

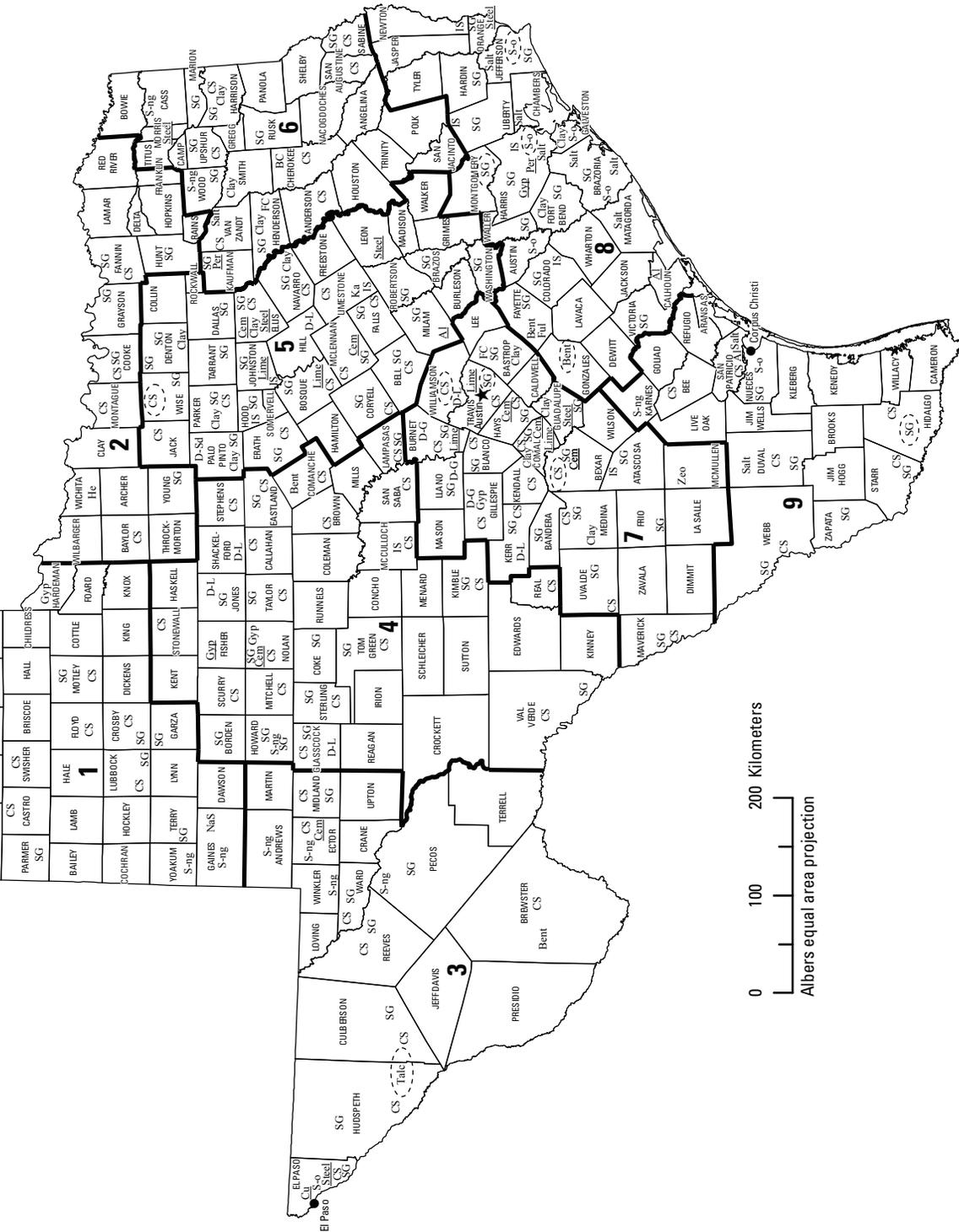


2009 Minerals Yearbook

TEXAS [ADVANCE RELEASE]

TEXAS

DALLAM	CS	SHERMAN	CS	HANSFORD	Hc	UPSCOMB	CS
HARTLEY	CS	S-NE	HUTCHINSON	Hc	ROBERTS	Hc	HEMPHILL
OLDHAM	SG	POTTER	SG	S-NE	GRAY	SG	WHEELER
DEAF SMITH	CS	RANDALL	SG	ARMSTRONG	CU	DONNEY	CS
COLLINGS-WORTH	SG	PARMER	CS	SWISHER	BRISGEOE	HALL	SHIELDS
BAILEY	CS	HALE	CS	FLOYD	CS	MOTLEY	SG
COCHRAN	CS	LUBBOCK	CS	CROSBY	CS	DICKENS	CS
YOAKUM	SG	LYNN	SG	GARZA	SG	KENT	STONEWALL
GAINES	NaS	DAWSON	SG	BORLEN	CS	SCURRY	CS
S-NE	ANDREWS	MARTIN	CS	HOWARD	SG	MITCHELL	CS
S-NE	WINKLER	CS	MIDLAND	CS	GLASSCOCK	STERLING	CS
S-NE	ECTOR	CS	D-D	CS	DOKE	SG	RUNNELS
S-NE	WARD	CS	CRANE	CS	REAGAN	IRION	CS
S-NE	REEVES	CS	LOVING	CS	JEFF DAVIS	CS	TERRELL
S-NE	CULBERTSON	CS	JEFF DAVIS	CS	PRESIDIO	CS	BRANSTATER
S-NE	HUSBERTH	SG	EL PASO	CS	EL PASO	CS	EL PASO



Source: University of Texas at Austin, Bureau of Economic Geology/U.S. Geological Survey (2009).

LEGEND

- County boundary
- ★ Capital
- City
- Crushed stone/sand and gravel district boundary

MINERAL SYMBOLS

(Principal producing areas)

- Al Aluminum plant
- BC Ball clay
- Bent Bentonite
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- Cu Copper plant
- D-G Dimension granite
- D-L Dimension limestone
- D-Sd Dimension sandstone
- FC Fire clay
- Ful Fuller's earth
- Gyp Gypsum
- Gyp Gypsum plant
- He Helium
- IS Industrial sand
- Ka Kaolin
- Lime Lime plant
- Per Perlite plant
- S-ng Sulfur (natural gas)
- S-o Sulfur (oil)
- Salt Salt
- NaS Sodium sulfate
- SG Sand and gravel
- Steel Steel plant
- Talc Talc
- Zeo Zeolites
- Concentration of mineral operations

THE MINERAL INDUSTRY OF TEXAS

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Texas Bureau of Economic Geology at University of Texas at Austin, for collecting information on all nonfuel minerals.

In 2009, Texas nonfuel raw mineral production¹ was valued at \$2.65 billion, based upon annual U.S. Geological Survey (USGS) data. This was a 23% decrease from the State's total nonfuel mineral value of almost \$3.45 billion for 2008, which followed a \$131 million, or 3.9%, increase from 2007 to 2008. In 2009, Texas ranked sixth among the 50 States in total nonfuel mineral production value for the second consecutive year, accounting for about 4.5% of the U.S. total value. The top three mineral commodities produced in the State were portland cement, crushed stone, and construction sand and gravel, in descending order of value. These three mineral commodities represented 81% of the State's total nonfuel mineral value.

In 2009, only four mineral commodities produced in Texas increased in production value—dimension stone, up by \$14.3 million; salt, up by almost \$7.9 million; zeolites; and crude talc (actual production value data withheld—company proprietary data) in descending order of production value. The production value of gemstones remained the same from 2008 to 2009. All other mineral commodities produced in the State declined in production value, led by decreases in crushed stone, down \$316 million; and portland cement, down \$297 million. Other significant decreases in 2009 in the production value of mineral commodities, in descending order of the decrease, included industrial sand and gravel, down by \$54 million; lime, down by \$23 million; masonry cement, down by \$12 million; gypsum, down by \$4.5 million; and bentonite clay, down by almost \$3.4 million. Smaller, yet significant, decreases took place in the production values of ball clays, fuller's earth (montmorillonite), kaolin, and both crude and Grade-A helium (actual production values withheld for these five mineral commodities—company proprietary data).

Zeolites were the only mineral commodity that increased in production quantity in 2009 (actual data withheld—company proprietary data). Helium production remained the same from 2008 to 2009 (actual data withheld—company proprietary data). Texas began producing fire clay and stopped producing brucite in 2009. All other mineral commodities produced in the State decreased in the quantity of production, led by decreases in the quantities of crushed stone, down by 39.4 million metric tons (Mt), or 26%; construction sand and gravel, down by 18.3 Mt, or 21%; and portland cement, down by 2.7 Mt, or 25%.

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 2009 USGS mineral production data published in this chapter are those available as of September 2011. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at <http://minerals.usgs.gov/minerals>.

In 2009, Texas continued to lead the Nation in production quantity of dimension stone, common clay, portland cement, and crushed stone, producing 14.6%, 14.5%, 13.5%, and 9.5% of the Nation's total quantity, respectively. This is the 2d consecutive year that the State has led production in dimension stone and common clay, the 4th consecutive year the State has led in the production of portland cement, and the 12th consecutive year the State has led in the production of crushed stone. Texas remained the second leading producer of salt, construction sand and gravel (accounting for 21% and 8.4% of the U.S. total, respectively), ball clay, crude helium, and crude talc (actual quantity data withheld—company proprietary data). The State also remained third in Grade-A helium and zeolites, and fifth in bentonite clay. Texas rose in rank to third from fifth in the production of crude gypsum and to fourth from fifth in the production of masonry cement. Texas lowered in rank to third from second in the production of industrial sand and gravel; sixth from fifth in lime; and seventh from sixth in kaolin. Texas ranked 13th in gemstone production (based on production value). Texas ranked fourth of six producing States in fire clay.

The following narrative information was provided by the Texas Bureau of Economic Geology² (TBEG). Production data in the following text are those reported by the TBEG, based upon its surveys and estimates. These data may differ from some USGS annual production figures, which were based upon USGS company surveys and estimates.

Industry Overview

In 2009, industrial minerals production significantly decreased, particularly in the aggregate and cement industries, owing to the economic downturn. Industry associations and aggregate producers indicated that sales decreased by 30% to 35% as compared to those of 2008. Producers in the Houston area saw an increase in activity as compared to other major markets in Texas; however, Federal highway stimulus funds made little impact in the Houston aggregate industry.

Employment

The Texas Workforce Commission reported a 17% decrease in job growth in the mining industry and a 14% decrease in the construction industry during 2009. The mining industry percentage included mining and mining support services (Brent A. Elliot, Research Associate, Bureau of Economic Geology, written commun., November 2012).

²Brent A. Elliot, Economic Geologist, Texas Bureau of Economic Geology of the John A. and Katherine G. Jackson School of Geosciences, University of Texas at Austin, authored the text of the State mineral industry information provided by the TBEG.

Commodity Review

Industrial Minerals

Cement production and sales decreased by an estimated 20%. Frac sand production continued to increase, owing to the development of shale gas plays. Several frac sand facilities increased capacity and Cadre Proppants announced plans for a new frac sand site in Voca, McCulloch County, approximately 110 kilometers northwest of Austin (Cadre Proppants, 2009). Houston-based Natural Resource Partners L.P. acquired limestone reserves in Wise County from Blue Star Materials, LLC. Natural Resource was developing the properties and expected production to start in mid-2010 (Natural Resource Partners L.P., 2010).

Legislation and Government Programs

Texas continued to be an active participant in the STATEMAP program. STATEMAP is a component of the congressionally mandated National Cooperative Geologic Mapping Program (NCGMP), through which the USGS distributes Federal funds

to support geologic mapping efforts through a competitive funding process. The NCGMP has three primary components: (1) FEDMAP, which funds Federal geologic mapping projects; (2) STATEMAP, which is a matching-funds grants program with State geological surveys; and (3) EDMAP, a matching-funds grant program with universities that has a goal to train the next generation of geologic mappers. In 2009, the TBEG, as part of the STATEMAP program, completed geologic maps for the Blaton, Brazos Point, Hillsboro West, Keene, Lakeside Village, and Morgan quadrangles.

References Cited

- Cadre Proppants, 2009, Cadre Services expands Material Products Division, announces purchase of 850 acres of ranch land, and plans to construct sand mining and processing plant: Houston, TX, Cadre Proppants press release, January 7. (Accessed July 8, 2013, at <http://www.cadreproppants.com/news/cadre-services-expands-material-products-division-announces-purchase-of-850-acres-of-ranchland-and-plans-to-construct-sand-mining-and-processing-plant/>.)
- Natural Resource Partners L.P., 2010, Form 10-K—2009: U.S. Securities and Exchange Commission, 103 p. (Accessed July 2, 2013, at <http://www.sec.gov/Archives/edgar/data/1171486/000095012310017799/h69690e10vk.htm>.)

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

(Thousand metric tons and thousand dollars)

Mineral	2007		2008		2009	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	368	52,100 ^e	274	40,300 ^e	202	28,300 ^e
Portland	10,900	1,060,000 ^e	11,100	1,110,000 ^e	8,350	815,000 ^e
Clays:						
Bentonite	64	3,730	73	12,000	54	8,610
Common	1,950	12,600	2,070	13,700	1,800	13,000
Gemstones, natural	NA	202	NA	202	NA	202
Gypsum, crude	2,520 ^r	15,300 ^r	1,870 ^r	13,900 ^r	1,310	9,330
Lime	1,620	132,000	1,500	128,000	1,040	105,000
Salt	8,950	143,000	9,080	157,000	8,910	164,000
Sand and gravel:						
Construction	96,100 ^r	656,000 ^r	88,300 ^r	631,000 ^r	70,000	528,000
Industrial	3,280	123,000	3,590 ^r	139,000	2,130	84,400
Stone:						
Crushed	153,000	1,020,000	150,000 ^r	1,100,000 ^r	110,000	782,000
Dimension	243	31,600	269	27,700	236	42,000
Combined values of brucite (2007–08), clays [ball, fire (2009), fuller's earth, kaolin], helium, talc (crude), zeolites	XX	72,100	XX	77,700	XX	69,700
Total	XX	3,320,000 ^r	XX	3,450,000 ^r	XX	2,650,000

^eEstimated. ^rRevised. NA Not available. 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.

TABLE 2
TEXAS: CRUSHED STONE SOLD OR USED, BY TYPE¹

Type	2008			2009		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone	205 ^r	138,000 ^r	\$1,000,000 ^r	184	99,700	\$708,000
Marble	4	208	4,500	15	86	4,180
Sandstone and quartzite	6	1,360	11,400	8	2,480	9,870
Miscellaneous stone	46 ^r	9,950 ^r	81,700 ^r	45	7,940	59,200
Total	XX	150,000 ^r	1,100,000 ^r	XX	110,000	782,000

^rRevised. XX Not applicable.

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

TABLE 3
TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2009, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	610	5,680
Filter stone	448	4,060
Other coarse aggregate	2,210	19,800
Coarse aggregate, graded:		
Concrete aggregate, coarse	3,350	25,500
Bituminous aggregate, coarse	1,070	11,800
Bituminous surface-treatment aggregate	150	1,200
Railroad ballast	1,030	10,900
Other graded coarse aggregate	9,750	106,000
Fine aggregate (-¾ inch):		
Stone sand, concrete	818	7,540
Stone sand, bituminous mix or seal	247	2,680
Screening, undesignated	570	2,360
Other fine aggregate	2,710	20,000
Coarse and fine aggregate:		
Graded road base or subbase	7,880	35,600
Unpaved road surfacing	W	W
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	1,870	5,090
Other coarse and fine aggregates	9,950	69,300
Other construction materials	1,630	5,130
Agricultural, limestone	W	W
Chemical and metallurgical:		
Cement manufacture	12,600	54,800
Lime manufacture	W	W
Special, other fillers or extenders	W	W
Other miscellaneous uses and other specified uses not listed	1	15
Unspecified: ²		
Reported	18,500	144,000
Estimated	33,700	241,000
Total	110,000	782,000

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

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

²Reported and estimated production without a breakdown by end use.

TABLE 4
TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2009, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ²	W	W	W	W	W	W	W	W
Coarse aggregate, graded ³	379	5,000	--	--	W	W	W	W
Fine aggregate (-¾ inch) ⁴	W	W	--	--	106	1,040	W	W
Coarse and fine aggregates ⁵	312	1,900	W	W	W	W	W	W
Other construction materials	--	--	--	--	--	--	1,630	4,480
Agricultural ⁶	W	W	--	--	--	--	--	--
Chemical and metallurgical ⁷	W	W	--	--	W	W	--	--
Special ⁸	--	--	--	--	--	--	W	W
Other miscellaneous uses	--	--	--	--	--	--	1	15
Unspecified: ⁹								
Reported	--	--	--	--	--	--	--	--
Estimated	1,140	9,350	99	655	5,230	38,500	2,910	21,700
Total	1,880	16,500	391	1,990	6,650	49,300	7,120	47,200
Use	District 5		District 6		District 7		District 8	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ²	1,620	14,700	W	W	1,400	12,300	W	W
Coarse aggregate, graded ³	2,270	17,300	--	--	9,860	89,400	W	W
Fine aggregate (-¾ inch) ⁴	1,080	4,570	--	--	2,650	21,600	W	W
Coarse and fine aggregates ⁵	2,230	12,400	W	W	12,800	59,100	W	W
Other construction materials	2	147	--	--	3	500	--	--
Agricultural ⁶	W	W	--	--	W	W	--	--
Chemical and metallurgical ⁷	W	W	--	--	7,940	32,800	W	W
Special ⁸	--	--	--	--	W	W	W	W
Other miscellaneous uses	--	--	--	--	--	--	--	--
Unspecified: ⁹								
Reported	8,990	70,100	--	--	8,350	64,900	674	5,300
Estimated	10,200	74,100	643	5,410	12,200	83,200	--	--
Total	30,800	214,000	835	7,310	55,600	366,000	2,630	43,800
Use	District 9		Unspecified districts					
	Quantity	Value	Quantity	Value				
Construction:								
Coarse aggregate (+1½ inch) ²	--	--	--	--				
Coarse aggregate, graded ³	W	W	7	154				
Fine aggregate (-¾ inch) ⁴	W	W	--	--				
Coarse and fine aggregates ⁵	W	W	361	5,180				
Other construction materials	--	--	--	--				
Agricultural ⁶	--	--	--	--				
Chemical and metallurgical ⁷	--	--	--	--				
Special ⁸	--	--	--	--				
Other miscellaneous uses	--	--	--	--				
Unspecified: ⁹								
Reported	467	3,670	--	--				
Estimated	1,330	8,450	--	--				
Total	3,980	31,000	368	5,330				

See footnotes at end of table.

TABLE 4—Continued
 TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2009, BY USE AND DISTRICT¹

- 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, riprap and jetty stone, and other coarse aggregate.
³Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.
⁴Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregates.
⁵Includes crusher run or fill or waste, graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.
⁶Includes agricultural limestone.
⁷Includes cement and lime manufacture.
⁸Includes other fillers or extenders.
⁹Reported and estimated production without a breakdown by end use.

TABLE 5
 TEXAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009,
 BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	14,400	\$114,000	\$7.95
Plaster and gunite sands	691	7,330	10.61
Concrete products (blocks, bricks, pipe, decorative, etc.)	90	1,030	11.42
Asphaltic concrete aggregates and other bituminous mixtures	908	10,600	11.70
Road base and coverings ²	4,070	23,000	5.65
Fill	2,810	12,100	4.32
Other miscellaneous uses ³	371	2,790	7.51
Unspecified: ⁴			
Reported	9,090	77,200	8.50
Estimated	37,600	279,000	7.44
Total or average	70,000	528,000	7.54

- ¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
²Includes road and other stabilization (cement and lime).
³Includes filtration, golf course, railroad ballast, and snow and ice control.
⁴Reported and estimated production without a breakdown by end use.

TABLE 6
TEXAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ²	W	W	W	W	477	3,550
Asphaltic concrete aggregates and road base materials ³	223	3,120	W	W	W	W
Fill	W	W	23	71	W	W
Other miscellaneous uses ⁴	518	5,920	1,580	11,300	24	98
Unspecified: ⁵						
Reported	63	532	17	134	154	1,360
Estimated	4,790	35,100	1,210	8,840	3,020	22,100
Total	5,590	44,700	2,820	20,300	3,670	27,100
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ²	67	519	2,810	22,200	W	W
Asphaltic concrete aggregates and road base materials ³	52	255	291	1,860	W	W
Fill	-6	2	1,890	8,410	13	56
Other miscellaneous uses ⁴	--	--	--	--	4,160	26,800
Unspecified: ⁵						
Reported	31	226	2,420	17,600	5	15
Estimated	1,580	11,900	9,280	68,200	1,540	11,300
Total	1,730	12,900	16,700	118,000	5,720	38,100
	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ²	1,650	13,900	4,930	36,300	1,750	16,600
Asphaltic concrete aggregates and road base materials ³	460	2,880	W	W	385	4,490
Fill	206	949	587	2,110	22	89
Other miscellaneous uses ⁴	161	1,430	722	4,360	--	--
Unspecified: ⁵						
Reported	2,270	16,500	3,870	38,700	262	2,190
Estimated	4,240	30,000	8,620	65,300	3,320	26,700
Total	8,980	65,600	18,700	147,000	5,730	50,100
	Unspecified districts					
	Quantity	Value				
Concrete aggregate and concrete products ²	306	3,440				
Asphaltic concrete aggregates and road base materials ³	49	705				
Fill	--	--				
Other miscellaneous uses ⁴	--	--				
Unspecified: ⁵	--	--				
Reported	--	--				
Estimated	--	--				
Total	355	4,150				

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

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

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement and lime).

⁴Includes filtration, golf course, railroad ballast, and snow and ice control.

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