

# CALIFORNIA NON-FUEL MINERALS 2002

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Based on the U.S. Geological Survey's (USGS) preliminary data for 2002, California ranked first among the states in non-fuel mineral production, accounting for approximately 9% of the United States' total. Mineral production for California amounted to \$3.5 billion, about a 5% increase from the previous year. Production of at least 30 types of industrial minerals in the state accounted for about 97% of the total value, with metals (gold and silver) accounting for 3% of the total. California was the only producer of boron and rare earth ore, and led the nation in the production of sand and gravel, portland cement, diatomite, and natural sodium sulfate. California ranked fourth in the nation for gold production behind Nevada (first), Utah (second) and Alaska (third). Other minerals produced in California include bentonite clay (including hectorite), common clay, crushed stone, dimension stone, feldspar, fuller's earth, gemstones, gypsum, iron ore, kaolin clay, lime, magnesium compounds, perlite, pumice, pumicite, pyrophyllite, salt, silver, soda ash, talc, and zeolites.

There are about 1,055 active mines producing non-fuel minerals in the state. Approximately 10,400 people are employed at these mines and their processing plants.

## INDUSTRIAL MINERALS

Construction sand and gravel was California's leading industrial mineral with a total value of \$1.16 billion produced for the year, a 7% increase from 2001 (final USGS data). Sand and gravel production was estimated to be 173 million tons, a 5% increase from 2001. Vulcan Materials Company/Western Division's Boulevard Plant (Los Angeles County) continued to lead the state and the nation in sand and gravel production. Portland cement was the second largest industrial mineral produced in the state with a total of 12.3 million tons valued at about \$865 million. Boron, valued at about \$486 million, ranked third, and crushed stone ranked fourth with a value of \$420 million.



RMC Pacific Material's Bonny Doon Limestone mine (Santa Cruz County). The mine produces high-quality limestone used to manufacture portland cement at RMC's nearby Davenport plant. *(Photo courtesy of Rob Walker)*



Barrick's McLaughlin Mine located in Napa, Lake and Yolo counties ceased gold production in July 2002. Since the mine's first pour in 1985, about 3,379,000 ounces of gold has been produced making it California's richest modern day gold mine. (Photo by Jim Pompy.)

## CONSTRUCTION AGGREGATE

Importation of aggregate by barge and ship from Canada and Mexico to California ports continues to increase in the San Francisco and San Diego bay areas. California imported about 2.4 million tons of sand and gravel during 2002 compared to 0.9 million tons in 2001, a 160% increase. Imports to the San Francisco Bay area are expected to increase significantly in the next few years due largely to the closing of Hanson Aggregates Radum Plant (Alameda County) in 2001. The Radum plant produced over 4 million tons of aggregate annually.

RMC Pacific Materials was granted a permit in November 2002 to mine alluvial sand and gravel at their Stillwell site, (Tulare County). The permit will add 7 million tons of reserves to the northern Tulare County region and will extend the life of the existing RMC Lemon Cove operation by 4-5 years. The neighboring Kaweah River Rock Company applied for a permit to mine 280 acres of land south of their existing operation. If approved, the permit will add an additional 15-20 million tons of reserves to the northern Tulare County area.

RMC Pacific Materials was denied a revision of their reclamation plan at their Bonny Doon Limestone Mine (Santa Cruz County) in March 2002 by the Santa Cruz County Board of Supervisors. The revision proposal was to expand the pit an additional 18 acres. RMC is currently in the process of writing an EIR for the expansion.

RMC Pacific Materials submitted an application to Fresno County to mine 220 million tons of crushed stone at Jessie Morrow Mountain (Fresno County) near the town of Friant.

Palomar Aggregates proposed Rosemary's Mountain crushed rock mining operation (San Diego County) was approved by the San Diego County Board of Supervisors in October 2002. The quarry is expected to produce about one million tons of aggregate annually for the next 20 years.

Granite Construction Company's proposal to mine 60 acres of land in the Tahoe National Forest (Placer County) was denied in October 2002 by the U.S. Forest Service.

Transit Mixed Concrete's proposed 460-acre, 78 million ton, Soledad Canyon sand and gravel mining project (Los Angeles County) was denied by the Los Angeles County Board of Supervisors in February 2002.

Rinker Materials Corporation acquired Kiewit Materials Company in September 2002 for \$540 million making Rinker the fifth largest aggregate producer in the United States. The acquisition came almost two years after Kiewit purchased Solano Concrete which operated four aggregate properties in Yolo and Solano counties.

Granite Construction Company acquired Parnum Paving Inc. in May of 2002. The newly acquired properties included eight sand and gravel mines located in Mendocino, Humboldt, and Del Norte counties and three crushed stone quarries in Mendocino and Lake counties. Granite Construction Company also purchased the Vern Freeman crushed stone quarry (Santa Clara County) from West Coast Aggregates in November 2002.

#### OTHER INDUSTRIAL MINERALS

KRAC Inc.'s Joe Asbestos Mine (San Benito County) closed its mill in May 2002 after mining ceased in 2001. The mine had been in operation since 1963 and was the only producer of asbestos in the United States. The mine produced a short fiber variety of chrysotile asbestos that was primarily exported to Japan. The United States still imports long-fiber asbestos for use in fire retardant products primarily asphalt roof tiles.

Molycorp Inc. continued its permitting process for an enlargement of the current pit and an on-site tailings pond for their Mountain Pass rare earths mine (San Bernardino County). A draft EIR is expected to be completed in April 2003. Molycorp was permitted to mine a limited quantity of bastnaesite ore in early 2002, but processing was limited to the recovery of raw and leached bastnaesite.

Rio Tinto's Borax Mine and plant at Boron (Kern County) underwent a 12% increase in boron production for the year while at the same time managed to reduce their water usage by 7% per ton of boric acid produced. Rio Tinto attributed the higher productivity to equipment upgrades and maintenance improvements. The overall price for all boron produced in California decreased by about 25% from 2001.

Mitsubishi Cement Corporation continued its permitting process for a 200-acre expansion of their Cushenbury Limestone Mine (San Bernardino County).



KRAC Inc.'s Joe Asbestos Mine located in San Benito County operated from 1963-2002. The mine produced a short fiber variety of chrysotile asbestos that was primarily exported to Japan. *(Photo by John Clinkinbeard.)*

## METALS

Gold production in California continues to decline. In 2002, annual production amounted to 306,274 ounces, down 32% from 2001. Total value amounted to about \$95.4 million, down about 25% from last year's value of \$125.7 million. Compared to 2002, gold production is expected to decrease by 80% by the end of 2004 and by over 95% by the end of 2005.

California had only five major producing gold mines in 2002. These include Glamis Rand Mining Company's Rand Mine (Kern County), Canyon Resources Corporation's Briggs Mine (Inyo County), Barrick Gold Corporation's McLaughlin Mine (Napa, Lake and Yolo counties), Newmont Mining Corporation's Mesquite Mine (Imperial County) and Viceroy Gold Corporation's Castle Mountain Mine (San Bernardino County). Mining has ceased at four of these mines and the last ore processing from heap leaching is expected to take place by the end of 2004. Canyon Resources is currently mining at the Briggs Mine, but they expected to be completed by fall of 2003. Ore processing from heap leaching is expected to end in 2005. The Glamis Rand Mine led the state in gold production with a total of about 67,000 ounces. Canyon Resource's Briggs Mine was the state's second largest producer of gold.

Newmont Mining Corporation attained approval for an expansion at their Mesquite Mine (Imperial County) in the spring of 2002. The approval came after Newmont ceased mining operations in May of 2001. Newmont is evaluating the economic viability of mining the expansion area, which could yield up to one million ounces of gold.

Barrick's McLaughlin Mine (Napa, Lake, and Yolo counties) ceased gold production in July 2002. About 40 million tons of ore have been milled at the site. Since its first pour in 1985, about 3,379,000 ounces of gold and 2,282,000 ounces of silver have been produced, making the McLaughlin Mine California's richest modern-day gold mine.

Silver production makes up less than 1% of California's total metal production. All of the silver produced in California is a byproduct of gold production. Because most of the iron ore mined in the state is used in the production of portland cement, iron is included in the industrial mineral category.

## MINERAL RESOURCE CONSERVATION

The California Geological Survey (CGS) Mineral Land Classification Project, a mandate of the Surface Mining and Reclamation Act, continued to provide lead agencies with mineral resource maps that have proved to be of great value in land-use planning and mineral resource conservation. To date, CGS has classified a little over one third of the state for mineral resources.

In August 2002, CGS released an Aggregate Availability Map of California. The map (1:100,000 scale) and accompanying report compares 50-year demand for construction aggregate, to the currently permitted construction aggregate resources for 32 aggregate resource areas. These areas cover about 25% of the state and supply aggregate to about 90% of California's population. The map also includes aggregate production locations, a pie diagram showing construction aggregate uses, and aggregate production areas with less than 10 years of permitted aggregate supply. The accompanying report contains information about the map as well as a general overview of construction aggregate resources.



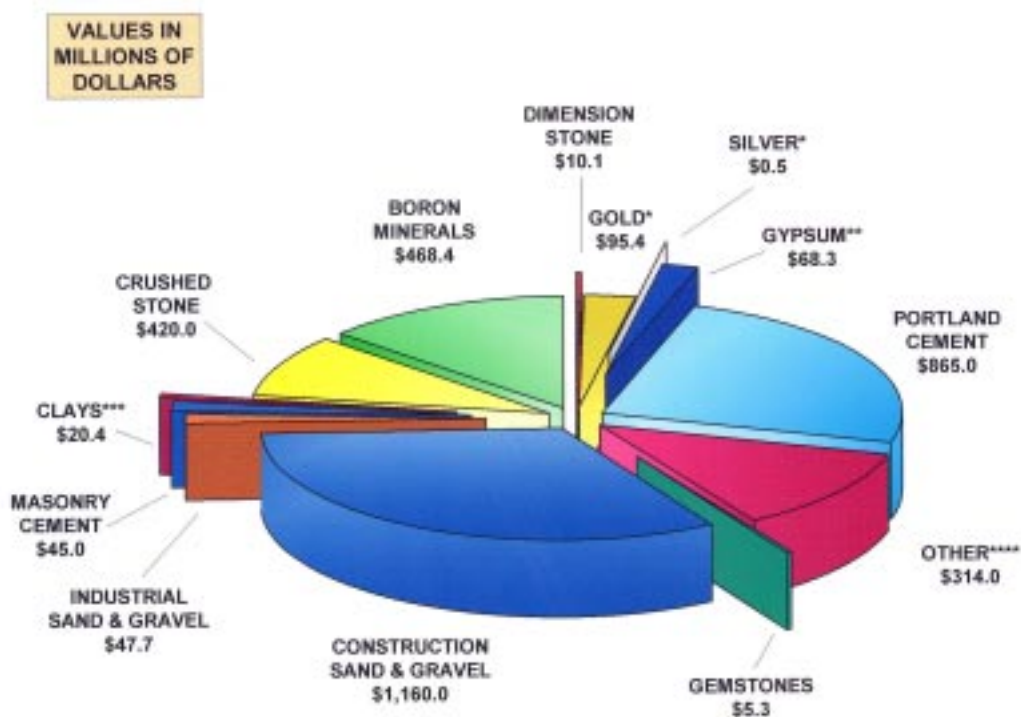
Amount and value of non-fuel mineral production for 2000, 2001, 2002.<sup>1,2</sup>

Mineral	2000		2001		2002 <sup>P</sup>	
	Quantity	Value (thousands \$)	Quantity	Value (thousands \$)	Quantity	Value (thousands \$)
Asbestos short tons	5,800	W	5,800	W	3,000	W
Boron Minerals (B <sub>2</sub> O <sub>3</sub> ) short tons	602,000	546,000	590,900	505,700	683,600	468,400
Cement:						
Masonry short tons	<sup>e</sup> 533,600	<sup>e</sup> 43,200	<sup>e</sup> 621,800	<sup>e</sup> 51,400	<sup>e</sup> 540,000	<sup>e</sup> 45,000
Portland short tons	<sup>e</sup> 12,017,200	<sup>e</sup> 821,000	<sup>e</sup> 11,135,300	<sup>e</sup> 778,000	<sup>e</sup> 12,348,000	<sup>e</sup> 865,000
Clays						
Bentonite short tons	23,600	2,200	27,400	2,600	25,700	2,500
Common short tons	1,067,800	16,800	976,300	10,100	1,732,800	17,900
Gemstones	NA	1,500	NA	1,300	NA	5,300
Gold <sup>3</sup> troy ounces	553,000	154,900	<sup>4</sup> 452,500	<sup>4</sup> 126,700	<sup>4</sup> 306,300	<sup>4</sup> 95,400
Gypsum <sup>5</sup> short tons	3,534,600	45,600	4,069,000	44,900	6,327,000	68,300
Sand and gravel:						
Construction short tons	163,170,000	940,000	164,273,000	1,080,000	173,092,500	1,160,000
Industrial short tons	1,992,200	45,200	1,934,900	43,900	2,023,100	47,700
Silver <sup>3</sup> troy ounces	<sup>4</sup> 281,700	<sup>4</sup> 1,400	<sup>4</sup> 240,000	<sup>4</sup> 1,100	<sup>4</sup> 112,200	<sup>4</sup> 500
Stone:						
Crushed short tons	65,819,200	373,000	67,914,000	396,000	70,008,800	420,000
Dimension short tons	36,700	5,800	44,300	9,500	45,400	10,100
Combined value of diatomite, feldspar, <sup>6</sup> fire clay, fuller's earth, iron ore (usable), kaolin, lime, magnesium compounds, perlite (crude), pumice and pumicite, <sup>7</sup> rare earths, salt, soda ash, <sup>6</sup> sodium bicarbonate, sodium sulfate, talc and pyrophyllite, zeolites, and values indicated symbol W						
	XX	305,900	XX	306,900	XX	314,100
<b>Total</b>	XX	3,302,400	XX	3,358,100	XX	3,520,200
<sup>1</sup> Production as measured by mine shipments, sales, or marketable production (including consumption by producers). <sup>2</sup> Quantity data are rounded to the nearest 100; values are rounded to the nearest \$100,000. <sup>3</sup> Recoverable content of ores, etc. <sup>4</sup> Data from California Department of Conservation, California Geological Survey. <sup>5</sup> Includes calcined, byproduct and crude gypsum. <sup>6</sup> Not produced in 2002. <sup>7</sup> No production data available for 2001 and 2002. <sup>P</sup> Preliminary. <sup>e</sup> Estimate. NA=Not available. W=Withheld to avoid disclosing company proprietary data; value included with "combined value" data. XX = Not applicable.						

Modified from unpublished U.S. Geological Survey (USGS) data, subject to change; official USGS preliminary 2002 data will be published in the California chapter of the USGS Mineral Yearbook, Area Reports: Domestic 2002, Volume II.

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Total Value \$3.52 Billion



\*\*\*\*OTHER includes:  
Asbestos, diatomite, feldspar, fuller's earth, iron ore,  
kaolin, lime, magnesium compounds, perlite,  
pumice and pumicite, pyrophyllite, salt, soda ash,  
talc, sodium sulfate, and zeolites.



\*Data from California Geological Survey

\*\*Includes calcined, byproduct and  
crude gypsum

\*\*\*Excludes kaolin and fuller's earth

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