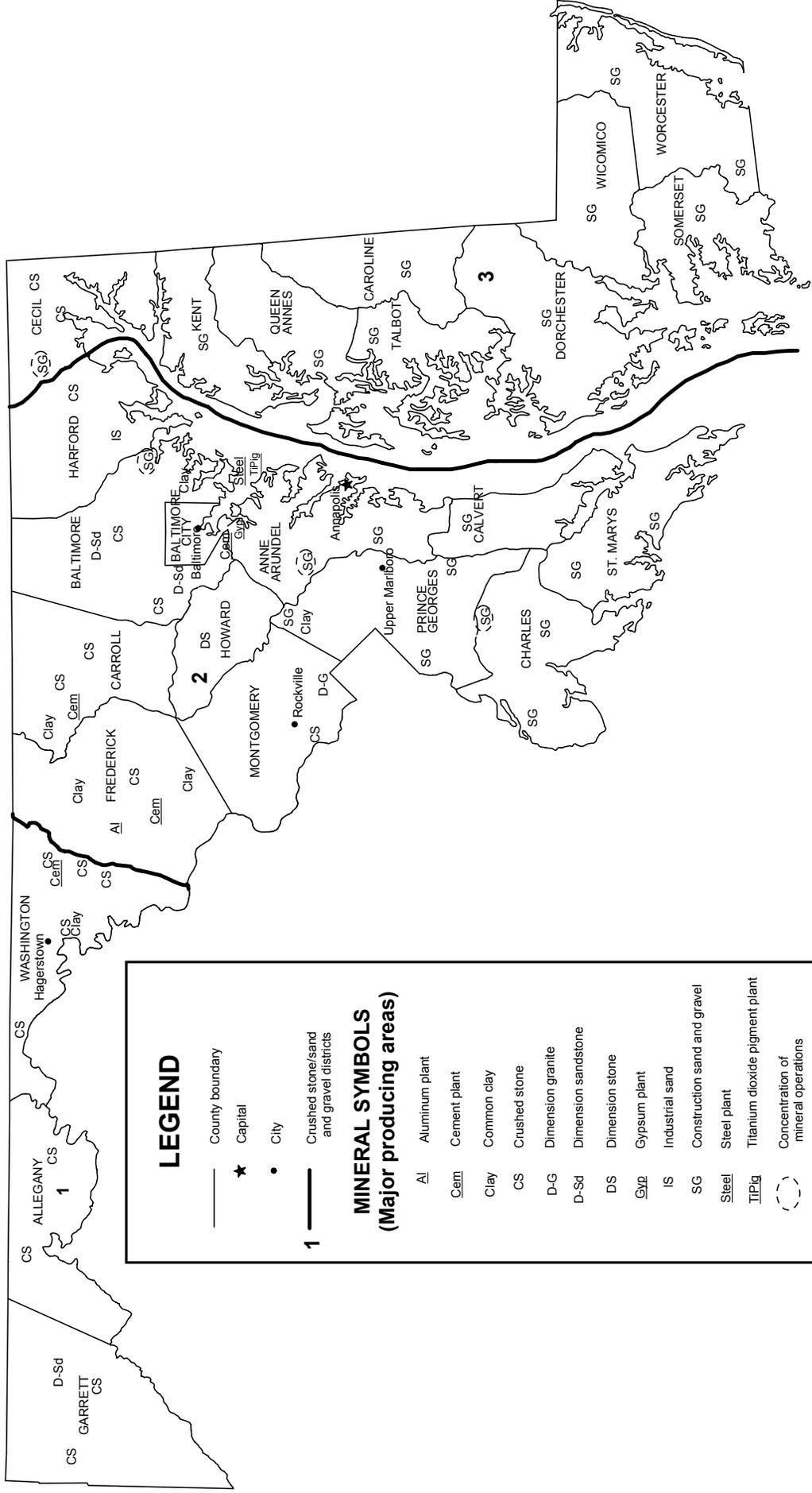


MARYLAND

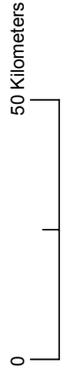


LEGEND

- 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



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 2004, Maryland's nonfuel raw mineral production was valued¹ at \$481 million, based upon annual U.S. Geological Survey (USGS) data. This was an increase of \$54 million, up 12.6% from 2003,² which followed a \$27 million or 7% increase from 2002. The State, for the third consecutive year, ranked 32d among the 50 States in total nonfuel raw mineral production value and accounted for slightly more than 1% of the U.S. total value.

Crushed stone, portland cement, and construction sand and gravel, based upon value, were Maryland's leading nonfuel raw mineral commodities. These three mineral commodities accounted for more than 90% of the State's total value (table 1). In 2004, increases in the production of portland cement, crushed stone, and dimension stone (average unit value up more than 200%), accounting for increases in value of \$28 million, \$20 million, and nearly \$7 million, respectively, led the way in Maryland's rise in total nonfuel mineral value. Although construction sand and gravel production rose nearly 8%, its value decreased by \$4.4 million. Increases in the value of crushed marble, shell, and traprock were, in part, offset by a decrease in the value of masonry cement.

In 2003, Maryland's rise in nonfuel mineral production value resulted from increases in the production of crushed stone, value up \$24 million, and portland cement, up \$7 million. The largest decrease in value resulted from a slightly more than 3% drop in construction sand and gravel production, its value down \$3.6 million (table 1).

All nonfuel minerals mined in the Maryland were industrial minerals. In 2004, the State continued to be a producer of significant quantities of crushed stone, portland cement, construction sand and gravel, dimension stone, and common clays (descending order of value), as compared with other producing States. All metal production, especially that of primary aluminum and raw steel, consisted of the processing and refining of materials received from other domestic and foreign sources. Maryland rose to eighth from 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.³ Maryland's nonfuel mineral mining production has remained consistently high in recent years; in 2004, the State again set a new record high for the value of nonfuel mineral production. With crushed stone continuing to be the primary nonfuel mineral product that was mined in Maryland, followed by construction sand and gravel, the State's nonfuel mineral production continued to be mainly driven by increasing construction-related aggregate demands.

Mine Permitting and Expansions

Bardon Inc. was issued a new 194-hectare (ha) surface mine permit for its Accokeek Road construction sand and gravel mining project in southern Prince George's County near Washington, DC. Construction of a new on-site wash plant to process the materials from the sand and gravel pit was nearing completion. The site will serve as Bardon's main sand and gravel reserve for the rapidly developing southern Maryland area and for the metropolitan Washington, DC area. Operations began in 2004 for both mining and processing.

The Arundel Corp. was issued a permit modification to its Havre De Grace stone quarry in Harford County in northeastern Maryland. Arundel sought modification to its permit so as to provide additional overburden storage area and to allow for the reconfiguration of existing overburden storage areas currently placed over reserves. The modification will allow access to an estimated additional 25 to 30 years of reserves. Although the modification was for a relatively small tract of property, 19 ha, it was nevertheless the subject of significant vocal opposition in the surrounding area; a separate permit expansion request for the quarry involving an area twice the size had been withdrawn the previous year.

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 2004 USGS mineral production data published in this chapter are those available as of December 2005. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²The 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 2004 USGS mineral production data published in this chapter are those available as of December 2005. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

³C. 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.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	1,880	140,000 ^c	2,200	147,000 ^c	2,520	175,000 ^c
Clays, common	268	550	269	550	262	571
Gemstones	NA	1	NA	1	NA	1
Sand and gravel, construction	12,200	83,500	11,800	79,900	12,700	75,500
Stone:						
Crushed ³	22,300	141,000	26,200	165,000	29,900	185,000
Dimension	21	2,120	24	2,700	27	9,580
Combined values of cement (masonry), sand and gravel (industrial), stone (crushed marble, shell, traprock)	XX	33,500	XX	31,700	XX	35,400
Total	XX	400,000	XX	427,000	XX	481,000

^cEstimated. NA Not available. XX Not applicable.

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

²Data are rounded to three significant digits; may not add to totals shown.

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

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

Kind	2002				2003				2004			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone ²	18	16,900	\$101,000	\$5.96	19	18,700	\$116,000	\$6.19	19	21,400	\$132,000	\$6.14
Granite	4 ^r	5,280 ^r	39,200 ^r	7.42 ^r	4	7,390	48,000	6.50	4	8,320	52,500	6.31
Marble	1	W	W	5.62	1	W	W	5.62	1	W	W	5.62
Sandstone	2	60	411	6.85	2	81	566	6.95	2	79	543	6.87
Shell	1	W	W	3.97	1	W	W	6.09	1	W	W	6.09
Traprock	2	W	W	4.49	2	W	W	4.71	2	W	W	4.75
Miscellaneous stone	1 ^r	26 ^r	122 ^r	4.64 ^r	1	22	101	4.64	1	24	113	4.63
Total or average	XX	22,300	141,000	6.31	XX	26,200	165,000	6.28	XX	29,900	185,000	6.19

^rRevised. W Withheld from total to avoid disclosing company proprietary data. XX Not applicable.

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

²Includes limestone-dolomite reported with no distinction between the two.

TABLE 3a

MARYLAND: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	W	W	\$10.95
Riprap and jetty stone	65	\$576	8.91
Filter stone	W	W	5.95
Other coarse aggregates	395	2,820	7.13
Total or average	460	3,390	7.38
Coarse aggregate, graded:			
Concrete aggregate, coarse	388	2,450	6.32
Bituminous aggregate, coarse	607	5,180	8.54
Bituminous surface-treatment aggregate	(2)	(2)	5.92
Railroad ballast	(2)	(2)	6.17
Other graded coarse aggregate	1,280	7,690	6.02
Total or average	2,270	15,300	6.74
Fine aggregate (-¾ inch):			
Stone sand, concrete	(3)	(3)	9.10
Screening, undesignated	1,210	6,710	5.53
Other fine aggregate	489	4,070	8.32
Total or average	1,700	10,800	6.33
Coarse and fine aggregates:			
Graded road base or subbase	1,000	8,280	8.28
Crusher run or fill or waste	583	3,390	5.82
Roofing granules	(4)	(4)	6.69
Other coarse and fine aggregates	1,700	12,400	7.29
Total or average	3,280	24,100	7.33
Other construction materials	29	177	6.08
Agricultural limestone	(5)	(5)	6.69
Chemical and metallurgical:			
Cement manufacture	3,630	21,100	5.82
Chemical stone	(5)	(5)	6.69
Sulfur oxide removal	(5)	(5)	6.28
Unspecified:⁶			
Reported	14,400	86,800	6.05
Estimated	360	2,200	6.09
Total or average	14,700	89,000	6.05
Grand total or average	26,200	165,000	6.28

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

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 with "Other graded coarse aggregates."

³Withheld to avoid disclosing company proprietary data; included with "Other fine aggregates."

⁴Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

⁵Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

⁶Reported and estimated production without a breakdown by end use.

TABLE 3b

MARYLAND: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	W	W	\$10.87
Riprap and jetty stone	538	\$4,280	7.95
Coarse aggregate, graded:			
Concrete aggregate, coarse	705	4,070	5.77
Bituminous aggregate, coarse	984	7,750	7.88
Bituminous surface-treatment aggregate	(2)	(2)	5.85
Railroad ballast	(2)	(2)	5.81
Other graded coarse aggregate	917	7,420	8.09
Total or average	2,650	19,500	7.37
Fine aggregate (-¾ inch):			
Stone sand, concrete	(2)	(2)	9.04
Stone sand, bituminous mix or seal	(2)	(2)	6.01
Screening, undesignated	476	2,680	5.63
Total or average	889	5,790	6.51
Coarse and fine aggregates:			
Graded road base or subbase	3,270	22,800	6.97
Crusher run or fill or waste	1,900	9,170	4.82
Other coarse and fine aggregates	1,630	9,820	6.01
Total or average	6,800	41,800	6.14
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	5.81
Sulfur oxide removal	(2)	(2)	6.28
Total or average	1,060	6,230	5.85
Unspecified:³			
Reported	15,200	91,600	6.01
Estimated	2,700	16,000	5.86
Total or average	17,900	107,000	5.99
Grand total or average	29,900	185,000	6.19

W Withheld to avoid disclosing company proprietary data; included in

"Unspecified: Reported."

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 "Total or average."

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

TABLE 4a

MARYLAND: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, 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 (+1½ inch) ²	W	W	169	1,220	W	W
Coarse aggregate, graded ³	W	W	W	W	W	W
Fine aggregate (-¾ inch) ⁴	W	W	1,280	7,790	W	W
Coarse and fine aggregate ⁵	W	W	W	W	W	W
Other construction materials	11	68	18	109	--	--
Agricultural ⁶	--	--	W	W	--	--
Chemical and metallurgical ⁷	W	W	W	W	--	--
Unspecified:⁸						
Reported	1,620	9,710	12,700	77,100	--	--
Estimated	180	1,100	170	1,100	--	--
Total	3,880	23,300	19,200	120,000	3,080	21,700

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 filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

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

⁴Includes screening (undesignated), stone sand (concrete), and other fine aggregates.

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

⁶Includes agricultural limestone.

⁷Includes cement manufacture, chemical stone, and sulfur oxide removal.

⁸Reported and estimated production without a breakdown by end use.

TABLE 4b

MARYLAND: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, 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 (+1½ inch) ²	W	W	W	W	W	W
Coarse aggregate, graded ³	W	W	1,350	9,550	W	W
Fine aggregate (-¾ inch) ⁴	W	W	W	W	W	W
Coarse and fine aggregate ⁵	1,280	7,450	3,440	22,900	2,080	11,400
Chemical and metallurgical ⁶	W	W	W	W	--	--
Unspecified:⁷						
Reported	1,880	11,300	13,300	80,200	--	--
Estimated	180	1,100	2,500	15,000	--	--
Total	4,550	26,900	21,600	134,000	3,710	24,400

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 and riprap and jetty stone.³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.⁴Includes screening (undesignated), stone sand (bituminous mix or seal), and stone sand (concrete).⁵Includes crusher run or fill or waste, graded road base or subbase, and other coarse and fine aggregates.⁶Includes cement manufacture and sulfur oxide removal.⁷Reported and estimated production without a breakdown by end use.

TABLE 5a
MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	4,640	\$32,100	\$6.92
Plaster and gunitite sands	126	602	4.80
Concrete products (blocks, bricks, pipe, decorative, etc.)	115	1,100	9.58
Asphaltic concrete aggregates road base materials ²	91	261	2.75
Fill	260	1,080	4.14
Other miscellaneous uses ³	18	200	11.00
Unspecified: ⁴			
Reported	3,310	23,700	7.18
Estimated	3,200	21,000	6.42
Total or average	11,800	79,900	6.77

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

²Includes road base and other stabilization (lime).

³Includes snow and ice control.

⁴Reported and estimated production without a breakdown by end use.

TABLE 5b
 MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
 BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	5,550	\$28,500	\$5.14
Plaster and gunitite sands	125	1,050	8.35
Concrete products (blocks, bricks, pipe, decorative, etc.)	632	4,640	7.34
Asphaltic concrete aggregates road base materials ²	344	1,260	3.65
Fill	794	3,070	3.87
Other miscellaneous uses ³	43	680	15.86
Unspecified: ⁴			
Reported	4,620	32,800	7.10
Estimated	580	3,500	6.06
Total or average	12,700	75,500	5.96

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

²Includes road base and other stabilization (cement).

³Includes snow and ice control.

⁴Reported and estimated production without a breakdown by end use.

TABLE 6a

MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2 ²		District 3	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	2,190	17,400	2,690	16,400
Asphaltic concrete aggregates and road base materials	W	W	W	W
Fill	172	845	89	234
Other miscellaneous uses ⁴	61	271	48	189
Unspecified: ⁵				
Reported	3,270	23,500	33	240
Estimated	1,300	9,600	1,900	11,000
Total	7,010	51,600	4,780	28,300

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

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

TABLE 6b

MARYLAND: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2		District 3	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	3,580	20,500	2,730	13,700
Asphaltic concrete aggregates and road base materials ⁴	277	848	67	408
Fill	382	1,310	413	1,770
Other miscellaneous uses ⁵	19	210	24	470
Unspecified: ⁶				
Reported	4,330	30,900	284	1,900
Estimated	230	1,400	350	2,100
Total	8,820	55,100	3,860	20,400

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 road and other stabilization (cement).⁵Includes snow and ice control.⁶Reported and estimated production without a breakdown by end use.