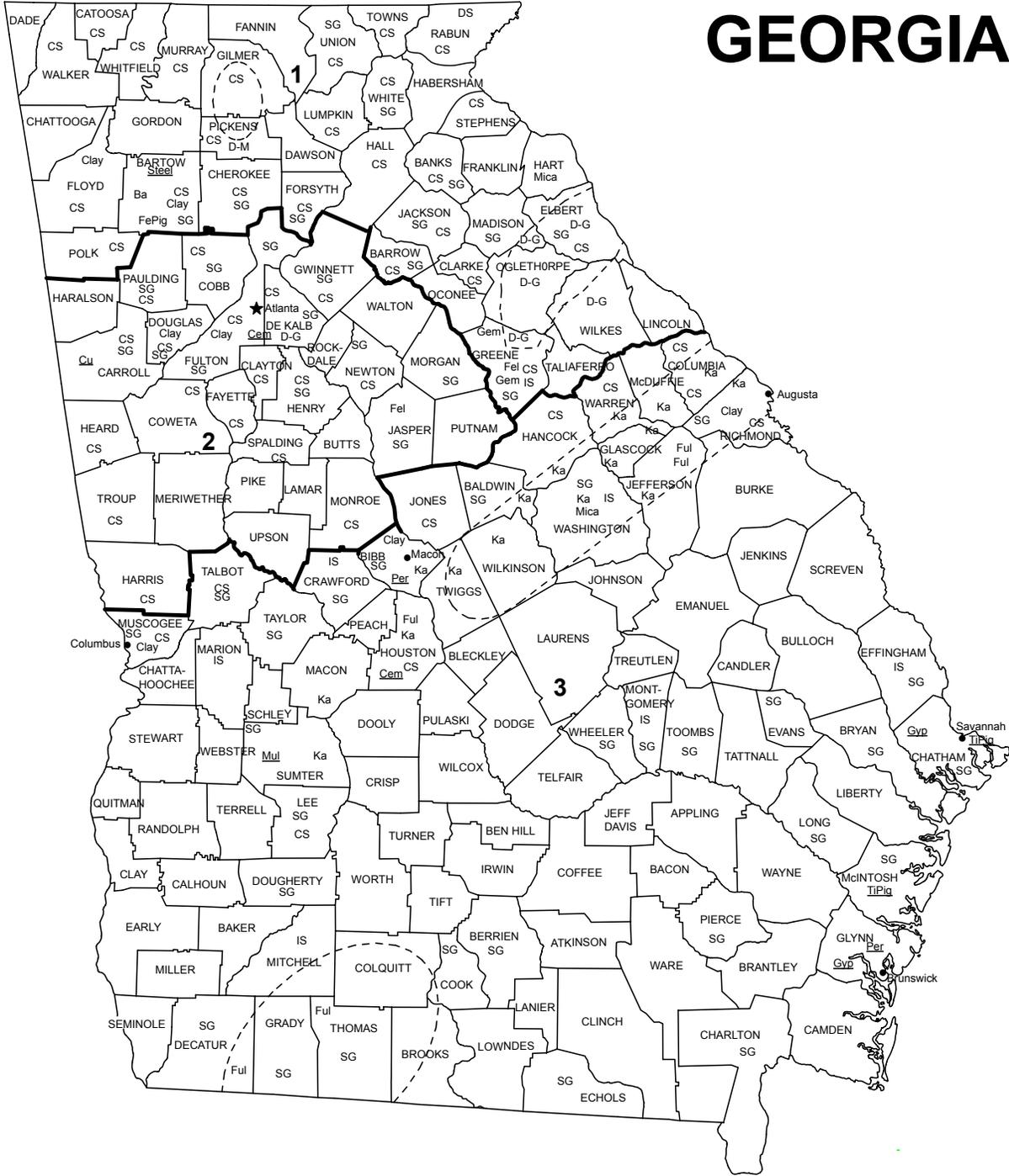


GEORGIA

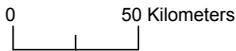


LEGEND

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

**MINERAL SYMBOLS
(Major producing areas)**

Ba	Barite	DS	Dimension stone	Mica	Mica
<u>Cam</u>	Cement plant	Fel	Feldspar	<u>Mul</u>	Synthetic mullite plant
Clay	Common clay	FePig	Iron oxide pigments	<u>Per</u>	Perlite plant
CS	Crushed stone	Ful	Fuller's earth	SG	Construction sand and gravel
<u>Cu</u>	Copper plant	Gem	Gemstones	<u>Steel</u>	Steel plant
D-G	Dimension granite	<u>Gyp</u>	Gypsum plant	<u>TIPlg</u>	Titanium dioxide pigment plant
D-M	Dimension marble	IS	Industrial sand	(dashed circle)	Concentration of mineral operations
		Ka	Kaolin		



Source: Georgia Geologic Survey/U.S. Geological Survey (2003)

THE MINERAL INDUSTRY OF GEORGIA

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

In 2003, the estimated value¹ of nonfuel mineral production for Georgia was \$1.67 billion, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 2% increase from that of 2002² and followed a 4.5% increase from 2001 to 2002. The State remained sixth in rank among the 50 States in total nonfuel mineral production value, of which Georgia accounted for more than 4% of the U.S. total.

Georgia was by far the leading clay-producing State in the Nation in 2003, accounting for about 24% of total U.S. clay production (all kinds) and producing more than 2.7 times the quantity of clay as the next highest producing State. Kaolin remained the State's foremost nonfuel raw mineral commodity, accounting for more than 53% of Georgia's estimated total nonfuel mineral production value and, of that, about 90% of its clay value. Crushed stone was second, accounting for nearly 29% of the State's nonfuel mineral value, followed by fuller's earth and portland cement.

In 2002, increases in the value of kaolin, up \$77 million (production down slightly) and in the production and value of fuller's earth, up about \$13 million, led Georgia's rise in value for the year. Smaller increases in the production of masonry cement, its value being up more than \$2 million, and in the production of mica, value up more than \$1 million, partly offset decreases in the production and values of crushed stone, down \$11 million; the values of dimension stone (production up slightly) and portland cement, down about \$8 million and \$3 million, respectively; and construction sand and gravel, down \$1.6 million (table 1). All other changes were less than \$1 million, having less of an effect on the overall net total.

Based upon USGS estimates of the quantities produced in the United States during 2003, Georgia continued to be first among the 50 States in kaolin, fuller's earth, and iron oxide pigments (descending order of value); second in mica and second of two barite-producing States; fourth in common clay

¹The 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>.

²Values, 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.

and feldspar; and ninth in masonry cement. The State rose to be one of the top five crushed-stone-producing States from seventh in 2002 and decreased to third from second in the production of dimension stone. Additionally, the State was a significant producer of portland cement and industrial sand and gravel.

The following narrative information was provided by the Georgia Geologic Survey³ (GGS) in cooperation with representatives of the Georgia Environmental Protection Division, Elberton Granite Association, the Georgia Crushed Stone Association, the Georgia Mining Association, and the China Clay Producers Association. Data in the following text are those reported by these sources, based on their own surveys and estimates, and may differ from some production figures reported by the USGS.

Georgia's mining industry is dominated by the kaolin and crushed stone industries. Overall, the mining industry is strong and spends millions of dollars on research and development. In support of the industry, the Georgia Mining Association sponsors a variety of mining-industry-related activities. In 2003, the association sponsored environmental and safety training and education seminars and workshops and awarded nearly \$40,000 in college scholarships to 69 Georgia high school students in 31 Georgia counties. Additional information on mining in Georgia and the Georgia Mining Association can be found on the Internet at URL <http://www.georgiamining.org>.

Mine Permitting Activities

Surface mining (except for dimension stone) in Georgia is regulated by the Land Protection Branch of the Georgia Environmental Protection Division (EPD), which issues permits for land disturbing activity and monitors mine reclamation. In 2003, EPD issued 59 new mining permits for a variety of mine operations including sand and gravel, crushed stone, kaolin, and fill material. Most notable among these was the permit for a new heavy-minerals (titanium and zircon) sand mining operation to be operated by TE Consolidated in Brantley County in southeastern Georgia. Further information on State rules and regulations can be found at URL <http://www.dnr.state.ga.us/dnr/enviro/>.

Commodity Review

Industrial Minerals

Clay, Kaolin.—Georgia's kaolin industry production was concentrated in the four member companies of the China

³Bruce J. O'Connor, Principal Geologist, authored the text of the State mineral industry information provided by the Georgia Geologic Survey.

Clay Producers Association (CCPA): Engelhard Corp., Imerys Pigments and Additives Group, J.M. Huber Corp., and Thiele Kaolin Co. In 2004, the association's members collectively announced an after-tax profit of \$4.6 million, or a 0.5% net return on investments totaling \$823 million for 2003. This represents a significant increase compared with the previous year's loss of \$93 million, a negative 10% return on total monies invested (10% loss on investments). However, performance is still well below the 1999 profit of \$33.2 million, a 2.7% return on investment. Dealing with its most significant losses in a decade, the kaolin industry was operating in a very competitive environment. A major issue was a continued overcapacity in the paper industry, the major consumer of kaolin. In addition, Georgia's kaolin industry continued to face increased foreign competition, the substitution of kaolin by other competing minerals, and higher energy prices. According to the CCPA, as a mature industry, the Georgia kaolin companies have experienced major restructuring and have continued to reduce payroll and other expenses. In 2003, direct employment in the industry was more than 2,900 personnel (down from its peak of 4,500). Restructuring has resulted in the shutdown of older unprofitable operations, reducing net investments by almost 32% for the four CCPA member companies alone. The CCPA reported "Unfortunately, the kaolin industry in Georgia is not seeing the reinvestment in capital, as assets are shifting to more profitable areas. This redeployment of assets will continue until income numbers reflect an acceptable return on investment" (China Clay Producers Association, 2004⁴). Additional information on Georgia's kaolin and the China Clay Producers Association can be found at URL <http://www.kaolin.com>.

Sand, Industrial.—Unimin Corporation of New Canaan, CT, extracted Late Cretaceous Cusseta Sand from pits in Marion and Taylor Counties, Georgia. The material was used to produce glass; fiberglass; filter sand; roofing sand; as well as beach, golf, and traction sand.

Stone, Crushed.—The Georgia crushed stone industry was largely dependent on heavy construction, and the market was distributed between three major sectors—road and highway construction; residential, office, and shopping center construction; and other public works projects. Based upon GGS-derived data, crushed stone production for 2003 increased approximately 8% from 2002 levels in spite of reduced spending on highway projects. However, because 2002 production, as reported by the GGS, was 6% lower than 2001 (USGS data indicate a 10.1% decrease—table 1), the increase for 2003 marked a return to recent production levels.

Florida Rock Industries, Inc.; Hanson Aggregates East; LaFarge Construction Materials; Martin Marietta Aggregates; and Vulcan Materials Co. are the leading producers of aggregate in Georgia's Valley and Ridge (limestone and dolostone), Blue Ridge (metagranite and metaconglomerate), and Piedmont (granite and granitic gneiss) Provinces.

Other crushed stone producers include Global Stone Corp.,

Imerys Pigments and Additives Group, and J.M. Huber Corp. These companies crushed and ground either limestone or marble from Valley and Ridge or Blue Ridge underground mines. End products were used in the manufacture of various commodities including extender for latex carpet backing, caulks, paints, and sealants. High-brightness, chemically pure materials were included in pharmaceuticals and were employed as a coating for high-quality papers in lieu of kaolin. Additional information regarding Georgia's crushed stone industry may be found on the Georgia Crushed Stone Association's Web site at URL <http://www.gacsa.org>.

Stone, Dimension.—Georgia's dimension granite industry is concentrated in the five-county Elberton granite district (Elbert, Oglethorpe, Madison, Greene, and Wilkes Counties) in central eastern Georgia; however, most quarries and plants are in Elbert County. In 2003, there were approximately 45 active quarries in the district. Total workforce and annual payrolls declined about 10% from 2002 levels, a shortage of skilled labor remaining a significant factor in limiting granite production in the district. The Elberton Granite Association continued to assist member companies by providing wage supplements for on-the-job training of new stone-cutting personnel for a period of 3 months.

There were no company acquisitions or plant closings reported for 2002. The domestic demand for Elberton's monumental-grade granite continued to decrease in 2003 because of foreign competition; the district lost more than 20% of its rough stock sales in the Asian markets to China. The volume of finished memorials being imported into the United States by brokers from China and India continued to increase and to seriously affect Elberton's granite producers. Import of polished slabs for counter tops from South America (especially Brazil) also increased.

High-pressure water-jet-assisted cutting systems continued to be widely used as a method of cutting granite within the quarries. In 2001, approximately 25% of the quarries in the district used this method, and most of the remaining quarries continued to use the flame burner. While installing and operating the water-jet equipment is a significant expense, the rise in energy costs has increased its popularity over the flame burner. In addition, the use of computerized wire saws in quarries increased (manufacturing facilities use diamond saws to cut quarried blocks). Some additional information regarding the State's dimension granite industry can be found on the Elberton Granite Association's Web site at URL <http://www.egaonline.com>.

Polycor Inc., Canada's leading architectural stone company and North America's second largest and most diversified supplier of architectural dimension stone, announced the September 3, 2003, acquisition of Georgia Marble Dimension Stone assets from Imerys, a worldwide leader in mineral processing. Polycor planned to distribute and to market Georgia Marble through its subsidiaries. This transaction enabled Polycor to increase its presence in the North American dimension stone market, and the company purportedly accomplished this transition without disrupting the Georgia Marble workforce (Polycor, 2003§)

⁴References that include section marks (§) are found in the Internet References Cited section.

Internet References Cited

China Clay Producers Association, 2004 (July 29), Georgia Kaolin industry announces economic figures for the year 2003, News Release, accessed July 29, 2004, at URL <http://www.kaolin.com/Press/2003profitability.htm>.

Polycor, 2003 (September 3), Polycor acquires Georgia Marble Dimension Stone, Announcement, accessed July 29, 2004, at URL http://www.polycor.com/html/en/poly_f_announcements.html.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN GEORGIA^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2001		2002		2003 ^P	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Common	1,360	4,580	1,310	5,500	1,310	5,500
Fuller's earth	879	80,600	979	93,800	979	93,800
Kaolin	7,020	816,000	6,830	893,000	6,830	893,000
Gemstones	NA	8	NA	8	NA	8
Sand and gravel:						
Construction	7,060	28,800	6,600	27,200	7,100	29,500
Industrial	W	W	606	12,200	759	12,400
Stone:						
Crushed ³	76,900 ^r	465,000 ^r	69,100	454,000	71,500	479,000
Dimension	108	26,500	111	18,200	103	21,100
Combined values of barite, cement, clays (bentonite, feldspar, iron oxide pigments (crude), lime, mica (crude), stone (crushed marble), and values indicated by symbol W	XX	150,000	XX	138,000	XX	139,000
Total	XX	1,570,000 ^r	XX	1,640,000	XX	1,670,000

^PPreliminary. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data.

XX Not applicable.

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

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Excludes certain stones; kind and value included with "Combined values" data.

TABLE 2
GEORGIA: CRUSHED STONE SOLD OR USED, BY KIND¹

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	18	W	W	\$6.27	18	W	W	\$6.65
Marble	6	(2)	(2)	6.29	6	(2)	(2)	6.37
Granite	53	66,700	\$401,000	6.02	53	59,300	\$389,000	6.56
Quartzite	2	W	W	4.59	2	W	W	5.25
Total or average	XX	76,900 ^r	465,000 ^r	6.04	XX	69,100	454,000	6.57

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

²Withheld from total to avoid disclosing company proprietary data.

TABLE 3
 GEORGIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$3.75
Riprap and jetty stone	615	\$4,650	7.56
Other coarse aggregates	1,610	10,900	6.74
Total or average	2,230	15,500	6.97
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	7.97
Bituminous aggregate, coarse	W	W	8.07
Railroad ballast	W	W	4.99
Other graded coarse aggregates	23,700	180,000	7.60
Total or average	23,700	180,000	7.60
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	8.01
Stone sand, bituminous mix or seal	W	W	6.66
Screening, undesignated	W	W	7.52
Other fine aggregates	10,100	67,800	6.71
Total or average	10,100	67,800	6.71
Coarse and fine aggregates:			
Graded road base or subbase	11,000	64,900	5.90
Crusher run or fill or waste	W	W	5.38
Other coarse and fine aggregates	4,340	23,900	5.51
Total or average	15,300	88,800	5.79
Other construction materials	186	930	5.00
Agricultural limestone	(2)	(2)	5.88
Unspecified:³			
Reported	16,600	93,100	5.61
Estimated	900	7,200	7.99
Total or average	17,500	100,000	5.73
Grand total or average	69,100	454,000	6.57

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

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

²Withheld to avoid disclosing company proprietary data; included in "Grand."

³Reported and estimated production without a breakdown by end use.

TABLE 4
 GEORGIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1 1/2 inch) ²	W	W	540	3,920	W	W
Coarse aggregate, graded ³	W	W	14,500	112,000	W	W
Fine aggregate (-3/8 inch) ⁴	3,010	22,900	5,610	38,800	W	W
Coarse and fine aggregate ⁵	4,720	28,500	9,140	52,700	1,480	7,640
Other construction materials	173	873	13	57	--	--
Agricultural ⁶	W	W	--	--	--	--
Unspecified: ⁷						
Reported	5,210	29,000	1,500	6,610	9,880	57,500
Estimated	900	7,200	--	--	--	--
Total	20,800	139,000	31,300	214,000	17,000	100,000

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes macadam, riprap and jetty stone, and other coarse aggregates.

³Includes bituminous aggregate (coarse), concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

⁴Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.

⁵Includes crusher run (select material or fill), graded road base or subbase, and other coarse and fine aggregates.

⁶Includes agricultural limestone.

⁷Reported and estimated production without a breakdown by end use.

TABLE 5
 GEORGIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,
 BY MAJOR USE CATEGORY¹

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate (including concrete sand)	2,390	\$10,500	\$4.40
Plaster and gunitite sands	416	1,880	4.51
Concrete products (blocks, bricks, pipe, decorative, etc.)	85	586	6.89
Fill	33	111	3.36
Other miscellaneous uses ²	93	425	4.57
Unspecified: ³			
Reported	2,020	7,220	3.57
Estimated	1,600	6,500	4.06
Total or average	6,600	27,200	4.13

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

²Includes asphaltic concrete aggregates and other bituminous mixtures.

³Reported and estimated production without a breakdown by end use.

TABLE 6
 GEORGIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,
 BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1 and 2 ²		District 3	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	419	2,450	2,470	10,500
Other miscellaneous uses ⁴	72	311	53	226
Unspecified: ⁵				
Reported	107	437	1,910	6,780
Estimated	200	800	1,400	5,700
Total	776	4,030	5,820	23,200

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Districts 1 and 2 are combined to avoid disclosing company proprietary data.

³Includes plaster and gunite sands.

⁴Includes asphaltic concrete aggregates and fill.

⁵Reported and estimated production without a breakdown by end use.