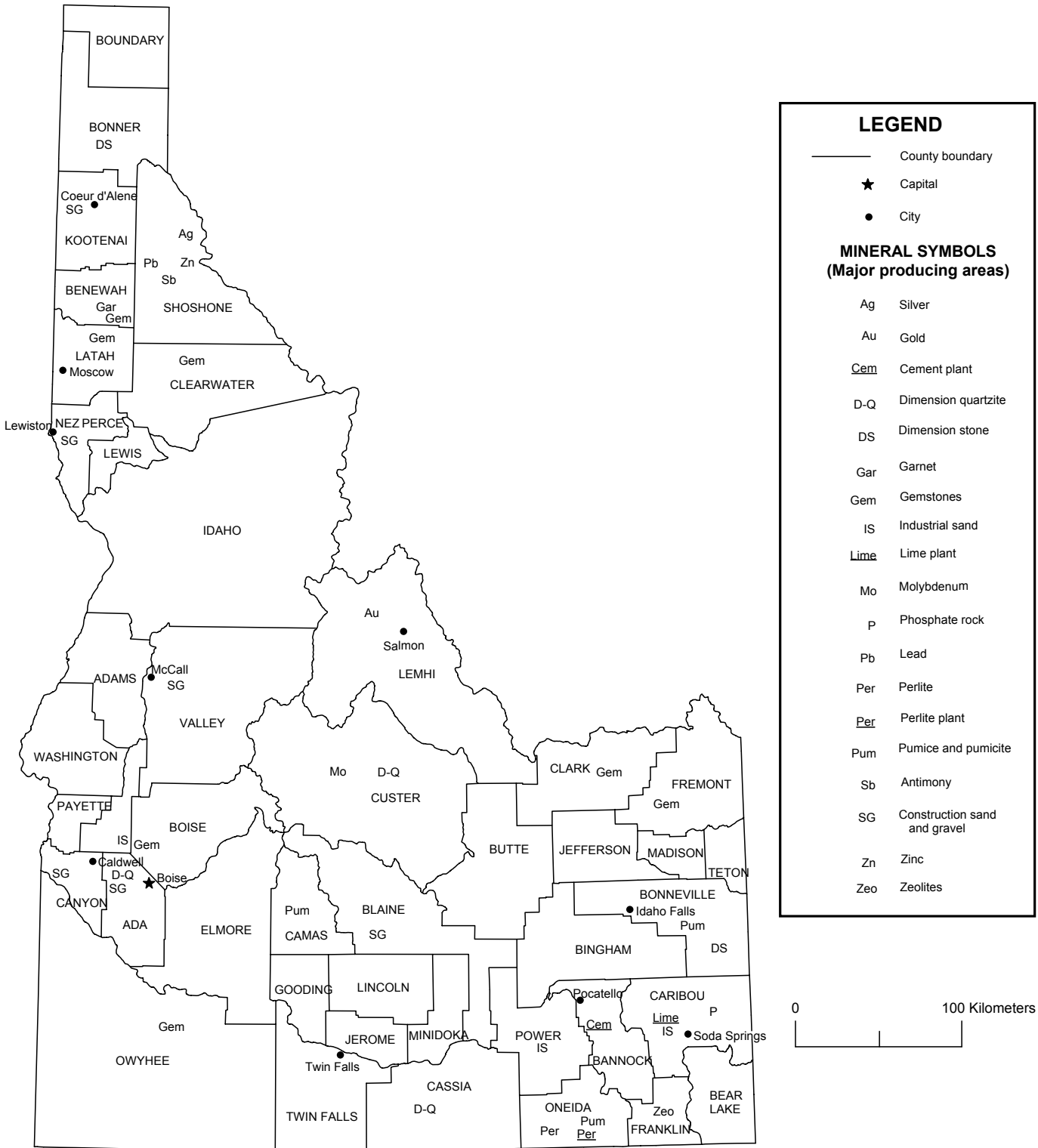


# IDAHO



Source: Idaho Geological Survey/U.S. Geological Survey (2003)

# THE MINERAL INDUSTRY OF IDAHO

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Idaho Geological Survey for collecting information on all nonfuel minerals.**

In 2003, the estimated value<sup>1</sup> of nonfuel mineral production for Idaho was \$277 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 2% increase from that of 2002<sup>2</sup> and followed a 5.9% decrease from 2001 to 2002. The State, for the second consecutive year, was 36th in rank among the 50 States in total nonfuel mineral production value, of which Idaho accounted for about 1% of the U.S. total.

Phosphate rock, construction sand and gravel, molybdenum concentrates, silver, portland cement, and crushed stone, by value, were Idaho's leading nonfuel minerals, accounting for about 90% of the State's total nonfuel mineral production value in 2003. Industrial minerals accounted for more than two-thirds of the State's total nonfuel mineral value, and metals—copper, gold, lead, molybdenum concentrates, silver, and zinc—accounted for the remaining one-third. During the past 5 years, the proportion of metals to industrial minerals in the State has significantly changed. Metals, after dropping from 45% and 43% of the State's nonfuel mineral value in 1999 and 2000, respectively, to 28% in 2001, rose to 29% in 2002 and to about 33% in 2003. Gold production substantially dropped off during this time period. Silver and lead production significantly decreased but leveled off during the past 2 to 3 years, their values were down more than 50% and about 65%, respectively. Overall, the most significant changes influencing the shifting proportion of metals to industrial minerals have been (1) a reduction in the production and value of phosphate rock (2002 and 2003 preliminary values at about 65% of 1999 value), and (2) successive increases in the production and value of molybdenum concentrates at Thompson Creek Mining Co.'s large open pit molybdenum mine in Custer County in the past 2 years (value more than doubled).

In 2002, the largest increases were those of molybdenum concentrates, up about \$10 million; construction sand and

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<sup>1</sup>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 2003 USGS mineral production data published in this chapter are preliminary estimates as of July 2004 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Values, percentage calculations, and rankings for 2002 may differ from the Minerals Yearbook, Area Reports: Domestic 2002, Volume II, owing to the revision of preliminary 2002 to final 2002 data. Data for 2003 are preliminary and are expected to change; related rankings also may change.

gravel, up about \$5 million; portland cement, up nearly \$4 million; and copper, up about \$3 million. But these increases were outweighed by decreases in phosphate rock, down more than \$14 million; lead, down about \$10 million; crushed stone down \$6.7 million; gold, down about \$4 million; and lime, down about \$3 million, accounting for most of the State's lowered total nonfuel mineral value. While small increases took place in feldspar and zinc, there were small decreases in the values of all other mineral commodities, the largest of which was a \$1 million decrease in the value of silver (table 1).

Based upon USGS estimates of the quantities produced in the United States during 2003, Idaho continued to be second in phosphate rock, third in silver and lead, fourth in molybdenum, fifth in zinc and pumice, and sixth in feldspar and zeolites (listed in descending order of value). While the State remained ninth of 10 States that produced gold, it dropped to second from first of two industrial-garnet-producing States and to seventh from sixth in the production of gemstones (based on value). Additionally, the State was a significant producer of construction sand and gravel, industrial sand and gravel, and dimension stone and a modest producer of portland cement.

The Idaho Geological Survey<sup>3</sup> (IGS) provided the narrative information that follows.

The nonfuel mineral industry was considerably brighter for Idaho than in 2002, as rising metal prices created renewed interest in precious-metals exploration and financed expansions in the Silver Valley. Foreign competition was a concern, however, at some of the State's industrial mineral operations. Based on preliminary 2003 data, Idaho's metallic minerals accounted for 32.6% of production value in 2003 compared with the 29.3% in 2002 and 28% in 2001. Employment in Idaho's mines stabilized at a low of 1,730 persons at the end of 2003, and modest hiring was expected in the Coeur d'Alene District. Phosphate rock continued to be the largest value contributor to Idaho's mineral industry, although metals in the Coeur d'Alene region exceeded the Phosphate District in number of new exploration projects. The Idaho Mining Association celebrated its 100th anniversary during 2003.

## Exploration and Development Activities

In the Coeur d'Alene District of north Idaho, Hecla Mining's Lucky Friday unit, which has produced more than 3,890 metric tons (t) of silver to date, conducted a 5-hole drilling program to test ore grades below 1,490 meters (m) of its Gold Hunter deposit. In December, Hecla announced a decision to drive a 1,680-m-long drift on the 1,800-m level to access an estimated 871 t of silver deep in the Silver Valley Mine.

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<sup>3</sup>Virginia S. Gillerman, Research Economic Geologist, authored the text of the State mineral industry information provided by the Idaho Geological Survey.

Production could double when the expansion is completed in 2005, and employment would increase beyond the current 90 persons. Coeur d'Alene Mines Corporation operated the Galena Mine, where production was slowed by a shutdown for hoist maintenance and extensive development work in the second half of the year. Work centered on the 72 vein above the 1,600-m levels and the Upper Silver vein at the 730-m level in shallower parts of the mine, where a raise-boring machine was drilling an internal shaft. In the fall, Coeur announced a decision to expand and drive a new decline to access below the 1,700-m level.

Sterling Mining Company, a newcomer, paid the back taxes and signed a lease-option on the Sunshine Mine, a 10,900-t silver producer that closed in 2001. Sterling initiated surface geophysics and geochemistry on the 890-hectare (ha) property and inspected the shaft, finding it open at least to the 1,100 m level. Sterling also picked up nearby properties in the Silver Valley and explored the copper-nickel-(platinum) mafic target at the Montgomery Mine near the United States-Canadian border. Kimberly Gold Mines, partly owned by Sterling, did exploration work and drilling at its property in the Marshall Mountains in Idaho County.

New Jersey Mining, based in Kellogg, had five exploration projects in north Idaho. It turned in a Plan of Operations to the U.S. Forest Service to reopen the Silver Strand underground silver-gold mine in Kootenai County. New Jersey drilled at the Lost Eagle gold mine, the Enterprise area, and the New Jersey Mine near Kellogg; it also optioned the Golden Chest Mine near Murray in Shoshone County.

In other gold exploration, Unity Gold Mines reopened the Charity Mine above the Unity Tunnel at Warren, and American Independence Mines and Minerals received modified approval from the Payette National Forest of the environmental impact statement for exploration and development work at the Golden Hand Mine near Edwardsburg. Vista Gold Corporation of Denver announced that it had acquired a 9-year option for the Yellow Pine project in the Stibnite Mining District from Bradley Mining. Previous drilling outlined a 68-t gold resource there. Kent Roche drilled north of Salmon; Kilgore Gold acquired the Kilgore deposit in Clark County; Juniper Rose worked on the Tyceska placer gold deposit at King Hill in southern Idaho; Nevada Contact drilled the Iron Creek property in Lemhi County and a State lease on War Eagle Mountain in Owyhee County; and Wave Exploration picked up the Musgove deposit in Lemhi County. Atlanta Gold (a subsidiary of Twin Mining) submitted a proposal to the Boise National Forest to open a 6,300-metric-ton-per-day open pit heap-leach gold-silver mine at Atlanta in Elmore County. National Environmental Policy Act permitting studies were ongoing at Atlanta.

Formation Capital Corporation was able to raise funds from the improved financial markets to resume the environmental monitoring and permitting activities for its Idaho Cobalt Project, a proposed cobalt-copper-gold underground mine in Lemhi County. According to the company, the project is in the advanced stages of feasibility and permitting. The underground operation will create minimal surface disturbance and will be 100% self-contained with no surface water involved and no chance of runoff water contamination. The conceptual Plan of Operations and the environmental scope of work have been

completed. As well, an updated prefeasibility study by Mine Development Associates of Reno, NV, was complete. Strong political support included members of the U.S. Congress and U.S. Senate. Idaho's Governor foresaw "no regulatory obstacles which would form a hindrance to the successful permitting of the Idaho Cobalt Project." Three public review (scoping) meetings held to date reveal overwhelming project support and no opposition (Formation Capital Corp., 2004<sup>§4</sup>).

In the Phosphate District, J.R. Simplot Company received Bureau of Land Management (BLM) approval and started mining on the B and C panels at its Smoky Canyon Mine, the largest in the district. Simplot also explored on its Dairy Syncline and Wells Canyon leases. The BLM and Forest Service approved Agrium and NuWest Mining's plan for a 109-ha expansion into the North Rasmussen Ridge Mine. Monsanto finished operations at its Enoch Valley Mine and continued mining its new South Rasmussen Ridge Mine. It also explored its Trail Creek lease.

After several years, the Army Corps of Engineers finally agreed in November to complete the environmental impact statement needed by Emerald Creek Garnet to expand onto 168 ha of the St. Maries River flood plain. L and W Stone worked on a Supplemental Plan of Operations for the growing Three Rivers quarry near Clayton. Alchemy Ventures, renamed "i-minerals inc.," drilled 12 coreholes at its Helmar-Bovill clay pits in Latah County and did metallurgical testing to evaluate its feldspar resource.

## **Commodity Review**

### ***Industrial Minerals***

J.R. Simplot Company consolidated its strong position in western fertilizer markets by purchasing Farmland Industries' share of SF Phosphates, including a Utah mine, Wyoming fertilizer plant, and pipeline from the mine to the plant. In October, Astaris, a joint venture of FMC Corp. and Solutia, made a surprise withdrawal from Soda Springs and closed the new purified phosphoric acid (PPA) plant at Conda, plus facilities in Green River, WY, and elsewhere. FMC expected to take a \$40 million after-tax charge for the restructuring and virtual withdrawal of FMC from the phosphate production business. Solutia filed a lawsuit against FMC over the PPA plant technology.

Other industrial minerals operations were little changed. Idaho Minerals, now owned by Hess Pumice of Malad, operated its expander plant for perlite from the Wrights Creek Mine. Hess noted slow market conditions and increased foreign competition for fine grinding pumice. Dimension stone producers were in full production, and L and W Stone opened a new regional distribution center in Challis near Three Rivers quarry in Custer County. Sand and gravel production and use were high.

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<sup>4</sup>A reference that includes a section mark (§) is found in the Internet Reference Cited section.

## Metals

The two operating mines in the Coeur d'Alene District together produced nearly 187 t of silver in 2003. Higher molybdenum prices allowed Thompson Creek Mining Company to recall 50 Ledcore contractors and resume the Phase 5 stripping and pushback. Production at the large, open pit mine in Custer County was about one-half capacity with only 100 employees working on the mining, milling, and a new water management environmental project.

## Environmental Issues and Mine Reclamation

In September, a decision was announced in the Natural Resources Damage lawsuit in Federal court after 12 years of legal action on the Coeur d'Alene River basin issue. The ruling said that damages were not as bad as portrayed by the U.S. Government and did assess some, but not all, charges against the mining companies who remain. ASARCO Incorporated, now owned by Grupo Mexico S.A. de C.V., reached a \$100 million settlement for its entire U.S. operations. Hecla set aside \$16 million for environmental work on the Bunker Hill Superfund area.

In the Phosphate District, additional sheep deaths were reported; the sheep had grazed on unsuspected, selenium-accumulating aster plants near an old, inactive mine site. The Idaho Department of Environmental Quality was in charge of the Comprehensive Environmental Response, Compensation and Liability Act, Area Wide Risk Assessment, which includes cooperative agreements for site-specific investigations at current and historic mine sites.

## Government Program

The IGS worked on new geologic maps; many are available on its Web site on the Internet at URL <http://www.idahogeology.org>. Mapping was conducted near Lewiston, Moscow, and Orofino in north Idaho and Hagerman and Shoshone in southern Idaho. A searchable version of the IGS Mines and Prospects database, which includes more than 8,000 properties, also debuted on the Web site along with a summary of last year's mineral activity report.

## Internet Reference Cited

Formation Capital Corp., 2004, Idaho cobalt project, accessed September 3, 2004, at URL <http://www.formcap.com/s/IdahoCobaltProject.asp>.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN IDAHO<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2001		2002		2003 <sup>p</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	665	NA	460	NA	455
Sand and gravel, construction	15,000	52,400	15,700	57,700	15,000	55,500
Stone, crushed	5,250	22,500	3,420	15,800	2,900	13,500
Zeolites metric tons	(3)	NA	(3)	NA	(3)	NA
Combined values of cement (portland), copper, feldspar, garnet (industrial), gold, lead, lime, molybdenum concentrates, perlite (crude), phosphate rock, pumice and pumicite, sand and gravel (industrial), stone [dimension granite, quartz, sandstone (2002), dimension quartzite and sandstone (2001), quartzite and sandstone (2003)], zinc	XX	213,000	XX	197,000	XX	224,000
Total	XX	288,000	XX	271,000	XX	294,000

<sup>p</sup>Preliminary. NA Not available. XX Not applicable.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to three significant digits; may not add to totals shown.

<sup>3</sup>Withheld to avoid disclosing company proprietary data.

TABLE 2  
IDAHO: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2001				2002			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	5	564	\$3,240	\$5.75	3	460	\$2,890	\$6.29
Shell	1	19	134	7.05	1	24	167	6.96
Granite	7	235	1,090	4.65	8	160	793	4.96
Traprock	40	3,710	14,700	3.97	36	2,140	9,140	4.27
Quartzite	3	371	1,580	4.26	2	356	1,520	4.28
Miscellaneous stone	9	355	1,680	4.74	5	279	1,280	4.60
Total or average	XX	5,250	22,500	4.28	XX	3,420	15,800	4.62

XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

TABLE 3  
IDAHO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
<b>Coarse aggregate (+1 1/2 inch):</b>			
Riprap and jetty stone	28	\$145	\$5.18
Filter stone	W	W	3.73
Other coarse aggregates	101	432	4.28
Total or average	129	577	4.47
<b>Coarse aggregate, graded:</b>			
Bituminous aggregate, coarse	(2)	(2)	5.02
Bituminous surface-treatment aggregate	8	44	5.50
Fine aggregate (-3/8 inch), stone sand, bituminous mix or seal	(2)	(2)	5.04
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	262	1,340	5.10
Unpaved road surfacing	W	W	5.05
Other coarse and fine aggregates	82	555	6.77
Total or average	344	1,890	5.49
Other construction materials	54	202	3.74
<b>Agricultural:</b>			
Poultry grit and mineral food	W	W	25.35
Other agricultural uses	30	568	18.93
Total or average	30	568	18.93
Special, mine dusting or acid water treatment	(2)	(2)	25.35
Other miscellaneous uses and specified uses not listed	28	798	28.50
<b>Unspecified:<sup>3</sup></b>			
Reported	2,330	9,530	4.09
Estimated	470	2,000	4.24
Total or average	2,790	11,500	4.12
Grand total or average	3,420	15,800	4.62

W Withheld to avoid disclosing company proprietary data; included with "Other."

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
IDAHO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	2,200	\$10,400	\$4.72
Plaster and gunite sands	23	127	5.52
Concrete products (blocks, bricks, pipe, decorative, etc.)	16	57	3.56
Asphaltic concrete aggregates and other bituminous mixtures	506	2,480	4.91
Road base and coverings	3,900	12,700	3.26
Fill	564	1,830	3.25
Snow and ice control	131	947	7.23
Other miscellaneous uses <sup>2</sup>	356	1,430	4.03
Unspecified: <sup>3</sup>			
Reported	3,960	13,400	3.38
Estimated	4,100	14,000	3.41
Total or average	15,700	57,700	3.67

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Includes railroad ballast.

<sup>3</sup>Reported and estimated production without a breakdown by end use.