

CALIFORNIA NON-FUEL MINERALS 2008

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Based on the U.S. Geological Survey's (USGS) preliminary data for 2008, California ranked fifth after Arizona, Nevada, Florida, and Utah in the value of non-fuel mineral production, accounting for approximately 5.6 percent of the nations' total. The market value of mineral production for California was \$4.0 billion. California produced about 30 different commercial industrial minerals during the year. California led the nation in the production of sand and gravel, diatomite and natural sodium sulfate, and was the only producer of boron and rare earth minerals. The state ranked second behind Texas for portland cement production. The only metals produced were gold and silver. California ranked 6th in gold production out of eleven states that reported for the year. Other minerals produced commercially include common clay, bentonite clay (including hectorite), crushed stone, dimension stone, feldspar, fuller's earth, gemstones, gypsum, iron ore (used in cement manufacture), kaolin clay, lime, magnesium compounds, perlite, pumice, pumicite, salt, soda ash, and zeolites.

There were about 717 active mines producing non-fuel minerals during 2008. Approximately 10,000 people are employed at these mines and their processing plants.

INDUSTRIAL MINERALS

Despite a significant downturn in the production of construction grade sand and gravel during the year, it continued to be California's leading industrial mineral, with an estimated total value of \$1.10 billion for 108.5 million tons produced. California's second largest mineral commodity was portland cement valued at nearly \$1.09 billion for 10.5 million tons produced. Valued at about \$700 million, boron was California's third highest dollar-value mineral produced in 2008. U.S. Borax and Chemical Corporation Inc., (a subsidiary of Rio Tinto Inc.), led the state and nation in the production of borates at their Boron Mine and facility in Kern County. Crushed stone ranked fourth in the state with a value of \$480 million.

Aggregate

California's residential construction slowdown during the year contributed to a significant decrease in both production and value of construction aggregate (sand and gravel and crushed stone). Total production in 2008 was 156.7 million tons compared to 208.0 million tons produced in 2007 – amounting to a 25 percent decrease. The value of construction aggregate produced decreased by 21 percent.

Money continues to come in from bond sales by the State Treasures Office to fund the \$19.9 billion transportation bond package approved by the voters in 2006. As of December 2008, Caltrans had awarded \$1.57 billion dollars to contractors for 98 transportation projects funded by Proposition 1B money. The projects consist of safety improvements and repairs to state highways, upgrades to freeways, repairs to local streets and roads, improvements to the seismic safety of local bridges, and expansion of public transit. The 1B bond package also authorizes state and regional agencies to engage in public and private partnerships to attract additional dollars in private investments for the development of transportation infrastructure in the state. Many of these infrastructure projects will require large amounts of construction aggregate and cement. The increased demand for construction materials necessary for these projects may offset some of the reduced demand from declining residential and commercial construction due to the current economic downturn.

In addition the Proposition 1B money, California is expected to receive approximately \$2.57 billion for highways, local streets and roads, freight and passenger rail, and port infrastructure projects from the American Recovery and Reinvestment Act signed by president Obama in February 2009.

In August 2008, 12 years after the initial project proposal, the Fresno County Board of Supervisors approved Calaveras Materials 315-acre sand and gravel mining project along the north bank of the Kings River in Fresno County. The approval followed an appeal by Calaveras Materials (a subsidiary of Lehigh Hanson) of an earlier March 2008 decision to deny the permit. The project will add approximately 30 million tons of aggregate reserves to the Fresno County area. The company is currently working on the plant design and the conditions of approval.

Teichert Aggregates announced in September 2008 that construction of its Lincoln aggregate facility, Placer County, has been put on hold until there is some improvement in the local economy. Teichert was granted an extension of their CUP through 2010. Work continued on road improvements and other mitigating measures associated with the approved mine and plant.

Triangle Rock Products Inc, a subsidiary of Vulcan Materials Company announced plans to expand its current operation north of Florin Road, Sacramento County to a 98-acre site south of Florin Road. Under the proposed plan, the mine expansion will yield about 10.7 million tons of gravel over a 12 year life span. Also, the plan calls for the preservation of a 23 acre wildlife corridor along Laguna Creek west of the proposed mined area.

Northern Aggregates Inc. continued its permitting process for the proposed 35 acre expansion of their Harris rock quarry located in Mendocino County. The project also calls for the construction of a concrete and asphalt processing plant on site. Findings of the Draft Environmental Impact Report (DEIR) for the

expansion were presented to the county in January 2008. The company currently is working on a list of conditions aimed at mitigating potential negative impacts of the project. The proposed expansion will add approximately 27 million tons of aggregate base reserves to the County.

A DEIR was submitted in June 2008 for De Silva Gates LLP's Ostrom Road 175-acre aggregate mining and processing project located along Dry Creek, Yuba County. The project also includes a 6,000 ton per day asphalt plant to be built the first year of the mine's operation. The proposed mine and plant could produce up to 600,000 tons of sand and gravel annually and would have reserves of about 9 million tons.

Troesh Materials Inc. received final county approval in September 2008 by the Board of Supervisors for their 133-acre Diamond Rock Sand Mine and processing facility located in and along the Cuyama River, Santa Barbara County. The approval came after the Board of Supervisors upheld a May 2008 decision by the Planning Commission to approve the project. The approval allows up to 750,000 tons of sand and gravel to be mined annually from an 84-acre site. Troesh plans to mine roughly 13 million tons of aggregate over the permit life of 30 years. The Richards Holdings Company has also applied for a permit from Santa Barbara County to mine the Cuyama River channel – the permit is pending.

Baldwin Contracting Company Inc.'s proposed 200-acre, 5.5 million cubic yard, M&T Ranch sand and gravel mining project in Butte County was denied by the Board of Supervisors in January 2008 – ending nearly 12 years of discussion and debate over the proposed mine. The company does not plan to appeal the decision.

The permitting process for Granite Construction Company's 155-acre Liberty Quarry project continued throughout the year. The project's approval would allow Granite Construction to mine a total of 270 million tons of crushed rock (up to 5 million tons annually) from a granite deposit located in southeastern Riverside County about three miles south of Temecula. A DEIR was released in July 2009 and public comment was continued through November 2009. In December 2008, the city of Temecula filed an application to annex almost 5,000 acres in the vicinity of, and including, the Liberty Quarry project site. The annexation would have changed the permitting agency for the quarry from Riverside County to the city of Temecula. The annexation was denied in June 2009.

A DEIR was released in August 2008 for Teichert Aggregate's 380-acre hard rock aggregate quarry and plant project located in eastern Sacramento County between U.S. Hwy 50 and California Hwy 16. The project, referred to as the Teichert Quarry, proposes mining 135 million tons of granitic rock over a 25 year quarry life. The proposed project is one of three hard rock quarry projects in

eastern Sacramento County that are in the permitting stage. The two other projects have been initiated by Granite Construction Company (the Walltown Quarry project) and by DeSilva Gates Construction (the Barton Quarry project). The Draft EIR's have not been released for either of these projects. If all three mining projects are approved as proposed, the Sacramento Region and Western El Dorado County will gain an additional 780 million tons of construction grade aggregate reserves.

Lehigh Hanson (a subsidiary of HeidelbergCement), CEMEX, and Shamrock continued to buy aggregate shipped from Canada to San Francisco Bay area ports. Lehigh Hanson also barges sand from Mexico into San Diego. The quantity of aggregate shipped from Canada and Mexico has remained fairly constant at about 2 to 3 million tons annually. Eagle Rock Aggregates (a subsidiary of Polaris Minerals Corporation) is gearing up for shipping of Canadian aggregate into the Los Angeles, Long Beach, and San Diego areas when the economy recovers and aggregate sales start to improve.

Cement

California's decline in new home and business construction during 2008 contributed to a significant drop in both cement production and in cement imports from the previous year.

The port of Stockton, San Joaquin County, experienced a severe decline in cement imports – 70 percent decrease from 2007 imports of 1.12 million tons to 2008 imports of 0.33 million tons. When compared to 2006 cement imports of 2.4 million tons, the decline was about 86 percent.

The decline in cement demand prompted CEMEX to announce the temporary closing of its Davenport cement plant, Santa Cruz County, beginning March 2009 for a minimum of six months. Most of the 125 plant and mine employees will be laid off except for a few workers that will maintain equipment. The plant primarily serves the San Francisco Bay Area. The closure comes in the wake of the economic downturn which has caused a significant decrease in cement demand throughout California. CEMEX also owns a cement plant located in Victorville, San Bernardino County that will remain fully operational.

Texas Industries, Inc.'s Riverside Cement temporarily shut down its Rubidoux cement plant located north of Riverside, Riverside County in December, 2008 – laying off 88 employees. A spokesperson for the company stated that the plant will be closed until the economy improves. Texas Industries also announced plans to suspend operations for four to six months at its Oro Grande facility in San Bernardino County at the end of January 2009. This shut down occurred just eight months after the company completed expanding and modernizing the Oro Grande plant facilities at a cost of \$427 million. The renovation completed in May 2008 included modernization of mining equipment and crushing facilities as well

as replacing seven 50-year-old kilns with a single state of the art kiln. The modernization almost doubles the plant's annual cement processing capacity from 1.3 to 2.3 million tons.

The construction slump also has impacted Lehigh Southwestern Cement Company's plant north of Redding, Shasta County. In August 2008, the company announced that it would be cutting all employees' hours by 20 percent and going to a 4 day work week.

Despite the downturn in cement importation, CEMEX and Pan Pacific Cement completed construction of two new state-of-the-art bulk cement terminals at the Port of Sacramento. CEMEX invested more than \$54 million on its new terminal that can handle up to 1.1 million tons of cement annually – almost five times the capacity of the former CEMEX facility. Pan Pacific's new facility cost about \$20 million and has a maximum capacity of about 880,000 tons per year.

In order to resolve a longstanding dispute between the City of Santa Clarita and CEMEX over the proposed Soledad Canyon sand and gravel quarry in Los Angeles County, the Soledad Canyon Bill (HR 5887) was introduced in April 2008 by U.S. Congressman Howard McKeon. The bill would have protected Soledad Canyon, including the CEMEX proposed mine site, as open space. The act also would have also authorized compensation to CEMEX for its two ten-year contracts with the U. S. Bureau of Land Management by providing CEMEX with land near Victorville that is comparable in value to the company's investment in the cancelled contracts. The bill failed despite being supported by CEMEX and the cities of Santa Clarita and Victorville, but it may be introduced again.

Lehigh Hanson (formerly Hansen Permanente Cement Inc.) continued working on revising and expanding the 1987 reclamation plan for its Permanente limestone quarry, Santa Clara County. The 1987 plan expires in 2010. The Permanente Quarry and processing plant currently supplies about 50 percent of the San Francisco Bay Area's cement.

Other Industrial Minerals

The Mountain Pass Rare Earth Mine, San Bernardino County, was purchased from Chevron by a group of U.S. based investors on September 30, 2008 forming Molycorp Minerals LLC, a Denver based company which owns and operates the mine. The new company continued separating rare earth elements from stockpiled rare earth concentrates in 2008. The major products being produced are lanthanum hydroxychloride, which is used in the manufacturing of fluid catalytic cracking catalysts, and didymium oxide (neodymium + praseodymium oxide), which is used to manufacture rare earth magnets. The current plant has a production capacity of about 4.5 million pounds of rare earth products per year but plans are under way to increase capacity to about 6 million pounds annually by 2010. The stockpiled rare earth concentrates are expected

to last until 2010, at which point the plant feed will change to bastnasite concentrate. The rare earth separations operations were mostly idle between 1998 and 2007, yet stockpiled ore continued to be sold during this time making mine operations continuous since the mine opened in 1952. The company also has plans to set up a factory for the production of high power neodymium magnets used in the manufacturing of wind turbine generators and other high tech products.

METALS

The only metals produced in California were gold and silver. Gold dominated California's metal production in 2008 – comprising over 99 percent of the value of the state's metals production. Gold production increased dramatically to 115,330 ounces in 2008, a 494 percent increase from 19,400 ounces in 2007. The value of gold production in the state had even a greater increase to \$100.6 million from \$13.0 million, a 674 percent increase driven in part by increasing gold prices.

The State's large increase in gold production can be attributed mainly to Western Goldfields, Inc., bringing the Mesquite gold mine back into production in 2008 – producing 108,000 ounces for the year. The company purchased the Mesquite Mine from Newmont Mining Corporation in 2003 and began mining in the fall of 2007. The company's first gold pour from the new operations took place in January 2008. Gold production for the Mesquite Mine for 2009 is projected to be 140,000 to 150,000 ounces. As of December 31, 2008, Western Goldfields had identified and estimated 2.6 million ounces of gold reserves and an additional 1.5 million ounces of measured and indicated resources.

Canyon Resources Corporation merged with Atna Resources Ltd. in March 2008. Since the merger, Atna has been concentrating its efforts on restarting its new holding, the Briggs Gold Mine in Inyo County. Major projects started during 2008 included a one million square foot leach pad expansion, refurbishing of the existing crushing plant and mining equipment, and the purchasing of new mining equipment. Striping of overburden began at the mine in late 2008 and mining of the first ore began in January 2009. The first gold pour at the mine took place in May of 2009. Atna expects to be at full production by the beginning of 2010 yielding about 40,000 ounces annually. Measured and indicated gold resources at the Briggs Mine and the unpermitted Cecil R deposit are currently estimated at 678,800 ounces. These resources reflect the recent 25,000-foot drilling program conducted from late 2008 to spring of 2009. Proven and probable reserves at the Briggs Mine are estimated at 267,000 ounces. Atna is currently working on revising its mine plan to increase these reserves.

Sutter Gold Mining Inc. announced an updated mineral resource estimate in February, 2008 for their Sutter Gold Project in Amador County after conducting 19,500 feet of core drilling in 2006-2007. The new 2008 indicated resource estimate was determined to be 673,600 tons of ore containing an estimated

223,000 ounces of gold – a 29 percent increase in ounces from the 2006 estimate. The drilling identified several new ore zones in the fully permitted Sutter Creek project comprising 535 acres along a 3.2-mile segment of the Mother Lode belt including the historic Lincoln Mine site. A portion of the historic workings are currently opened for tours.

A DEIR was completed in October 2008 for the reopening of Emgold Mining Corporation's Idaho Maryland gold mine located in the City of Grass Valley, Nevada County. After public comment ended in January 2009, a decision was made to revise the EIR and to resubmit it. A spokesperson for Emgold stated in October 2009 that the mine probably is about four years away from production if the permit is granted. The Idaho Maryland mine is a historic underground lode gold mine that operated from 1862 to 1956, producing about 2.4 million ounces of gold. Emgold has identified measured and indicated gold resources of 472,000 ounces. A key component of the mine reopening is the dewatering of the historic workings. Emgold is also working with Golden Bear Ceramics to plan an on-site manufacturing facility that will use waste rock for the production of ceramic products.

In addition to the above mentioned lode gold mines, placer gold is produced from Cal Sierra Development Inc.'s Yuba River gold dredging operation in Yuba County and as a by-product mineral from numerous sand and gravel mines located in the northern and central part of the state. California also has several small underground gold mines that mainly produce specimen gold including gold in quartz matrix for jewelry.

Silver is produced as a by-product of gold production and makes up less than one percent of California's total metal production. Iron ore, mined in one location in San Bernardino County, is considered an industrial mineral because it is used for the production of portland cement.

THE CALIFORNIA GEOLOGICAL SURVEY

The California Geological Survey's (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 completed mineral resource studies in about one third of the state. During the year, CGS completed an updated classification project in the San Bernardino area. Classification work is currently taking place in southern Los Angeles County, Nevada County, the North San Francisco Bay area (Marin, Sonoma, and Napa counties), San Joaquin County and Kern County. These reports are scheduled for completion in 2009-2010.

Amount and value of non-fuel mineral production for 2006, 2007, 2008. ^{1,2}

Mineral		2006		2007		2008 ^P	
		Quantity	Value (thousands \$)	Quantity	Value (thousands \$)	Quantity	Value (thousands \$)
Boron Minerals	short tons	W	W	W	^e 4600,000	W	^e 4700,000
Cement							
Masonry	short tons	^e 769,500	^e 89,500	^e 576,000	^e 68,900	^e 377,000	^e 46,000
Portland	short tons	^e 12,017,300	^e 1,190,000	^e 11,943,000	^e 1,180,000	^e 10,496,000	^e 1,091,000
Clays:							
Bentonite	short tons	26,500	2,500	32,000	3,100	33,000	3,200
Common	short tons	820,100	7,600	605,000	4,000	515,000	3,400
Gemstones		NA	1,000	NA	800	NA	700
Gold ³	troy ounces	⁴ 21,600	⁴ 13,100	⁴ 19,400	⁴ 13,000	⁴ 119,300	⁴ 104,100
Sand and gravel:							
Construction	short tons	168,571,100	1,522,900	148,134,000	1,450,300	108,529,000	1,105,100
Industrial	short tons	1,843,400	57,800	2,034,000	43,400	1,940,000	42,900
Silver ³	troy ounces	W	W	W	W	3,590	50
Stone:							
Crushed	short tons	60,544,900	644,300	59,839,000	567,900	48,196,000	480,300
Dimension	short tons	44,400	10,000	43,000	12,300	47,000	12,200
Values for boron (2006), diatomite, feldspar, gypsum (calcined), iron ore (usable shipped), clay (fire, fullers earth, and kaolin), lime, magnesium compounds, perlite (crude), pumice and pumicite, rare earths (2008), ⁴ salt, silver (2006 and 2007) soda ash, sodium sulfate, and zeolites are combined to avoid disclosing company proprietary data.							
Total combined and W values			1,090,100		341,400		393,300
Total annual value-all minerals			4,628,800		4,285,100		3,978,800
¹ Production as measured by mine shipments, sales, or marketable production (including consumption by producers). ² Quantity and value data are rounded to the nearest 100 units except for 2008 silver (rounded to nearest 10 units). ³ Recoverable content of ores, etc. ⁴ Data from California Department of Conservation, California Geological Survey. ^P Preliminary. ^e Estimate. NA=Not available. W=Withheld to avoid disclosing company proprietary data; value included with "combined value" data.							

Modified from unpublished U.S. Geological Survey (USGS) data, subject to change; official USGS final 2006 data will be published in the California chapter of the USGS Mineral Yearbook, Area Reports: Domestic 2006, Volume II.

