operations, and closure. Public review and input are incorporated into state and federal regulatory review processes at multiple points to ensure that all significant issues associated with a project, and public concerns, have been addressed.

Because of the preponderance of public lands (87 percent of land area) in Nevada, most companies must meet the requirements of the National Environmental Policy Act (NEPA). NEPA analysis requires completion of a formal Environmental Impact Assessment or Statement as part of the permitting process.

Regular reporting to regulatory agencies on many aspects of environmental performance and resource management, and inspections by regulatory officials, are required throughout the life of a mining project.

Obtaining the necessary permits and permissions (see figure below) to develop a mine requires a significant investment of both time and money. Once an economical mineral deposit is identified, it can take up to 10 years to conduct studies and obtain permits before a mine is constructed. In some cases, more than \$1 billion dollars may be invested before any minerals or metals are produced. In other words, mining is a risky investment and significant hurdles must be overcome before a mine begins production.

Partial List of Typical Permits and Approvals Required for a Large Scale Mine in Nevada

Phase	Exploration	Construction and Operations		Closure
Permit and Approval Required	<ul style="list-style-type: none"> • Plan of Operations • Mining Reclamation Permit • Permit for Temporary Use of Water for Exploration Holes • Temporary Final Closure Plan • Permanent Final Closure Plan • Approval for Final Closure 	<ul style="list-style-type: none"> • Plan of Operations Approval • Environmental Impact Assessment Record of Decision • Mine Registry • Notices of Opening and Commencement • Air Quality Operating Permits (Construction, Operations) • ND PES Stormwater Permits (Construction, Operations) • Water Pollution Control Permit (Construction, Operations) • Groundwater Discharge Permit • Mining Reclamation Permit • Approval to Operate a Solid Waste System • Hazardous Waste Management Permit • Underground Injection Control Permit • Drinking Water Supply Permit • Permit to Appropriate Public Waters 	<ul style="list-style-type: none"> • Permit to Construct Dam • Dredging Permit • Industrial Artificial Pond Permit • Septic System Permit • Abatement of Hazardous Conditions Approval • Fire and Life Safety Approval • Historic Preservation Clearance • Right of Way Encroachment Permit • Permit to Purchase, Transport, or Store Explosives • Right of Way for Utilities • Road Access Permit • Endangered Species Act Permit • Special Use Permits (county and U.S.) • Permit to Discharge Dredged/ Fill Material (404) • Building Permit • Business License • County General Plan Approval • Zoning Change for Industrial Use 	<ul style="list-style-type: none"> • Tentative Permanent Closure Plan • Final Permanent Closure Plan • Approval for Final Closure

Management Systems

Many of our member companies use formal management systems to meet the requirements of applicable laws and regulations, integrate evolving best practices, and strive for continuous improvement in environmental performance. Management systems typically include the elements in the figure below.



Performance Improvement Initiatives

Member companies have undertaken a number of innovative initiatives to reduce their environmental impacts, often enhancing overall performance. Cashman Equipment's new LEED-certified headquarters, for example, shows how even an industrial machinery company can increase the sustainability of its operations.



Cashman's new LEED-certified corporate headquarters, Henderson, Nevada

Going for Green: LEED Certification at Cashman Equipment

After more than 25 years in North Las Vegas, Nevada Mining Association member Cashman Equipment Company found itself searching for a new home that would provide enough space as well as cutting-edge technology and tooling to deliver world class customer support.

Cashman is the main Caterpillar equipment dealer in Nevada and one of the largest privately-owned employers in the state. The company provides new and used equipment, parts and services to most mining operations.

When the opportunity to find new headquarters arose, Chairman and CEO MaryKaye Cashman (a long-time supporter of energy independence) seized the opportunity to make a commitment to sustainability. The result was Cashman's new Leadership in Energy and Environmental Design (LEED) Gold certified corporate headquarters in Henderson, just outside of Las Vegas – the largest industrial LEED Gold campus in Nevada. The 308,000-square-foot, seven-building facility covers 53 acres, and features a large parts warehouse and several repair shops. It also has:

- Xeriscaping with native desert plants, to minimize water use for landscape maintenance.
- A geothermal heating and cooling system with 65 miles of underground pipe.
- Aluminum solar shades to prevent sun from entering the building and dark glass panels that allow people to see out, but limit the heat entering the building.
- Sensors that control the window shades, closing or opening them, depending on outside conditions and time of day.
- Ambient lighting that minimizes energy use.
- Training room floors made with post-consumer waste, in this case, recycled glass.
- Larger spaces, like the 1+ acre service shop featuring 20 bays and the adjacent parts warehouse, that utilize Solatubes in the ceiling and retractable glass doors to bring in natural light.
- Optimized zone control, in which large work areas found between the parts warehouse and the service bays are separated by high speed doors, controlled by sensors on fork trucks.

At the beginning of the process, few Cashman employees were familiar with LEED certification; however, the more the company considered pursuing certification, the more it made good financial and environmental sense. In fact, the process prompted a profound culture change, even before construction began. A new internal green team formed and launched a communications campaign to increase employee awareness of and participation in sustainability practices like recycling.

One of the unique characteristics of the LEED process is the close collaboration it encourages between the owner, the architect and the general contractor to obtain the best results. MaryKaye and Mike Pack, Cashman's president and COO, met weekly with the architect and general contractor onsite to discuss progress and challenges encountered.

"LEED Certification isn't something you can just jump into halfway through. All of the minute details are very carefully planned out before construction. We spent three years planning every aspect of the new building before we broke ground: identifying the right suppliers, manufacturers and contractors to do the work. You truly have to have an entire team wholeheartedly committed to sustainability or it won't work"
- **Kate Graziano, Cashman Equipment Company**

The new building has provided significant benefits: for Cashman, the environment (see below), and local communities. For example, more than 40% of building materials came from suppliers and manufacturers within a 500 mile radius of the campus, creating local economic benefit. Cashman will also receive 30% savings on annual property taxes, and the geothermal heating/cooling system is expected to provide a return on investment in energy cost savings within five to seven years.

Environmental Benefits

- 45% less energy used due to the geothermal heating and cooling system
- 30% less water consumed through efficient irrigation, retention ponds, and low-flow fixtures
- 814 tons of this site's construction debris went to local recyclers, thereby diverting it from a landfill. That's over 80% of all waste material
- 20% of all materials used on the project are post-consumer recycled.
- More than 30 species of native plants appropriate for xeriscape, minimizing the need for water.
- All woodwork is Forest Stewardship Council (FSC) certified

One of the building's major design achievements was striking a delicate balance between allowing in natural light – and keeping the building environment cool in the desert heat. Special window glazing on the 3,500 panels of glass (more than an acre total) blocks some of the heat generated so more than 75% of employees can enjoy abundant natural lighting and a direct line of sight to the outdoors. The windows are also equipped with automatic shades controlled by sensors that monitor the angle of the sun to rise and fall accordingly throughout the day.

Employees have also reaped the benefits of the new headquarters: many of the building's features are designed to provide a better working environment. Enhancements like these speak highly to the company's culture of caring for employees and have contributed to high morale.

With its new headquarters, Cashman is setting a new bar for sustainability amongst suppliers of industrial goods and services.



Effective Reclamation and Productive Post-Closure Landscapes

Before any ground is disturbed, mining companies must ensure that adequate funds are available to complete reclamation and remediation of exploration and mining sites. In Nevada this process takes the form of bonds and sureties held by the Nevada Department of Environmental Protection, the Division of Minerals, the U.S. Bureau of Land Management, and the U.S. Forest Service. This provides assurance to the public that, should a company be unable to fulfill the activities required for reclamation and closure of a mine, funds are available to regulatory agencies to complete these tasks. Bond amounts are determined through development of comprehensive reclamation plans that detail the engineering, construction and environmental costs required to physically and chemically stabilize, reclaim, and restore areas disturbed by mining. Reclamation plans and cost estimates are prepared following detailed state and federal regulatory guidelines and must be approved by these agencies prior to project approval.

PERFORMANCE Reclamation Bonding

- \$1.234 billion total bond funds held for exploration and mining
- Current bond pool equates to more than \$10,000 per acre placed in trust for reclamation

Partnerships for Environmental Protection, Conservation, and Enhancement

Developing and implementing an effective strategy to address an environmental concern sometimes requires collaboration with other stakeholders, such as government agencies and community organizations. Partnerships allow us to benefit from the skills and resources our partners possess, and ensure the participation of all parties necessary to achieve success. We discuss several additional examples of partnerships between the industry and stakeholders on environmental protection and enhancement initiatives in the following sections.

INDUSTRY INITIATIVES

NvMA's environmental affairs committee helps our membership keep abreast of new developments in state and federal environmental regulations, and provides a channel for members to provide input on these developments to the appropriate authorities. Recent activities for the environmental committee have included:

- **Providing information to the U.S. EPA** concerning the development of national regulations on mercury emissions for the mining industry at the agency's request.
- **Developing a better reference for soil testing** in the event of a cyanide spill.
- **Standardizing the process for calculating remediation bonds** to allow for comparison and verification by the state.
- **Meeting with the Western Governors' Committee** to discuss the implications of likely addition of the sage grouse to the Endangered Species List.
- **Discussing potential consequences** for the industry of the recent U.S. EPA decision to regulate greenhouse gases with the Nevada Department of Environmental Protection to keep members informed of expectations for management and reduction.

At a Glance: Water Regulation

Water Quantity

In Nevada companies pursuing new mining projects must apply for water use permits from the Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation as a part of the project's Plan of Operations.

The division's Department of Water Resources administers all surface and groundwater in the state. Companies can acquire water only through permits, which requires evaluation of the impact to proposed surface and groundwater withdrawals before permits are issued.

Water Quality

Discharge of water from mining operations is regulated by the State of Nevada and by federal statutes, such as the Clean Water Act and Safe Drinking Water Act.

Mining operations are required to obtain several permits, which set guidelines for controlling water pollution through establishment of discharge standards. These permits include National Pollution Discharge Elimination System permits (which regulate point sources for pollution) and Stormwater Pollution Prevention plans in case of overflow. These permits set limits on the amounts of particular substances that can be discharged in water, to protect public and environmental health.

Water Management

Water is essential for human existence, ecosystem health, wildlife, and various kinds of economic activity. It is also a limited resource. Wise use, management, and conservation are critical to balancing and meeting these needs—especially in an arid state like Nevada, where rainfall averages 7.5 inches per year (the driest in the nation) and water is particularly scarce.

Water Quantity

Water is used throughout the mining process; without an economical water supply, the growth of the mining industry in Nevada over the past three decades would not have been possible. The acquisition of rights and permits to appropriate water for these uses are critical steps in large-scale mine development. The table below shows typical water use at a mine.

Water Use at Mines		
Ore Extraction	Processing	Other
<ul style="list-style-type: none"> Dewatering Dust suppression Mine cooling 	<ul style="list-style-type: none"> Dust suppression Ore milling Heap-leaching 	<ul style="list-style-type: none"> Workforce drinking and sanitary needs Mechanical maintenance

The scale of water use varies across mining operations depending on the mineral being recovered and the recovery process.

Water Quality

Some individual mine sites may have increased concentrations of specific metals and salts in water used in—or runoff from—mine sites. Acid mine drainage (AMD) is a phenomenon that can occur when rock containing sulfides is exposed to air and water. The water can become acidic and often carries elevated levels of toxic metals. AMD occurs most frequently in association with metals mines and can affect water quality.

Another water-quality concern during and after mine closure, pit lakes are created when mining is completed in a pit and dewatering pumps are turned off, allowing groundwater to flow back into the pit. Similar concerns about the acidity and concentration of heavy metals in these water bodies arise in association with metals mines.

Changes in water quality and quantity can affect not only human health but also wildlife habitat and ecosystem health (see case studies below). There are a significant number of federally-listed endangered and threatened species in Nevada—and most of these are “water-dependent species.” Environmental impact assessment processes often intensively focus on biodiversity issues in Nevada, and as a consequence, operating plans require significant dedication to design of mitigation and management efforts.

COMPANY PRACTICES

Mining companies use a variety of techniques to reduce, conserve, and recycle water from mining processes—and to reuse it to meet other needs, such as irrigation or restoring it (if of acceptable quality) to the groundwater system. Some techniques include:

- Using saline water that is unsuitable for agriculture or domestic use for processing ore



Photo courtesy Mike Sevon, Nevada Natural Heritage Program

- Using groundwater pumped from mining excavations for processing
- Re-use and recycling of water for ore processing to reduce the total water required
- Returning water to surface waters or to groundwater systems via infiltration ponds or reinjection into aquifers after treatment to ensure it meets water-quality standards

Companies also implement protective management measures and technologies to avoid or minimize impacts on water quality and meet regulatory standards. These include:

- Testing to determine the potential for acid mine drainage from waste dumps, leach piles, and tailings
- Design of management strategies and technical solutions to prevent acid mine drainage and the acidification of pit lakes. Detailed management plans aimed at mitigating and minimizing exposure to air and water of sulfide minerals in waste rock and processed ore, and thereby prevent acid mine drainage, are created by mining companies and reviewed and approved by regulatory agencies. Similar plans are created for pit lakes
- Use of water treatment plants to treat dewatering water prior to discharge either to surface or groundwater

Cyanide Use and Management

Cyanide, a chemical comprised of carbon and nitrogen, occurs naturally as part of sugars in certain plant foods. A concentrated, solid form of cyanide known as sodium cyanide that is extremely effective in extracting gold, silver, and copper concentrate from ore is used for this purpose in some mining operations. Sodium cyanide is dissolved in water, forming a dilute solution that is then dripped onto heaps of crushed ore removed from the mine that is placed in lined piles, commonly called heaps (process known as “heap leaching”), or mixed with ore in enclosed tanks containing. The cyanide solution attaches to minute particles of gold in the rock to form a water-soluble, gold-cyanide compound from which the gold can later be recovered. The resulting solution containing the metal is collected and processed to extract the metal and return it to solid form, from which it can be further refined. The cyanide solution is recycled and reused in the extraction process.

While cyanide can be poisonous when inhaled, ingested or absorbed through the skin, mine operators have developed stringent standards and practices to minimize risks to workers, the environment, and communities.

- Stringent measures are implemented to prevent **workers** from being exposed to concentrated hydrogen cyanide gas during heap-leaching or tank-leaching processes. Employee training and emergency response plans are put into place to prepare workers to respond quickly to exposure to cyanide fumes or spillage of cyanide or cyanide-containing solutions. This training and preparation, along with strict controls, minimize the possibility and impact of exposure.
- Leaks into the **environment** are usually quickly contained and cleaned up. Cyanide breaks down in sunlight, and when exposed to air and surface water, it forms hydrogen cyanide gas, which is quickly diluted and degraded by ultra-violet rays from the sun. To prevent any release into the environment, mines take precautions such as constructing containment areas around tanks, using liners beneath leach pads and ponds, and installing leak detection and collection systems.
- **Community** exposure to sodium cyanide or hydrogen cyanide gas is rare— however, accidents can occur, most during transport to and from mine sites. Specific safety and environmental requirements and emergency response plans for transporters and emergency responders, coordinated with public agencies; radio communication with drivers; and satellite tracking of trucks helps to mitigate potential exposures to employees and communities.

Heap-leach sites are monitored and reclaimed to deter spills, even long after mine closure. For example, Barrick has been monitoring the Alligator Ridge (formerly a Placer Dome site) heap-leach pad for 10 years following the site's closure.

The International Cyanide Management Code

A majority of gold and silver mines in Nevada are certified to the International Cyanide Management Code (ICMC). The Code is a voluntary industry program developed by mining companies, cyanide manufacturers, financial institutions, NGOs, and governments to provide guidance on the manufacture, transport, storage, and use of cyanide to protect workers, the environment, and communities near mining operations.

Mining companies must meet a series of principles and objectives, including worker safety, environmental protection, emergency response planning, training, and stakeholder communication to ensure they are managing the use of cyanide to the highest standards. Their compliance is independently audited and certified by the ICMC. A number of NvMA members adhere to the code, as does cyanide producer and supplier CYANCO. In fact, many are already starting a cycle of recertification: Goldcorp's Marigold mine was the first to complete its recertification in 2009.

To learn more, visit: www.cyanidecode.org.

Wildlife Protection and Conservation

Operating a mine responsibly requires dedication and careful thought about how mining activities will impact local residents – both human and non-human alike. Mining companies apply many measures to conserve and protect wildlife and wildlife habitat from physical or chemical harm resulting from their operations, and many times also take specific steps to mitigate unavoidable impacts and even enhance habitat near the mine to offset impacts occurring within the mine area itself.

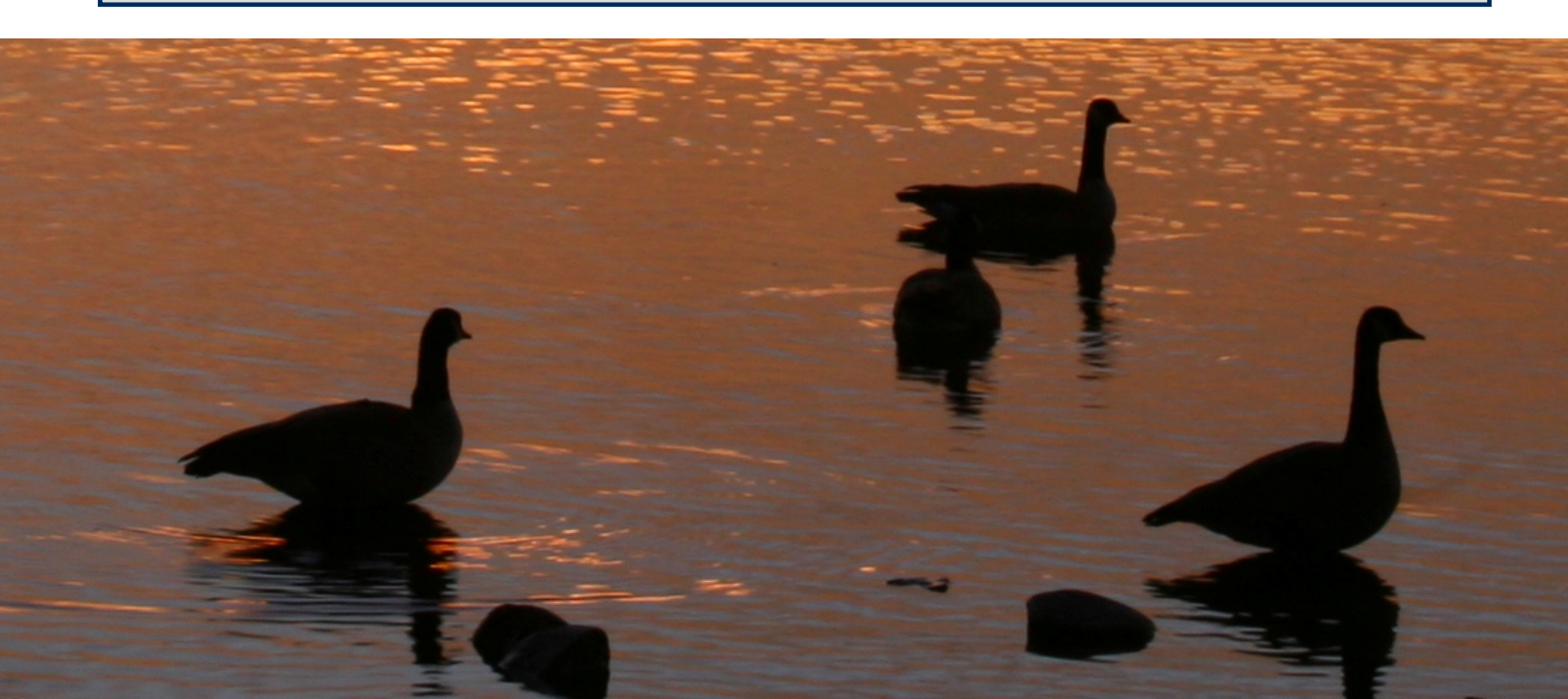
Wildlife conservation begins with understanding both the local populations and habitat, and modern mines expend a great deal of effort completing studies on both prior to and while expanding operations. For example, many of today's mines are built on or around historic mine operations, where older mine features such as adits and shafts often provide habitat for bats. These features, however, also may threaten the safety of other wildlife and the general public. A common mitigation measure enacted by mines in cooperation with regulatory agencies and neighbors is to secure them while preserving their value to bat populations, utilizing features such as bat gates to prevent access by humans and large animals, while still allowing bats to continue to benefit from the shelter they provide.

Chemicals used in mining are carefully managed to help avoid adverse effects on wildlife. For example, cyanide solution from leach pads is collected in lined ponds that are either netted or employ floating, high-density polyethylene "bird balls" to keep birds out. High fences are also built around these ponds to keep larger animals from accessing them. Companies minimize ponding on the surface of leach pads through regular inspections and rotation of lines, use of low-drip tubes and emitters, and when possible, solution is conveyed in closed pipelines rather than open flow, lined ditches. All of these measures serve to keep wildlife from coming into contact with chemicals used to process ore.

Often, protection and mitigation measures can have a net positive impact on wildlife habitat, such as improving freshwater resources to draw animals away from the processed water used in operations. Enhancements include: diverting a portion of unused water to a new location, or working with partners on neighboring ranch and public lands to improve spring site flows or access. At Ruby Hill mine, for example, water and native species planted during concurrent reclamation were attracting higher numbers of deer to the site – but to reach these reclaimed areas, deer would often cross one of the mine's main haul roads. The company developed a new watering location on another side of the mine to help minimize risks to both deer and truck operators working at the mine.

Collaboration with local landowners and regulatory agencies continues during site closure. As land is reclaimed, careful consideration is given to the seed mixes used to re-vegetate the site, typically using only native blends with high value to wildlife. Within a single site, this can involve careful planning to match plant species with such things as elevation, aspect, precipitation range, and use of different land features that mimic local topography. Ongoing monitoring then provides important information about which species and techniques are most successful and likely to be used in similar situations.

Any natural resource extraction by definition impacts the environment. However, it is the manner in which these activities are carried out that is crucial in minimizing adverse effects. The array of mitigation and conservation measures being employed at today's mines serve as an example of how wildlife can co-exist, and often even flourish in and around mine sites.





Air Emissions

Reducing or eliminating air emissions is another important aspect of managing the environmental impact of mines, and one of particular importance to the local stakeholders who live near our mines.

Air Quality

Air quality permits are obtained from regulatory agencies before ground is broken on any mining project. Mining companies submit substantial studies identifying the potential sources of emissions and the equipment that will be used to control them.

Mining operations can generate dust from mining and mineral processing operations and associated truck traffic, releasing particulates, nitrous oxide, sulfur dioxide, and carbon monoxide from the equipment used to mine and process ore minerals. These emissions can generate smog and other forms of air pollution that may impact local air quality.

COMPANY PRACTICES

Most air emissions are regulated by the U.S. Environmental Protection Agency under its ambient air-quality standards. Best practices at mine sites involve evaluating the level of likely emissions, taking steps to reduce or eliminate them through the use of management practices or technical controls, and monitoring the sources from which they may be generated to ensure compliance with regulatory standards. The table below shows common practices used to control emissions.

Management Practices: Air Emissions				
	Dust	Nitrous Oxide	Sulfur Oxide	Carbon Monoxide
Source	Haul trucks, crushers, conveyors, stockpiles, and blasting	Diesel Engines in Heavy Equipment, Plant/Mill Equipment	Diesel engines in heavy equipment	Diesel engines in heavy equipment
Management Practices	<ul style="list-style-type: none"> Applying water to roads Use of dust collection systems and mist sprays at point sources Chemical surfactants 	<ul style="list-style-type: none"> New Tier 2 diesel engines and lower sulfur diesel Emissions from diesel engines are reduced by catalytic control systems, effective preventive and repair maintenance to keep engines running at high efficiency and ensure pollution control features operating, use of computerized fleet management and routing systems using real time GPS data to reduce fuel consumption, and effective haul road maintenance that reduces fuel consumption. Filters, scrubbers, and other pollution control devices at processing facilities. 		

Mercury Emissions

Processes used to remove gold from ore can also result in the release of mercury contained in the ore. Controlling mercury emissions from gold mining has been the objective of a major partnership between the gold industry and federal and state government agencies, discussed in detail in the case study on below.

Reducing Mercury Emissions

In 2000, gold mining operations submitted their first reports on mercury emissions following their addition to the US EPA's Toxic Release Inventory. Prior to this date, mercury emissions had not been consistently quantified for the industry, as permit requirements and measurement and reporting of emission varied from state to state. While cumulatively coal plants as a whole are the largest source of mercury releases into the air in the United States, the TRI data indicated that some gold mining operations were among the largest individual facilities emitting atmospheric mercury.

Mercury is a naturally occurring element and it is released through the atmosphere by a variety of natural processes as well as by human activities. Mercury is a toxic of particular concern, as it tends to persist in the environment and is bio-accumulative, meaning that it can build up in human and animal tissues over time. It is known to affect the nervous systems of humans and wildlife alike. In mining, mercury can be emitted though ore processing.

In response to these findings, four companies (Barrick, Newmont, Placer Dome and Independence) sat down with the US EPA and the Nevada Division of Environmental Protection (NDEP) to discuss how to reduce atmospheric mercury emissions. At the time, there was a broad continuum of existing controls in place at mining operations. Rather than undergo a lengthy and costly rule-making process to regulate the implementation of controls, these companies agreed to voluntarily take steps to reduce emissions. What followed was the Voluntary Mercury Air Emissions Reduction Program (VMRP), a partnership between companies, the NDEP and the U.S. EPA. This voluntary approach also allowed companies considerable flexibility in implementing reduction measures, permitting them to find the right individual balance between reduction in emissions, and the remaining life of older facilities to implement such controls.

These voluntary actions were tremendously successful in immediately reducing emissions. Companies quickly surpassed the goals of 33% reduction by 2003 and 50% reductions by 2005 set at the start of the program, achieving a 40% reduction in emissions by 2003 and 75% by 2005. Extensive measurement and testing were also completed to improve the accuracy of information about mercury emissions.

In 2006 the industry worked with NDEP to develop a mandatory mercury control program applicable to all precious metals mining operations. The Nevada Mercury Control Program established a process to determine and implement Maximum Achievable Control Technology (MACT) for all thermal sources at mining operations. MACT must be implemented by 2011. Some companies have already done so.

Stakeholders have expressed some continuing concerns and interests. These include:

- The inclusion of fugitive emissions from waste rock and heap leaching. The Nevada Mining Association and NDEP provided funding for a study in 2009 to begin to quantify these emissions to consider how they might be addressed in the existing program. Early results suggest that such emissions account for 10-20% of the total mercury emitted at a sites.
- Reporting discrepancies
- Proper disposal of captured mercury in control systems
- Continued high emissions and even increases despite program controls
- More frequent stack monitoring and ambient air monitoring to capture fugitive emissions.

In 2008, the US EPA began to consider whether or not to regulate mercury emissions from gold mining at a federal level as part of a long-running lawsuit brought by the Sierra Club on the Clean Air Act. This action has created uncertainty for the NDEP program and even delayed companies' willingness to invest in potentially costly control technologies which may later be supplanted should the EPA propose different measures. Advocates for federal regulation argue that it is needed to address perceived gaps or weaknesses in Nevada's program, and to provide a framework of protection for states currently without controls.

Consensus on a standard remains an ongoing process. However, transparency and willingness to collaborate have been its hallmarks, with significant support and input provided by gold mining companies to the NDEP and US EPA, laying a foundation of continued success and collaboration going forward.



Photo courtesy Barrick Gold

Climate Change

Climate change is an important emerging issue for our industry. Mining is energy intensive. In recent years, high energy costs, paired with a desire to reduce carbon emissions, have driven mining companies in Nevada to seek alternative solutions to their energy needs. These solutions include installing solar arrays, developing heat exchange systems, changing practices to be more efficient, and even building an entire power plant. Companies are partnering with developers of new technologies to advance innovative energy saving techniques and use of renewable energy.

Nevada's geothermal, solar, and wind resources could meet the energy needs of the mining industry, reduce CO₂ emissions, and provide a new source of economic development as well. The Humboldt Pershing Sustainable Development committee, for example, is working toward bringing renewable energy to Nevada as part of economic diversification efforts related to the mining industry.

Energy Efficiency

Over the last decade, mining companies and suppliers in Nevada have been looking for opportunities to reduce energy use—and finding many ways to reap savings from lower costs.

- **Lighting:** Many companies have changed lighting fixtures in offices, warehouses, and on mine sites to high efficiency models. With an eye toward preventing waste, old fixtures are often only replaced if necessary, while high efficiency lighting is used in all new development.
- **Air systems:** In offices and warehouses, heating, ventilation, and air conditioning units are being replaced with high efficiency models, but a bigger impact is in changing the way mines are ventilated. Air is used in mines to both power equipment and, for below-the-surface operations, to ventilate underground rooms. Quick identification and repair of leaks in the air system can save significant amounts of energy by keeping air flow high and therefore reducing the amount of time the air compression system is operating. In addition, ventilation of underground rooms, once constant throughout the mine site, is now targeted to only the areas where workers are present.
- **Transportation:** Mining companies are replacing trucks and truck engines with energy efficient models and converting to biodiesel when possible. For underground operations, this conversion is both a greener and a safer option—it reduces carbon emissions while protecting workers from exhaust fumes. Companies are also innovating to eliminate the use of trucks entirely. One company has installed a six-mile-long over-land conveyor to transport more than 10,000 tons of ore per day from the pit to the milling site.
- **Putting common sense into practice:** Like many other industries, once mining companies started looking for energy savings, they found that opportunities abounded. Roads coming out of pits can be graded to a gentler slope, requiring less fuel to ascend. Tanks that supply liquids can be elevated to exploit gravity instead of using pumps. Insulation can be increased to save heating and cooling costs. Small changes in standard practice can drastically increase efficiency, and combine to create significant savings.
- **Use of alternative energy sources:** Much of Nevada's environment is high desert, making it an ideal location for solar. Barrick Gold's Western 102 Power Plan, for example, pairs a 115 megawatt traditional power generation system and 8 acres of solar photovoltaic panels, to provide power to the Goldstrike mine nearby. The state also offers a wealth of geothermal



Photo courtesy Barrick Gold

resources. Mining companies are increasingly seeking ways to employ these renewable resources. Mining operations are often located away from settled areas and therefore away from an established electrical grid. Small solar arrays in these distant areas can provide power for lights, radio towers, and the like. Some companies have also built solar arrays large enough to offset traditional power use at the mine or at office buildings (see case study below).

Geothermal water is another renewable energy source being tapped to power operations and heat facilities. Although still in nascent stages, advances in technology are enabling mining companies to exploit the hot water often found in mines for minor power generation. New “modular power plants” convert hot ground water into clean electrical power while cooling the water for further use in operations. Geothermal water is also used to heat buildings and sidewalks and provide hot water.

PERFORMANCE

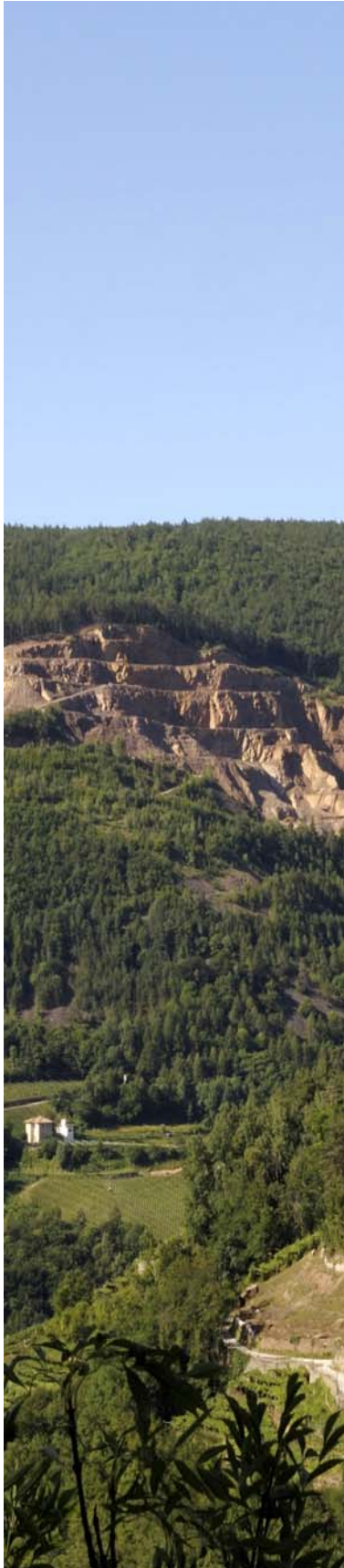
- In 2008, the industry emitted 3164.9 lbs/ year of mercury from processing and 102.9 tons per year as a co-product. This is a 35% decrease and 5% increase, respectively, from 2007.
- The mining industry used a total of 2,693,739,188 Kwh of energy in 2009; 2.58 million Kwh in the northern service territory (mostly gold and silver mining) and 116 million in the southern service territory (largely aggregates & construction materials).

Renewable Sources: Mining’s Energy Future

The renewable energy market in Nevada is still nascent. The state lacks utility-scale solar arrays and wind farms, and development of large geothermal power plants is in its infancy. Land ownership disputes, an underdeveloped grid system and energy infrastructure, and strict environmental requirements for the 67 percent of Nevada land controlled by the BLM are barriers to significant advancement in renewable energy generation in the state. In addition, access to inexpensive coal-fired energy minimizes the perceived need, and financial incentive, for development of renewable energy options.

Significant energy users like mining companies have an opportunity to advance renewable energy generation and supply in Nevada by creating large-scale demand and exploring investments in renewable energy projects. There is great potential synergy between renewable energy and former mine sites, which have existing electrical infrastructure, landscaped surface areas, and access roads that would facilitate establishment of solar arrays or other renewable technology. Re-purposing these facilities for renewable energy generation would reduce the required capital for infrastructure development and avoid disturbance of additional land for generation sites.

Mining companies are well-positioned to explore the benefits of renewable power, to foster mechanisms that enable its expansion, and to remove of structural impediments



Mine Closure

Commitment to sustainability does not end with production; responsible mine closure processes that attend to potential environmental and community impacts, and allow for productive post-closure land uses are the legacy our mines leave behind. Abandoned mines or improperly addressed environmental issues damage our industry's reputation and social license to operate.

COMPANY PRACTICES

To build a mine is to create a plan—a plan for where and when to dig, where to site water, power and transportation infrastructure, how long to operate, and what to do when operations cease. Environmental impacts must be managed during mining operations, and addressed for decades—even centuries—after closure.

Mining companies in Nevada undergo a lengthy and robust permitting process with state agencies such as the Bureau of Land Management, the Forest Service, and the Nevada Department of Environmental Protection. Part of this process is securing a separate permit for appropriate and complete mine reclamation, the activity to restore and re-slope the mined area to a pre-determined condition set out during the planning process.

To establish baselines, mining companies conduct rigorous environmental analyses to understand and assess conditions such as plant density, soil composition, and hydrological conditions, among others. These baseline conditions—along with the plan for the size, type, and length of operation of the mine—inform the estimated cost of conducting reclamation after mine closure. Mining companies are required to set aside this amount as a “reclamation bond”, ensuring that proper reclamation is funded no matter the economic state of the company at the time of mine closure. As noted in the Environmental Management section above, mining companies in the state of Nevada have a combined posted reclamation bond amounts in excess of \$1.2 billion.

A company takes steps throughout the mining process to minimize the area affected, reclaim land, and protect the environment as mining activities progress. Monitoring continues beyond the conclusion of operations.

The mining industry and state environmental agencies work in partnership to continually advance the science and technology behind reclamation processes. Closed mines are graded and replanted to look as though no mine ever existed. Buildings are removed, and plant and animal life is reintroduced. All this is done with an eye on the environmental baselines established before the mine was opened. Despite these significant efforts to leave the land as minimally impacted as possible, aspects of the process remain challenging. For this reason, the annual Excellence in Mine Reclamation Awards recognize companies who have achieved a high level of performance or innovation in reclamation practices (see case study p.29).

Key Activities in Mine Closure

Planning & Design

- Create plans for reclamation and closure
- Set aside budget for concurrent reclamation
- Define anticipated future land use
- Submit reclamation bonds
- Undergo permitting reviews and approvals
- Conduct studies to assess baseline conditions

Construction & Operations

- Update reclamation/ closure plans annually to reflect operational changes & environmental considerations
- Avoid/ minimize disturbance
- Conduct concurrent reclamation
- Support economic diversification
- Review reclamation estimates

Closure

- Contour land forms after reclamation
- Prepare & re-vegetate ground
- Remove buildings
- Remove chemicals
- Treat and seal heap leach/ tailings
- Provide workforce assistance

Post-Closure

- Monitor success of re-vegetation, water quality

Closure presents both challenges and opportunities for companies operating in Nevada, particularly in terms of environmental protection and the socioeconomic effects of closure on host communities, as summarized in the table below.

Challenges and Opportunities in Mine Closure			
Environmental		Community	
Challenges	Opportunities	Challenges	Opportunities
<ul style="list-style-type: none"> Preventing acid mine drainage, siltation, and other impacts on surface or groundwater quality Ensuring long-term water quality in pit lakes Reclaiming vegetation 	<ul style="list-style-type: none"> Creating habitat beneficial to native vegetation and wildlife 	<ul style="list-style-type: none"> Transitioning employees to new jobs Controlling effect on local tax revenue Controlling effect on local economic activity (spending on goods and services and employee income) 	<ul style="list-style-type: none"> Identifying new opportunities economic activity using land and infrastructure developed for mining Assisting in economic diversification and development of alternative industries and livelihoods

Nevada's dry environment reduces some of the environmental challenges associated with mine closure. Scarce precipitation in the high Nevada desert reduces the likelihood of runoff, including drainage from heap leaching and tailing facilities and erosion of restored land features.

Current regulations require mining companies to remove all buildings, facilities, and utilities as part of the reclamation process, precluding the possibility of using these facilities to create new economic opportunities or to meet community needs. For example, many sites may hold potential for renewable energy, and existing electrical sub-stations may power host communities after mine closure. Many NvMA members are exploring opportunities to use former mine sites for development of new industries—often in concert with other stakeholders (see Economic Contributions, p. 31)

PERFORMANCE

- At the end of 2008, approximately 114, 578 acres, or 0.16 percent of the total land surface of Nevada has been disturbed by mining.

INDUSTRY INITIATIVES

One key challenge related to the historical presence of mining is cleanup of abandoned mine lands. Nevada is home to over 200,000 abandoned mine features that pose risks to public health and safety. While these features were created by past operations, today's mining industry has supported state and federal regulatory agencies in their efforts to address the risks associated with these legacy sites (see case study, p. 30).

The Excellence in Mining Reclamation Awards

Reclaiming a mine site after operations have ceased is as important a step in the mining process as building or operating the mine. Permitting processes and bonds ensure that all mining companies in Nevada are held to a strict standard for site reclamation. Some companies go beyond these requirements to make advances in responsible mine closure practices. To recognize these companies' achievements the U.S. Bureau of Land Management; U.S. Forest Service; Nevada Division of Minerals; Nevada Division of Environmental Protection; and Nevada Division of Wildlife established the Nevada Excellence in Mining Reclamation Awards.

The awards acknowledge innovative, proactive, and responsible reclamation practices. Although the awards categories change from year to year, standard criteria detailed below are used to select the winners. Selection committees, composed of representatives from the above state and federal agencies, seek to reward companies that excel in any of the following categories:

- Erosion Control: Limiting surface soil movement, directing surface water, optimizing stability, and applying other erosion control methods
- Aesthetic Quality: Enhancing the appearance of the surrounding natural landscape
- Stabilization: Eliminating the mine's potential to adversely impact public safety or the environment, including planning for resistance to chemical change or physical disintegration.
- Toxic Waste Control: Reducing the escape of toxic wastes from the project site through the treatment or stockpile of material with the potential for generating toxic by-products
- Re-vegetation: Exceeding the reclamation plan criteria or comparable vegetative cover on an adjacent similar site by re-planting the land disturbed by exploration or operation.
- Shaping: Re-shaping and re-sloping to blend well with surrounding natural landforms.
- Wildlife Habitat Improvement: Improving and/or enhancing vegetative cover and/or forage for the benefit of wildlife species.
- Post-Mine Land Use: Supporting activities or uses which are beneficial to the citizens of the state of Nevada or the land owner through use of the reclaimed area.
- Water Quality: Improving the quality of the subsurface and/or surface water.
- Riparian Area Protection Enhancement: Improving the quality and quantity of existing riparian areas and/or establishing new riparian areas.
- Agency Cooperation and/or Coordination: Cooperating and/or coordinating with State or Federal agencies above and beyond normal working relationships.

The awards serve to promote the development of better operational and reclamation plans; highlight best practices and raise the level of industry performance; and increase public awareness of and interest in the positive steps taken by mining companies to protect the environment; and encourage innovation in environmental stewardship.

In 2008, Nevada's Excellence in Mining Reclamation Awards given to the El Paso Corporation, for its Comstock Mill Site Leadership in Reclamation, and the Newmont Mining Corporation, for its Lone Tree Mine Wildlife Habitat Enhancement.

Making Historic Mining Sites Safe

Nevada's rich mining heritage has played a key role in the history and economy of the state. However, past mining operations have also left a troubling legacy in the form of abandoned mine shafts and other features which are hazardous to public safety. An estimated 200,000 to 300,000 of these features are scattered throughout the landscape, the highest number for any state in the nation. (A large portion is small, shallow excavations).

Some of these historic sites date back as early as the 1800s, when techniques to secure such facilities, protect the environment, and safeguard public health, did not exist or were not as advanced as they are today. Injuries, and even fatalities, have occurred as exposure to the elements and subsequent decay have destabilized abandoned mine sites.

The Nevada Abandoned Mine Lands (AML) Program was established in 1987 and administered by the Nevada Division of Minerals, identifies abandoned mine features, assesses the risks they may pose to the environment, public health and safety, and takes steps to secure them. It is the most extensive abandoned mine program in the country and has been successful in securing over 14,000 hazardous features in partnership with landowners, mine operators, county and government agencies, and community organizations.

The program consists of several activities:

- **Landscape surveys** are conducted to identify abandoned mine features, determine the hazards they pose, and, where possible, identify the responsible landowner or claimant.
- Some abandoned mine features have become important **habitat for bat populations**. The Division of Minerals works with state and federal conservation agencies to decide if permanent closure may have a negative impact on bat habitat; if so, measures may be taken to secure the site in ways that enhance the habitat. For example, by constructing bat gates or cupolas.
- When features need to be **permanently closed**, and there is a known landowner, the Division will notify them of their responsibilities and follow up to ensure that they take steps to secure the site. These may include permanently sealing the future using backfill or expansive polyurethane foam, fencing the area and putting up warning signs. When there is no identifiable landowner, the Division, Bureau of Land Management or US Forest Service will make sure the site is closed.
- The Division of Minerals also runs a **public awareness campaign** that includes billboards, public service announcements, school presentations, and other events aimed at warning the public of the dangers of abandoned mine features.

An important part of the AML program's success story is the participation of the Boy Scouts of America. Since 1992, 94 Eagle Scout projects have resulted in 488 secured sites and 60 repaired fences.

Despite its effectiveness, the AML program faces a number of challenges:

- First, its reliance on mining fees results in **a lack of consistent funding**. Obtaining such funds for abandoned mine cleanup is a key issue for mining law reform.
- Second, it is challenging to **attract talent**. The shortage of earth scientists in the US impacts land management agencies and regulators as well as the mining industry
- Abandoned mine cleanup can be difficult **on lands with mixed public/ private ownership**, as public funds may only be used on public lands
- While **good Samaritan laws** allow companies, individuals, and civic groups to assist in securing abandoned mine features, lingering concerns about permission from owners and liability inhibit many from taking action.
- A low level of public **awareness about the risk associated with abandoned mine features**.
- And finally, securing abandoned features is a monumental challenge – only 5% of the total estimated sites in Nevada have been made safe. Eventually, these sites will also require maintenance to ensure they do not endanger public health.

The mining industry supports the AML program financially through mining claim fees, and fees assessed for new mining operations. Companies have also contributed equipment, operator time, transportation and fuel to assist with backfilling. Additional opportunities to increase involvement of the industry in the future may include:

- Supporting and promoting the Eagle Scout AML program by encouraging participation of employees and their families
- Helping to distribute outreach materials
- Developing a program for safety personnel to participate in community outreach, possibly with the assistance of the Nevada Mining Association safety committee.

For more information, visit minerals.state.nv.us or http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands.html.



Looking Ahead

In 2010 and beyond, key environmental issues for the industry are likely to include:

- **Reducing greenhouse gas emissions.** The industry may explore opportunities to save electricity and fuel through improved heavy machinery efficiency, reducing emissions by using alternative fuels such as biodiesel, and using cogeneration techniques at processing facilities to capture heat from processing for additional energy supply.
- Continued work with wildlife agencies and stakeholders to **develop management plans for wildlife species** as sage grouse and mule deer.
- **Continuous improvement in water management.** Striving for greater efficiency in water use, protection of existing water quality, and balancing the needs of various water users are critical issues. Nevada's rapidly growing population, particularly in urban areas, is placing increased pressure on rural watersheds to meet urban needs, even if they are hundreds of miles away. Coupled with future growth in the industry, pressure on water resources will make water management—individually and in collaboration with stakeholders—a priority for mining.
- **Learning to use the BLM's new adaptive management plan process.** This process is intended to adjust environmental protection measures in response to impacts over the life of a mine.

At a Glance: Mining Taxation

Mining companies pay three kinds of state and county taxes in addition to federal taxes. These include:

The Net Proceeds of Mines (NPOM) Tax, which has existed for decades and was increased from 3.65 percent to 5 percent in 1989. Mining is one of only four industries in Nevada with an industry-specific tax that must be paid in addition to conventional business taxes. More than half of NPOM tax revenue goes to the Nevada General Fund and is distributed on a per capita basis throughout the state. The remainder goes to the county in which the minerals were produced.

Property taxes, which are paid on property, plants, and facilities, stay almost exclusively in the counties and special tax districts where mines are located.

Sales and use taxes are primarily distributed throughout the state on a per capita basis, while a small amount goes to the state's General Fund and to school districts statewide on a per pupil basis. Because modern mining is a capital intensive business that spends significant amounts on sophisticated equipment and supplies, sales taxes are the largest tax obligation for the industry.

Economic Contributions

Mining's contributions to Nevada's economy are a key component of our collective corporate responsibility as an industry. We support economic development directly, through our operations, supply chain, and payment of taxes, and indirectly by stimulating broader economic growth. However, the cyclical nature of commodity prices and finite nature of the minerals we extract require that we work closely with our stakeholders to take advantage of the opportunities mining provides to create long-term, sustainable economic value.

Direct Contributions

The mining industry contributes directly to Nevada's economy in a variety of ways: by providing jobs, paying state and local taxes, and purchasing goods and services from local suppliers and contractors. In particular:

- **Mining creates high-paying jobs.** The average annual earnings for mining employees is \$69,300 (\$78,600 in metal mining), as compared to statewide average earnings of a little less than \$43,000.
- **Mining pays more taxes per employee than most other industries.** On average, the industry pays more than \$14,000 more in state and local taxes per employee than other industries. In 2008, mine operators alone paid approximately \$224 million in total taxes (not including personal or corporate taxes paid by industry employees or suppliers).

NAVIGATING THE FINANCIAL CRISIS

In 2008, the financial crisis created economic instability around the world, including for Nevada and the mining industry. At its start, the recession deepened ongoing shortages of equipment and materials, and most commodity prices slumped. However, energy prices, a major cost for mining, declined.

Gold prices remained steady during the financial turmoil in the second half of 2008 and reached new highs in 2009. As gold mining represents 81.5 percent of Nevada's mineral production, these price increases have buoyed the industry and have been critical in supporting local economies in northern and northeastern Nevada. Thanks to the growth of the gold industry, mining produced \$2.5 billion in direct value added to Nevada's economy in 2008. In addition, while employment in most industries shrank dramatically over the last year, employment in mining increased modestly.

Indirect Contributions

Mining operations in Nevada also generate significant indirect economic impact, creating economic growth in businesses outside of the industry's direct supply chain, and developing of infrastructure and services in communities around the state.

- To develop or expand mines, mining companies **make investments in infrastructure and services that can also benefit their host communities.** Examples include road construction and improvements to utility services such as water and power supply. Mines also often bring enhanced telecommunications infrastructure, particularly to rural areas, which lag behind more urban parts of the state in their access to high-speed communications.



- Through the influx of workers associated with new and expanding mines, mining also **stimulates the growth of the housing industry and related trades in rural towns where employees live**. In many cases mining companies have provided assistance to employees for home purchases. Some companies have pursued innovative initiatives to ensure adequate housing for employees. Newmont, for instance, struggled to find adequate housing for employees in Battle Mountain. Through a four-party agreement with county officials and the Lander County Economic Development Authority, Newmont helped renovate a trailer park that will provide housing for employees and community members, and will help stabilize tax revenues for the county and stimulate business in town.
- The presence of mining operations **stimulates growth of local businesses, even those outside mining's direct supply chain**. As workers relocate to take jobs, they generate demand for goods and services such as retail, service providers, entertainment, and recreation. This business growth creates additional jobs and can attract other long-term industries.

PERFORMANCE

In 2008, the mining industry:

- Directly employed 14,600 people
- Paid \$1.01 billion dollars in employee compensation
- Generated more than 51,850 total jobs in Nevada and states supplying goods and services to the industry (or 3.55 indirect jobs per every direct employment opportunity)
- Generated over \$10 billion in total economic activity, including both direct and indirect effects
- \$2.5 billion in direct economic value added to Nevada's economy through operations, employment, increased household income, and state economic output)
- Paid over \$300 million in state and local taxes (see box)

Source: John Dobra, University of Nevada at Reno 2008

Long-Term Economic Sustainability

While mining has played, and will continue to play, a significant role in Nevada's economy, we share our stakeholders' concerns about economic dependence on the industry. Mining is a particularly cyclical industry, creating significant growth when mineral prices are high, but also periodically undergoing significant downturns resulting in elevated unemployment, lower tax revenues, and economic contraction. These impacts are felt strongly in rural communities where mining is a significant economic engine. We believe that the solution is in diversification through the attraction and growth of other industries that require similar skill sets. These complementary industries, such as manufacturing, construction, and renewable energy, can absorb excess workforce capacity and create diversified economic growth in Nevada. Our industry is committed to working with our host communities, business partners, and other stakeholders to address these concerns and look for opportunities to stimulate long-term, sustainable growth during downturns and beyond mine closure.



COMPANY PRACTICES

Supporting economic diversification is important to offset potential negative effects of downturns in the industry and of mine closure, and to position the state for continued growth. Individual Nevada Mining Association Members facilitate economic diversification by:

- Helping suppliers identify business opportunities outside of the mining industry. Many of the suppliers that mining companies work with can supply other industries, both within Nevada and in nearby states.
- Retraining displaced workers and providing outplacement services, including coaching, resume writing, interview skills, and networking for employees affected by mine closure. For example, when the Jerritt Canyon Mine closed, leading to layoffs of more than 400 employees, Newmont helped the majority of the affected employees secure opportunities at other sites in the state. Through this “labor pool realignment,” workers avoided extended unemployment, other companies addressed labor shortages at their mines, and the industry retained the employees.

INDUSTRY INITIATIVES

Representatives from mining companies and industry suppliers are active in many state and local community economic development organizations that seek to attract new businesses and industries. These organizations provide a mechanism for several mining companies to work together in support of economic sustainability and include the:

- Elko County Economic Diversification Authority (formerly the Northeastern Nevada Partnership)
- Humboldt-Pershing Sustainable Development Partnership
- Lander County Sustainable Development Committee
- Smoky Mountain Development Team

In the case study below, we share some of achievements and challenges of the Elko County Economic Diversification Authority (ECEDA),

See <http://www.northernnevadapartnership.com/index.shtml> for more information.

Sustainable Economic Development in Elko

The mining industry has had a significant hand in developing some of Nevada's towns and cities, an impact one clearly sees in the Northern Nevada city of Elko. In 1993, Elko was selected as the "Best Small Town in America", and much of the city's infrastructure and quality of life is directly related to the presence of the mining industry. As cities like Elko mature, however, new opportunities will be necessary to sustain prosperity and growth.

In the 1980s and 90s, Elko grew rapidly as the mining industry developed nearby mines and invested in roads, utility infrastructure, water and sanitation provision, housing development, schools, parks, and other community services to support new populations of employees. As mine operations often stretch into the decades, working to ensure safety, stability, and a high quality of life for employees and local community members makes good business sense for mining companies. However, the industry's ability to invest in development is limited by the finite nature of mineral resources: eventually the mines will close.

Although gold mining in Elko is currently thriving, a decade ago the price for an ounce of gold had declined to a low of \$300. Nevada's mining industry was able to keep operations stable and retain jobs during this downturn, but growth ceased and mining companies suspended exploration for new mine sites. This period of stabilization was a "reality check" for the town of Elko, highlighting its reliance on a single industry. In response, the mining industry partnered with the government, community organizations, and other businesses to form the Elko County Economic Diversification Authority (ECEDA), a group that identifies and pursues opportunities for industrial development and economic diversification.

Developers have financed the construction of large buildings within city limits that mining companies then lease—in addition to providing tax revenue, these multi-use buildings will be an attraction to other industries looking for existing facilities in the future. More recently, Elko County finished construction on the Northeastern Nevada Regional Railport.; a 60 acre trans-loading facility and 500 acre industrial park that will eventually be home to six industrial tenants and create an estimated 1,400 jobs.

ECEDA seeks to draw strategic new industries— such as metal fabrication, metal recycling, food processing, transportation, construction and small- and medium-sized manufacturing—that are offer goods and services for current mining operations but also diversification that contributes to economic stability. The symbiotic relationship between these complementary industries and mining allows mining companies to procure goods and services from businesses within the community, and other industries to tap into a skilled workforce, whose talents and abilities are transferrable from mining to these new endeavors and may provide a pool of labor after closure.

In the recent recession, Elko's job market continued to grow, as did construction, while the rest of Nevada found itself in an economic downturn. Mining companies' and the Nevada Mining Association's commitment to the community of Elko remains strong. New and growing investment in the community from these new economic endeavors will enhance the future of an already thriving town.

At a Glance: Jobs in Mining

Jobs in the mining industry typically fall into three categories.

Professional occupations:

These highly technical and specialized positions include geologists, and engineers in mining, metallurgical, civil, chemical, environmental, hydrological, industrial, technology, and mechanical fields. These employees are generally involved in the entire mine life cycle, from exploration to closure.

Extraction, transportation, and material moving and processing occupations:

The workers in these occupations operate the equipment used to extract and process ore. Most of these occupations are unique to underground or surface mining operations.

Construction, installation, maintenance, and repair occupations:

Many other workers, who are not directly involved in the extraction process, work in these occupations in and around wells, mines, and quarries to support extraction. Jobs include mechanics, electricians, and carpenters.

Working in Mining

Our workforce is the backbone of the mining industry; without our employees we could not operate mines in Nevada. Employment also represents one of the most direct ways for member companies to contribute to economic development and the creation of human capital in host communities.

Employee Recruitment, Development, and Retention

Recruitment and Development

The mining business has evolved dramatically from its early days in Nevada, from an industry which required simple tools and often dangerous manual labor to a technical and mechanized business that requires a wide variety of employees who work in highly specialized and increasingly technical positions. However, attracting qualified employees can be difficult, particularly when high commodity prices increase competition for employees to bring new operations online. The industry faces a labor shortage in the next five to ten years, as much of the current mining workforce nears retirement age. Studies by professional societies anticipate that approximately 50 percent of the current minerals and energy workforce in the United States will retire over the next decade.

The rural location of many mining operations can also be an obstacle to recruitment: small populations with limited skills make local recruitment difficult. Conversely, attracting employees from urban areas to rural operations can be complicated by limited housing, infrastructure, and differences in quality of life. Investing in employee development programs assists with our recruitment efforts – both by offering attractive opportunities to current employees and by supporting the development of a capable labor pool in our host communities.

Retention

The cyclical nature of the industry complicates employee retention. Downturns sometimes require temporary or permanent site closures, causing employment to fluctuate with the commodity cycle. Consequently, some qualified individuals are deterred from seeking employment in the industry, and others who lose their positions may seek opportunities in other sectors.

Workforce recruitment, retention, and development efforts are critical to ensure that the mining industry continues to operate efficiently and to create economic value in Nevada.

COMPANY PRACTICES

Company practices to increase employee recruitment, retention and development include:

- **Partnerships with local colleges and technical training facilities**, to assist residents in obtaining the skills required to work in the mining industry. Companies provide financial support, access to training infrastructure, or employee mentors and trainers.
- **Scholarships and temporary or part-time employment for students** during their course of study to help them gain on-the-job experience, with preferential recruitment at the end of these programs. For example, the industry has provided scholarships for students of the Mackay School of Mines at the University of Nevada, Reno.
- **Professional development opportunities for current employees** such as hands-on and classroom training, to increase professional competencies, improve familiarity with new technology and build new skill sets.

- **Programs in leadership and personnel management, project management, safety, and financial management.** Sometimes the best way for people to gain new skills is to transfer their existing knowledge to new situations. For example, in Newmont's Developmental Assignment Program (DAP), participating employees temporarily transfer to Newmont sites outside their home countries, where they share or learn best practices in health and safety, community development, and operations and environmental management. In turn, their visits to host mines provide for cross-cultural exchanges of information. Nevadans participating in this program have worked at sites in Peru and credit the experience with assisting in their career development by offering broader operational experience.
- **Financial support for employees' secondary and lifelong educational pursuits.** In addition to helping employees become more productive in their current roles, these development programs also provide employees with a broader range of skills and more employment opportunities both within and outside of the mining sector.
- **Excellent health care benefits,** including paid health insurance for employees and their families as well as employee wellness programs such as noncash incentives for meeting annual wellness goals.

INDUSTRY INITIATIVES

There is a high level of collaboration within the mining industry in Nevada to address recruiting challenges through workforce development programs for individuals who seek employment in the sector. One of these initiatives is the Great Basin College Mine Maintenance Training Program (below).

Increasing Diversity in Mining

Diversity is vital to sustaining and strengthening our workforce. Although women now comprise an estimated 25 percent of the workforce in a mine in Nevada—up from an estimated 5 percent in the 1970s—mining companies are still challenged to recruit more women into this traditionally male field. Historical reasons for preventing women from participating in mining, such as strenuous physical labor and safety issues, have been dramatically reduced through technological advances, and the ripples of labor laws enacted three decades ago are steadily—if slowly—being felt. Mining is no longer considered a gendered occupation, yet opportunities to encouraging women to enter mining remain.

COMPANY PRACTICES

Most Nevada mining companies actively recruit female employees, and have designed flexible work practices to encourage women to seek employment in the industry. Many also have equal remuneration policies to ensure wage equality.

INDUSTRY INITIATIVES

We are undertaking many efforts to increase both the gender and ethnic diversity of our industry, many of which begin with K-12 educational programs (see Community Impact, p. 40) and continue through the college level (see Great Basin College Mine Maintenance Training Program case study).

Great Basin College Mine Maintenance Training Program

In the late 1980s, a boom in mining activity resulted in exponential growth in demand for skilled mine employees in Nevada. Newmont Mining Corporation's staffing requirements alone grew sevenfold in only three years. To fill short-term demand, workers were brought west from coal mining areas in the Eastern U.S., but relocation resulted in high turnover rates. The state needed a way to increase local populations' technical skills for mine employment. Newmont and the Great Basin College (GBC) partnered to create the Great Basin College Mine Maintenance Training Program—fulfilling the mining company's need for skilled workers while providing jobs for local residents.

With a main campus in Elko, four branch campuses, and 13 satellite centers, GBC serves six of Nevada's largest rural counties within 62,000 square miles, an area with more than 120,000 residents. The college is dedicated to making the achievement of an associate's or bachelor's degrees available to communities in rural Nevada.

The Mine Maintenance Training Program is crafted specifically to match industry needs. The Program was originally sponsored by, and designed in partnership with, Newmont. In the 1990s, industry partnership was expanded to include 15 companies under the non-profit coordinating body, Manpower Training Cooperative. The companies offered scholarships to each high school senior that the college had recruited into the Program, and the students split their time between the classroom and a job with the company that had provided the scholarship.

The Program continues to have significant industry involvement. All instructors have mining experience, and each educational track has an advisory committee from the industry. Mining companies also support the Program through donations or long-term loans of mining equipment too expensive for the college's budget.

As the Program evolved, training was streamlined into a summer of work with a mining company, followed by the one-year classroom-based degree program. Classes are now open to students who have not received scholarships, and some graduates have gone on to work in other industries. Ongoing research, sponsored by Newmont, into the current needs of mining companies has been used to further develop and evolve the curriculum, ensuring that students emerge with relevant skills and abilities.

The Program supports Nevada's economy by ensuring companies can recruit sufficient skilled workers and that locals have the training necessary to access high-paying jobs in their region. As local towns and cities seek economic diversification, these pools of skilled laborers attract new industries and employers. In addition, recruitment of women into the Program is working to create gender parity in mining in Nevada.

Occupational Health and Safety

One of our members' most important responsibilities is the protection of their employees' health and safety. "Safety First" is a philosophy widely shared by all members of the mining industry. We are committed to high levels of performance and continuous improvement in safety on the job and in the overall health and welfare of our employees.

COMPANY PRACTICES

It is a basic responsibility for our members to comply with all federal and state level regulations for health and safety and to cooperate with the Mine Safety & Health Administration and the Mine Safety and Training Section to the best of our ability. However, while compliance with laws and regulations is important, we measure our success by striving for health and safety performance above and beyond compliance. Companies in the mining industry undertake additional steps (in addition to those required by state and federal regulations) to improve health and safety in ways that are most appropriate for their businesses, employees, and corporate cultures.

- **Formal health and safety management programs** at member company mines are designed to integrate protective measures and practices into how

Mine Safety Regulations

Mine safety is highly regulated both by the state and federal governments.

Federal Legislation

The Federal Mine Safety and Health Act, passed in 1977, requires regular inspections of all surface mines, mandatory training, creation of rescue teams for all underground mines, involvement of mine employees and their representatives in health and safety

The Mine Improvement and New Emergency Response Act of 2006 contains a number of provisions to improve safety and health in America's mines.

The Mining Safety & Health Administration (MSHA), a division of the U.S. Department of Labor conducts inspections and investigations at mine sites to ensure compliance with these acts. When inspectors and investigators observe violations, they issue citations and orders to mine operators that require them to make corrections. MSHA also investigates mine accidents, complaints of discrimination related to employee health and safety rights, reports of hazardous conditions, and criminal violations; improves safety and health standards; and reviews mine operators' operational plans and health and safety education and training programs.

State Regulations

Within Nevada, the Mine Safety and Training Section (MSATS) in the state's Department of Business and Industry regulates mine health and safety. The mission of MSATS, created in 1909, is to establish and determine mine operator compliance with state and federal mine safety regulations and assist mine operators in achieving such compliance through training programs, consultation, and technical assistance.

employees perform their daily jobs. We seek to protect and encourage the overall health and well-being of our employees, both on and off the job.

- We invest heavily in **ongoing training and evaluations** to ensure that employees understand safety practices, which are built into processes and procedures associated with mine operations.
- **Certification of health and safety management systems** to the Occupational Health and Safety Audit System (OHSAS) 18001 standard.

INDUSTRY INITIATIVES

The industry collaborates on health and safety training and resources—for example, the Mine Safety & Health Committee of NvMA organizes regular trainings on topics, such as conducting sampling to monitor particulates, noise, and mercury vapors. Because safety and health are critical across the industry, whether companies are members of NvMA or not, we offer these trainings to all interested parties. We also seek to leverage the greater experience of many of our larger members, who have been able to devote more resources to developing best practices, when training smaller, less experienced companies.

NvMA also seeks to develop strong relationships with industry regulators responsible for safety. We invite MSHA representatives to participate in many of our meetings so that we can discuss new and potential regulations, performance concerns, and general questions in a collaborative environment. MSHA representatives also serve as judges in our mine safety competitions, which builds their knowledge of our capabilities as well as our challenges.

PERFORMANCE

Despite our best efforts and significant improvement over the last two decades, accidents do occur and occasionally result in injuries or even fatalities. As of the third quarter of 2009, there were 108 days lost due to nonfatal occupational injuries. The industry also had one fatality in 2009. We deeply regret the loss of this individual as well as the impact of injury and illness on other employees and their families. We believe that any injury, illness, or fatality resulting from employment in mining is unacceptable and will continue to seek improvement to reduce or eliminate these incidents.

Fatalities and Days Lost, Nevada Mining Industry 2006-2009

	2009 *	2008	2007	2006
Fatalities	1	3	2	0
Non-Fatal Days Lost	108	162	144	159
Total Working Days	558740	739483.5	712868	668327
* Preliminary Data				

Mine Safety and Health Administration

Mine Safety Competitions

Two people lie unconscious on top of a 70 foot high drill mast. A team of safety experts rig a series of ropes and harnesses to scale the mast. Once at the top, they carefully maneuver the unconscious people into stretchers and lower them to the mine floor below. Nearby, a panel of expert judges-watches closely, rating the team on its performance.

Each year, mine emergency response teams (ERT) representing mining companies operating in Nevada come together to compete against each other for awards of excellence in emergency response. Competitions are held for both surface and underground mining operations—the first surface competition was held twenty three years ago. The teams are graded on written test responses, as well as actions witnessed during scenarios such as the one described above. They are required to be expert in rescue techniques, knowledge of chemicals and what to do in the event of exposure, CPR and first aid, and emergency equipment use, among other skills. Teams showcase their skills and abilities, and learn new techniques and best practices from each other. Although each team's scenario lasts just an hour or two, the competition stretches over two to three days.

Many of these teams are lucky enough to go years on end without putting their skills in to practice outside of the competitions. Each mine's emergency response team is comprised of volunteers - and companies grant time in these employees' schedules for training. They meet throughout the year to practice and learn about ongoing developments in emergency response. Many mine safety volunteers find involvement on these teams to be among the most rewarding aspects of their jobs. Many extend their dedication and service to their local communities, running ambulances and supporting local emergency response departments.

When an emergency occurs, these employees are expected to leave their posts immediately and respond, whether the emergency is at their mine or a neighboring site. Under the terms of a Mutual Aid Agreement, mining companies in Nevada have committed to sending emergency response teams whenever an emergency occurs at any mine in the state. This Agreement not only commits resources to emergency situations, it furthers training and promotes sharing of best practices. Each team trains at sites around the state in order to be familiar with operations, emergency procedures, and the working structures of the teams they would be supporting.

Best practice sharing is also promoted through the emergency response subcommittee of the Nevada Mining Association's Safety and Health Committee. Emergency response team captains attend monthly subcommittee meetings, engaging in topical discussions and creating an informal network for learning. Miners and mining companies are also committed to working together to elevate proactive prevention practices, a strategy which generates the biggest gains in mine safety.

Emergency response teams are prepared to respond to any emergency, and mine safety competitions serve to ensure that they are equipped to spring into action when required. These teams are as ready to rescue trapped miners or contain a chemical spill as they are to resuscitate a heart attack victim. But the ultimate mine safety success would be an emergency response team that was only activated for training and competition, and a mine that operated day in and day out with no emergencies at all.





Community Impact

Mining can transform the communities where we work and live: Our operations bring both new opportunities and new challenges to our host communities. Part of our responsibility is to work with communities to take advantage of the benefits mining can offer, and to find ways to minimize potential negative impacts on their way of life. This responsibility goes beyond providing jobs and paying taxes to such issues as assisting local government in meeting increased demand for public services and infrastructure. It means that, as corporate citizens in our host communities, we have an obligation to contribute to their overall well-being and development.

Community Investment

COMPANY PRACTICES

Our operating members, suppliers and vendors are committed to making strong contributions to our host communities through donations of time and resources in community programs and services that support local education, health care, arts, social programs, and community infrastructure such as parks and recreational areas.

While the mining industry has a large presence in rural parts of Nevada, many of the Nevada Mining Association's members are also active contributors to the state's urban communities. For example, Barrick employees have helped to raise funds in Las Vegas for AIDS of Nevada, the largest AIDS service organization in Nevada. As the company explains, "Barrick doesn't actually operate in Las Vegas, but we have historic ties to the state of Nevada and to addressing this health issue at our operations." Many mining suppliers in Las Vegas, Reno, and Carson City also make philanthropic contributions in these cities.

PERFORMANCE Industry Philanthropic Contributions in 2009

- **NvMA's five largest members** alone reported a total of **\$3,299,000 in philanthropic contributions** made in 2009.
- **The Nevada Mining Association** also made **\$65,000 in donations** independent of our membership.

Source: John Dobra, 2010.

INDUSTRY INITIATIVES

The mining industry is heavily invested in supporting K-12 education in Nevada. One of the many challenges we face as an industry is an outdated perception of mining—many individuals still think jobs in mining are highly dangerous and unskilled. By bringing our core competencies to the classroom, we are helping to improve public understanding of modern mining, prepare the next generation of employees, and provide all resident schoolchildren with a solid understanding of math and science, as well as exposing them to career opportunities. By working together as an industry, we are able to extend our reach across more regions and to pool our resources to increase our impact.

The Nevada Mining Association supports this commitment through its educational website www.nvmineraleducation.org, which contains age-appropriate information for students and educational resources for teachers and parents. NvMA's Education Committee also organizes multiple educational programs in partnership with our members, such as scholarships, educational mineral workshops for teachers, classroom presentations, and career fairs. We are exploring ways to measure the effect of the semiannual training that we offer to teachers in Nevada. Direct interaction with professionals can inspire students,

and we are exploring more opportunities to mentor and teach children directly in the school setting.

Enhancing Public Services

Mining, like any industry, often requires access to public services to support business activity. Healthcare is one example. To protect the health and safety of their workers, mining operations must have reliable access to emergency medical personnel. To meet this need, our members often employ or establish private medical response teams, which are also available to support the medical needs of communities. Our members also invest in existing health care facilities and programs that provide essential services to our workers and their families, and by extension, to the communities where we work. Below we highlight one example of how a member company has worked with community members to address concerns about the adequacy of public services to address new demands created by mining.



Photos courtesy
Northern Nevada
Partnership

Mining Education: The McCaw School of Mines and the K-12 Earth Science Mineral Education Curriculum

Standing on five acres of land in Henderson, Nevada, the McCaw School of Mines offers a day of hands-on learning to fourth graders from southern Nevada. While these students live in a state whose history, present, and future is closely linked to the mining industry, many of them live too far from a mine site to visit. Driven by the vision of two fourth-grade teachers and sustained by ongoing investments by the NvMA, the McCaw School of Mines brings the mine to them.

On a typical field trip to McCaw, students find themselves standing in the center of a scaled open pit mine, surrounded by tiered walls and scaled representations of mining equipment. They explore model tunnels and shafts, load ore into carts, and learn about the “drill, blast, muck” process of extracting ore from rock. Four educational rooms allow them to identify minerals, examine antique and new mining equipment, learn about products that contain mined minerals, and experience the operation of modern mining techniques via computer. The school's grounds include an antique drilling rig more than 40 feet high, a Caterpillar mining truck, a model train, and a full-sized caboose that houses the school's collection of fluorescent minerals. The facilities are designed to make learning about minerals and mining both educational and enjoyable through hands-on experience and exposure to real-life applications of science.

Teachers schedule the field trip as part of the weeklong mining curriculum embedded in the Nevada History unit, and the lessons of the day align with state educational requirements for fourth-grade science, social studies, and history. The McCaw School of Mines Foundation raises funds each year to ensure that all of southern Nevada's fourth-grade classes have access to a trip to the school. There is no charge for the field trip, and the foundation provides transportation to all visiting classes. More than 150 fourth-grade class field trips are taken to the school each year, and more than 55,000 students have visited since it opened in 1997.

Specially selected fourth- and fifth-grade “student docents” from the McCaw Elementary School act as tour guides to the visiting classes. These docents highlight aspects of mining, such as safety, environmental impacts and reclamation, and the viability of mining as a career for women. Several docents have gone on to enroll in the Mackey School of Earth Science and Engineering at the University of Nevada, Reno. A recent graduate of the University of Notre Dame credited her achievement of a degree in computer science under full scholarship, in part, to her experience as a docent. She plans to further the mission of the school by helping to redesign the website.

Some teachers volunteer to bring information on mining and minerals to their students beyond the weeklong mining curriculum offered in fourth grade. The K-12 Earth Science Mineral Education Curriculum is a three-day workshop offered to teachers throughout Nevada and beyond. Held in both northern and southern Nevada, the workshop costs less than \$40 and provides participants extensive resources and information on minerals, earth science, and mining to use in their classrooms. The resulting units fulfill state requirements for all subject standards, including English, math, science, and social studies.

Much like the McCaw School of Mines, the program provides teachers and their students information otherwise unavailable on mining in Nevada and the importance of mined minerals to daily life. Up to 150 teachers participate each year, and most of the curriculum's instructors are industry experts. Teachers, who experience both classroom learning and an opportunity to visit a mine site, can receive university credit or professional development credit for attending the workshop.

The Nevada Mining Association supports programs like these to advance awareness of the benefits and impacts of mining on communities in Nevada. Students who learn about minerals and mining become ambassadors within their schools and families, and carry what they have learned into adulthood and out into the world. They grow into a more informed voting populace and have a stronger awareness of the broad range of mining-related careers open to them in their home state. What begins as an exciting earth science lesson has the potential to lead to more interest in—and more informed opinions about—mining for a lifetime.

"The Friendliest Town on the Loneliest Highway" Grows with Mining

Mining has the potential to bring tremendous economic growth to towns and rural areas. Areas impacted by the opening and operation of a mine will see an increased tax base, access to new jobs, and company investment in the community. However, communities are also concerned about the changes that will affect their town as it grows and the industry evolves. Members of the NvMA seek to facilitate growth responsibly and to engage affected communities throughout the process.

Eureka, population 600, is a small town about to undergo a growth spurt due to the increased presence of mining. General Moly, a U.S.-based mineral company engaged in the exploration, development, and mining of molybdenum, expects to open the Mt. Hope Mine outside of Eureka within the next few years. Although a large gold mine is already in operation just miles from Eureka, many of its employees are drawn from communities as much as 110 miles away. The opening of Mt. Hope will likely have a dramatic effect on the face and shape of Eureka.

Established in the mid-1800s, Eureka is perched on the edge of a canyon in the high desert of central Nevada. Local residents are proud of the diversity of natural, historic, and economic resources available in the area—the link to the “Old West” is visible in the more-than-century-old brick buildings lining the downtown streets—and the community is committed to retaining the town’s charm and quality of life through conscientious management of growth and resources.

As it prepares to open Mt. Hope, General Moly has made strides to build a strong relationship with members of the Eureka community. The company opened a store front on the main street and encourages residents to drop in with questions and concerns. In addition, General Moly holds “open house” community meetings, focus groups, and mine tours to create a dialogue and facilitate the exchange of information with town residents. Through these meetings, the company has become aware of both concerns and opportunities it will face in development of the mine and its peripheral needs. One key concern is the effect of planned population growth. In response, General Moly is working with the town to ensure that public facilities and services, such as local schools, are able to support the increased population, and new housing has been sited away from the historic downtown so as not to impact the aesthetic of the area.

The company has also identified innovative ways to address community needs. When trees needed to be cleared to develop the new housing subdivision for example, General Moly turned them into firewood to heat the homes of local seniors. And when Eureka’s superintendent of schools identified the need to light the high school football field, the company enlisted their vendors and suppliers, as well as the local power company, to have lights installed within three months. Investments such as these intend to communicate that the company sees itself as a community member—one that is committed to acting as a responsible, responsive partner.

The addition of General Moly’s Mt. Hope Mine will bring economic development to Eureka. It will spur the development of new infrastructure, facilitate new business opportunities, bring in new tax revenues to fund town and county services, and increase wages throughout the community. Through General Moly’s conscientious efforts, the Mt. Hope Mine will open to a town that feels respected by the company and welcomes it as a positive addition to the community.

Indigenous People

Nevada is home to several Native American nations, including the Western Shoshone, Paiute, and Washoe. Some of these communities’ claims to land are not formally recognized by the United States government. At times, these unresolved disputes have contributed to contentious relationships and even lawsuits between the mining industry and Nevada’s Native American populations. We recognize the special history and relationship between Native peoples and land and believe that protecting traditional values and uses of land, and providing opportunities for indigenous people to benefit from mining in ways appropriate to their cultures are part of our responsibility towards these important host communities. There is much opportunity to improve the industry’s relationship with indigenous peoples, and many of our members are seeking more collaborative and constructive ways to work with Native American nations as partners in mining. These include:

- **Establishing ongoing, constructive dialogue** between mining companies and Native nations affected by mining operations or exploration. For example, Barrick's Cortez Gold mine has made a commitment to discuss and consider any issue that may concern Western Shoshone communities in regular forums. Each meeting agenda is prepared by the host tribe or band, with limited input from the company, to ensure that the community's priorities are the focus of discussion.
- **Protecting cultural heritage sites and addressing actual or potential impacts of operations on traditional ways of life.** Impacts are often related to land use and can include access to and disruption of culturally and spiritually significant sites. The Bureau of Land Management, which authorizes public land use for mining is legally obligated to consider tribal concerns and interests when planning new land use actions. Nevada Mining Association Members frequently work with indigenous communities to identify specific sites and lands that should be protected from development. At Round Mountain mine, for instance, Kinross Gold Corporation has worked in partnership with local Western Shoshone communities to complete a detailed cultural resource inventory in the vicinity of a proposed transportation and utility corridor.
- **Creating opportunities for indigenous peoples to participate in economic benefits from mining** and ensure that the jobs and revenues created by operations improve the lives of the people who have the strongest ties to the land and are most impacted by its disturbance. Company policies on local hiring, pre-vocational training, mentorship, and cross-cultural awareness help to ensure that indigenous people benefit from mining operations. Newmont actively recruits members of the Western Shoshone tribes and bands in Nevada for employment opportunities to benefit local indigenous communities.





Looking to the Future

Industry Trends

The mining industry depends on continual exploration to identify new mineral resources to open new mines and extend the life of existing operations. Despite its long history of mining, Nevada still possesses considerable mineral reserves and its untapped geologic potential continues to make the state one of the most prospective mineral provinces in the world. For example, estimates of gold reserves have remained at 10-12 years of projected production consistent for the past two decades, maintained by constant exploration. This trend indicates that Nevada is nowhere near running out of gold.

Demand for Nevada's substantial deposits of silver, molybdenum, copper, tungsten, lithium, uranium, and industrial minerals such as gypsum, diatomaceous earth, and limestone is likely to grow significantly over the coming years. Exploration suggests that companies are investing now to develop these new resources: exploration spending in 2008 totaled \$158 million dollars. This represents a significant annual investment in the state of Nevada.

Exploration and capital investment in mineral resources by US and foreign companies is mobile - it will be directed to areas with the highest likelihood of a superior return on investment. While the quality of the mineral resources impacts this selection process, the regulatory environment and taxation regime also play significant role. The long-term vitality of Nevada's mining industry depends to a great extent on maintenance of a balanced business climate to attract such investment.

Sustainability Trends

Mining is likely to remain an important part of Nevada's economy for many years to come. However, social and environmental trends will pose new opportunities and challenges for our industry in the future. These include:

- **Energy generation and climate change.** Mining requires energy, and industry growth will increase demand. However, we recognize our responsibility to address climate change through initiatives to reduce energy consumption and develop renewable energy as a means of meeting our operational needs, and those of our host communities, while reducing emissions. Fortunately, there is significant potential to in Nevada to develop renewable energy. According to the chairman of the Federal Energy Regulatory Commissions, aggressive energy efficiency programs and of the state's abundant wind, solar, and geothermal resources could provide all of the Nevada's energy in the next 15 to 20 years. The challenge lies in taking steps to realize this potential.
- **Water.** As the driest state in the nation and one of its fastest growing, Nevada faces major challenges in balancing various demands for water – from the residential population, tourism, agriculture, conservation and mining industry. Increasing efficiency of water use in our operations and supply chain, and working with partners in civil society and government to conserve water resources will be important for the future of the mining industry and the state.
- **Urbanization.** Nevada is an increasingly urban state. For example, 72 percent of Nevadans now live in the Las Vegas Metro area. These demographic changes will not only place new demands on natural resource,



but they will also change the stakeholder landscape for mining. Engaging with urban stakeholders is important for the industry to increase knowledge about mining – a largely rural economic activity – and to understand evolving expectations about the social and environmental performance of the industry. Additionally, the industry's workforce will increasingly have to be recruited from urban settings.

Tackling these future challenges will require continued industry collaboration – amongst our membership and with our partners and stakeholders. Our 150 year history in the state is a strong foundation for such partnership today and in the future. Like all good partnerships, it requires shared decision-making to meet challenges and seize the opportunities, both present and future. In the coming years, the Nevada Mining Association will continue to play a key role in facilitating communication and collaboration to foster responsible, and sustainable, growth for the mining industry in Nevada.

Economic Overview of Nevada's Minerals Industry, 2009



Cover Photo: Exploration drilling at Allied Nevada Gold Corp.'s Hycroft Mine west of Winnemucca.
Courtesy of Adella Harding and The Elko Daily Free Press/Mining Quarterly.

Economic Overview of Nevada's Minerals Industry, 2009

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Executive Summary

Nevada's minerals industries have always been heavily influenced by regional, national, and international trends and events whether they have been favorable or unfavorable. The financial and economic upheavals of the "great recession" over the past two years have been no exception. However, unlike other areas of the national and state economies where the economic news has been mostly bad, economic developments in Nevada's minerals industry in 2009 and the first half of 2010 have been mixed. While gross proceeds in the precious metals sector held up fairly well, other minerals were definitely hit by the recession.

On the positive side gold prices have remained strong and sustained the largest sector of the state's mining industry. Gold prices averaged \$972 per ounce in 2009, almost \$100 higher than in 2008.

In addition, base metal prices, primarily copper, have partially rebounded after a steep slide in the early part of the recession. The average realized price of copper at Nevada mines was just over \$3 per pound in 2009 after plunging to around \$1.30 in late 2008. Molybdenum prices also slid in the early part of the recession from around \$30 per pound to around \$10, but have also partially rebounded.

Gold production accounted for almost 88 percent of gross proceeds of mines in 2009 according to the Nevada Department of Taxation (NDT) so the significance of gold prices for the state's industry is clear. Copper production is currently located primarily at the Robinson Mine in White Pine County and the Phoenix Mine in Lander County, but sustained copper prices make other new developments more feasible. The same is true of molybdenum prices. A major molybdenum mine development is in the permitting process at Mt. Hope in Eureka County and sustained demand and prices are crucial.

On the production side, Nevada gold mines produced 5.64 million ounces in 2009 according to the Nevada Division of Minerals (NDOM), down slightly from 5.7 million ounces in 2008. Silver production, which is mostly a byproduct of gold production, was 7.2 million ounces, also down slightly compared to 2008. The NDT reports to gross proceeds of gold and silver at \$5.1 billion out of total state gross proceeds of \$5.8 billion.

2009 copper production totaled 145.7 million pounds from two mines, with a value of \$441.8 million or 7.6 percent of gross proceeds of mines.

Exploration spending to discover new orebodies and expand existing orebodies as reported in the NDOM's annual survey was down almost 30 percent in 2009 compared to the previous year, and was at its lowest level since 2004. Exploration expenditures for 2010 are forecasted to rebound to levels comparable to the past several years.

Proven and probable reserves of gold, which represents gold in orebodies that can be profitably mined at current prices in the future, increased to 2009 to over 75 million ounces from slightly over 70 million ounces at year end 2008. This means that exploration efforts, although reduced, expanded reserves to replace the 5.64 million ounces that were

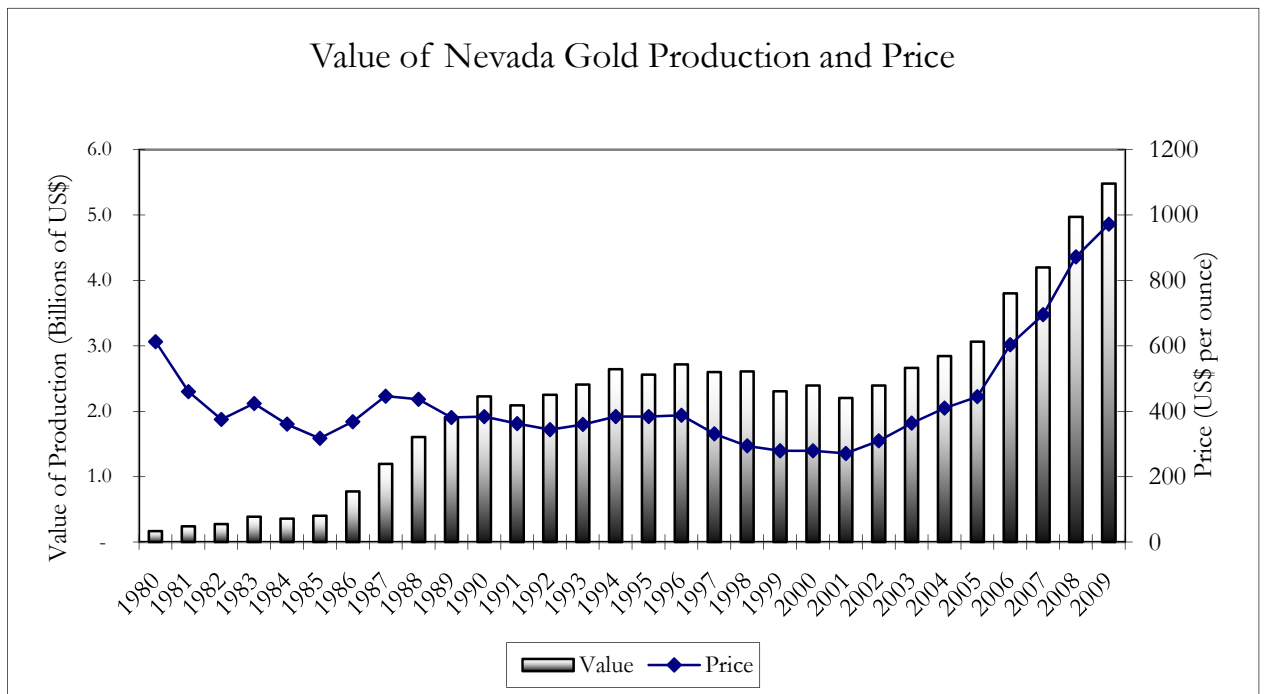
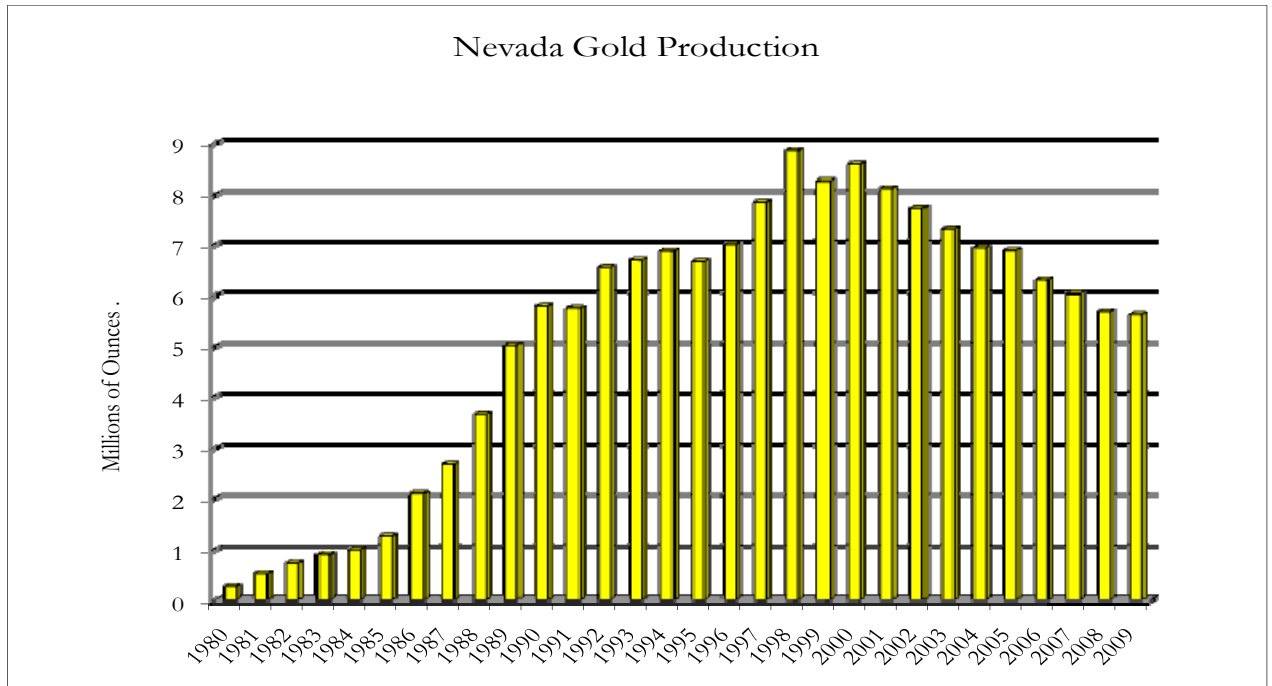
mined in 2009 and found an additional five million ounces. This level of reserves implies that current levels of production could be maintained for over 13 years at current prices even if no new orebodies were discovered. There are enough promising development projects across the state, however, to suggest that it is highly likely that new reserves will be added in the future.

Other positive news from 2009 is that corporate reports from gold producers operating in the state showed that for the first time since 2000, total cash costs of production fell. Weighted average total cash costs, which do not include non-cash items such as depreciation, fell in 2009 to \$508 per ounce from \$525 in 2008. The primary reasons for the decrease are because startups of new lower cost operations such as Barrick's Cortez Hills mine in Lander County, and improved efficiencies at Barrick's Goldstrike mine on the Carlin Trend and Newmont's Carlin Trend operations and the Phoenix mine in Lander County.

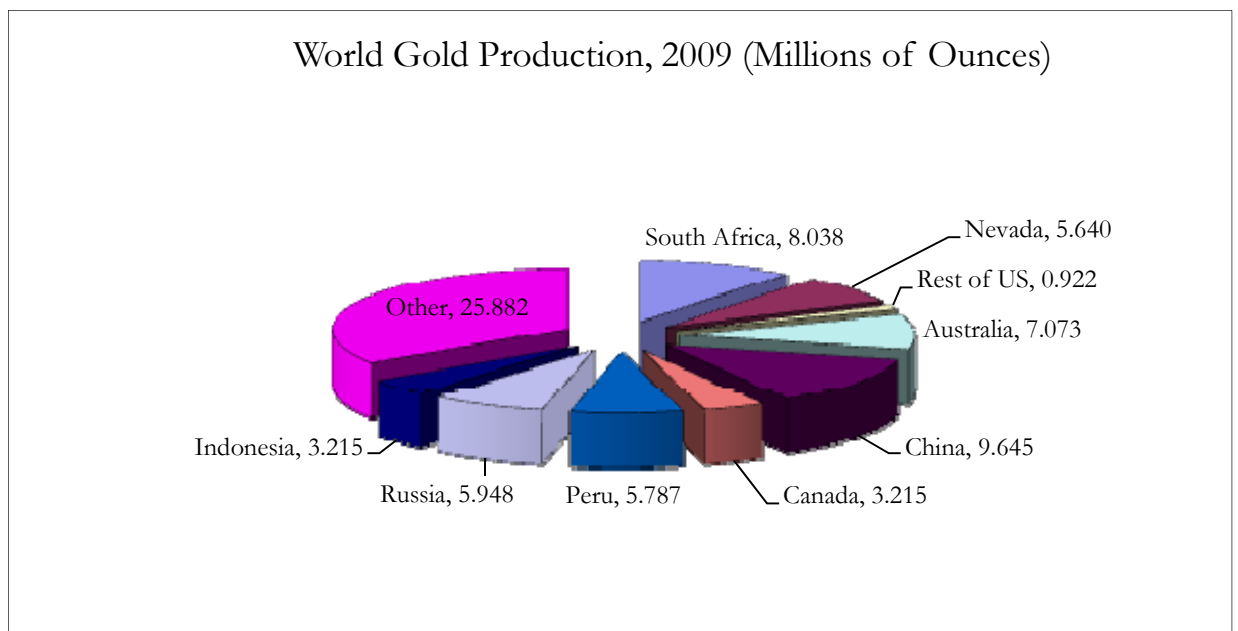
The outlook for the industry in the balance of 2010 and going forward have to be viewed favorably in light of gold prices, lower costs and promising developments across the state. These developing projects are in various stages from exploration to permitting to development to expansions, and stretch from near the Utah to the California borders. Some of the more well publicized projects include the Long Valley project southeast of Wells, the Newmont's Genesis project on the Carlin Trend, the Cortez Hills project mentioned above, the Marigold Mine expansion west of Battle Mountain, the reopening of the Coeur-Rochester mine in Pershing County, the reopening of the Hycroft mine west of Winnemucca, and the permitting process of the Nevada Copper project near Yerington. The success of these and other projects would suggest a bright outlook for the industry and this portion of Nevada's economy. On the other hand, economic recovery will be needed to revive other sectors of the minerals industry.

HIGHLIGHTS OF NEVADA MINERAL PRODUCTION

GOLD

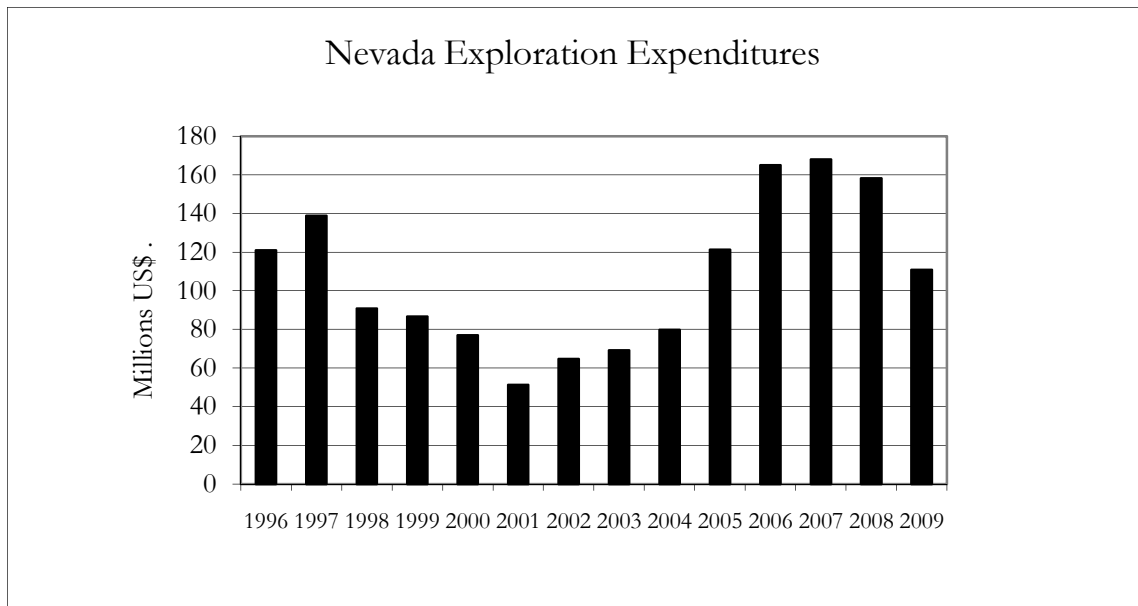


- Nevada operators produced 5.64 million ounces of gold in 2009, down slightly from 5.7 million in 2008. In spite of the decrease in output for the ninth consecutive year, as the graph above indicates, the value of output increased because of higher prices. The average price in 2009 was \$972 per ounce, \$100 per ounce higher than the 2008 price of \$872 per ounce. Through the first half of 2010 the price even broke the \$1,000 level which had been a bit of a psychological barrier.
- Nevada's production declined for the eighth straight year because higher prices allow operators to process lower grades of ore. While lower production levels may seem like bad news in the short term, in the long run it extends the life of ore bodies and enhances the sustainability of the industry.
- Nevada gold production accounted for over 79 percent of total US production and approximately 7.2 percent of world production.
- As a result of this decline in production and increases in production in other countries, Nevada's rank in world production fell from fifth to sixth behind China, South Africa, Australia, Russia, and Peru.



Source: U.S. Geological Survey (USGS)

- The NDOM reports over 20 major gold/silver mines in Nevada although several of these (e.g. McCoy/Cove, and Denton-Rawhide) are closed or operating at reduced levels (e.g. the Rain Mine, Trenton Canyon Mine). In addition, a number of these “operations” have multiple points of extraction, that is, actually consist of several “mines”. Consequently, citing the actual number of mines is somewhat misleading.
- The NDOM annual exploration survey showed that exploration expenditures by operators reporting declined significantly in 2009 to \$110 million from \$158 million in 2008. In spite of this decline in reported expenditures, press reports and company press releases suggest that exploration activity remains quite strong.



Source: Nevada Division of Minerals

- Also in spite of the decline in exploration expenditures, reported proven and probable gold reserves, which is ore that can be produced profitably with a high degree of likelihood, increased to 75 million ounces in 2009 compared to 70 million ounces in 2008. This means that producers replaced the 5.6 million ounces mined in 2009 and found an additional 5 million ounces. 75 million ounces is sufficient to maintain production at current levels for an additional 13 years.

OTHER 2008 MINERAL PRODUCTION

COPPER

- Because of renewed production at Quadra Mining's Robinson mine near Ely and Newmont Mining's Phoenix Mine near Battle Mountain, copper production is once again a significant contributor to minerals industry output. Copper is the second most important mineral produced in terms of the value of output, although only a little more than one tenth the value of gold production.
- 2009 copper production was 146 million pounds compared to 175.5 million pounds in 2008. The gross proceeds from copper production reported by the Nevada Department of Taxation was \$442 million. This was down from 2008 because of lower copper prices.

SILVER

- Nevada silver production fell slightly again in 2009 to 7.2 million ounces from 7.96 million ounces in 2008. These levels, however, are down significantly from the levels seen in the late 1990's due to the closure of several large silver producing mines. The planned restart of the Coeur-Rochester mine near Lovelock in 2010 is likely to reverse this trend.
- Silver prices have risen significantly in the past several years and averaged \$14.67 per ounce in 2009, down slightly from \$14.99 per ounce in 2008.
- Because of lower production and slightly lower prices in 2009, the calculated value of 2009 silver production fell from \$119 million in 2008 to \$105.6 million.

OTHER MINERALS

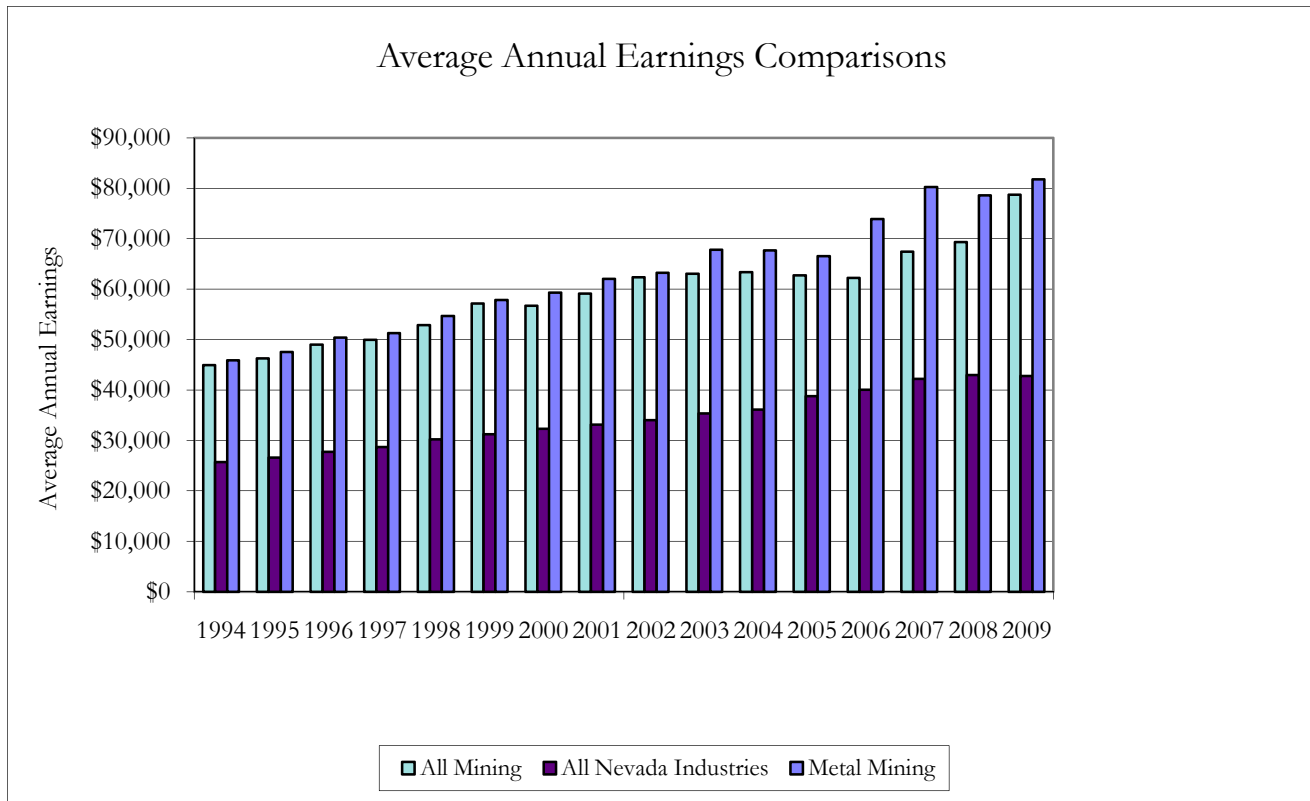
- Geothermal energy also provided domestic, public and commercial heating in several parts of the state. Geothermal electric production came from 15 plants at 12 different sites, and is sufficient to provide electrical energy for approximately 75,000 typical homes.
- The Nevada Department of Taxation reports that geothermal producers generated over \$110.8 million in gross proceeds in 2009, compared to \$95 million in 2008, making it the fourth largest mineral category in the state.

- Because geothermal energy is a renewable and non carbon dioxide producing energy source it is receiving favorable treatment and encouragement from federal and state regulators, this portion of the industry appears to have significant growth potential.
- Nevada mines also produced numerous other minerals including aggregates, barite, diatomite, dolomite, gypsum, limestone, lithium carbonate, molybdenum, magnesium oxide, perlite, precious opals, salt, silica sand, and specialty clays.
- The gross proceeds from the production of these other minerals is an estimated \$156 million, which is down significantly from the previous year. A decline that is likely due to the national recession and a decrease in demand.

MINING EMPLOYMENT AND PAYROLLS¹

2009 Average Direct Employment	11,609 jobs
2008	14,600
2007	14,470
2009 Payrolls	\$913 Million
2008	\$1.01 Billion
2007	\$974 Million
2009 Average earnings for Metal Mining	\$81,755/year
2008	\$78,567
2007	\$80,236
2009 Average earnings for All Mining	\$78,727/year
2008	\$69,313
2007	\$67,392
2009 Average earnings in All Industries Statewide	\$42,746/year

¹ Nevada Department of Employment, Training and Rehabilitation website.



ECONOMIC IMPACTS OF MINING

For the purpose of estimating Gross State Product (GSP) and impact multipliers, i.e., the total number of jobs, total state output, and state household income, the U.S. Department of Commerce breaks down the industry into two components: value added from mining, and the value of mining services. The summaries of employment, output and household income impacts below combine these two categories, while the table below separates the two sectors.

- Between mining and mining services, mining increased state output by approximately \$9.5 billion in 2009 compared to \$10 billion in 2008 including both direct and indirect impacts. The decline was primarily due to a decline in industrial minerals and mining services.
- Generated more than 49,260 total jobs in Nevada in mining and industries supplying goods and services to the industry.
- Contributed \$2.3 billion to Nevadans' personal incomes in 2009.

- Economic impacts derive both from mining and, to an almost equal extent, support services of contractors and suppliers. Below is a breakdown of impacts from these sources from the U.S. Department of Commerce:

		Employment (jobs)	Output (\$Millions)	Household Income (\$Millions)
Value Added to GSP				
Mining	\$2,934	16,340	4,353	913.6
Mining Services	<u>\$2,877</u>	<u>32,920</u>	<u>5,159</u>	<u>1,363.1</u>
Totals	\$5,811	49,260	9,512	2,276.6
Implied jobs multiplier ²		4.24		

² The ratio of total jobs created to direct mining jobs.

TAXES PAID BY NEVADA MININGEstimated Direct Taxes Paid by the Mining Industry 2004 - 2007 (\$1,000)³

	2006	2007	2008	2009
Net Proceeds of Mines Tax				
County Portion	\$ 32,177	\$ 37,442	\$ 42,335	\$ 46,415
State General Fund	<u>\$ 29,740</u>	<u>\$ 38,252</u>	<u>\$ 49,491</u>	<u>\$ 51,162</u>
Total NPOM Tax	\$ 61,881	\$ 75,694	\$ 91,856	\$ 97,578
 Sales & Use Tax	 \$ 101,087	 \$ 93,124	 \$ 95,783	 \$ 69,389
Property Tax	\$ 25,000	\$ 27,000	\$ 32,000	\$ 33,000
Modified Business Tax	<u>\$ 2,662</u>	<u>\$ 2,870</u>	<u>\$ 4,000</u>	<u>\$ 3,700</u>
Total	<u>\$ 192,439</u>	<u>\$ 199,488</u>	<u>\$ 223,609</u>	<u>\$ 203,967</u>

(Source: Nevada Department of Taxation and industry surveys)

³ Nevada Department of Taxation and industry surveys.

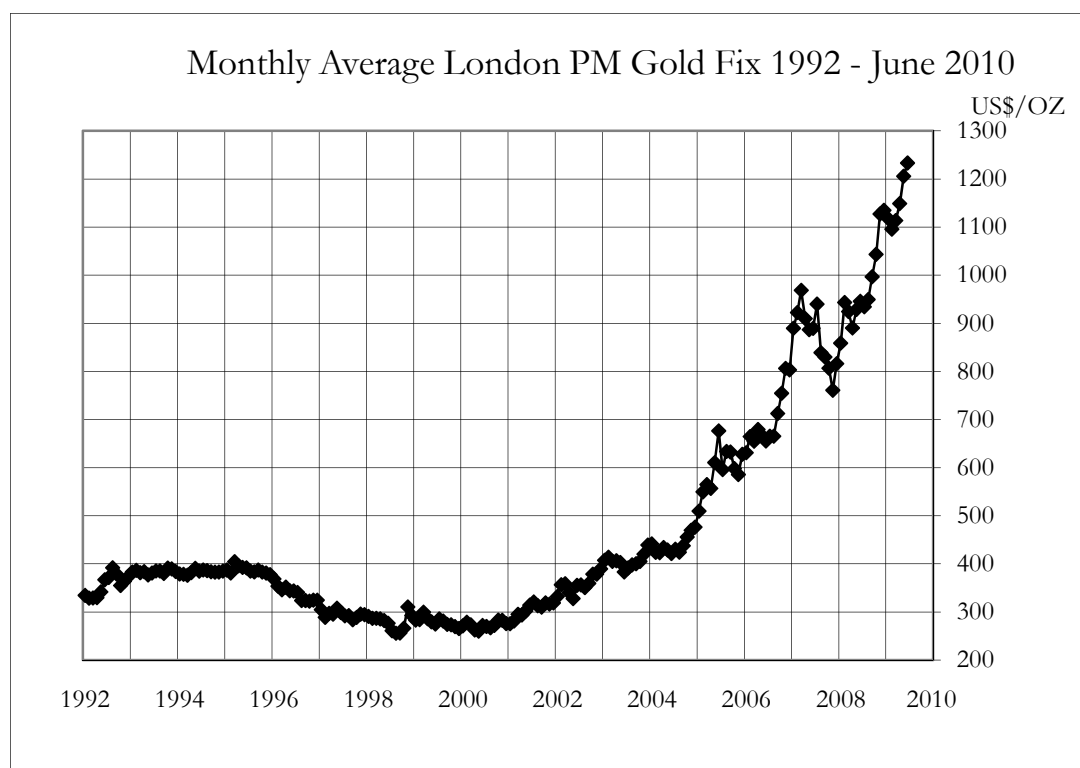
NEVADA MINING: A REVIEW AND OUTLOOK

2009 INDUSTRY DEVELOPMENTS

GOLD PRICES

Since gold production accounts for almost 88 percent of the value of state mineral production, the most salient issue for the industry is the price of gold. Gold is sold in a global, highly efficient market that is open and accessible to investors and traders 24 hours a day. As the graph below illustrates, gold has had quite a ride over the past few years. After languishing in the \$250 to \$400 per ounce range throughout the 1990's, prices broke out of that range in 2002.

Conventional wisdom holds that gold prices increase because of catastrophes, political uncertainties and wars. While these kinds of events do have some short term impact, a look at the graph above and more extensive analysis does not bear this out. For example, the terror attacks of September 11, 2001 barely caused a bump in the gold price and the price quickly came back down. This left market observers asking "If this can't push gold over \$300, what can?" The price of gold also rose prior to the invasion of Kuwait in 1991 and Iraq in 2003, but quickly retreated.



A far more powerful explanation of gold price trends can be found in fundamental market factors. For example, gold prices clearly move inversely to the value of the U.S. dollar because gold is priced worldwide in dollars. Hence, as long as other things are equal, a rise in the purchasing power of the dollar relative to other currencies will cause a proportional fall in the price of gold. There is no real mystery to this relationship but, of course other things never remain equal.

The major change in 2009 and the first half of 2010 compared to the previous five years came in mid 2008 when the dramatic climb in the price of oil collapsed because the worldwide financial crisis and the onset of the deepest recession since the early 1980's. The other factor was a slight strengthening of the U.S. dollar, reversing the trend of most of the post 2000 period. From 2002 until mid 2008 the price of gold was closely linked to oil and the dollar. Gold prices rose with higher oil prices and fell with higher dollar values. Then, in mid 2008, oil prices fell from \$140 per barrel to the mid \$40 range and the dollar strengthened. Past trends would have suggested these events would weaken gold prices, but the price held in the mid \$900 per ounce range. Gold had come to be viewed as a "safe haven".

In late 2008 and early 2009 increasing U.S. dollar weakness has led to a number of countries to call for a new currency that could be used in international trade. Currently, the vast majority of international transactions – even those not involving U.S. companies or banks – are denominated in U.S. dollars and dollar weakness has caused unease among the world's largest trading countries. The main proponents of an alternative currency have been China, Russia, and several Middle Eastern countries. The outlines of such a system have not been worked out but the rumors in financial circles generally involve some kind of gold backed financial instrument. Whatever may or may not happen, this dissatisfaction with the dollar has further spurred speculative and investment demand for gold.

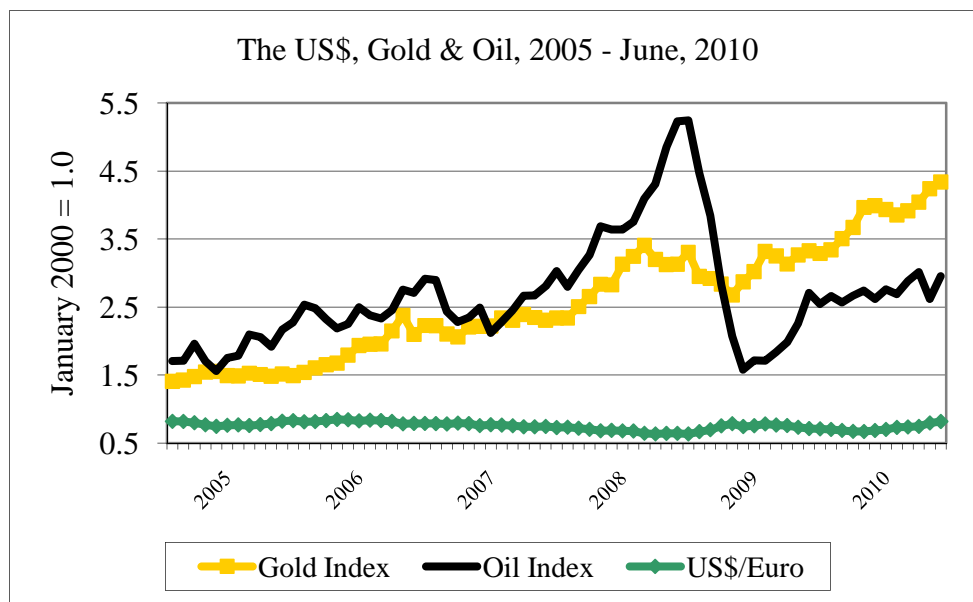
The relationship between oil prices and gold is also fairly clear. Middle Eastern countries that produce oil are also major consumers of gold for investment and other purposes. The reasons for this are cultural, historical and financial. Culturally, gold plays a role in Muslim and Hindu traditions. Historically, the region has an unfortunate record of political instability, weak currencies, and weak financial institutions. In this environment gold serves its traditional role as a store of value. Similarly, gold is used in the Middle East (as well as other parts of the world) as a hedge against the dollar. The upshot of this combination of factors is that rising oil prices tends to increase the demand for physical gold. The world's other major consumer of gold, India, views gold in a very similar way, and rising prosperity on the subcontinent also increases the demand for physical gold.

Another significant factor in gold demand recently has been increased investment demand in the west. This investment has been facilitated by the innovation of Exchange Traded Funds, or ETFs. These funds buy physical gold,

hold it, and sell shares in the fund to individual and institutional investors. These ETFs make it much easier for investors to participate in gold markets.

Finally, during the late 1990's when world stock markets were booming, it is no coincidence that gold prices were weak. European central banks were selling off their gold reserves and lending gold at near zero interest rates. Many investors were engaged in the "gold carry trade": borrowing gold to sell and buying stocks and bonds aided by the liquidity provided to the world's gold markets by European central banks. This put additional downward pressure on gold prices. Clearly, during this period, gold was not a good investment.

Since fall 2008, the situation has reversed and gold has become a much more attractive investment vehicle. World stock markets have lost significant percentages of their value. Recent U.S. and other government stimulus packages and Federal Reserve increases in the money supply have raised market fears of inflation which has also increased investment demand for gold. In addition, the Federal Reserve, the European Central Bank, and other central banks have held interest rates at historically low levels. The liquidity provided by central banks' monetary policies has stirred inflation fears and made gold a more attractive investment.



OPERATIONS

Mining operations consist of five distinct activities: exploration, permitting, development, extraction or mining, and reclamation. In a simplistic view, these activities occur in the order listed above, however, in reality they generally occur simultaneously.

Permits from state and federal regulatory agencies are required for each stage of the process although initially, permits are generally only sought for exploration. Part of this permitting process involves providing financial assurance that land disturbances caused by exploration and operations will be reclaimed.

While the permitting process is essential for protecting public lands and the environment in general, and the industry is generally in compliance with all regulations, the process has become increasingly lengthy over time. During the 1980's it was possible, although not common, to get operating permits in under two years. Recent experience has been much different. Newmont's Phoenix project in Lander County took eight years, and Barrick's Cortez Hills project is in a similar situation. The problem is exacerbated by the fact that even after permits are obtained, operators frequently face law suits over various aspects of the permitting process that can cause further delays. This lengthy permitting process is one reason that employment in the industry has increased so little during a period of rising prices when it should be increasing robustly.

The definition of a "mine" is also a bit fluid. Currently, there are approximately 18 active gold and silver operations listed by the NDOM. However, since some of these operations involve multiple points of extraction, or "mines", where multiple mines feed common processing facilities, it is more accurate to talk about operations than mines. The NDOT lists 24 gold/silver operations. There are a number of mines that are currently closed but where prospective operators are in some stage of feasibility study or permitting to reopen them and there are also a number of mines in the development phase.

In 2009 active Nevada operations produced 5.64 million ounces of gold, 8.4 million ounces of silver, and 143 million pounds of copper. This compares with 2008, gold and silver production of 5.7 million ounces of gold, just less than eight million ounces of silver, and copper production of 176 million pounds. Gold production fell because higher prices allowed operators to process lower grade ores. The cost of production for operations is determined by factors such as the grade of the ore processed, the amount of waste rock that has to be moved to get at the ore commonly referred to as the "stripping ratio", the processing methods used, whether the mines are surface or underground, etc. All of these factors will generally be unique to each operation and, consequently, different operations will have different costs of production.

A consequence of low gold and silver prices during the late 1990's and early 2000's was that operators made concerted efforts to reduce their production costs. As prices have risen in the past 8 years, operators have been able to expand their reserves and process lower grade materials. In many cases this has involved processing materials, i.e., ore that was previously considered "waste" rock, i.e., materials that are uneconomic to mine and process. Mining and processing these lower grade materials, however, have caused costs to rise. Other factors contributing to rising production costs at Nevada mines during the first half of 2008 in particular, has been significant increases in fuel and energy costs, as well as the cost of steel, labor, and equipment. In 2009 energy and other costs declined for the first time in the past decade, reducing total cash costs. In the case of electricity costs, Barrick and Newmont have mitigated rising costs by building their own power plants. And, it should be noted, the worldwide slowdown in the world economy, and particularly the base metal mining industry, shortages of equipment and supplies that plagued the industry in recent years have eased.

Mining costs are generally referred to as "*total cash costs*" and "*total costs*." *Total cash costs* refer to costs that vary with production and include payrolls, electric power, fuel, chemicals, production taxes, etc. They are costs that producers must pay to stay in operation. They are referred to as "total" cash costs because they include taxes and royalties which are not really costs of production but nonetheless have to be paid to operate legally. Prices above a producer's total cash costs, but below total production costs, merely allow the producer to maintain a positive cash flow, however, a price equal to a producer's cash cost does not allow it to recover any of its investment or earn a profit. *Total costs* include total cash costs but also include non-cash costs such as depreciation of capital plant, equipment, and debt service. Some producers do not report total costs so they are not included in this report because of the lack of data.

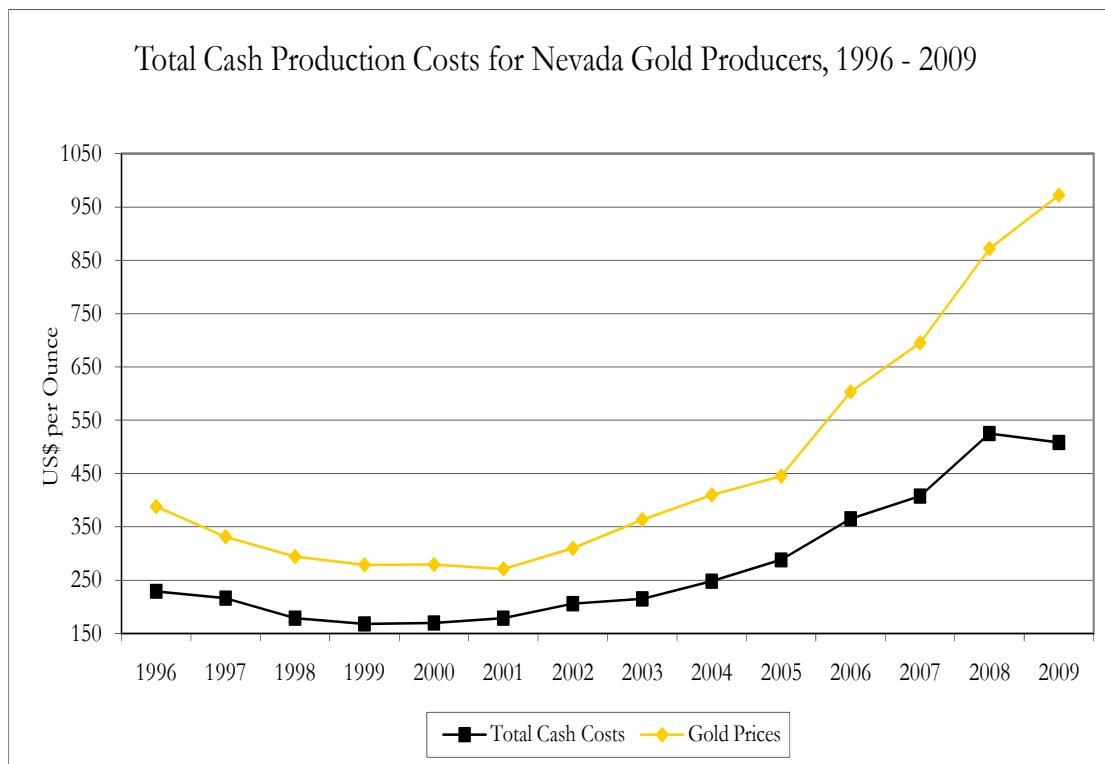
It should also be noted that the profitability of operations illustrated on the graph does not necessarily bear any relationship to the profitability of the corporations that own these operations that can be found in annual financial reports. The costs on the graph only represent the cost of producing gold at these operations and do not include funds spent in exploration to find new reserves or, for example as noted above, the cost to Newmont and Barrick to construct power plants which will lower their costs in the future. Also not included in the costs above are the costs for in house experts, research and development, consultants and lawyers that are needed for the permitting process. The issue of industry profitability will be addressed below.

Overall, the weighted average total cash cost of operations at Nevada gold mines fell from \$525 in 2008 to \$508 per ounce in 2009. As an indication of longer term changes in operating costs in the industry, since 2001 the weighted average total cash costs increased 188 percent from \$182 to \$525 per ounce. However, over the

same period the average price increased by 322 percent, so on average at least, the industry is in far better shape from an operations standpoint than in 2001.

In previous years the *Economic Overview* highlighted some of details of the cost increases hitting the industry. The increases in fuel and energy have been noted but are only a small part of the picture. Costs for steel, equipment, tires, chemicals, transportation, etc. all were up 30 to 60 percent. The economic downturn in late 2008 and 2009 has reversed this trend creating cost savings.

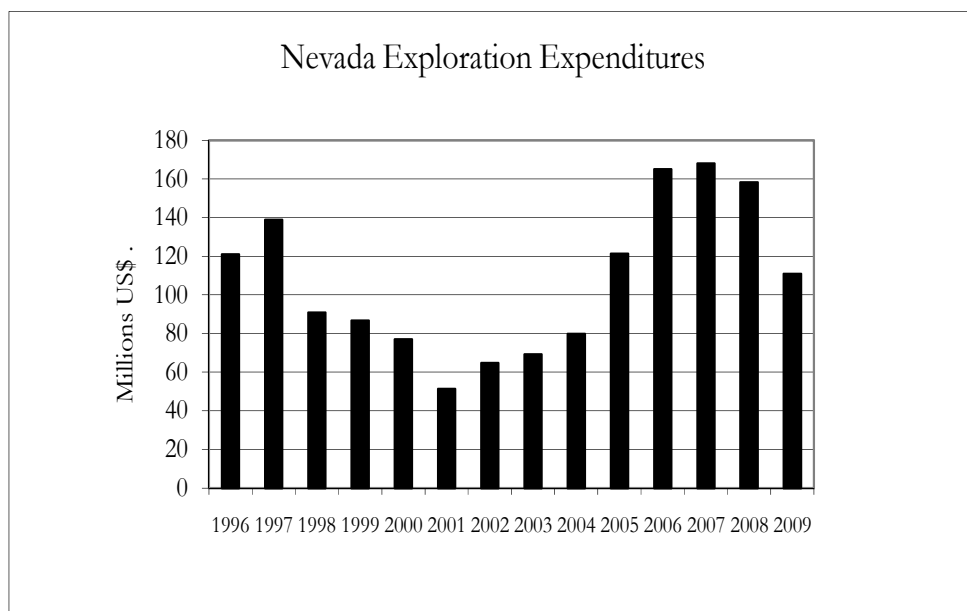
Mining is notorious for being a cyclical business. During the years of declining prices from 1996 to 2001 operators made many efforts to cut their costs to stay in business. From 1996 to 1999 weighted average total cash production costs went from \$229 to \$168 per ounce, a decrease of 27 percent. These cost reductions were achieved by various means such as delaying or reducing development, exploration projects, and when possible, purchases of new equipment. In addition, when possible, operators stockpiled lower grade materials rather than processing them. Operators tried to preserve their workforces by getting rid of contractors and letting their own employees do what the contractors were doing which also cut costs. Even with these kinds of efforts mining employment still fell by thousands of workers. What we have experienced since 2002 has been a reversal of this process.



EXPLORATION ACTIVITIES IN 2009

In 2002 exploration activity in Nevada reversed a 5-year downward trend and increased from \$51.2 million spent on exploration in 2001 to \$64.6 million. 2007 marked the sixth year of this upward trend with expenditures estimated by the Nevada Division of Minerals at \$167.9 million, up modestly over the same survey for 2006, but well above the levels in the late 1990's. The 2007 figure is the highest found by the survey since it began in 1995.

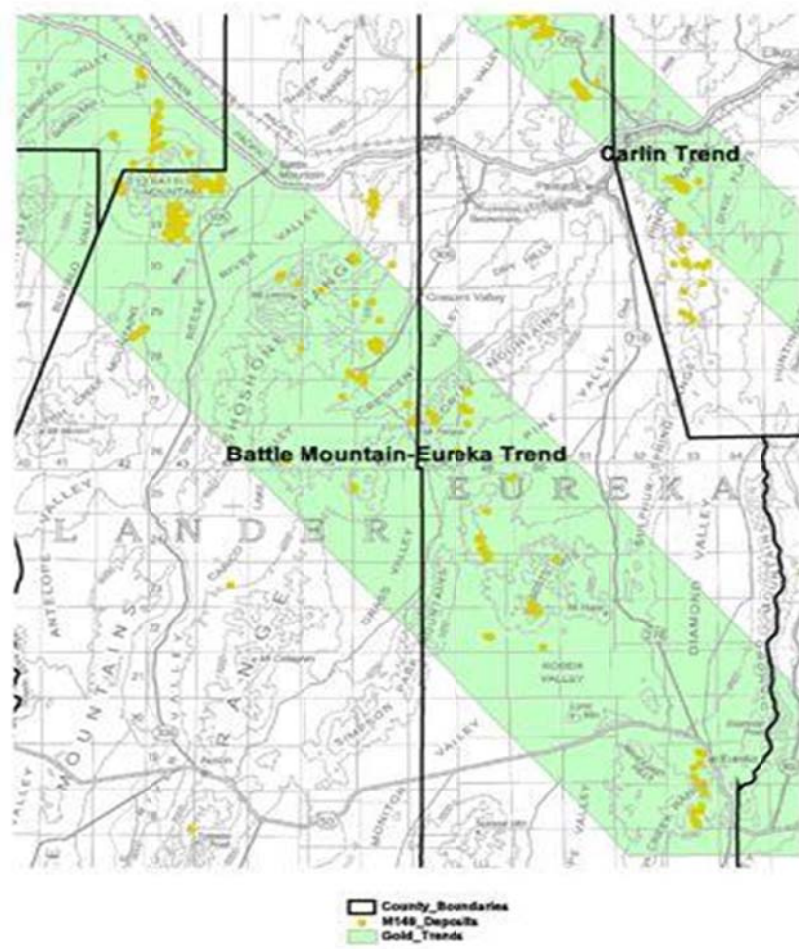
In 2008 the NDOM survey showed its first decline since 2001. However, it should be noted that in spite of this decrease, the figure probably underestimates exploration expenditures because the Division must rely on voluntary reporting and tends to get most of its responses from larger companies and mineral exploration tends to attract a relatively large number of smaller companies. In 2009 the NDOM reported another decline.



During the period of low prices at the end of the 1990's mining claims held in Nevada recorded with the Bureau of Land Management had fallen to under 100,000 from levels in the several hundreds of thousands in the previous decade. Part of this decline was no doubt the result of a claim holding fee instituted in 1993 that resulted in many unpatented claims being dropped. More recently, however, the number of unpatented claims has rebounded strongly.

In 2009 the Nevada Legislature instituted significant onetime fee on mining claims. This is probably a major factor in the 14 percent decline in mining claims held compared to 2008.

Most exploration activity is occurring in the general areas of the Carlin and Battle Mountain Trends since these are proven areas of gold mineralization. The Carlin Trend basically extends from Carlin on Interstate 80 northwest to Midas and south into White Pine County, although most mining activity is at the southern end of that extension. The Battle Mountain Trend, also sometimes called the Cortez Trend, extends from north of Valmy on Interstate 80 southeast to Eureka. These trends are shown on the map below.



However, in 2009 and 2010 there has been considerable exploration activity outside of these trends. Well funded exploration programs are underway from near the Utah border to the California border. The Pequop mountain area between Wells and Wendover is getting serious attention from several companies. Exploration is

underway at the Hycroft mine west of Winnemucca in an effort to restart the mine. And there is serious exploration activity near Yerington in the western part of the state in an effort to start a new copper mine.

The record shows that this exploration has paid off for companies pursuing gold in Nevada. At year-end 2008 Nevada estimated gold reserves were approximately 70 million ounces. At year end 2009 statewide proven and probable reserves were 75 million ounces – enough reserves to maintain current levels of production for over 13 years. Part of this increase was no doubt the result of reclassifying known “resources” because of higher prices, that is, material that was known to exist but could not be profitably mined at lower prices, as “reserves” because they can be mined at today’s higher prices. The extent to which reserves increased because of reclassification versus discovery is not known.

Some question these reserve estimates because it seems that they never change. There are actually a number of reasonable explanations for this phenomenon. Undoubtedly, geologists would probably like to find all the gold in Nevada, and equally undoubtedly mining engineers would like to build a mine to get it all. But in reality, it does not work that way.

Before they authorize the geologists to look for more gold and the engineers to build new mines, the people who run the financial side of the business step in. They understand that the present value of capital, and risks associated with commodity prices, taxes, and regulations make finding an ounce of gold that you cannot mine for ten to fifteen years is not worth the cost of finding it.

Another important consideration is financial regulation. In order to claim that a company has a “reserve” it needs to conduct extensive studies and to go through a permitting process that includes exploration, development, mining, and reclamation. Most informed persons will acknowledge that there is far more than 75 million ounces of gold in Nevada to be mined, but financial and regulatory realities stand in the way of formally announcing it.

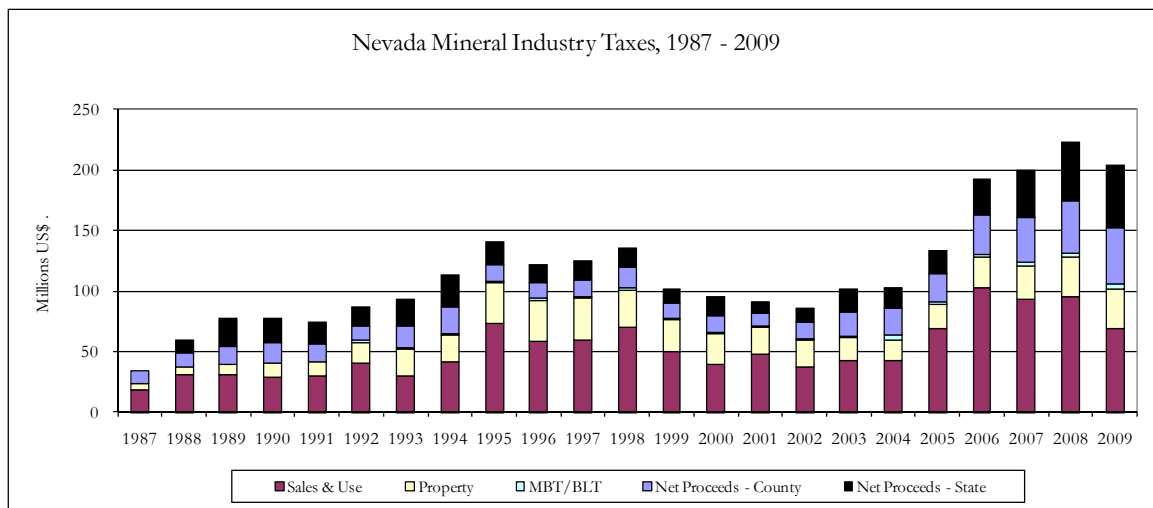
STATE AND LOCAL TAXES PAID IN 2009

Estimated total state and local taxes paid by the mining industry in 2009 decreased slightly compared to 2008, based on information from the Nevada Department of Taxation and industry surveys. This downturn is primarily the result of the general downturn in the economy because the major source of the decline is a reduction in sales and use taxes reported. It should also be noted that these figures do not include pre-payments of 2010 Net Proceeds taxes made in 2009 and early 2010. Prepayments of 2010 net proceeds of mines by the four largest companies during this period were about \$123 million.

It is important to stress that most of the figures presented below are “estimates.” The State Department of Taxation provides an accurate accounting of Net Proceeds of Minerals taxes in the state but estimates for Sales and Use taxes and property taxes are based on surveys of companies that are willing to disclose the information, so the estimate is clearly an underestimate. The major drawback of this method is that it does not pick up sales and use taxes paid by other producers such as most industrial minerals and geothermal operators who also pay these taxes. However, these segments of the industry are smaller than the gold industry and do not purchase the quantity of equipment and supplies on which the taxes are paid. In the case of property taxes we use an estimate based on both surveys and a base figure established several years ago by the NDOT.

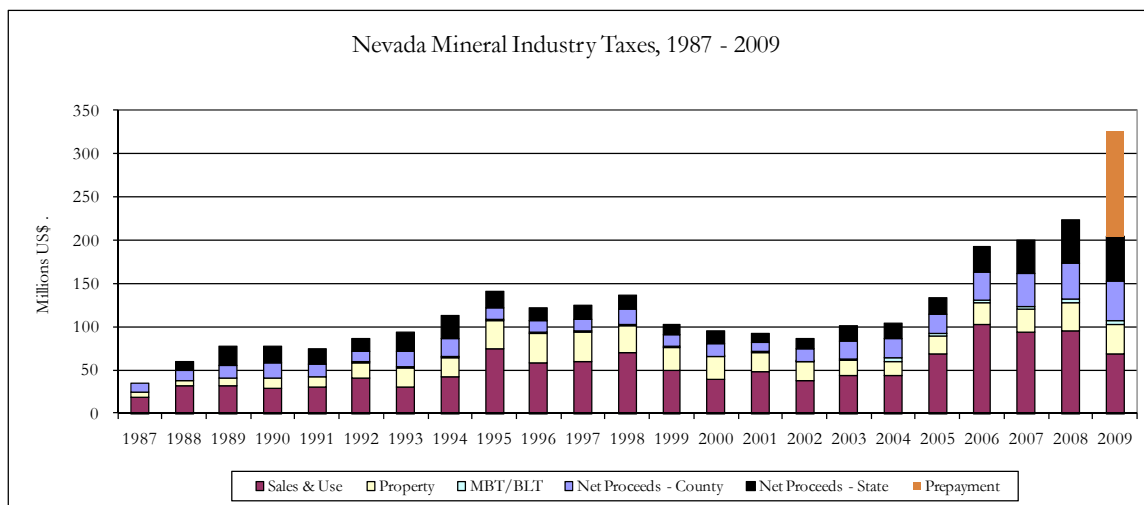
The 8.8 percent decrease in overall estimated taxes in 2009 follows substantial increases during the previous years. Total estimated taxes in 2008 were almost \$204 compared to \$224 million in 2008. Note that this figure includes taxes paid by operators and does not include taxes paid by industry employee or suppliers. The figure below shows taxes paid by the industry in Nevada since 1987.

The primary cause of the decrease was a decline in Sales and Use taxes, the lower part of the stacked bar chart below. In the three previous years higher Sales and Use taxes were the result of several major mine development projects, that result in capital expenditures that are subject to these taxes. These projects were completed in 2009, and capital expenditures were lower.



Even with a decrease in total taxes in 2009, there was a significant increase in Net Proceeds of Minerals taxes because of the increase in the price of gold. Aside

from Sales and Uses, other taxes increased slightly. When the prepayment of 2010 NPOM taxes are included the graph above can be modified to the graph below:⁴



As the graphs above illustrate, total taxes paid by the Nevada mining industry in recent years had been in a downward trend from 1999 to 2002. This trend was primarily due to low gold prices affecting Net Proceeds of Minerals Tax (NPOM) receipts and lower levels of investment in equipment and development which drive Sales and Use tax payments. Low gold prices also led several mines to close during this period and others to seek lower assessments for property tax purposes.

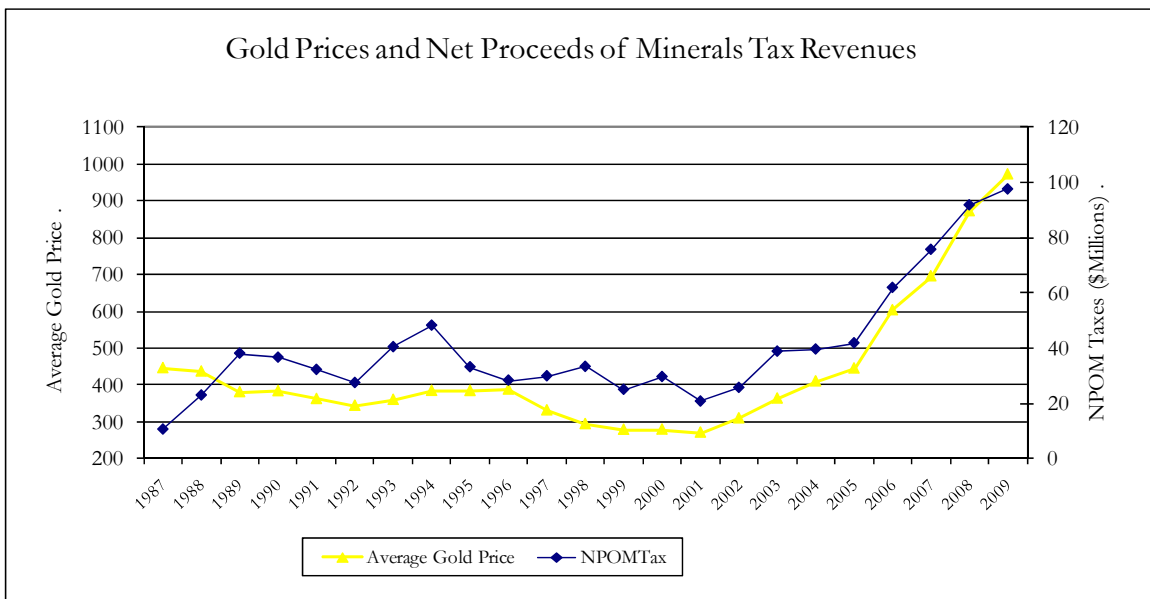
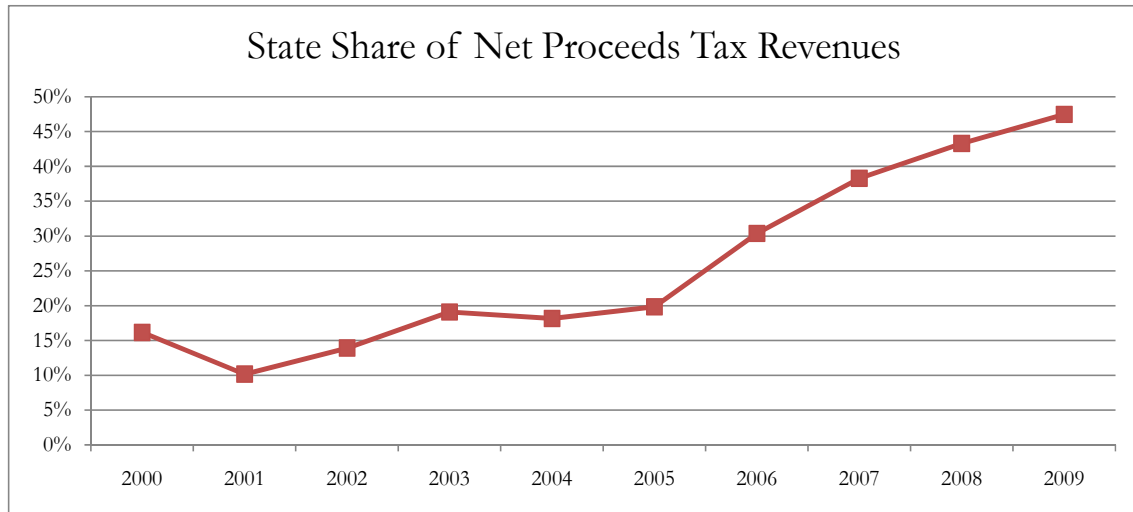
A key point about taxes paid by the mining industry that is often overlooked is the issue of where these revenues go. The general assumption is that they support the communities where the mining occurs. This is, in fact, the way the tax was originally designed but when the state constitution was amended in 1989 to raise the rate to 5 percent and give a portion of the revenue to the state general fund, that changed. Over half of Net Proceeds tax payments go to the state General Fund and are distributed essentially on a per capita basis throughout the state.

Property taxes paid on property, plant and equipment do stay almost exclusively in the counties and special tax districts where the mines are located. Although a small portion of property taxes is dedicated toward state debt repayment.

In the case of sales and use taxes, the various components of the tax are distributed differently. A portion (two percent) goes to the State General Fund, another goes to school districts statewide on a per pupil basis, but the bulk of it is distributed more or less on a per capita basis. This, of course, means that the vast

⁴ The final portion of the prepayment of NPOM taxes was made in February, 2010.

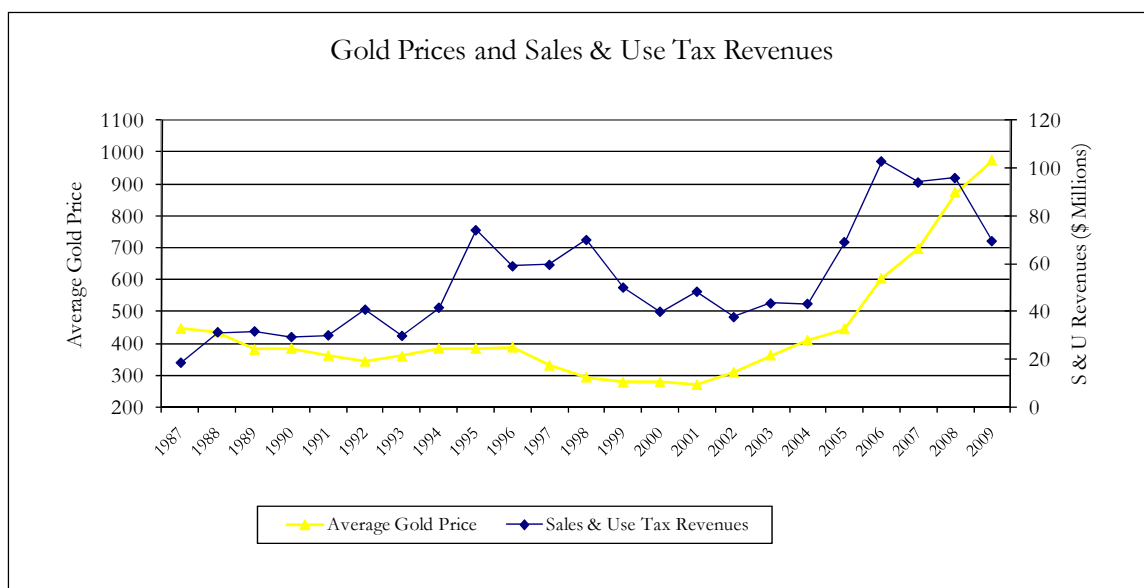
majority of these funds go to Clark County with just under 72 percent of the state's population.



As the graph above illustrates, the increase in NPOM taxes starting in 2003 primarily reflected the increase in gold prices. With the relatively stable margin between production costs and prices as noted above, short term commodity price increases directly increase Net Proceeds, which are Gross Proceeds less deductible production costs (not all production costs described above are deductible).

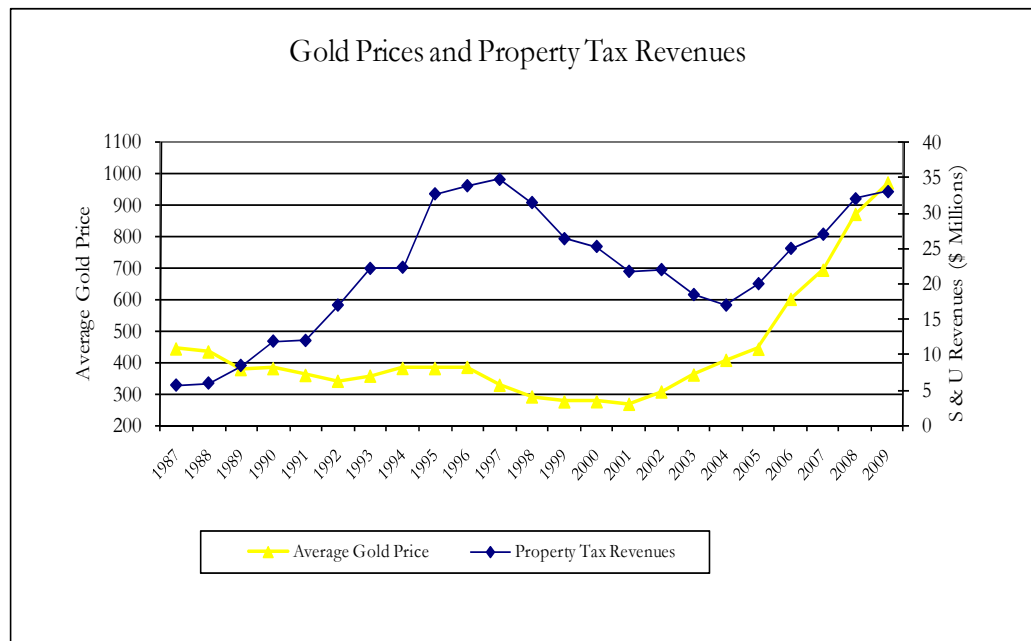
Operators with over \$4 million in Net Proceeds pay five percent tax on their Net Proceeds. In 2004 and 2005, although gold prices increased over 2003 levels, Net Proceeds taxes increased very little because of the significant increases in production costs noted above. In the past three years Net Proceeds taxes increased substantially because prices have increased fairly rapidly, faster than operators could adjust their operating plans. Other deductible costs such as near mine exploration also increased as noted above. In the future, as newly discovered near mine reserves are developed and brought into production, these development costs will be deductible if the mines have Gross Proceeds. Hence, when commodity prices rise significantly, as they have over the past five years, the initial effect on taxes is felt in higher Net Proceeds revenues. However, as operators adjust to higher prices by processing lower grade ores and investing in exploration and new development, these tend to reduce increases in Net Proceeds tax revenues.

Sales and Use taxes, which are primarily paid on purchases of capital items and equipment, have historically been the largest taxes paid by the industry. These taxes primarily depend on the rate of investment in the industry which typically lags behind price changes. That is, when prices increase as they did in the mid 1990's and in the past several years, it takes time to get construction plans and permits in order to proceed. On the other side of the price cycle, if prices fall after construction is underway, projects tend to be pursued anyway, so there is a lag before tax receipts fall. As indicated by the graph below, relatively high rates of investment in new plant and equipment in the mid – 1990's led to relatively high sales and use tax payments. These payments declined in the late 1990's as the industry reduced its rate of investment and limited equipment purchases to replacing existing capital.



The levels of sales and use taxes reported in past industry surveys suggest that after a bit of lag after prices began increasing in 2002, industry purchases have increased tremendously in the last two years. We would expect these levels to continue and possibly increase further if gold and other commodity prices hold their current levels and they were relatively flat comparing 2007 and 2008 after several years of strong increases and declined in 2009.

Ad valorem property taxes are also generated by industry investment, but tend to lag even farther behind the commodity price cycle than sales and use taxes as illustrated by the graph above. After a large construction boom in the mid-1990's property taxes paid reached their highest levels at over \$35 million. As prices faded in the late 1990's property taxes declined as a result of mine closures. These closures led to reassessment of both real and personal property reflecting the reduced value of the site after mining stops and reclamation begins, and the liquidation of capital equipment. Even in some cases where operations continued the value of mining assets were sometimes reduced to reflect their lower value because of lower prices. The small increases beginning in 2004 are a result of the resumption of capital investment because of higher prices.



Because of the way the three major taxes paid by mining are allocated, historically approximately 40 percent of the total tax payments stay with local government as opposed to state funds spent on a statewide basis. While ad valorem property taxes largely remain in the counties where the minerals are mined (a small portion of the ad valorem tax and the net proceeds tax are allocated to state debt

reduction) These tax dollars are available for city and county operations, and local education expenditures.

State Mining Tax Comparisons

Because of federal efforts to enact a production royalty on hardrock mining and interest in taxation of mines in Nevada created by a failed initiative petition to substantially increase mining taxes, we have attempted to put together a meaningful comparison of state mining taxes for metal mining in the U.S. This task is not as simple as proponents of royalties and taxes have claimed.

Earthworks, in cooperation with the Mineral Policy Center and the Sierra Club, all environmental lobbying groups, put together a “white paper” which claimed that all western states producing hardrock minerals employ a gross proceeds tax except Nevada and Alaska. On closer inspection of state statutes regarding taxation of mines, we found this claim to be untrue. All but one western state employs some version of a Net Proceeds Tax, that is, they allow deduction of certain costs of production, although they may call it a gross tax.

Comparing state taxation of metal mining has difficulties that go beyond the use of terminology like “net” and “gross”. Each state produces a different mix of minerals which, in some cases, they tax differently. For example, in Colorado, molybdenum is taxed differently than other metals. In Utah, beryllium is taxed differently than copper. Each state tends to adapt the tax laws to the economics of the particular mineral produced and the size of the operations in their states.

Nevada, on the other hand, takes a “one size fits all” approach to mineral taxation. Gold miners are subject to the same set of statutes and regulations as copper miners, moly miners, geothermal producers, etc. Small producers are given a reduction in tax rates⁵, but other than that, all mineral producers are treated alike.

Another factor that makes comparison of different state’s treatment of mineral producers is the role of other, non-mineral related taxes, in determining the overall tax burden of a mining operation. All states have property taxes on property, plant and equipment, but rates vary. Most states have sales and use taxes and corporate income taxes, and the rates vary.

In an effort to address these difficulties, we have taken a hypothetical medium sized gold mine that would be fairly typical of an operation found in Nevada and calculated its tax liabilities if that mine were in various other states. The hypothetical mine produces 250,000 ounces of gold per year which it sells for \$1,100 per ounce for gross revenue of \$275 million. It employs 350 workers with labor costs including benefits and taxes of \$36.4 million. Net operating profits are assumed to be \$50

⁵ NRS 362.140 provides for a reduced tax rate for operations with net proceeds less than \$4 million.

million per year. The table below shows mining specific taxes and total taxes (including mining taxes) in 10 western states.

Estimated Taxes for a Hypothetical Gold Mine in Western States

	Total Taxes	Mining Taxes
Alaska	\$ 9,993,040	\$ 3,497,000
Arizona	\$ 10,433,503	\$ 1,250,000
California	\$ 13,773,897	\$ 534,209
Colorado	\$ 15,540,430	\$ 2,880,000
Idaho	\$ 6,930,850	\$ 802,500
Montana	\$ 13,075,450	\$ 7,460,750
Nevada	\$ 11,687,500	\$ 3,187,500
New Mexico	\$ 11,070,250	\$ 275,000
Utah	\$ 12,579,807	\$ 2,145,000
Wyoming	\$ 8,507,000	\$ 6,307,000

The table above shows that with a few exceptions, the total tax burden does not vary much between states even though mining specific taxes vary significantly. Some states like California and New Mexico have relatively low mining specific taxes but are still comparable to other states because of other taxes such as general property, sales and use, and corporate income taxes.

The tables below show rankings by total tax and mining tax burdens:

Rankings by Total Taxes

Colorado	\$ 15,540,430
California	\$ 13,773,897
Montana	\$ 13,075,450
Utah	\$ 12,579,807
Nevada	\$ 11,687,500
New Mexico	\$ 11,070,250
Arizona	\$ 10,433,503
Alaska	\$ 9,993,040
Wyoming	\$ 8,507,000
Idaho	\$ 6,930,850

Rankings by Mining Taxes

Montana	\$	7,460,750
Wyoming	\$	6,307,000
Alaska	\$	3,497,000
Nevada	\$	3,187,500
Colorado	\$	2,880,000
Utah	\$	2,145,000
Arizona	\$	1,250,000
Idaho	\$	802,500
California	\$	534,209
New Mexico	\$	275,000

One thing to note about the ranking by mining taxes is that the results for the top two states, Montana and Wyoming, are somewhat misleading. In the case of Montana, the state has adopted a relatively negative attitude toward mining in the past decades. Part of this is due to the legacy of mining in the state and its negative perception. In fact, the hypothetical mine used for this example could not be built in Montana because it bans the use of cyanide, heap leach processing. Consequently, it is doubtful that any Montana mine would exist to actually pay the amount shown.

The case of Wyoming is slightly different. The major mining products in Wyoming are coal, uranium, and trona. These products are typically sold at the mouth of the mine without significant processing and, hence, without the operator incurring significant costs. The hypothetical mine model used for this exercise anticipates significant processing and costs after the mined material leaves the mine mouth. If the hypothetical mine actually existed in Wyoming the operators would no doubt adapt to the tax regime by selling the ore at the mine mouth without processing to avoid being taxed on the value added to the product from processing.

Consequently, if we discount the results for Montana and Wyoming for the reasons above, this leaves Alaska and Nevada as the states with the highest mining specific taxes. States with the lowest mining specific tax burdens, California and New Mexico, nonetheless rank in the upper half of the states considered in terms of total taxes paid because of their reliance on general business taxes and other taxes like corporate income taxes, general property taxes on property, plant and equipment, sales taxes, and other levies.

PRECIOUS METALS INDUSTRY PROFITABILITY

2009 and the first half of 2010 were relatively profitable for the precious metals industry in Nevada and around the world. Other metals sectors such as base metals and industrial minerals have had less successful operations because of the

international economic slowdown. Since Nevada's mineral industry is dominated by precious metals, this section will primarily focus on precious metals.

It was noted above that 2009 and the first half of 2010 were *relatively profitable* for the precious industry in Nevada and worldwide. That profitability is relative to both the past performance of the industry and relative to other industries that have been hit hard by the national and international recession.

A common misconception about the mining industry, and precious metals mining in particular, is that it is an enormously profitable venture. If this were true, according to conventional wisdom and common sense, we would all become gold miners. Nonetheless, the misconception is difficult to dispel. Indeed, the term "gold mine" is commonly applied to anything highly profitable. Precious metals mining can be very profitable and producers invest in production capacity in hopes of earning profits, but industry profits are highly leveraged by metals prices and operating costs.

It is also important to distinguish between the profitability of a mine based on its operating costs and net proceeds, and profitability of a *mining company*. The mining company may own numerous mines all over the world and uses the operating profits from more profitable operations to sustain less profitable operations. In addition, the corporate entity finances exploration, development, and permitting that are not part of ongoing expenses at an existing operation. The corporation provides legal services, tax services for federal and international taxes, and business development services, which usually involve merger and acquisition negotiations. All of these activities are necessary to sustain a mining company beyond the life of a single operation.

When one looks at industry average profitability over the long run rather than focus on an individual mine or mining company in a short period of time, what they will find is that the precious metals mining industry is, in fact, not extraordinarily profitable. Over the long run, when price cycles are taken into consideration, the industry earns, on average, what economists call a "normal" profit.

While this observation sometimes seems counter intuitive, there are some very valid reasons why it is true and they primarily relate to the way operators act over the price cycle. In most other industries, for example, when the price of their product goes up, they try to produce more to increase their profits. In the gold mining industry, in contrast, when prices rise one of the first things that happens is that operators lower their cut-off grades which reduces the quality, in terms of ounces per ton, of ore that they put through their processing facilities.

Unless they can quickly expand the scale of their processing facilities, this reduces output and raises costs, cutting profitability. In the current regulatory environment, expanding the scale of operations is generally not an option because it would require a change in an operation's operating permit, and that can take a considerable amount of time.

While lowering cut-off grades raises costs, it frequently has the benefit of extending the mine life of their operations and makes more efficient use of the natural resource. It is also generally beneficial for the communities supported by mining operations, but its impacts on operating profits are clear.

Another thing that happens when prices rise is that operators invest more in a variety of activities such as more exploration spending, more capital construction, replace aging equipment, conduct deferred maintenance, etc. We have observed all of these actions in Nevada in the past few years and it occurs in every other gold mining district in the world. And, while these activities have benefits for the communities and operators like extending mine life, these activities clearly cut into profitability.

When prices fall, the reverse occurs. In most other industries, if prices fall they would cut output in an attempt to lower their costs. In the precious metals mining industry, operators will raise their cut-off grades to lower their costs with the result that their output typically goes up, at least initially. They will also attempt to lower costs by reducing exploration, deferring purchases of new equipment, new construction, and other actions. The result is that over the price cycle the relationship between price and costs is relatively constant as suggested by the graph below shown above on page 17.

The latter point illustrates why streamlining the permitting process is so critical to the long-term viability of the gold mining industry in Nevada. Long lead times to get approvals for expansions and new projects reduce operators' ability to respond to price increases by increasing capacity. Knowing this, if a company has an opportunity to develop a property offshore where it can get permits and have the mine constructed in 18 months or it can develop an identical property in Nevada where the permitting process and construction will take over five years, the offshore mine is a much more profitable investment. Political risk operating offshore is clearly a factor in these decisions, but so is the time value of the money that has to be invested.

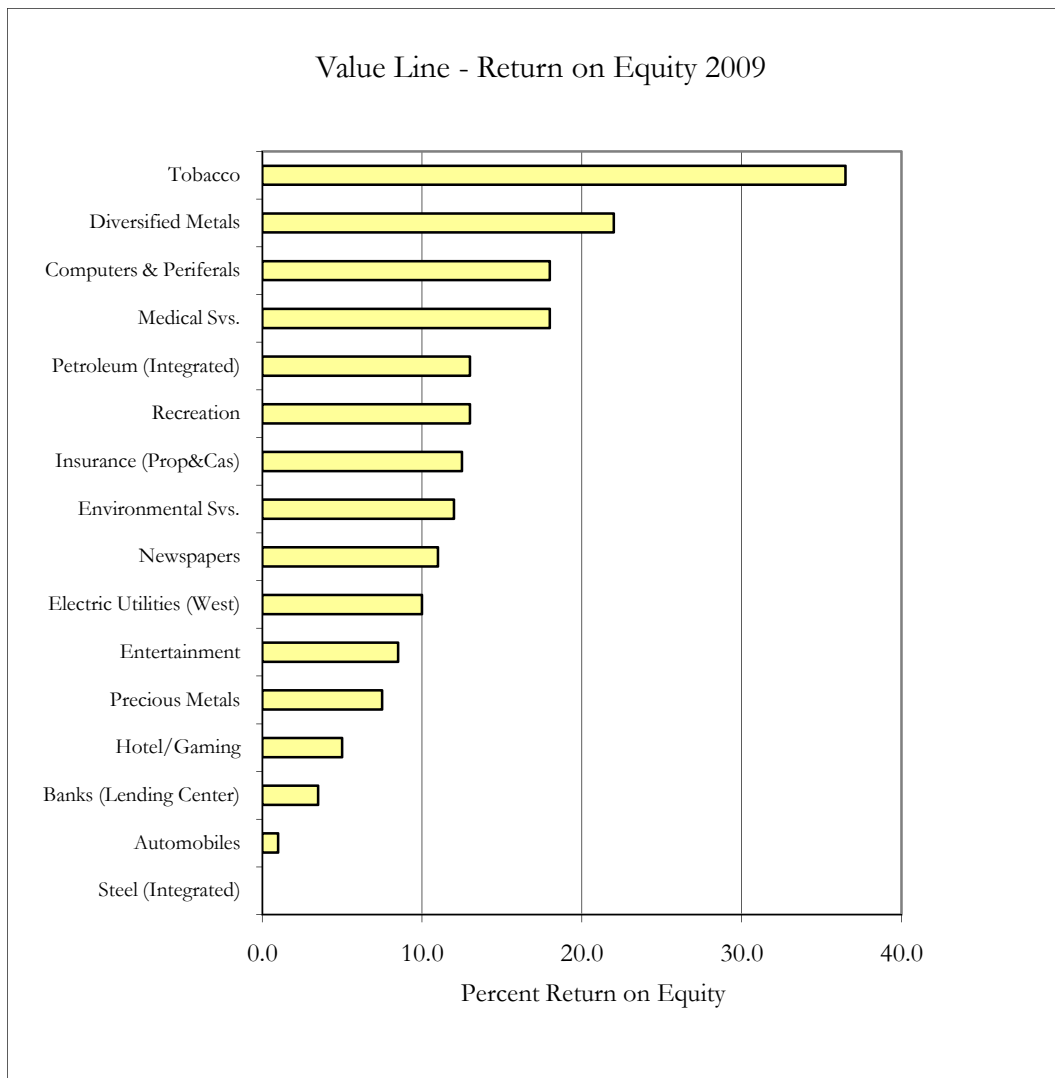
Another basis for comparing precious metals industry profitability to other industries comes from Value Line's Investment Survey, which reports on the profitability of over 90 industry groups using companies selected by Value Line. Value Line's precious metals group in the current report includes nine companies including the three largest companies with operations in Nevada – Newmont, Barrick, and Goldcorp. It also includes a mutual fund with primarily South African gold mining stock holdings, two mid-sized Canadian producers, South African producer AngloGold Ashanti, and a U.S. platinum group metals mining company, Stillwater Mining, which has operations in Montana. Value Line's group of precious metals producers had a weighted average rate of return on equity before write-downs in 2009 of 7.5 percent, up from 6.5 percent in 2008, and 5.3 percent in 2007. The

graph below provides a comparison of ROE in selected industries from the Value Line Survey for 2009.

Return on equity is arguably the best method of comparing different industries as opposed to profit margin or return on assets because it measures earnings as a percent of the assets the company actually owns. This approach has the advantage of accounting for company debt which can vary widely between different industries.

The profitability of the precious metals industry seems counterintuitive to many because it can remain low in years when prices have increased significantly. But the operational factors mentioned above play a significant role in the industry cost structure. Another important factor is corporate activities such as mergers and acquisitions. These kinds of activities tend to involve prospects and development properties and add little to current earnings. At the same time they tend not to add much to shareholder equity in the short term and may add to long term debt.

2009 and the first half 2010 have been unusual years for the precious metals industry and the entire world economy for a number of reasons. First, the worldwide recession reduced demand for consumer products across almost all sectors. However, one consequence of the meltdown in the financial sector has been a renewed interest in gold as an investment. The exception would be Tobacco/cigarette producers which are likely to earn high returns in any market based on experience. Diversified Metals, which includes aluminum and other fabricated metals also typically show higher returns on Equity.





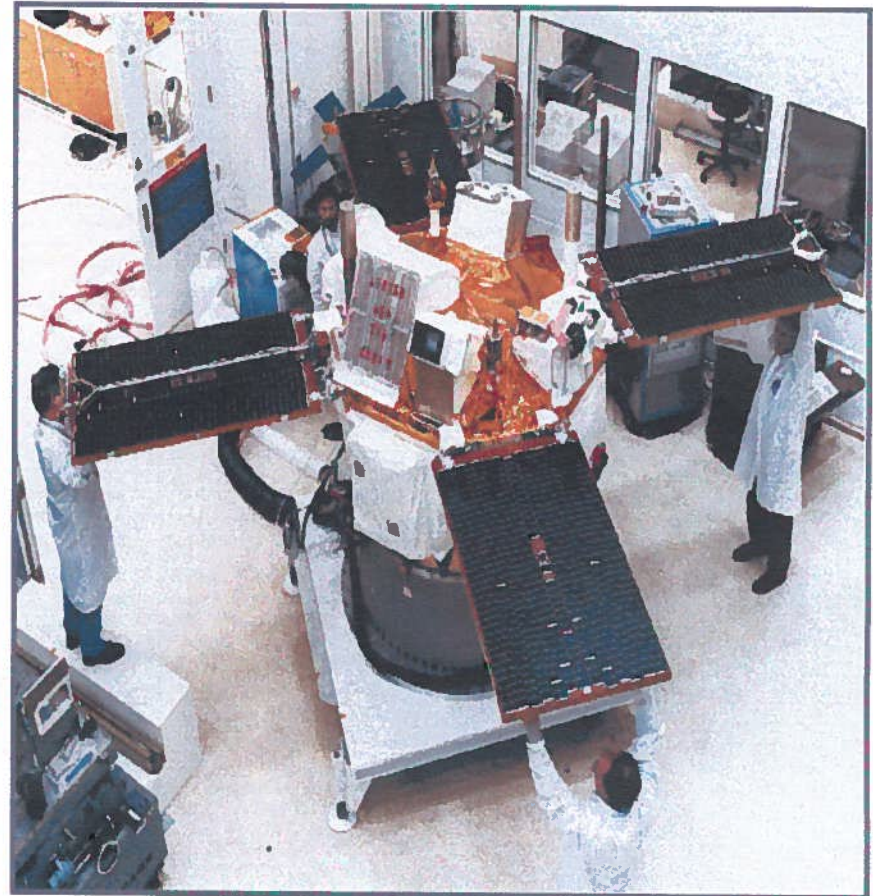
NEVADA

Mining Association

NEVADA
Mining Association

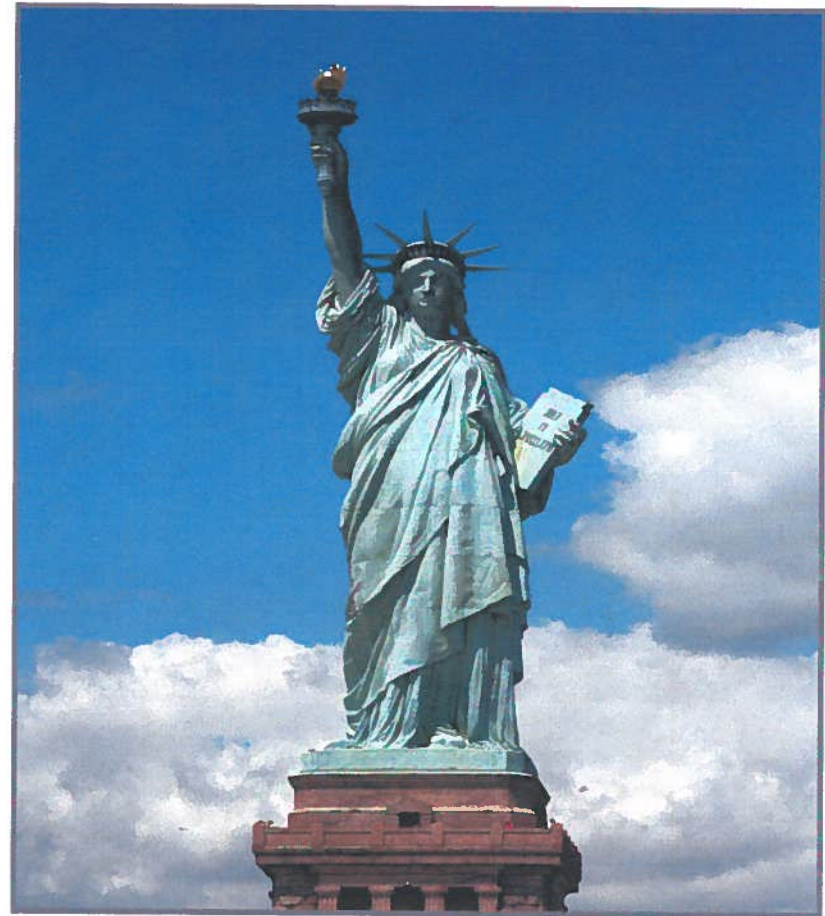
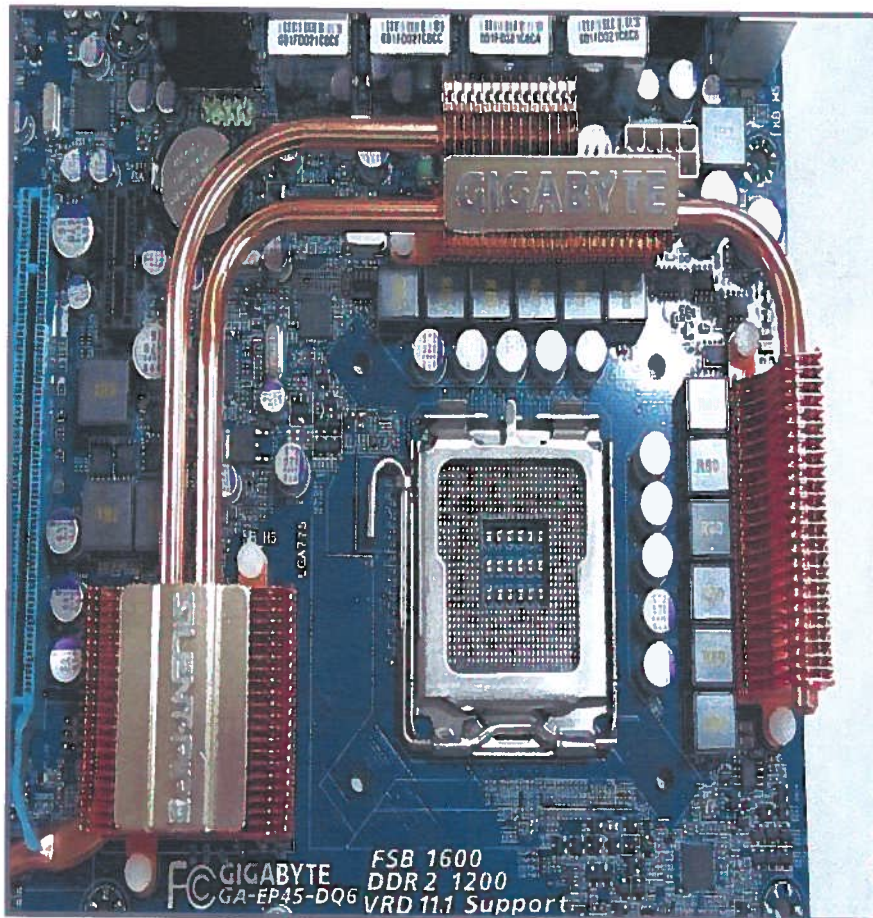
Nevada -- Mineral Rich

Gold



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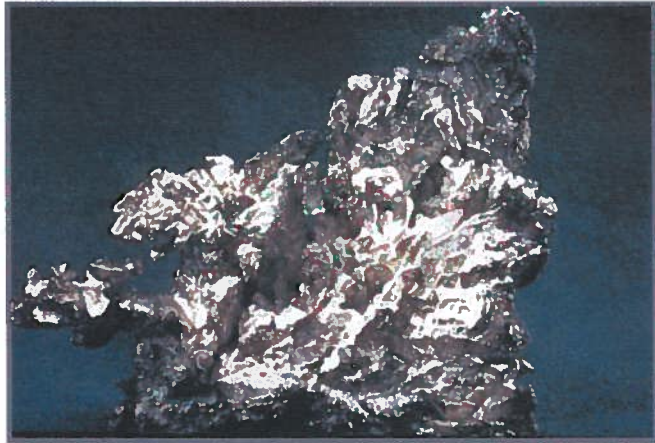
Nevada -- Mineral Rich Copper



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Nevada -- Mineral Rich

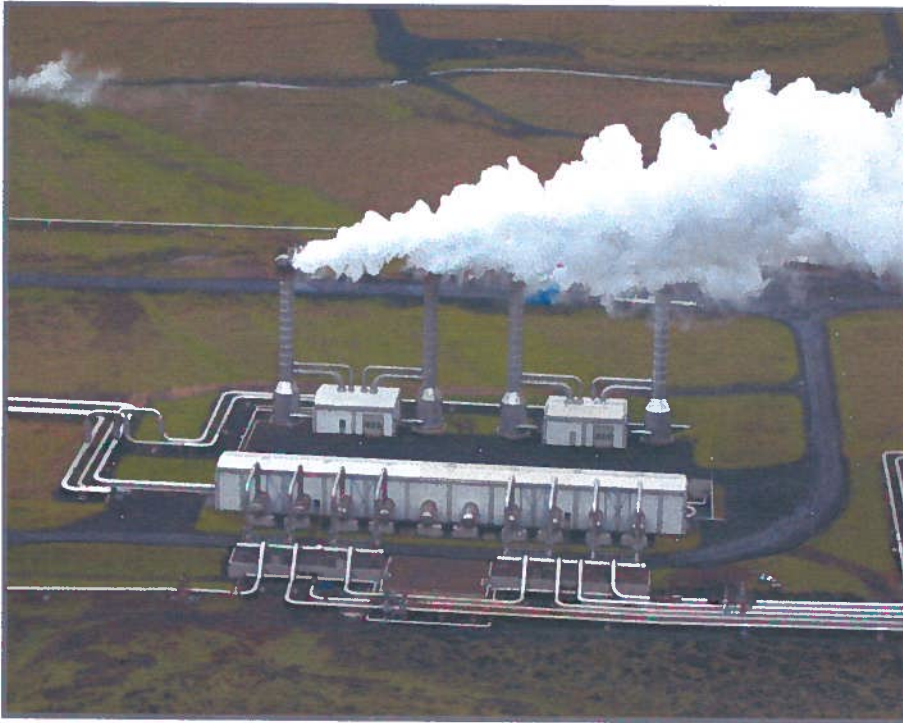
Silver



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Nevada -- Mineral Rich

Geothermal



Nevada -- Mineral Rich

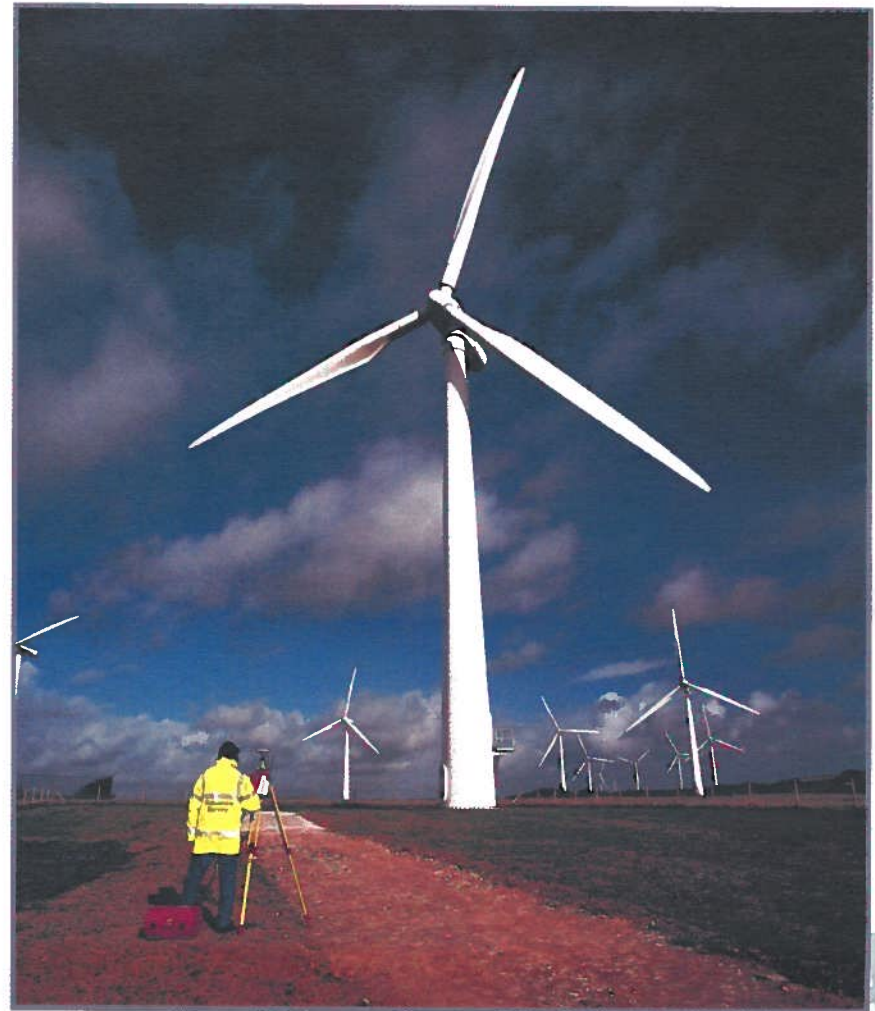
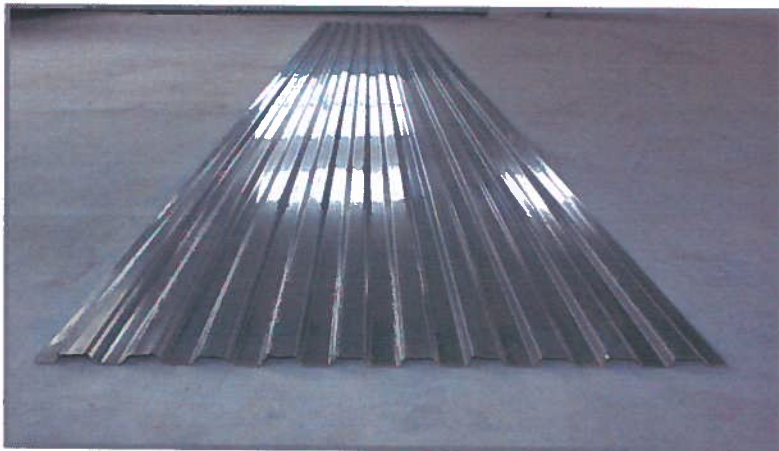
Lithium



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Nevada -- Mineral Rich

Molybdenum



Mining Association

Nevada -- Mineral Rich

Barite & Barium Sulfate



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Nevada -- Mineral Rich

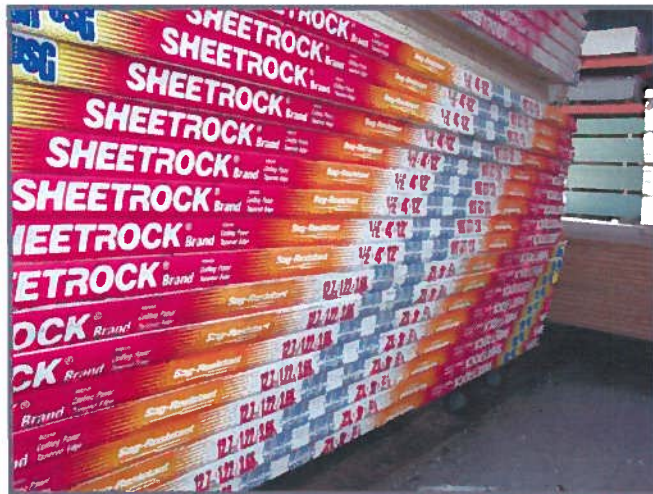
Diatomite



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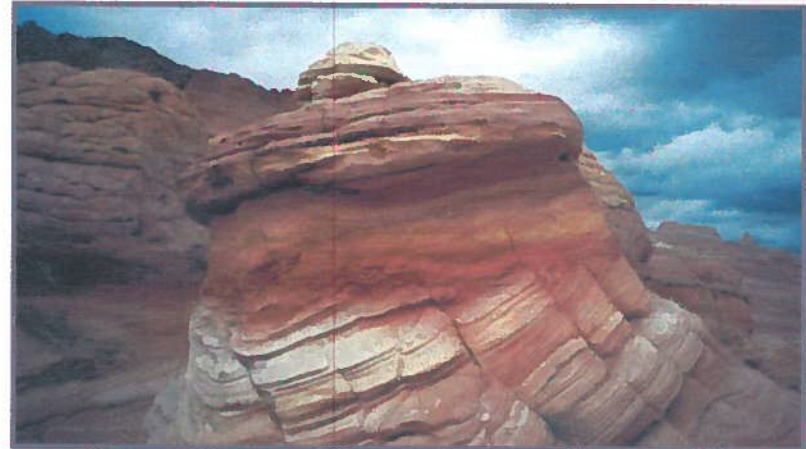
Nevada -- Mineral Rich

Gypsum



Nevada -- Mineral Rich

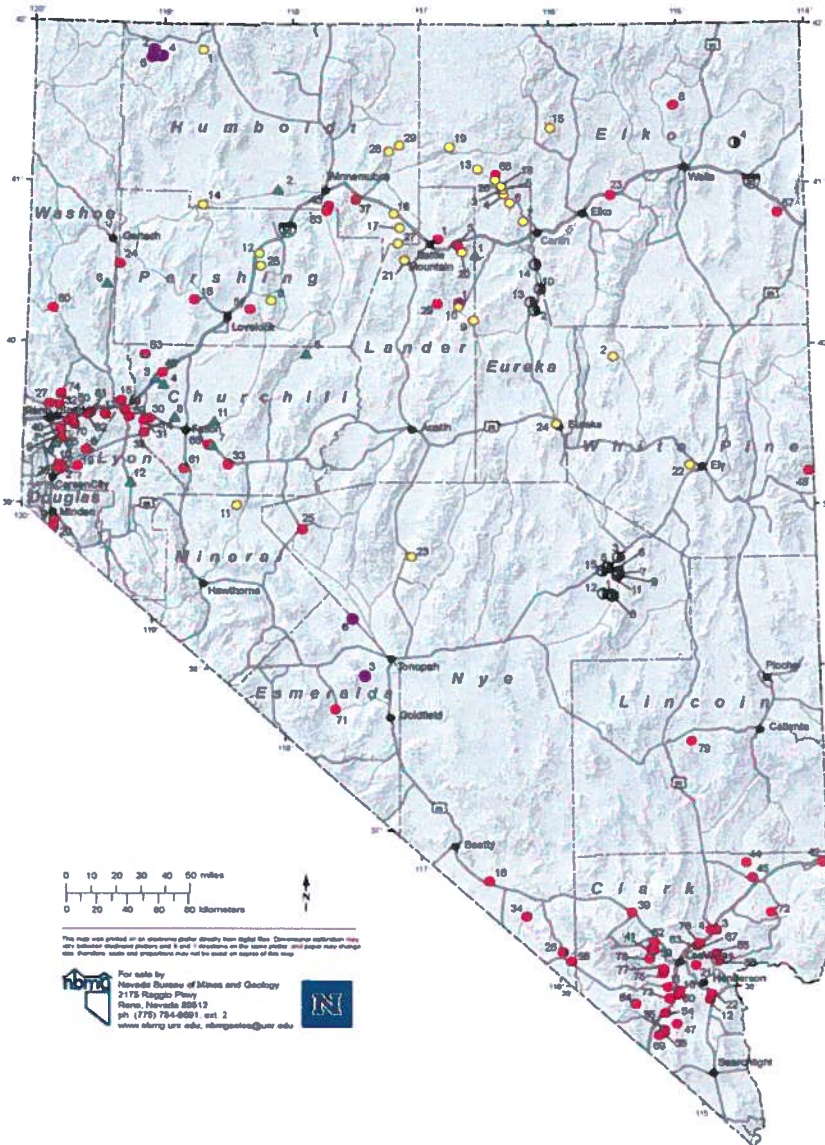
Lime



Nevada Active Mines & Energy Producers

Nevada Active Mines and Energy Producers

Compiled by
David A. Davis and Ronald H. Hess
2009



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- INDUSTRIAL MINERAL MINES**
 - 1 3D Pit
 - 2 Adams Claim Gypsum Mine
 - 3 Apex Landfill Pit
 - 4 Apex Quarry
 - 5 Argenta Mine
 - 6 Basaltic Dayton Pit
 - 7 Bella Vista Pit
 - 8 Big Ledge Mine
 - 9 Bing Materials Pit
 - 10 Black and Red Cinder Pits
 - 11 Blue Diamond Pit
 - 12 Boulder Ranch Quarry
 - 13 Cactus Pit
 - 14 Cattle Mine
 - 15 CEMEX Palmdale Pit
 - 16 Cinder Cone Pit
 - 17 Clark Mine
 - 18 Colorado Mines
 - 19 Dayton Materials
 - 20 Dressler Pit
 - 21 East Pit
 - 22 El Dorado Quarry
 - 23 Elbert Pit
 - 24 Empire Quarry
 - 25 Gabba Mine
 - 26 Garfield Pit
 - 27 Golden Valley Pit
 - 28 Goni Pit
 - 29 Greystone Mine
 - 30 Hazen Pit
 - 31 Hazen Pit
 - 32 Hidden Canyon Pit
 - 33 Huck Salt
 - 34 MUV Pits
 - 35 Jean Pit
 - 36 Jean Quarry
 - 37 Kramer Hill Quarzite Quarry
 - 38 Lasherton Pit
 - 39 Lee Canyon Sand and Gravel Pit
 - 40 Lockwood Quarry
 - 41 Lone Mountain Pits
 - 42 Mesquite Community Pit
 - 43 MIN-AD Mine
 - 44 Moapa (CEMEX) Pit
 - 45 Moapa (Ready Mix) Pit
 - 46 Molten Mine
 - 47 Money Pit
 - 48 Mount Moriah Quarry
 - 49 Mutt Lane Pit
 - 50 Mustang Pit
 - 51 Nassau Mine
 - 52 Nevada Cement Mine
 - 53 Nightingale Pit
 - 54 North Jean Lake Pit
 - 55 PABCO Gypsum-Apex Pit
 - 56 Pahrump Community Pit
 - 57 Pilot Peak Quarry
 - 58 Pioneer Gypsum Mine
 - 59 Pipes Pit
 - 60 Primeau Depletion Pit
 - 61 Popcorn Mine
 - 62 Providence Pit
 - 63 Racetrack Pit
 - 64 Rainbow Quarries
 - 65 Rifle Aggregate
 - 66 Rust Mine
 - 67 Salt Lake Highway Pit
 - 68 Salt Wells Gravel Pit
 - 69 Sierra Ready Mix Quarry
 - 70 Sierra Stone Quarry
 - 71 Silver Peak Operations
 - 72 Sinter Silica Products Pit
 - 73 Sloan Quarry
 - 74 Spanish Springs Quarry
 - 75 Spanish Trails Pit
 - 76 Speedway Pit
 - 77 Spring Mountain Pit
 - 78 Summit Pit
 - 79 Tenacity Perlite Mine
 - 80 Terraced Hill Clay Mine
 - 81 Tracy Pit
 - 82 Trico Pit
 - 83 W. Glen Serian Family Trust
- METAL MINES**
 - 1 Ashdown Mine
 - 2 Bald Mountain Mine
 - 3 Betz/Post Mine
 - 4 Carlin North - Genesis Complex
 - 5 Carlin North - Post and adjacent mines
 - 6 Carlin South - Carlin and adjacent mines
 - 7 Carlin South - Gold Quarry and adjacent mines
 - 8 Cosur Rockwater Mine
 - 9 Cortez Hills Mine
 - 10 Cortez Pipeline Mine
 - 11 Denton-Rawhide Mine
 - 12 Florida Canyon Mine
 - 13 Hollister Mine
 - 14 Hyatt Mine
 - 15 Jarrett Canyon Mine
 - 16 Lone Tree Mine
 - 17 Marigold Mine
 - 18 Meade Mine
 - 19 Middle Mine
 - 20 Muir Canyon Mine
 - 21 Phoenix Mine
 - 22 Robinson Mine
 - 23 Round Mountain Mine
 - 24 Ruby Hill Mine
 - 25 Standard Mine
 - 26 Storm Mine
 - 27 Thorton Canyon Mine
 - 28 Turquoise Ridge Joint Venture
 - 29 Twin Creeks Mine
- GEOTHERMAL POWER PLANTS**
 - 1 Beowawe
 - 2 Blue Mountain
 - 3 Bristle
 - 4 Desert Peak
 - 5 Dixie Valley
 - 6 Empire
 - 7 Salt Wells
 - 8 Soda Lake
 - 9 Steamboat - Binary
 - 10 Steamboat - Flash
 - 11 Stillwater
 - 12 Wabuska
- GEMSTONE MINES**
 - 1 Blue Ridge Turquoise Mine
 - 2 Bonanza Opal Mine
 - 3 Lone Mountain Turquoise Mine
 - 4 Rainbow Ridge Opal Mine
 - 5 Royal Peacock Opal Mine
 - 6 Royal Blue Turquoise Mine
- OIL FIELDS**
 - 1 Bacon Flat
 - 2 Blackburn
 - 3 Current
 - 4 Deadman Creek
 - 5 Duckwater Creek
 - 6 Eagle Springs
 - 7 Ghost Ranch
 - 8 Grant Canyon
 - 9 Kate Spring
 - 10 North Willow Creek
 - 11 Sand Dune
 - 12 Sans Spring
 - 13 Three Bar
 - 14 Tomara Ranch
 - 15 Trap Spring

Compiled by Nevada Bureau of Mines and Geology (www.nbgm.unr.edu) and the Nevada Division of Minerals (www.minerals.state.nv.us)
Source: NBMG Special Publications M-2008, The Nevada Mineral Industry 2008 and P-20, Major Mines of Nevada 2008

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Direct Contributions



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Mining is the glue that holds rural communities together — providing significant tax contributions to help fund education and other essential services, and putting Nevadans to work for stability at home. Mining is performing to help restore economic prosperity to Nevada.



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Nevada's Mining Industry

Taxes Paid

	<u>Biz. Lic.</u>	<u>MBT</u>	<u>Sales</u>	<u>Prop.</u>	<u>Gaming</u>	<u>Bank Tax</u>	<u>Spl. Prop.</u>	<u>Ins. Prem.</u>
Mining	√	√	√	√			√	
Agriculture	√	√	√	√				
Banks	√	√	√	√		√		
Casinos	√	√	√	√	√			
Contractors - Commercial	√	√	√	√				
Contractors - Residential	√	√	√	√				
Hotel/Motel	√	√	√	√				
Insurance	√	√	√	√				√
Manufacturing	√	√	√	√				
Real Estate Brokers	√	√	√	√				
Restaurants	√	√	√	√				
Retail	√	√	√	√				
Warehouse	√	√	√	√				

Indirect Contributions

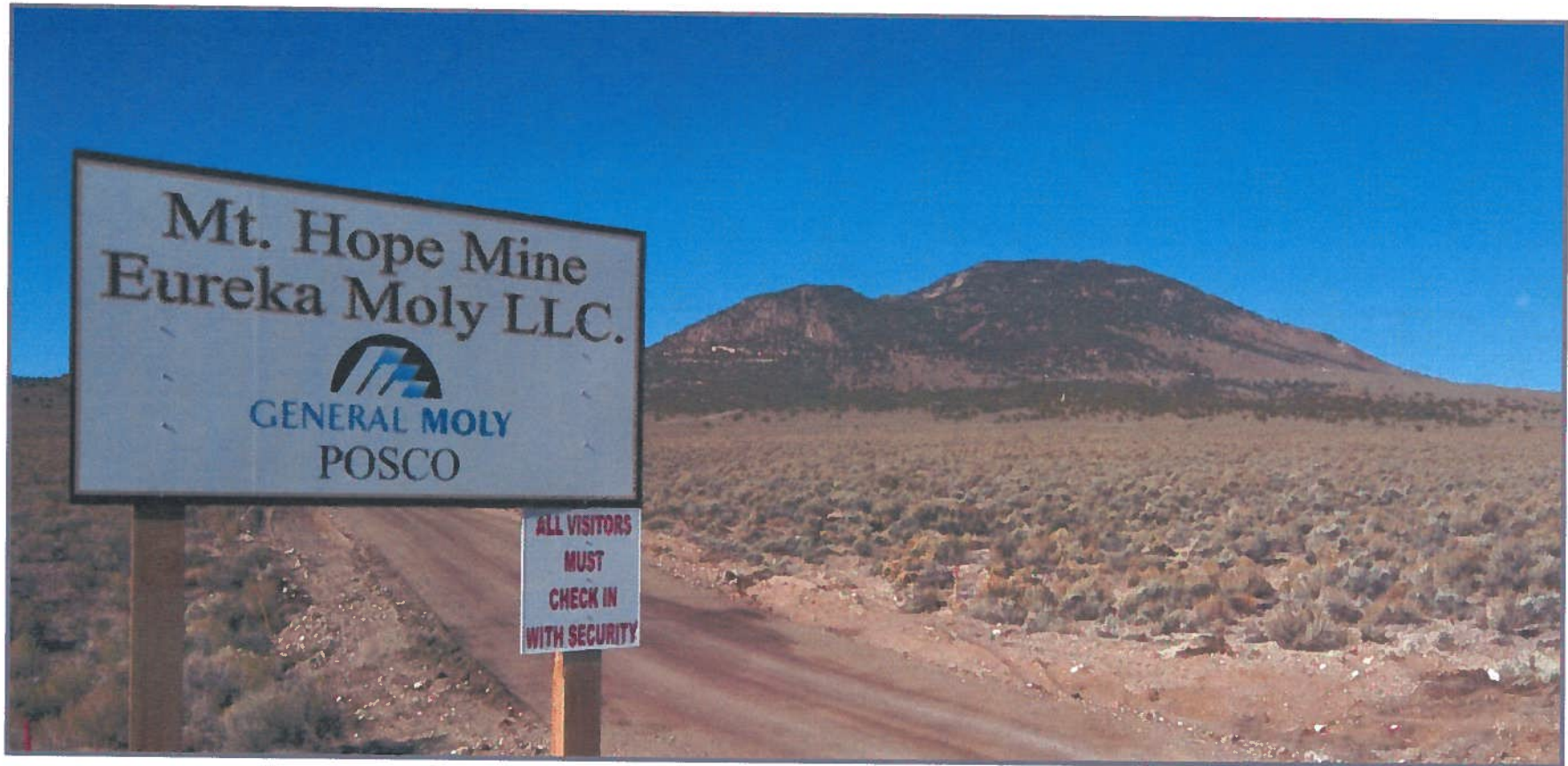


Federal Contributions



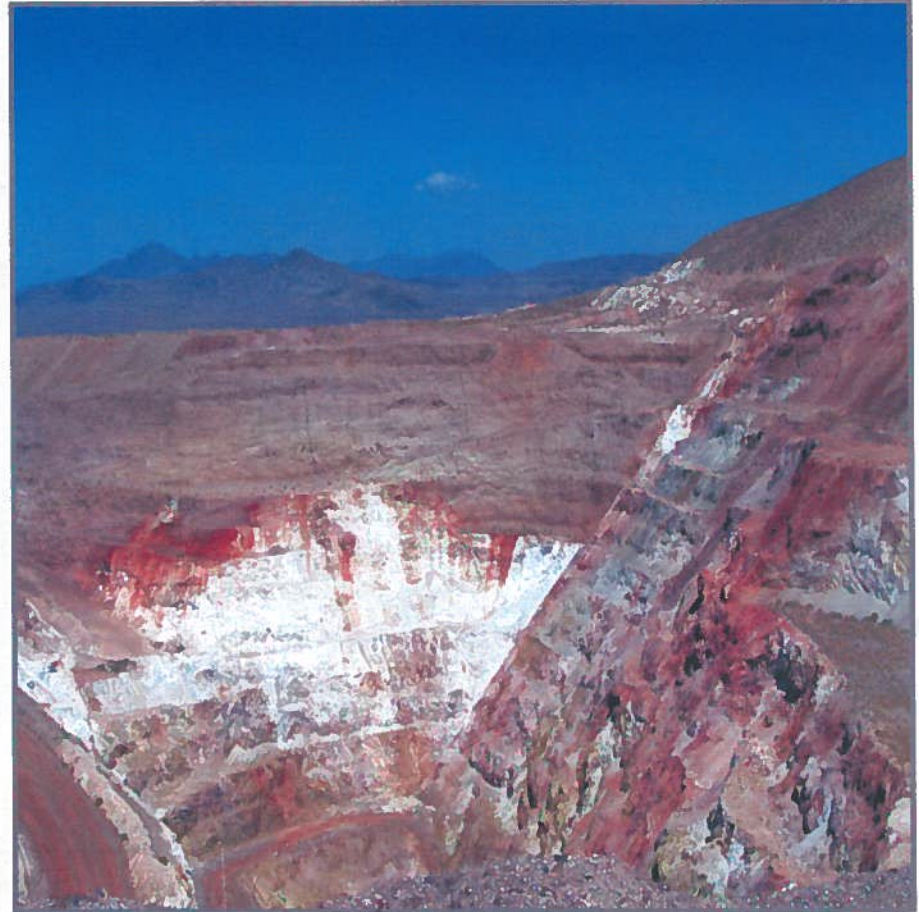
The Future

Mining in Nevada looks Bright



The Future

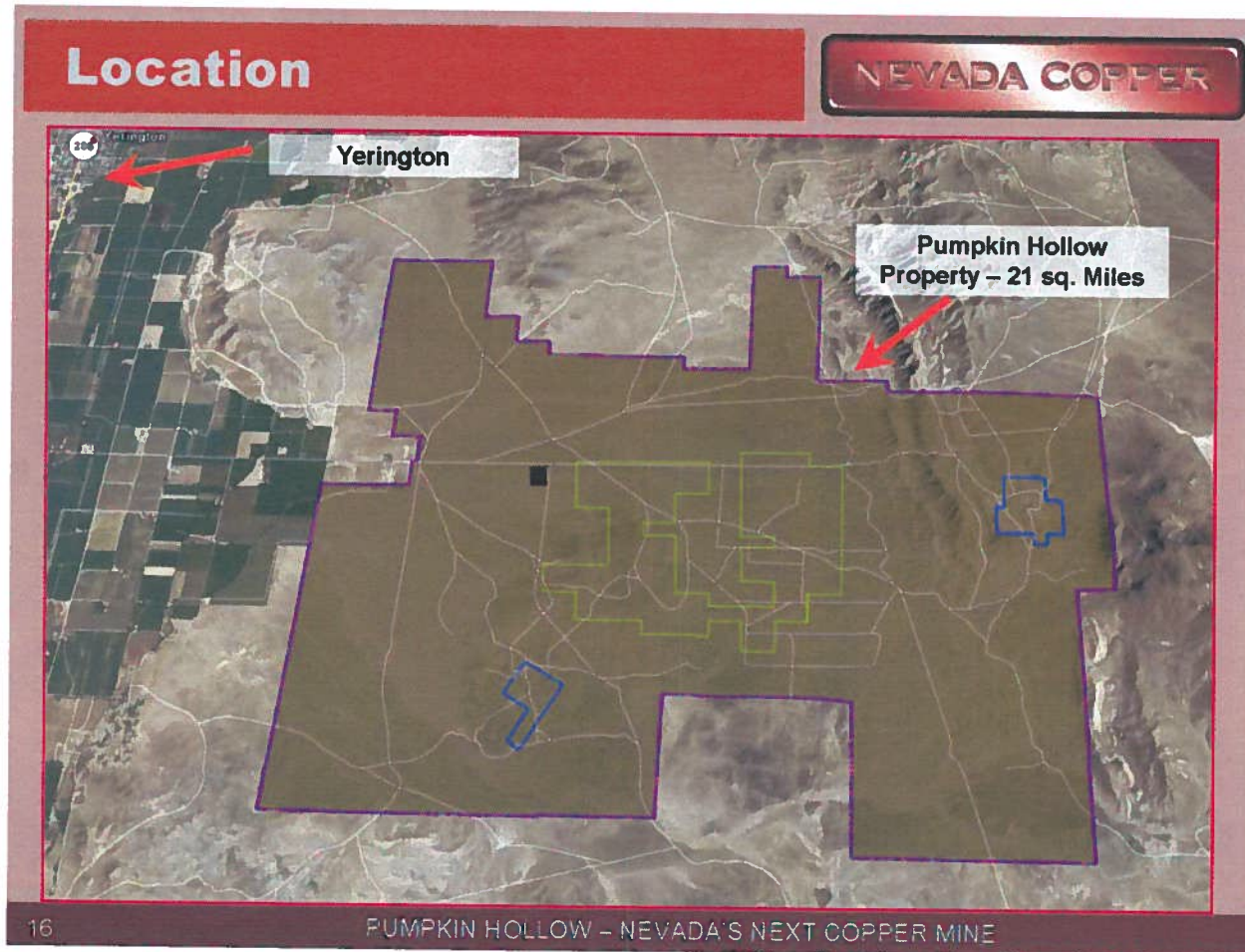
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