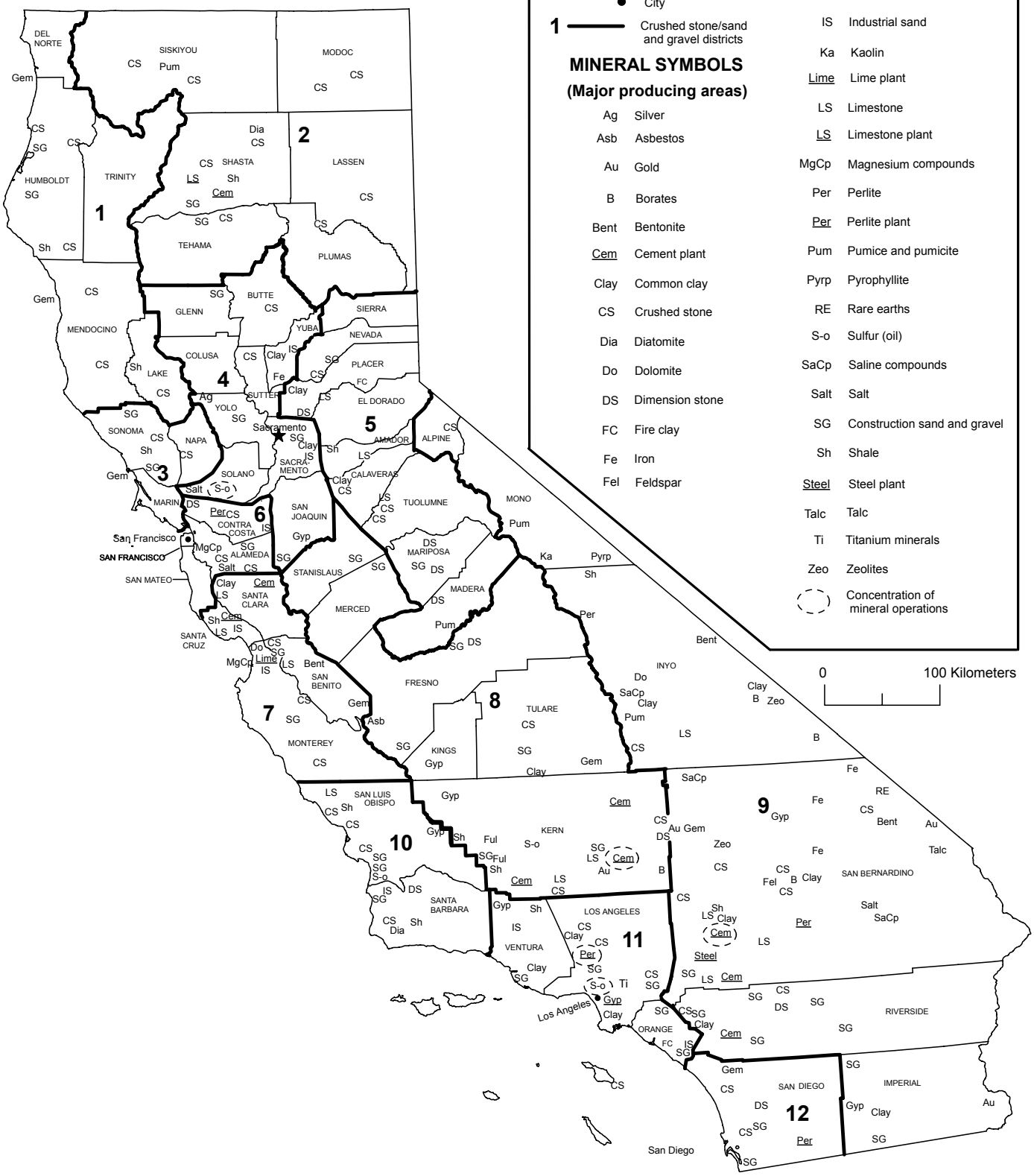
CALIFORNIA



Source: California Department of Conservation, California Geological Survey/U.S. Geological Survey (2003)

THE MINERAL INDUSTRY OF CALIFORNIA

In 2003, the estimated value[1] of nonfuel mineral production for California was $3.41 billion, based upon preliminary U.S. Geological Survey (USGS) data. This overall total value was the same as that of 2002[2] and followed a 3% increase in 2002 from that of 2001. The State continued to lead the Nation in nonfuel mineral production value, of which California accounted for about 8.5% of the U.S. total.

Industrial minerals accounted for more than 98% of California's nonfuel mineral value; the remaining value resulted from the mining of gold, silver, and iron ore (descending order of value). California continued in 2003 as the leading construction-sand-and-gravel-producing State, accounting for about 14% of the commodity's total U.S. mine production and nearly 20% of the Nation's total value for that mineral commodity. Construction sand and gravel was, by value, also the State's leading nonfuel mineral, accounting for approximately 36% of the State's total nonfuel mineral production value. Cement (portland and masonry) was the second leading nonfuel mineral, followed by boron minerals, crushed stone, and soda ash; these five accounted for more than 92% of the State's total industrial mineral value (table 1).

In 2002, the mineral commodities having the most substantial increases in value were those of portland cement, up by about $75 million; construction sand and gravel, up by $30 million; crushed stone, up by $27 million; boron minerals, up about by $7 million; soda ash, up about by $7 million; and common clays, up by about $3 million. The largest decreases were those of gold, down by about $29 million, and diatomite, down by about 11 million. All other changes in value were on the order of about $1 million or less (table 1).

Based upon USGS estimates of the quantities produced in the 50 States during 2003, California remained the Nation's only State to produce boron and continued to be first in the production of construction sand and gravel and portland cement (descending order of value). The State continued to be second among three States that produced soda ash and second among four States that produced diatomite; third in industrial sand and gravel and feldspar; fourth in pumice, gemstones, and fire clays; fifth in magnesium compounds and perlite; sixth in fuller's earth; and eighth in common clays. California rose in rank to 4th from 5th in gypsum and remained 10th in salt. While the State was 2d of two States that produced pyrophyllite, it decreased to 2d from 1st in masonry cement, to 6th from 4th in gold, and to 10th from 8th in crushed stone. Additionally, California was a significant producer of dimension stone.

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[1]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.

[2]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.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN CALIFORNIA[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral		2001		2002		2003[p]	
		Quantity	Value	Quantity	Value	Quantity	Value
Asbestos	metric tons	5,260	W	2,770	1,380	--	--
Boron minerals		1,050	506,000	1,050	513,000	1,150	518,000
Cement:							
Masonry		564	51,400 [e]	W	W	W	W
Portland		10,100	778,000 [e]	11,200	853,000 [e]	11,300	870,000
Clays:							
Bentonite		W	W	26	2,830	26	2,830
Common		885	18,300	1,030	21,400	1,030	21,400
Gemstones		NA	1,280	NA	1,040	NA	1,080
Gold[3]	kilograms	13,800	121,000	9,180	91,900	5,260	59,200
Rare-earth metal concentrates[e]	metric tons	5,000	27,600	5,000	27,600	--	--
Sand and gravel:							
Construction		149,000	1,080,000	151,000	1,110,000	158,000	1,160,000
Industrial		1,840	47,700	1,800	48,000	1,870	49,900
Silver[3]	kilograms	7,590	1,070	3,400	506	1,110	36
Stone:							
Crushed		61,600	396,000	67,400	423,000	62,200	395,000
Dimension		40	9,540	41	9,870	41	9,790
Zeolites	metric tons	(4)	NA	(4)	NA	(4)	NA
Combined values of clays (fire , fuller's earth, kaolin), diatomite, feldspar, gypsum (crude), iron ore [usable (2001-02)], lime, magnesium compounds, perlite (crude), pumice and pumicite, pyrophyllite (crude), salt, soda ash, and values indicated by symbol W		XX	256,000	XX	311,000	XX	321,000
Total		XX	3,300,000	XX	3,410,000	XX	3,410,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data.
XX Not applicable. --Zero.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Data are rounded to no more than three significant digits; may not add to totals shown.
[3]Recoverable content of ores, etc.
[4]Withheld to avoid disclosing company proprietary data.

TABLE 2
CALIFORNIA: CRUSHED STONE SOLD OR USED, BY KIND[1]

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[2]	32	27,700	$143,000	$5.18	30	35,400	$176,000	$4.97
Dolomite	5	234	1,770	7.57	5	316	2,460	7.79
Marble	2	W	W	7.96	2	W	W	8.52
Shell	1	W	W	5.61	1	W	W	8.18
Granite	22	13,100	90,300	6.91	22	12,800	94,800	7.40
Traprock	23 [r]	12,800 [r]	96,400 [r]	7.52 [r]	23	10,400	76,200	7.35
Sandstone and quartzite	16 [r]	3,660 [r]	34,400 [r]	9.40 [r]	15	3,890	38,900	10.01
Slate	2	W	W	21.27	2	W	W	18.80
Volcanic cinder and scoria	7	198	1,670	8.43	8	192	1,690	8.77
Miscellaneous stone	35 [r]	3,790 [r]	26,200 [r]	6.91 [r]	29	4,280	31,500	7.37
Total or average	XX	61,600	396,000	6.44	XX	67,400	423,000	6.28

[r]Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
[1]Data are rounded to no more than three significant digits, except unit values; may not add to totals shown.
[2]Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE[1]

Use	Quanity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$8.82
Riprap and jetty stone	1,580	$16,600	10.49
Filter stone	112	1,470	13.12
Other coarse aggregates	866	6,610	7.63
Total or average	2,560	24,700	9.64
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,840	24,900	8.77
Bituminous aggregate, coarse	4,010	34,900	8.69
Bituminous surface-treatment aggregate	W	W	8.99
Railroad ballast	561	5,360	9.55
Other graded coarse aggregates	701	4,650	6.63
Total or average	8,120	69,800	8.60
Fine aggregate (-3/8 inch):			
Stone sand, concrete	366	1,980	5.42
Stone sand, bituminous mix or seal	566	6,080	10.75
Screening, undesignated	385	1,710	4.45
Other fine aggregates	902	7,680	8.51
Total or average	2,220	17,500	7.87
Coarse and fine aggregates:			
Graded road base or subbase	2,650	17,700	6.67
Unpaved road surfacing	205	1,100	5.36
Terrazzo and exposed aggregate	W	W	16.96
Crusher run or fill or waste	1,110	4,800	4.34
Other coarse and fine aggregates	1,880	13,300	7.08
Total or average	5,840	36,800	6.31
Other construction materials	323	3,190	9.89
Agricultural:			
Limestone	W	W	21.85
Poultry grit and mineral food	W	W	19.38
Other agricultural uses	157	3,270	20.85
Total or average	157	3,270	20.85
Chemical and metallurgical, cement manufacture	(2)	(2)	5.16
Special:			
Asphalt fillers or extenders	(2)	(2)	18.19
Other fillers or extenders	1	20	20.00
Other miscellaneous uses:			
Flour (slate)	(2)	(2)	50.71
Other specified uses not listed	(2)	(2)	12.69
Unspecified:[3]			
Reported	18,300	104,000	5.69
Estimated	21,000	117,000	5.54
Total or average	39,300	220,000	5.61
Grand total or average	67,400	423,000	6.28

W Withheld to avoid disclosing company proprietary data; included with "Other."
[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Withheld to avoid disclosing company proprietary data; included in "Grand."
[3]Reported and estimated production without a breakdown by end use.

TABLE 4

CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4		District 5	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:										
Coarse aggregate (+1 1/2 inch)[2]	43	256	34	165	W	W	W	W	11	83
Coarse aggregate, graded[3]	W	W	W	W	W	W	--	--	W	W
Fine aggregate (-3/8 inch)[4]	W	W	W	W	397	3,830	--	--	W	W
Coarse and fine aggregate[5]	W	W	W	W	713	5,040	W	W	203	1,420
Other construction materials	--	--	1	4	209	2,260	16	155	11	92
Agricultural[6]	--	--	W	W	--	--	--	--	--	--
Chemical and metallurgical[7]	--	--	W	W	--	--	--	--	--	--
Special[8]	--	--	--	--	--	--	--	--	--	--
Other miscellaneous uses[9]	--	--	--	--	--	--	--	--	24	1,220
Unspecified:[10]										
Reported	21	105	29	163	--	--	3,580	29,400	51	303
Estimated	550	3,000	200	980	1,800	11,000	60	320	970	5,700
Total	916	5,400	1,670	8,380	3,550	28,300	3,740	30,500	1,680	10,500

	District 6		District 7		District 8		District 9		District 10	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:										
Coarse aggregate (+1 1/2 inch)[2]	W	W	W	W	W	W	692	4,920	W	W
Coarse aggregate, graded[3]	973	11,500	4,780	39,400	W	W	831	7,250	W	W
Fine aggregate (-3/8 inch)[4]	647	5,470	617	4,760	--	--	351	2,050	--	--
Coarse and fine aggregates[5]	1,560	9,660	973	6,030	W	W	402	2,210	218	1,250
Other construction materials	18	193	1	6	--	--	57	406	10	74
Agricultural[6]	W	W	--	--	--	--	--	--	W	W
Chemical and metallurgical[7]	--	--	W	W	W	W	3,000	14,700	--	--
Special[8]	--	--	--	--	--	--	--	--	W	W
Other miscellaneous uses[9]	29	517	--	--	--	--	87	952	--	--
Unspecified:[10]										
Reported	--	--	693	7,630	--	--	11,200	49,000	985	6,520
Estimated	47	230	2,000	13,000	4,400	26,000	9,900	50,000	270	1,400
Total	3,420	29,100	12,000	89,100	6,920	39,300	26,600	131,000	1,660	12,500

	District 11		District 12		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1 1/2 inch)[2]	W	W	W	W	--	--
Coarse aggregate, graded[3]	W	W	W	W	--	--
Fine aggregate (-3/8 inch)[4]	W	W	W	W	--	--
Coarse and fine aggregates[5]	W	W	W	W	--	--
Other construction materials	--	--	--	--	--	--
Agricultural[6]	--	--	--	--	--	--
Chemical and metallurgical[7]	--	--	--	--	--	--
Special[8]	--	--	--	--	--	--
Other miscellaneous uses[9]	--	--	--	--	--	--
Unspecified:[10]						
Reported	862	4,850	803	6,020	3	24
Estimated	490	2,800	450	2,600	--	--
Total	3,170	24,300	2,030	14,900	3	24

See footnotes at end of table.

TABLE 4--Continued
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT[1]

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.
[3]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.
[4]Includes screening (undesignated), stone sand (concrete), stone sand bituminous mix or seal, and other fine aggregates.
[5]Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.
[6]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[7]Includes cement manufacture.
[8]Includes asphalt fillers or extenders and other fillers or extenders.
[9]Includes flour (slate) and other specified uses not listed.
[10]Reported and estimated production without a breakdown by end use.

TABLE 5
CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	31,000	$254,000	$8.21
Plaster and gunite sands	1,320	11,800	8.97
Concrete products (blocks, bricks, pipe, decorative, etc.)	5,000	52,400	10.48
Asphaltic concrete aggregates and other bituminous mixtures	18,000	144,000	8.02
Road base and coverings[2]	14,100	97,900	6.93
Road stabilization (cement and lime)	603	3,340	5.55
Fill	7,470	48,400	6.48
Snow and ice control	99	671	6.78
Railroad ballast	8	57	7.13
Other miscellaneous uses	6,790	49,800	7.35
Unspecified:[3]			
Reported	50,800	339,000	6.66
Estimated	16,000	110,000	6.88
Total or average	151,000	1,110,000	7.32

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Reported and estimated production without a breakdown by end use.

TABLE 6

CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	186	1,620	224	1,460	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.)[2]	--	--	W	W	W	W
Asphaltic concrete aggregates and road base materials[3]	474	6,890	1,050	6,050	363	3,320
Fill	30	89	29	145	W	W
Other miscellaneous uses[4]	8,850	143	22	148	1,020	10,000
Unspecified:[5]						
Reported	247	2,240	82	289	541	4,790
Estimated	790	5,000	1,600	12,000	120	820
Total	1,740	16,000	3,050	20,300	2,040	18,900
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	6,550	47,000	604	4,830	3,250	40,800
Concrete products (blocks, bricks, pipe, decorative, etc.)[2]	849	7,590	46	401	--	--
Asphaltic concrete aggregates and road base materials[3]	7,480	41,500	871	6,910	2,150	22,400
Fill	770	4,160	88	763	2,410	25,100
Other miscellaneous uses[4]	188	1,490	382	3,650	12	155
Unspecified:[5]						
Reported	12,300	102,000	1,020	7,400	862	5,720
Estimated	2,700	19,000	710	4,800	38	110
Total	30,900	232,000	3,720	28,700	8,710	94,300
	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	1,060	10,700	4,490	35,800	4,030	26,400
Concrete products (blocks, bricks, pipe, decorative, etc.)[2]	202	2,720	W	W	1,180	7,840
Asphaltic concrete aggregates and road base materials[3]	601	5,380	5,110	42,100	6,690	31,900
Fill	178	1,220	583	2,810	432	1,910
Other miscellaneous uses[4]	--	--	1,560	12,600	5,760	39,500
Unspecified:[5]						
Reported	613	4,060	1,450	10,600	13,500	78,900
Estimated	--	--	740	4,800	4,200	29,000
Total	2,650	24,000	13,900	109,000	35,800	215,000
	District 10		District 11		District 12	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	267	1,960	9,450	74,300	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.)[2]	W	W	555	5,640	W	W
Asphaltic concrete aggregates and road base materials[3]	420	2,690	4,970	46,200	2,550	21,600
Fill	62	286	1,910	7,280	W	W
Other miscellaneous uses[4]	54	134	54	419	3,170	36,200
Unspecified:[5]						
Reported	781	4,800	10,500	66,600	7,270	48,500
Estimated	480	3,800	2,400	13,000	2,100	14,000
Total	2,060	13,700	29,800	214,000	15,100	120,000
	Unspecified districts					
	Quantity	Value				
Concrete aggregate (including concrete sand)	--	--				
Concrete products (blocks, bricks, pipe, decorative, etc.)[2]	--	--				
Asphaltic concrete aggregates and road base materials[3]	--	--				
Fill	5	5				
Other miscellaneous uses[4]	--	--				
Unspecified:[5]						
Reported	1,630	2,690				
Estimated	--	--				
Total	1,630	2,700				

See footnotes at end of table.

TABLE 6

CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, BY USE AND DISTRICT[1]

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

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

[2]Includes plaster and gunite sands.

[3]Includes road stabilization (cement and lime).

[4]Includes railroad ballast and snow and ice control.

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