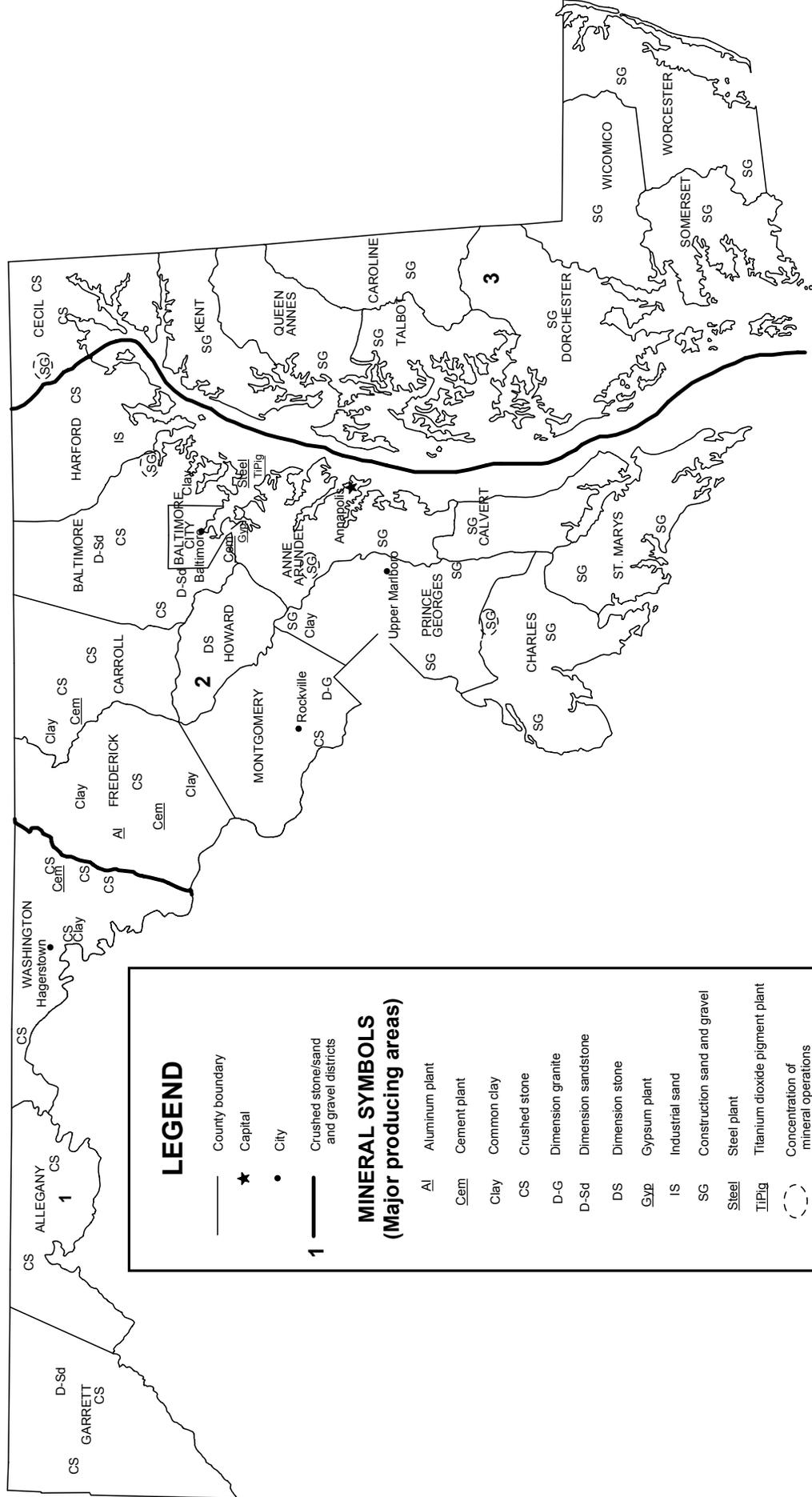


# MARYLAND



## LEGEND

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

## MINERAL SYMBOLS (Major producing areas)

- Al Aluminum plant
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- D-G Dimension granite
- D-Sd Dimension sandstone
- DS Dimension stone
- Gyp Gypsum plant
- IS Industrial sand
- SG Construction sand and gravel
- Steel Steel plant
- TiPig Titanium dioxide pigment plant
- Concentration of mineral operations

0 50 Kilometers

# THE MINERAL INDUSTRY OF MARYLAND

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Maryland Department of the Environment, Minerals, Oil, and Gas Division, for collecting information on all nonfuel minerals.**

In 2003, the estimated value<sup>1</sup> of nonfuel mineral production for Maryland was \$382 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 4.5% decrease from that of 2002<sup>2</sup> and followed a 12.4% increase in value in 2002 from 2001. The State ranked 33d (32d in 2002) among the 50 States in total nonfuel raw mineral production value, of which Maryland accounted for 1% of the U.S. total. (Because 2001 data for crushed marble, shell, and traprock and industrial sand and gravel were withheld to protect company proprietary data, the actual total value for that year was somewhat higher than that reported in table 1.)

Portland cement and crushed stone, based upon value, were Maryland's leading nonfuel raw minerals, followed by construction sand and gravel. These three mineral commodities (including crushed marble, shell, and traprock) accounted for more than 95% of the State's total value (table 1). In 2003, although offset somewhat by increases in the value of cement (portland and masonry), decreases in the production and values of construction sand and gravel and crushed stone (including that of marble, shell, and traprock) resulted in the State's drop in value for the year. In 2002, Maryland's rise in value resulted from increases in the production and value of portland cement, up \$16 million, and the value of crushed stone (production down slightly), up \$5 million. Construction sand and gravel, dimension stone, and crushed marble, shell, and traprock stone values were down about \$1 million each (table 1).

Compared with USGS estimates of the quantities of minerals produced in the other 49 States during 2003, Maryland was a significant producer of all of its major nonfuel raw mineral commodities—cement (portland and masonry), crushed stone, construction sand and gravel, and dimension stone (in descending order of value). All nonfuel minerals mined in the State were industrial minerals. All metal production, especially that of primary aluminum and raw steel, consisted

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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.

of the processing and refining of materials received from other domestic and foreign sources. Based upon USGS data, the State remained ninth among 12 States in the production of primary aluminum.

The narrative information that follows was provided by the Maryland Department of the Environment's (MDE) Mining Program.<sup>3</sup> Maryland's nonfuel mineral mining production has remained consistently high in recent years; in 2002, the State set its record high for the value of nonfuel mineral production. Crushed stone continued to be the primary nonfuel mineral product that was mined in the State followed by construction sand and gravel. There have been no significant changes in the State's nonfuel mineral production, which continued to be mainly driven by aggregate-related construction demands.

## Exploration and Development

A significant mine development and a significant mine opening took place during 2003. The Chase Quarry operated by Chase Mining LLC (a subsidiary of Laurel Sand and Gravel, Inc.) was permitted following several years of legal challenges and permit reviews at the county and State levels. This 105-hectare (ha) (260-acre) site, located strategically between the Baltimore and Washington markets in Howard County, will be mined for the Baltimore Gabbro, a very hard dense rock sought after for its excellent skid resistance and durability in asphalt use. Stripping of overburden was underway, but the commencement of stone production was not likely until late 2004 or early 2005.

Maryland Rock Industries Inc. became active in the St. Mary's County area again by opening a 62-ha surface sand and gravel mine known as the Camack property. This site was being mined with a hydraulic dredge with the sand pumped to the adjacent Medly's Neck wash plant. The company's reclamation plan calls for the creation of a large lake surrounded by agricultural land.

## Environmental Issues and Reclamation

Sinkhole development and repair continued to be significant issues during 2003 in the Frederick and Carroll Counties areas, which were in the midst of increased development and highway construction. New zones of influence were developed around the Essroc Quarry and the New Windsor Quarry in Frederick and Carroll Counties. In 2000, the MDE had promulgated regulations to support the zone of influence requirements in the State's surface mine law. A zone of influence is an area where, if private property damage is sustained, the person suffering the

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<sup>3</sup>C. Edmon Larrimore, Program Manager of the Mining Program of the Maryland Department of the Environment, authored the text of the State mineral industry information provided by that agency.

loss must be reimbursed for damages by the quarry operating within the zone's boundaries. The zones are based upon topography and historical data, on geologic and hydrogeologic factors, and potential effects to the area's wells. A quarry is initially presumed responsible in order to facilitate an immediate solution for the victim. These regulations regarding zone of influence affect quarries in karst areas by making the quarry operator responsible for water supply replacement and the reporting of and management of sinkholes that develop. The regulations specify procedures for providing a temporary water supply, sinkhole investigation procedure, and proper reporting procedures.

The trend of reclaiming old mine sites and wash plants continued with the reclamation of the Laurel Sand and Gravel

Annapolis Junction gravel pit and wash plant. This 115-ha site had been active since the mid-1960s as both a mine site and minerals processing plant. The reclamation of the site was planned to be completed during calendar year 2004 in preparation for office space and light commercial industry. Part of this reclamation included Laurel Sand and Gravel's creation of a 32-plus-ha wetland site that was done as an enhancement to an adjoining previously existing wetland area. The company's wetland work on this site was substantial enough for the company to receive official credit from the U.S. Army Corps of Engineers and from the Maryland Department of the Environment. The site has become home to multiple species of plants and animals.

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

(Thousand metric tons and thousand dollars)

Mineral	2001		2002		2003 <sup>p</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	77	7,070 <sup>e</sup>	W	W	W	W
Portland	1,720	124,000 <sup>e</sup>	1,880	140,000 <sup>e</sup>	1,900	143,000
Clays, common	266	560	268	550	268	550
Gemstones	NA	1	NA	1	NA	1
Sand and gravel, construction	12,500	84,800	12,200	83,500	11,400	78,100
Stone:						
Crushed <sup>3</sup>	22,800	136,000	22,300	141,000	21,800	138,000
Dimension	28	3,440	21	2,120	17	2,050
Combined values of sand and gravel (industrial), and stone (crushed marble, shell, traprock), and values indicated by symbol W	XX	(4)	XX	33,500	XX	20,600
Total	XX	356,000	XX	400,000	XX	382,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data. 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>Excludes certain stones; kind and value included with "Combined values" data.

<sup>4</sup>Value excluded to avoid disclosing company proprietary data.

TABLE 2  
MARYLAND: 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 <sup>2</sup>	18	17,200	\$94,700	\$5.50	18	16,900	\$101,000	\$5.96
Granite	3	3,370	26,500	7.88	3	3,390	26,000	7.68
Marble	1	W	W	5.62	1	W	W	5.62
Sandstone	3	122	733	6.01	2	60	411	6.85
Shell	1	W	W	3.97	1	W	W	3.97
Traprock	2 <sup>r</sup>	W	W	4.62	2	W	W	4.49
Miscellaneous stone	2	2,110	14,200	6.74	2	1,920	13,300	6.91
Total or average	XX	22,800	136,000	5.97	XX	22,300	141,000	6.31

<sup>r</sup>Revised. W Withheld from total to avoid disclosing company proprietary data. 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.

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

TABLE 3  
MARYLAND: 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>			
Macadam	W	W	\$10.69
Riprap and jetty stone	392	\$3,410	8.71
Filter stone	W	W	6.84
Other coarse aggregates	245	1,660	6.76
Total or average	637	5,070	7.96
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	1,400	11,700	8.39
Bituminous aggregate, coarse	678	6,180	9.11
Bituminous surface-treatment aggregate	1,110	8,280	7.43
Railroad ballast	W	W	10.00
Other graded coarse aggregate	374	2,470	6.59
Total or average	3,560	28,700	8.04
<b>Fine aggregate (-3/8 inch):</b>			
Stone sand, concrete	218	1,950	8.95
Stone sand, bituminous mix or seal	W	W	6.72
Screening, undesignated	449	3,090	6.87
Other fine aggregate	552	3,740	6.77
Total or average	1,220	8,770	7.20
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	2,240	17,600	7.87
Unpaved road surfacing	W	W	4.41
Crusher run or fill or waste	583	3,630	6.23
Other coarse and fine aggregates	852	5,870	6.88
Total or average	3,670	27,100	7.38
Other construction materials	340	2,330	6.84
Agricultural limestone	(2)	(2)	5.62
Chemical and metallurgical, sulfur oxide removal	(2)	(2)	5.62
Other miscellaneous uses and specified uses not listed	17	96	5.65
<b>Unspecified:<sup>3</sup></b>			
Reported	11,600	62,300	5.37
Estimated	1,100	4,700	4.36
Total or average	12,700	66,900	5.28
Grand total or average	22,300	141,000	6.31

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  
MARYLAND: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT<sup>1</sup>

(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) <sup>2</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>3</sup>	W	W	W	W	W	W
Fine aggregate (-3/8 inch) <sup>4</sup>	W	W	W	W	W	W
Coarse and fine aggregate <sup>5</sup>	W	W	W	W	W	W
Other construction materials	--	--	340	2,330	--	--
Agricultural <sup>6</sup>	--	--	W	W	--	--
Chemical and metallurgical <sup>7</sup>	W	W	--	--	--	--
Other miscellaneous uses	--	--	17	96	--	--
Unspecified: <sup>8</sup>						
Reported	1,410	8,260	10,200	54,000	--	--
Estimated	910	3,800	160	810	--	--
Total	3,530	20,400	16,100	96,900	2,660	23,300

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

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

<sup>2</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

<sup>3</sup>Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

<sup>4</sup>Includes screening (undesignated), stone sand (concrete), stone sand bituminous mix or seal, and other fine aggregates.

<sup>5</sup>Includes crusher run (select material or fill), graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

<sup>6</sup>Includes agricultural limestone.

<sup>7</sup>Includes sulfur oxide removal.

<sup>8</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate and concrete products <sup>2</sup>	5,340	\$40,500	\$7.58
Asphaltic concrete aggregates and other bituminous mixtures	128	729	5.70
Road base and coverings	48	120	2.50
Fill	385	1,160	3.01
Other miscellaneous uses <sup>3</sup>	349	2,480	7.09
Unspecified: <sup>4</sup>			
Reported	3,330	23,600	7.10
Estimated	2,700	15,000	5.62
Total or average	12,200	83,500	6.80

<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 plaster and gunite sands.

<sup>3</sup>Includes filtration.

<sup>4</sup>Reported and estimated production without a breakdown by end use.

TABLE 6  
MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products <sup>2</sup>	--	--	2,880	25,900	2,460	14,500
Asphaltic concrete aggregates and road base materials	--	--	W	W	W	W
Fill	--	--	299	931	86	226
Other miscellaneous uses <sup>3</sup>	22	262	208	1,360	295	1,700
Unspecified: <sup>4</sup>						
Reported	--	--	3,330	23,600	--	--
Estimated	--	--	580	2,100	2,100	13,000
Total	22	262	7,290	53,900	4,930	29,400

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Includes railroad ballast and snow and ice control.

<sup>4</sup>Reported and estimated production without a breakdown by end use.