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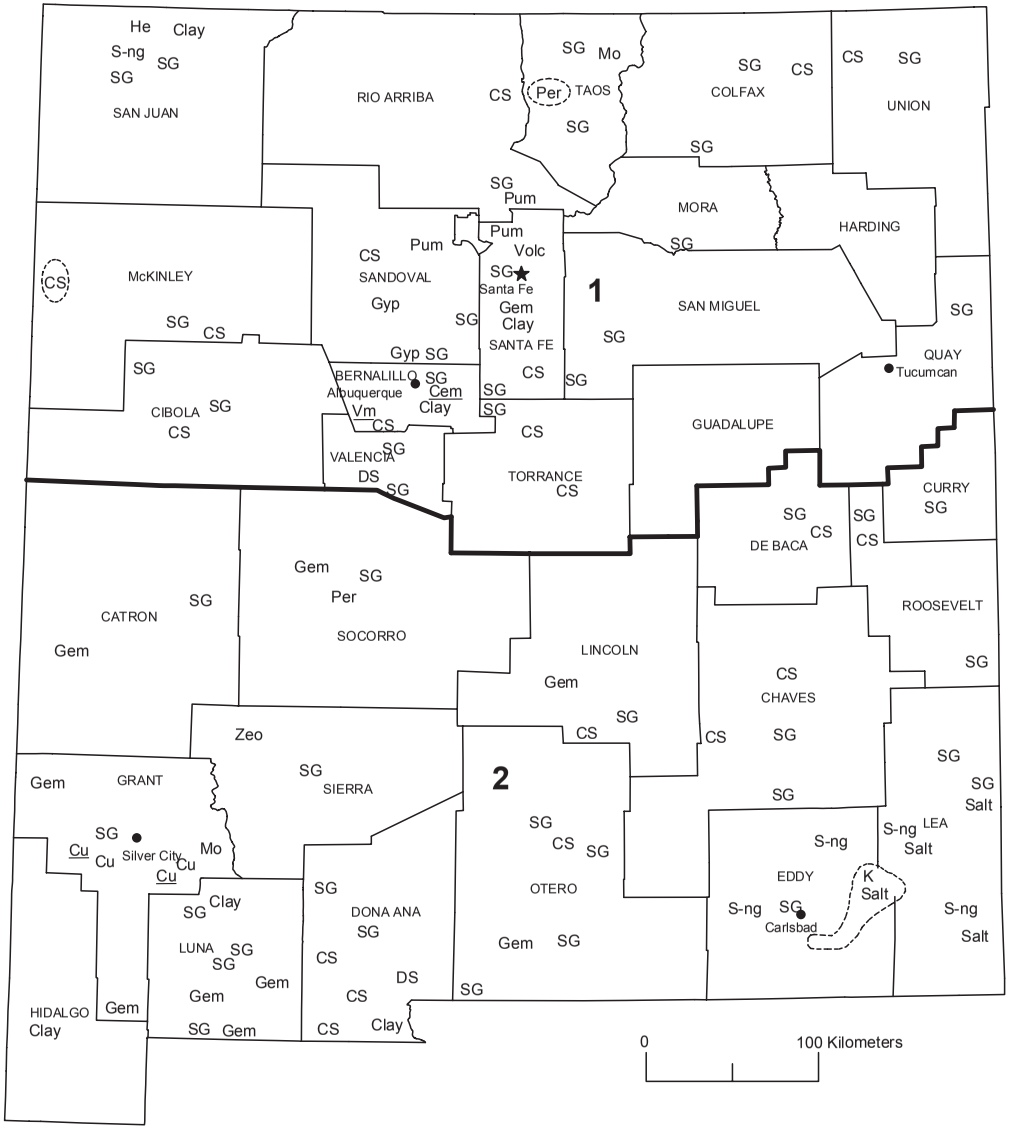
2005 Minerals Yearbook

NEW MEXICO

U.S. Department of the Interior
U.S. Geological Survey

June 2008

NEW MEXICO



LEGEND

- County boundary
- ★ Capital
- ● City
- 1 — Crushed stone/sand and gravel districts

MINERAL SYMBOLS
(Major producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
Cu	Copper
Cu	Copper plant
DS	Dimension stone
Gem	Gemstones
Gyp	Gypsum
He	Helium
K	Potash
Mo	Molybdenum
Per	Perlite
Pum	Pumice
S-ng	Sulfur (natural gas)
Salt	Salt
SG	Construction sand and gravel
Vm	Vermiculite plant
Volc	Volcanic cinder
Zeo	Zeolites
⬭	Concentration of mineral operations

Source: New Mexico Bureau of Geology and Mineral Resources/U.S. Geological Survey (2005)

THE MINERAL INDUSTRY OF NEW MEXICO

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the New Mexico Bureau of Geology and Mineral Resources for collecting information on all nonfuel minerals.

In 2005, New Mexico's nonfuel raw mineral production was valued[1] at $1.15 billion, based upon annual U.S. Geological Survey (USGS) data. This was a $282 million, or 33%, increase from the State's total nonfuel mineral value for 2004, which then had increased by nearly $300 million, or up 53%, from 2003 to 2004. The State rose to 19th from 20th in rank among the 50 States in total nonfuel mineral production value and accounted for more than 2% of the U.S. total. Yet, per capita, the State ranked 8th in the Nation in its minerals industry's value of nonfuel mineral production; with a population of about 1.93 million, the value of production was about $596 per capita.

The top nonfuel minerals in New Mexico in 2005 were, by value of production, copper and potash, followed by molybdenum concentrates, construction sand and gravel, and cement (portland and masonry). These five accounted for nearly 93% of the State's total nonfuel raw mineral production value. Copper continued to be the State's leading nonfuel mineral in 2005, accounting for about 44% of the State's total nonfuel value. Copper has led for 35 of the past 38 years (from 1968 through 2005). Potash (reported as potassium salts prior to 1990) had been the State's leading nonfuel mineral in the early 1950s through 1967, in 1982, and in 2002-03.

In 2005, the largest increases in value were those of copper, molybdenum concentrates, potash, construction sand and gravel, and pumice and pumicite (descending order of change). Smaller yet significant increases also took place in crushed stone, cement, and gold. The unit values rose in all eight mineral commodities, substantially for copper, molybdenum concentrates, potash, and pumice and pumicite. A 7.3% increase in the production of copper combined with a 29% increase in average price led to a 39%, or $140 million increase in the commodity's value. Even though there was only an 8.5% increase in the production of molybdenum concentrates, there was a nearly 100% rise in its overall total value. Similarly, despite a larger decrease in the quantity of potash produced (than the decrease that took place in molybdenum concentrates), there was a very significant $48 million rise in its value. Also, pumice and pumicite production increased slightly, but the commodity's total value increased more than 200%. The unit values of construction sand and gravel and crushed stone were up 6% and 15%, respectively (table 1).

Nearly all the State's molybdenum concentrate was mined and processed at Molycorp Inc.'s Questa Mine and mill in Taos County; the remainder was produced as byproduct from copper processing from Phelps Dodge Corp.'s Chino Mine in Grant County. The trend toward the recent heights in molybdenum concentrate prices began in June 2002 and continued on throughout 2003 and 2004, peaking in 2005. For example, as reported in Platts Metals Week (there in dollars per pound of contained molybdenum) the annual average price of molybdic oxide rose from $8.27 per kilogram (kg) in 2002 to $11.75 per kg in 2003 to $36.73 per kg in 2004 and nearly doubled to $70.10 per kg in 2005. In June 2005, the monthly average molybdic oxide price reached its highest point of the 4-year run at $82.54, and then followed a generally downward trend the rest of the year to close at $61.84. Molybdenum concentrate prices had stayed relatively level during the early months of 2006. With rising and overall higher average metal prices, byproduct gold and byproduct silver were produced from the processing of copper at Phelps Dodge operations in Grant County.

In 2005, New Mexico continued to lead the Nation in the quantities of potash, perlite, and zeolites produced (descending order of value) and remained third in copper, fourth in pumice and pumicite, sixth in molybdenum concentrates, and eighth in silver. The State continued to rank ninth of 11 gold-producing States and was a significant producer of construction sand and gravel and gypsum.

The following narrative information was provided by the New Mexico Bureau of Geology and Mineral Resources[2] (BGMR). Production data and information in the text that follows are those reported by the BGMR and are based on the agency's own surveys and estimates, data obtained from the New Mexico Department of Energy, Minerals, and Natural Resources, Mines and Minerals Division, personal mine visits by Nevada Bureau of Mines and Geology (NBMG) staff, and cited references. These may differ from some production figures published by the USGS.

Overview and Trends

Mining and exploration in New Mexico continued to increase from the lower levels of the early 2000s as most commodity prices continued to rise in 2005 along with worldwide demand for minerals increasing. About 245 mine and primary mineral processing operations were active in the State in 2005, including 195 aggregate and stone operations, 2 copper mines and related concentrators and solvent extraction and electrowinning (SX/EW) plants, 1 copper smelter, 1 molybdenum mine and mill, 3 potash mines and 4 potash mills, and about 43 other industrial mineral mines and mills. Aggregate, stone, and other industrial mineral operations on Native American Indian Lands were not included in these numbers (Kamat, 2007). Reclamation activities increased during 2005, and nearly every company in the State had comprehensive reclamation plans for their active mines.

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

All 2005 USGS mineral production data published in this chapter are those available as of December 2006. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Virginia T. McLemore, Senior Economic Geologist, authored the State mineral industry information provided by the New Mexico Bureau of Geology and Mineral Resources.

Exploration and Development

In 2005, Phelps Dodge Corp. initiated permitting for the startup of production at the company's Cobre copper mine, formerly the Continental Mine. In early 1998, Phelps Dodge acquired Cobre Mining Co., Inc., which included the open pit mine, two underground mines, two mills, and 4,450 hectares (ha) (11,000 acres) of land surrounding the operations. Later that year, Phelps Dodge suspended underground mining at Cobre owing to low copper prices. On March 17, 1999, the remaining operations were suspended and the entire operation remained on care-and-maintenance status. Estimated leaching reserves were about 100 million metric tons (Mt) of ore grading 0.35% Cu (Phelps Dodge Corporation, 2006§[3]). Most of the copper reserves at the Cobre Mine were in the Syrena limestone and upper part of the Lake Valley limestone north of the Barringer fault.

Several companies explored for gold and silver throughout New Mexico, especially in Catron, Dona Ana, Grant, Lincoln, Rio Arriba, and Socorro Counties.

Commodity Review

Industrial Minerals

Cement (Portland and Masonry).—Portland cement was a principal construction material produced in New Mexico. Masonry cement was also produced in the State, especially for use in mortar and stucco. Cement commonly refers to hydraulic cement, those cements that have the property of hardening under water and are the chief binding agents for concrete and masonry. Portland cement, the name patented in Leeds, England, in 1824, was named for the set cement that resembled a building stone quarried from the Isle of Portland off England's southern coast; today it is the predominant variety of hydraulic cement. New Mexico produced hydraulic cement from the Tijeras cement plant operated by Grupos Cementos de Chihuahua (GCC) near Albuquerque; estimated annual capacity of the plant was 454,000 metric tons (t) [500,000 short tons (st)] per year of cement. In 2005, a cement shortage in the State resulted in high prices for the commodity (New Mexico Business Weekly, 2006§). GCC's Tijeras cement plant was commissioned in 1959 and GCC took over operations in 1994. The main ingredient in cement is limestone, which was mined at Tijeras with additional varying quantities of alumina, gypsum, iron, and sandstone/shale (locally obtained from throughout New Mexico).

Clays.—Two types of clay were mined in New Mexico: common clay as well as some fire clay. Common clay, which typically made up most of the State's production, was used for making bricks, quarry tile, and roofing granules. Commercial adobe yards, which produced adobe bricks from local alluvial materials, were mostly in northern New Mexico. Bricks were also manufactured at the Kinney Brick Co.'s brick mill in Albuquerque, Bernalillo County, and American Eagle Brick Co.'s Eagle plant in Sunland Park, Dona Ana County.

Gemstones.—Gemstones and semiprecious stones were produced in New Mexico, including agate, azurite, fluorite, geodes, moonstone, onyx, peridot, smithsonite, and turquoise. Specific production statistics for 1998-2005 are withheld for gemstones and semiprecious stones in New Mexico (proprietary data), in part because many noncommercial collectors do not report their income. In 1993, the value of gemstone production was estimated to be about $22,000 and the average during the previous 5 years was approximately $76,000, mostly from turquoise (Austin, 1994). However, owing to the depletion of identified resources and difficulties and expenses involved in adhering to Federal, State, and local environmental regulations, most of the commercial mines in the State have closed during the past 12 to 13 years.

Gypsum.—Centex American Gypsum Co. operated the White Mesa Mine near Cuba, Sandoval County, and two wallboard plants in Albuquerque and Bernalillo County. Other smaller gypsum mines were operated in Dona Ana and Sandoval Counties.

Perlite.—In New Mexico, perlite is found in high-silica rhyolite (lava) flows and domes that were emplaced typically 3.3 to 7.8 million years ago (Barker and others, 1996; Chamberlin and Barker, 1996). Perlite was produced at three mine and mill operations in New Mexico: Dicaperl Minerals Corp.'s El Grande and Socorro mines and mills and Harborlite Corp.'s No Agua mine and mill.

Potash.—The Carlsbad potash district was the leading potash producing area in the United States. Intrepid Mining LLC and Mosaic Co. operated underground mines in that district. The minerals langbeinite and sylvite were the primary potash minerals found in Permian Age evaporites of the Permian Basin in New Mexico (Barker and Austin, 1996). The estimated potash reserves in the district amounted to more than 500 Mt.

Mosaic Co., which resulted from the merger of Cargill Crop Nutrition Corp. and IMC Global Inc. on October 22, 2004, became the world's leading potash and phosphate producer (The Mosaic Company, 2005§). The capacity of the Mosaic potash mines was about 500,000 t of red potash and nearly 1.2 Mt of potassium-magnesium sulfate (K-Mag). In 2005, Mosaic produced 3.7 Mt of ore containing 12.6% K_2O equivalent of red potash and 3.3 Mt of ore containing 7.4% K_2O equivalent of K-Mag (The Mosaic Company, 2006§). The total reserves at Mosaic included an estimated total of about 110 Mt of potash ore ranging in thickness from 1.4 meters to more than 3.4 meters. These ore reserves were estimated to yield 5 Mt of concentrate from sylvinite with an average grade of 60% K_2O equivalent and more than 18 Mt of langbeinite concentrate with an average grade of approximately 22% K_2O equivalent. These reserves were expected to last 15 to 23 years.

Intrepid Mining NM LLC, owned by Intrepid Mining, LLC, announced in early March that it had completed the acquisition of all the assets of Eddy Potash, Inc., and Mississippi Potash, Inc., which included four potash properties in Carlsbad, NM, for approximately $27.4 million and thereby becoming the leading potash producer in the United States (Intrepid Mining NM LLC, 2004§). Intrepid employed approximately 650 people at three facilities in New Mexico. The West Facility, which consisted of a potash mine and refinery originally built in

[3]References that include a section mark (§) are found in the Internet References Cited section.

1929 by U.S. Potash Corp., had an annual production capacity of approximately 463,000 t of red potash. The East Facility, consisting of a potash mine, refinery, and compaction plant, had an annual production capacity of approximately 354,000 t of white potash and 227,000 t of lansbeinite. The North facility consisted of a granular compaction plant and storage facilities (Intrepid Potash - New Mexico, LLC, 2006§). Two types of ore were processed. Flotation was used to produce red potash and hot-leach crystallization was used to produce the higher purity white potash. In August 2005, the East Mill returned to a 24 hour, 7-day schedule in preparation for the startup of the company's new Langbeinite facility.

Pumice and Pumicite.—In New Mexico, pumice is found in the Jemez Mountains and the Mogollon-Datil volcanic field (Hoffer, 1994); however, only seven operations were active in New Mexico in 2005. Copar Pumice Company, Inc., which has been in the pumice mining industry for more than 40 years, produced pumice from two quarries, the El Cajete Mine and the Guaje Canyon Mine. An expansion of the El Cajete pumice mine in the Jemez Mountains was delayed awaiting the preparation of a final environmental impact statement (original draft released early 1997). The mine opened in 1997 with operation originally planned for 10 years. Reserves were estimated to be 90,700 t (100,000 st) of pumice to be used in making stonewashed jeans. Other pumice mines were active in the region.

Salt.—United Salt Corp. acquired a solar evaporation salt plant near Carlsbad in 1962 (United Salt Corp., 2006§). Here, the company harvested the salt on a 1,050-ha salt lake after the sun and wind evaporated the water from the brine. The salt was then carefully washed three times before it was packaged into a variety of solar salt products. Originally, the salt at Carlsbad was sold as deicing salt for roads. In recent years, the salt has been used in agricultural feed products, chemical feed stocks, water conditioning, and swimming pool chlorine generation and numerous other industrial applications.

Zeolites.—St. Cloud Mining Co. (a subsidiary of Imagin Minerals, Inc.) operated the largest zeolite mine in the Nation at the Stone House Mine in Sierra County. Imagin Minerals, Inc. bought the St. Cloud Mining Co. from The Goldfield Corp. in December 2002. St. Cloud Mining Co. has operated the open pit mine since 1993. The mining properties consisted of approximately 607 ha (1,500 acres) and contained 16.6 Mt of reserves with an annual capacity of 90,700 t (St. Cloud Mining Co., 2006§). Clinoptilolite was found in the altered Tertiary age tuff of Little Mineral Creek (White and others, 1996). Clinoptilolite was mined, crushed, dried, and sized without beneficiation and shipped packaged to meet customer's specifications. St. Cloud Mining Co. also, in the past several years, made several modifications to its zeolite operation, including the addition of cation exchange capacity for added-value products and additional classification capabilities to expand markets for their products. The modern facility had the crushing and sizing capacity of 454 t (500 st) per day.

Other Industrial Minerals.—Small flagstone dimension stone operations were located throughout New Mexico that produced sandstone, travertine, and other ornamental rock. The largest was New Mexico Travertine, Inc., a fully integrated stone processing plant, located south of Albuquerque, near Belen.

Helium was produced from the Shiprock and Ute Dome fields in the San Juan Basin. Helium was used in cryogenic applications, welding cover gas, pressurizing and purging, controlled atmospheres, leak detection, gas mixtures, and other uses.

Humates are weathered coal or highly organic mudstone that are found in the coal-bearing sequences. New Mexico has significant deposits of humates, predominantly in the Fruitland and Menefee formations in the eastern San Juan Basin. Humate was produced from five mines in New Mexico. Horizon Ag Products Inc.'s mine and mill were south of Cuba, Sadoval County. Menefee Mining Corp. operated one pit and a mill near Cuba. The mining operations, processing site, and transportation facility of U-Mate International, Inc. were located in the Gallup (McKinley County) area. Rammsco, Inc.'s Eagle Mesa mine was near Cuba, and the Morningstar Mine was in San Juan County. Humate is used as a soil conditioner and as an additive to drilling muds. Approximately 11 billion t of humate resources was estimated to be within the San Juan Basin (Hoffman and others, 1996).

Magnetite was produced from the stockpiles at Cobre Mining Co.'s (Phelps Dodge Corp.) Continental Mine and used in cement production and other minor uses.

Silica flux was produced from several quarries in Grant County for the Phelps Dodge Corp. copper mill.

Although garnet has not been produced in New Mexico from 1998 through 2004, at least one company was examining areas in the State for potential resources for uses as an abrasive. Garnet typically is found in skarn deposits in southern and central New Mexico and in some areas, garnet is a major constituent of waste rock piles remaining after recovery of metals (Lueth, 1996). For example, approximately 135,000 t of material grading 20% to 36% garnet was estimated to occur in four tailings piles at Hanover (Cetin and others, 1996). During 2005, domestic values for crude concentrates for different applications ranged from about $58 to $120 per metric ton, with an average for the year of $96 per ton. The domestic values for refined garnet for different applications sold during the year ranged from $61 to $298 per ton, with an average for the year of $268 per ton (Olson, 2007, p. 29.2).

Metals

Copper.—In 2005, Phelps Dodge Corp. continued to leach copper at the Chino Mine at Santa Rita and the Tyrone Mine in New Mexico. The company's Hurley smelter was permanently closed in 2005 and reclamation started.

The Chino Mine was the largest identified porphyry copper deposit in New Mexico. Copper sulfides were found in the upper, fractured granodiorite and adjacent sedimentary rocks. Adjacent copper skarns have become increasingly more important economically. In 2005, Chino produced 49,100 t of copper by SX/EW and 46,000 t of copper in concentrate (Phelps Dodge Corporation, 2006§). Estimated milling reserves in 2005 were nearly 65.9 Mt of ore grading 0.70% copper and 0.02% molybdenum and estimated leaching reserves were 142 Mt of ore grading 0.40% copper (Phelps Dodge Corporation, 2006§).

The Tyrone porphyry copper deposit in the Burro Mountains is within a quartz monzonite laccolith and adjacent Proterozoic Age

rocks. There are several ore bodies, sometimes considered separate porphyry copper deposits, within the deposit. Phelps Dodge's concentrator processed approximately 270 Mt of ore grading 0.81% copper from 1969 to 1992. The mill then closed and the mine began processing exclusively by heap-leach methods. In 2005, more than 36,700 t of electrowon copper was produced. In 2005, leaching reserves were estimated as 44.7 Mt of ore grading 0.29% copper (Phelps Dodge Corporation, 2006§). In addition, the nearby Niagara deposit contained 454 Mt of mineralized material grading 0.29% copper as of December 2000. This mineralized material could be brought into production should market conditions warrant.

Gold and Silver.—All the gold and silver production in New Mexico was as byproduct recovery from copper refining by Phelps Dodge in 2005 and amounted to 304 kg (9,764 troy ounces) gold and 6,340 kg (203,672 troy ounces) silver (Phelps Dodge Corporation, 2006§).

Molybdenum.—Molycorp Inc.'s (a subsidiary of Unocal Corp.) Questa molybdenum mine operated continuously from 1923 through 1986 when soft market conditions (low prices) caused the temporary shutdown of the mine until 1989. Mining operations again were placed on standby in 1992 and resumed in 1995. The price of molybdenum has increased during the past decade, in particular during the past 3 years.

The company mined some 73.5 Mt of ore from its open pit at a grade of 0.191% molybdic oxide between 1965 until 1983. Underground block caving of ore commenced in 1983 continuing through 2005. In 2005, production was about 1,600 t (3.5 million pounds) of molybdenum in concentrates. In 2005, ore grade ranged between 0.3% and 0.5% molybdenum. Reserves and resources (as of November 1999) at Questa were: (1) proven reserves of more than 1.5 Mt of 0.343% molybdenum disulfide (MoS_2) at a cutoff grade 0.25% MoS_2; (2) probable reserves estimated to be more than 40 Mt of 0.315% MoS_2; and (3) possible estimated resources of nearly 3 Mt of 0.369% MoS_2.

With proven and probable reserves considered, the mine life was expected to be 25 to 35 years. More than 200 people worked at the mine in 2005. For comparison, Phelps Dodge Corp. reports molybdenum reserves in 2005 at its Climax Molybdenum Co.'s Climax Mine and Henderson Mine (both in Colorado), to be 142 Mt of 0.19% Mo and 137 Mt of 0.21% Mo, respectively (Phelps Dodge Corporation, 2006§).

Molycorp Inc. also continued with a reclamation and revegetation program to cover overburden rock piles at the inactive open pit site.

Outlook

Nonfuel mineral production in New Mexico, as well as the total value of that production, had declined since maximum annual minerals production was achieved in 1989 (McLemore and others, 2002). The total nonfuel mineral production value temporarily trended up and was slightly higher in 1995, but in 1996 and thereafter, the value trended downward again, reaching its lowest levels from 2001 through 2003. During 2004 and 2005, most production values increased, obtaining near record values. Higher commodity prices and increased production resulted in a more than 50% increase (table 1) in nonfuel mineral production values from 2003 to 2005. New records were set for values of production of molybdenum and potash. Aggregate production and production value also broke previous records (New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division, 2006§). These trends, especially in aggregate (construction sand and gravel, and crushed stone), copper, gold (and silver), and most other industrial minerals, were expected to continue well into 2006. Molybdenum production value was thought likely to decrease somewhat in 2006 (New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division, 2007§). In part because molybdenum prices trended downward in late 2005, though leveling off somewhat in early 2006, a return to the record high price levels of 2005 was not anticipated.

References Cited

Austin, G.T., 1994, An overview of gemstone production in the United States: U.S. Bureau of Mines Mineral Industry Surveys, 44 p.

Barker, J.M. and Austin, G.S., 1996, Overview of the Carlsbad potash district, New Mexico, *in* Austin, G.S., Hoffman, G.K., Barker, J.M., Zidek, J. and Gilson, N., eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources, Bulletin 154, p. 49-61.

Barker, J.M., Chamberlin, R.M., Austin, G.S., and Jenkins, D.A., 1996, Economic geology of perlite in New Mexico, *in* Austin, G.S., Barker, J.M., Hoffman, G., Gilson, N., and Zidec, J., eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources, Bulletin 154, p. 165-170.

Cetin, U., Walder, I.F., Lueth, V.W., and Gundiler, I.H., 1996, Recovery of garnet from the Hanover mill tailings, Grant County, New Mexico, USA, *in* Austin and others, eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources Bulletin 154, p. 147-158.

Chamberlin, R.M., and Barker, J.M., 1996, Genetic aspects of commercial perlite deposits in New Mexico, *in* Austin, G.S., Hoffman, G.K., Barker, J.M., Zidek, J. and Gilson, N., eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources, Bulletin 154, p.171-185.

Hoffer, J.M., 1994, Pumice and pumicite in New Mexico: New Mexico Bureau of Mines and Mineral Resources, Bulletin 140, 23 p.

Hoffman, G.K., Verploegh, J., and Barker, J.M., 1996, Geology and chemistry of humate deposits in the southern San Juan Basin, New Mexico, *in* Austin and others, eds.) Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources Bulletin 154, p. 105-112.

Kamat, S. Lucas, 2007, New Mexico: Mining Engineering, v. 59, no. 5, May, p. 101.

Lueth, V.W., 1996, Garnet resource potential in southern New Mexico, *in* Austin and others, eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources Bulletin 154, p. 137-146.

McLemore, V.T., Hoffman, G.K., and Pfeil, J., 2002, Minerals industry in New Mexico in 1998-2000: New Mexico Geology, v. 24, p. 19-28.

Olson, D.W., 2007, Garnet, industrial, *in* Metals and minerals: U.S. Geological Survey Minerals Yearbook 2005, v. I, p. 29.1-29.3.

White, J.L., Chavez, Jr., W.X., and Barker, J.M., 1996, Economic geology of the St, Cloud Mining Company (Cuchillo Negro) clinoptillolite deposit, Sierra County, New Mexico, *in* Austin and others, eds., Proceedings of the 31st Forum on the Geology of Industrial Minerals—The Borderland Forum: New Mexico Bureau of Mines and Mineral Resources Bulletin 154, p. 113-120.

Internet References Cited

Intrepid Mining NM LLC, 2004 (March 3), Press release—Intrepid Mining NM LLC announces purchase of four potash facilities in Carlsbad, NM, accessed November 28, 2006, at URL http://www.intrepidllc.com/press/documents/040303PressRelease.pdf.

Intrepid Potash - New Mexico, LLC, 2006, Mine site locations, accessed November 28, 2006, at URL http://www.intrepidllc.com/loc/carlsbad.html.
New Mexico Business Weekly, 2006 (October 20), High prices still mark concrete industry, despite cement surplus, accessed November 28, 2006, at URL http://albuquerque.bizjournals.com/albuquerque/stories/2006/10/23/focus1.html.
New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division, 2006, 2005 New Mexico mineral industry statistics, accessed November 28, 2006, at URL http://www.emnrd.state.nm.us/MMD/MRRS/Prelim2005ProdData.htm.
New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division, 2007, 2006 New Mexico mineral industry statistics—Preliminary figures, accessed March 27, 2008, at URL http://www.emnrd.state.nm.us/MMD/MRRS/prelim2006ProdData.htm
Phelps Dodge Corporation, 2006, Annual report for 2005, accessed November 27, 2006, at URL http://library.corporate-ir.net/library/95/953/95336/items/192481/2005AR.pdf.
St. Cloud Mining Co., 2006, St. Cloud data sheets—Specifications, accessed November 28, 2006, at URL http://www.stcloudmining.com/.
The Mosaic Company, 2005, Meet Mosaic—The Mosaic Company 2005 annual report, accessed November 28, 2006, at URL http://media.corporate-ir.net/media_files/irol/70/70455/mosaic_05_ar.pdf.
The Mosaic Company, 2006, The Mosaic Company 2006 annual report, accessed November 28, 2006, at URL http://media.corporate-ir.net/media_files/irol/70/70455/mosaic_06_ar.pdf.
United Salt Corp., 2006, USC history, accessed November 28, 2006, at URL http://www.unitedsalt.com/site/html/about.htm.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW MEXICO[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2003 Quantity	2003 Value	2004 Quantity	2004 Value	2005 Quantity	2005 Value
Clays, common	36	209	34	177	36	221
Copper[3]	88	165,000	122	362,000	131	502,000
Gemstones	NA	20	NA	20	NA	19
Sand and gravel:						
Construction	13,300	65,300	13,600	89,500	16,000	112,000
Industrial	--	--	--	--	113	W
Silver kilograms	--	--	3,570	767	6,390	1,510
Stone:						
Crushed	3,730	26,000	2,830 r	16,400 r	3,010	20,100
Dimension	57	2,590	57	2,430	7	279
Combined values of cement, gold (2004-05), gypsum (crude), helium (Grade-A [2003-04]), lime, mica (crude [2003-04]), molybdenum concentrates, perlite (crude), potash, pumice and pumicite, salt, stone (crushed granite [2004]), zeolites (2004-05), and values indicated by symbol W	XX	310,000	XX	397,000 r	XX	513,000
Total	XX	569,000	XX	868,000 r	XX	1,150,000

rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined value" data.
XX Not applicable. -- Zero.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Data are rounded to no more than three significant digits; may not add to totals shown.
[3]Recoverable content of ores, etc.

TABLE 2
NEW MEXICO: CRUSHED STONE SOLD OR USED, BY KIND[1]

Kind	2004 Number of quarries	2004 Quantity (thousand metric tons)	2004 Value (thousands)	2005 Number of quarries	2005 Quantity (thousand metric tons)	2005 Value (thousands)
Limestone	15 r	2,250 r	$12,300 r	15	2,250	$13,800
Granite	1	W	W	1	(2)	(2)
Sandstone	1	3	15	1	(2)	(2)
Volcanic cinder and scoria	8 r	277	2,040	9	338	2,620
Miscellaneous stone	4	296 r	2,030 r	3	240	1,820
Total	XX	2,830 r	16,400 r	XX	3,010	20,100

rRevised. W Withheld from total to avoid disclosing company proprietary data. XX Not applicable.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 3
NEW MEXICO: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2005, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch), riprap and jetty stone	W	W
Coarse aggregate graded:		
Concrete aggregate, coarse	114	1,030
Bituminous aggregate, coarse	W	W
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Other graded coarse aggregate	378	1,210
Fine aggregate (-⅜ inch):		
Stone sand, concrete	147	1,270
Screening, undesignated	W	W
Other fine aggregate	16	137
Coarse and fine aggregates:		
Graded road base or subbase	66	427
Unpaved road surfacing	W	W
Crusher run or fill or waste	W	W
Chemical and metallurgical, cement manufacture	W	W
Other miscellaneous uses and specified uses not listed	140	1,510
Unspecified:[2]		
Reported	366	1,960
Estimated	1,700	11,000
Total	2,020	13,200
Grand total	3,010	20,100

W Withheld to avoid disclosing company proprietary data; included in "Grand total."
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 4
NEW MEXICO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005,
BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

	District 1		District 2		Unspecified districts	
Use	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	W	W	--	--
Coarse aggregate, graded[3]	W	W	W	W	--	--
Fine aggregate (-⅜ inch)[4]	W	W	W	W	--	--
Coarse and fine aggregates[5]	W	W	W	W	--	--
Chemical and metallurgical[6]	--	--	W	W	--	--
Other miscellaneous uses	89	1,030	51	480	--	--
Unspecified[7]						
Reported	171	1,000	129	551	68	406
Estimated	705	4,800	946	6,400	--	--
Total	1,560	10,000	1,390	9,660	68	406

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes riprap and jetty stone.
[3]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.
[4]Includes screening (undesignated), stone sand (concrete), and other fine aggregates.
[5]Includes crusher run or fill or waste, graded road base or subbase, and unpaved road surfacing.
[6]Includes cement manufacture.
[7]Reported and estimated production without a breakdown by end use.

TABLE 5
NEW MEXICO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	1,440	$11,400	$7.91
Plaster and gunite sands	128	1,220	9.50
Concrete products (blocks, bricks, pipe, decorative, etc.)	30	72	2.40
Asphaltic concrete aggregates and other bituminous mixtures	2,670	24,100	9.01
Road base and coverings[2]	2,780	18,200	6.56
Fill	829	4,030	4.86
Other miscellaneous uses[3]	682	12,300	18.07
Unspecified:[4]			
Reported	5,350	28,100	5.25
Estimated	2,100	12,900	6.08
Total or average	16,000	112,000	7.01

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes road and other stabilization (cement and lime).
[3]Includes railroad ballast and snow and ice control.
[4]Reported and estimated production without a breakdown by end use.

TABLE 6
NEW MEXICO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

	District 1		District 2		Unspecified districts	
Use	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products	663	5,890	803	5,540	--	--
Plaster and gunite sands	102	867	14	155	12	194
Asphaltic concrete aggregates and other bituminous mixtures	1,970	18,400	648	5,300	52	346
Road base and coverings[2]	1,420	9,610	887	5,700	476	2,940
Fill	549	3,230	257	735	23	69
Other miscellaneous uses[3]	482	9,760	191	2,540	9	30
Unspecified:[4]						
Reported	3,560	24,000	248	1,020	1,540	3,040
Estimated	600	3,600	1,500	9,300	--	--
Total	9,330	75,400	4,580	30,200	2,110	6,620

-- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes road and other stabilization (cement and lime).
[3]Includes railroad ballast and snow and ice control.
[4]Reported and estimated production without a breakdown by end use.