2010–2011 Minerals Yearbook

PENNSYLVANIA [ADVANCE RELEASE]

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U.S. Geological Survey

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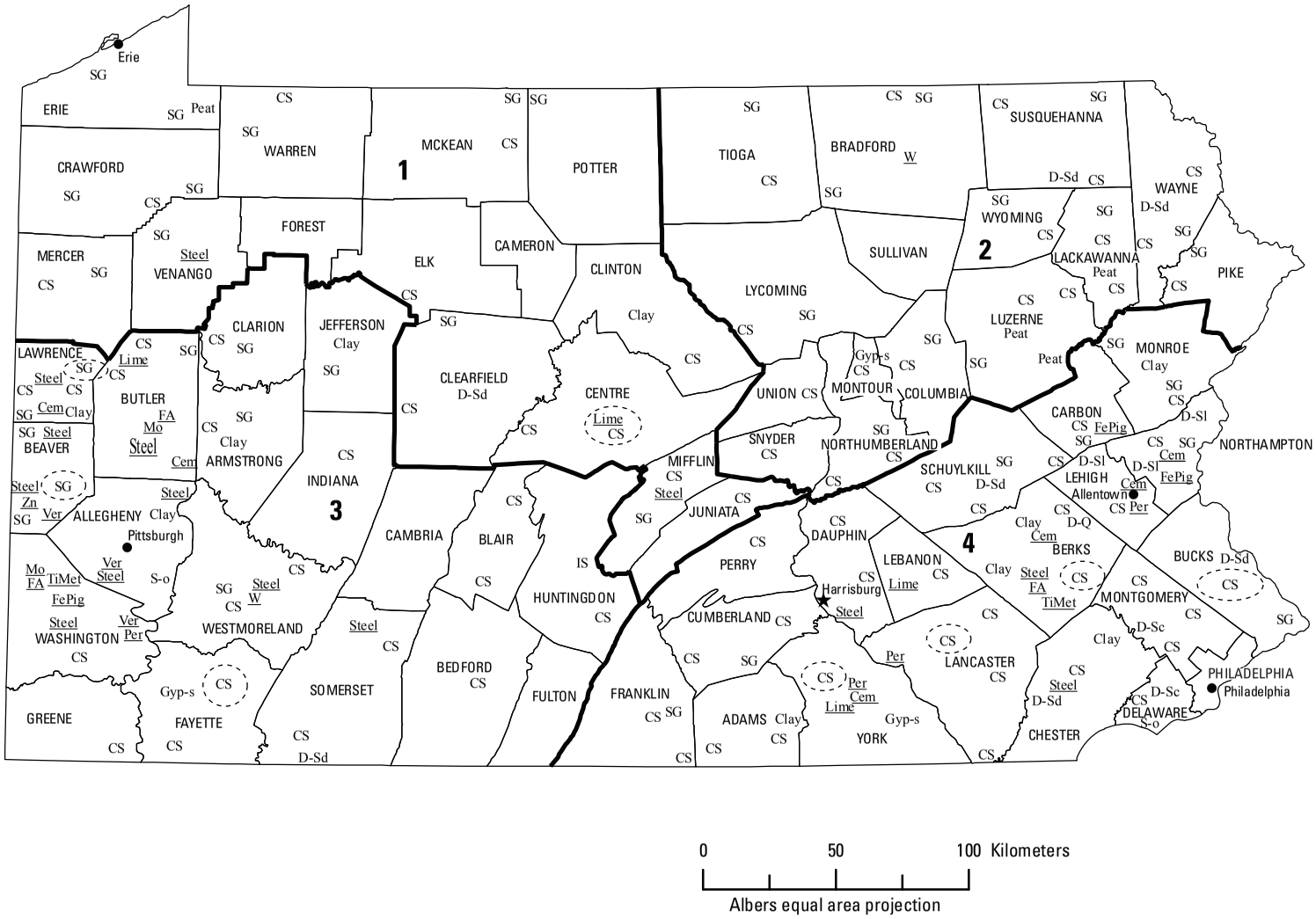
PENNSYLVANIA



LEGEND

County boundary

★ Capital

● City

1 Crushed stone/sand and gravel district boundary

MINERAL SYMBOLS
(Principal producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-Q	Dimension quartzite
D-Sc	Dimension schist
D-Sd	Dimension sandstone
D-Sl	Dimension slate
FePig	Iron oxide pigments plant
FA	Ferroalloys plant
Gyp-s	Synthetic gypsum
IS	Industrial sand
Lime	Lime plant
Mo	Molybdenum plant
Peat	Peat
Per	Perlite plant
S-o	Sulfur (oil)
SG	Construction sand and gravel
Steel	Steel plant
TiMet	Titanium metal plant
W	Tungsten plant
Ver	Vermiculite plant
Zn	Zinc plant

Concentration of mineral operations

Source: Pennsylvania Bureau of Topographic and Geological Survey/U.S. Geological Survey (2010–11).

The Mineral Industry of Pennsylvania

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

In 2011, Pennsylvania's nonfuel mineral production[1] was valued at $1.60 billion, based upon annual U.S. Geological Survey (USGS) data. This was a 3.6% decrease from the total production value of $1.66 billion in 2010, which was a 1.8% increase from the total production value of $1.63 billion in 2009. Pennsylvania remained ranked 13th in the Nation in total nonfuel mineral production value in 2011 and accounted for 2.1% of the U.S. total production value. On a per capita basis, the State ranked 28th in 2011 with a value of $126; the national average was $240.

The State's leading nonfuel mineral commodities produced in 2011, in order of descending value, were crushed stone, portland cement, lime, and construction sand and gravel. These four commodities made up 97% of Pennsylvania's total nonfuel mineral production value. Lime and masonry cement had the two largest increases in production value among the State's mineral commodities with publishable data. Lime increased to $156 million, up by $11.8 million (8%), and masonry cement saw an estimated $2 million increase (11%) despite a production quantity decrease of 4%. Industrial sand and gravel had the largest increase in production value of any mineral commodity in the State, although there was only a modest increase in production quantity (values withheld—company proprietary data). The increase in production value was driven by the production and sale of hydraulic fracturing sand for the petroleum industry. The two largest decreases in mineral production value in Pennsylvania in 2011 took place with crushed stone and portland cement, down by $58 million and an estimated $24 million (6% and 8%), respectively. Construction sand and gravel and dimension stone also decreased in production value in 2011. Even with the large decreases in the State's two leading mineral commodities, Pennsylvania's rank among the 50 States remained unchanged between 2010 and 2011.

Pennsylvania continued to rank second in the Nation in the quantity of crushed stone produced, fourth of 4 tripoli-producing States, sixth in lime of 33 producing States, and seventh for masonry cement. Pennsylvania dropped from 5th to 7th in portland cement production, and rose to 12th from 14th in common clay production among 38 producing States.

Pennsylvania did not produce any primary metals from ores mined in the State; the last metal-mining operation in the State closed more than 30 years ago. Metals that were produced in the State in 2010 and 2011, principally steel, as well as ferroalloys, molybdenum, niobium, tantalum, titanium, tungsten, and zinc, were processed from materials acquired from other domestic and foreign sources. Additionally, Pennsylvania produced significant quantities of cadmium metal and finished iron oxide pigments. Metals operations were concentrated primarily in the industrial southwestern and eastern portions of the State.

The Pennsylvania Bureau of Topographic and Geologic Survey,[2] also known as the Pennsylvania Geological Survey (PGS), within the Pennsylvania Department of Conservation and Natural Resources, provided the following narrative information.

Government Programs and Activities

The PGS continued to conduct geologic investigations, surveys, and research of the geology, mineral resources, and topography of the State. The PGS 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.

Digital maps of surficial geology that were produced in 2010 and 2011 under the STATEMAP program covered the following 7.5-minute quadrangles: Blossburg, Hancock, Harford, Lake Como, Lehighton, Liberty, Long Eddy and Callicoon, Orson, Pohopoco Mountain, Sugar Lake, and Thompson.

Digital maps of bedrock geology that were produced in 2010 and 2011 under the STATEMAP program covered the following 7.5-minute quadrangles: Blossburg, Kirkwood, Mansfield, McCoysville, and McVeytown. Others in progress included maps for the Cherry Flats, Elizabethtown, Frenchville, Glenshaw, Hershey, Indiantown Gap, Julian, Middleburg Palmyra, and Troy quadrangles.

More information regarding the geology, hydrology, mineral resources, and mining history of Pennsylvania, as well as a variety of PGS publications, is available from the PGS. Much of this information, PGS contact information, and several educational series publications regarding both nonfuel and fuel minerals are available on the Internet at http://www.dcnr.state.pa.us/topogeo/index.aspx.

Complete information on obtaining all Pennsylvania Geological Survey publications is with the PGS online listing of publications at http://www.dcnr.state.pa.us/topogeo/publications/index.htm.

[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 USGS mineral production data published in this chapter are those available as of May 2013. Data in this report are rounded to three significant digits and percentages are calculated from unrounded data. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Leonard J. Lentz, P.G., Geologic Scientist with the Pennsylvania Geological Survey, authored the text of the State mineral industry information provided by that State agency.

TABLE 1
NONFUEL MINERAL PRODUCTION IN PENNSYLVANIA[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2009 Quantity	2009 Value	2010 Quantity	2010 Value	2011 Quantity	2011 Value
Cement:						
Masonry	176	23,700 e	147	17,700 e	141	19,700 e
Portland	3,720 r	354,000 e,r	3,380	321,000 e	3,270	297,000 e
Clays, common	451	3,040	344	2,490	W	W
Gemstones, natural	NA	1	NA	1	NA	1
Lime	985	126,000	1,110	145,000	1,150	156,000
Peat	3	90	2	58	W	W
Sand and gravel:						
Construction	14,000 r	115,000 r	13,500	119,000	12,700	114,000
Industrial	618	15,600	524	13,400	W	W
Stone:						
Crushed	81,100 r	987,000 r	85,300	1,040,000	89,100	981,000
Dimension	39	9,670	27	6,070	25	5,040
Combined values of tripoli and values indicated by symbol W	XX	(3)	XX	(3)	XX	30,300
Total	XX	1,630,000 r	XX	1,660,000	XX	1,600,000

[e]Estimated. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data.
XX Not applicable.
[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]Included in "Total."

TABLE 2
PENNSYLVANIA: CRUSHED STONE SOLD OR USED IN THE UNITED STATES, BY TYPE[1]

Type	2009 Number of quarries	2009 Quantity (thousand metric tons)	2009 Value (thousands)	2009 Unit value	2010 Number of quarries	2010 Quantity (thousand metric tons)	2010 Value (thousands)	2010 Unit value	2011 Number of quarries	2011 Quantity (thousand metric tons)	2011 Value (thousands)	2011 Unit value
Limestone[2]	113 r	44,900 r	$499,000 r	$11.11	109	47,700	$523,000	$10.96	105	51,700	$585,000	$11.30
Dolomite	20	10,100 r	96,100 r	9.55	20	10,700	110,000	10.24	19	9,690	100,000	10.34
Marble	1 r	108 r	916 e,r	8.5	1	43	376	8.84	1	84	642	7.66
Granite	5 r	2,770 r	28,600 r	10.34	7	2,760	30,400	11.00	7	3,400	37,500	11.03
Traprock	9	5,190	185,000	35.75	7	4,720	181,000	38.27	8	5,110	52,100	10.20
Sandstone and quartzite[3]	63 r	11,200 r	113,000	10.10	55	10,400	105,000	10.11	61	11,000	115,000	10.52
Slate	18	933 r	10,500 r	11.24	16	991	9,620	9.71	12	832	14,000	16.81
Miscellaneous stone	32	5,890 r	53,200 r	9.03	45	8,010	80,000	9.99	45	7,250	76,500	10.55
Total or average	XX	81,100 r	987,000 r	$12.27	XX	85,300	1,040,000	12.17	XX	89,100	981,000	11.01

[r]Revised. XX Not applicable.
[2]Includes limestone-dolomite reported with no distinction between the two kinds of stone.
[3]Includes sandstone-quartzite reported with no distinction between the two kinds of stone.

TABLE 3
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2010, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	887	9,890
Filter stone	W	W
Other coarse aggregate	1,510	12,800
Coarse aggregate, graded:		
Concrete aggregate, coarse	1,740	18,100
Bituminous aggregate, coarse	2,220	21,000
Bituminous surface-treatment aggregate	1,110	14,500
Railroad ballast	W	W
Other graded coarse aggregate	5,430	42,500
Fine aggregate (-⅜ inch):		
Stone sand, concrete	67	1,070
Stone sand, bituminous mix or seal	1,260	12,400
Screening, undesignated	689	6,150
Other fine aggregate	2,230	21,200
Coarse and fine aggregates:		
Graded road base or subbase	3,710	33,300
Unpaved road surface	1,820	19,300
Crusher run or fill or waste	1,220	9,090
Other coarse and fine aggregates	7,960	64,700
Other construction materials	578	6,090
Agricultural:		
Agricultural, limestone	816	10,900
Poultry grit and mineral food	W	W
Other agricultural uses	W	W
Chemical and metallurgical:		
Cement manufacture	3,070	34,700
Lime manufacture	1,290	62,500
Dead-burned dolomite manufacture	W	W
Flux stone	W	W
Sulfur oxide removal	1,110	16,900
Special:		
Mining dusting or acid water treatment	W	W
Whiting or whiting substitute	69	1,020
Other fillers or extenders	354	5,940
Other miscellaneous uses and specified uses not listed	31	272
Unspecified:[2]		
Reported	14,400	160,000
Estimated	30,800	448,000
Total	85,300	1,040,000

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

TABLE 4
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2011, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	1,500	16,900
Filter stone	316	3,270
Unspecified coarse aggregate	2,210	18,100
Coarse aggregate, graded:		
Concrete aggregate, coarse	2,650	27,200
Bituminous aggregate, coarse	2,600	28,000
Bituminous surface-treatment aggregate	1,620	22,500
Railroad ballast	773	7,310
Unspecified graded coarse aggregate	3,200	24,900
Fine aggregate (-⅜ inch):		
Stone sand, concrete	310	2,380
Stone sand, bituminous mix or seal	1,960	23,500
Screening, undesignated	699	8,890
Unspecified fine aggregate	1,920	18,900
Coarse and fine aggregates:		
Graded road base or subbase	6,360	64,200
Unpaved road surface	1,420	16,500
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	4,420	18,200
Unspecified coarse and fine aggregates	5,820	42,300
Unspecified and other construction materials	409	8,800
Agricultural:		
Agricultural, limestone	433	5,210
Poultry grit and mineral food	W	W
Unspecified and other agricultural uses	W	W
Chemical and metallurgical:		
Cement manufacture	2,330	13,900
Lime manufacture	2,180	84,500
Dead-burned dolomite manufacture	W	W
Flux stone	W	W
Chemical Stone	W	W
Sulfur oxide removal	1,090	17,200
Special:		
Mining dusting or acid water treatment	353	8,870
Asphalt fillers or extenders	W	W
Whiting or whiting substitute	W	W
Other fillers or extenders	W	W
Other miscellaneous uses and specified uses not listed	576	6,410
Unspecified:[2]		
Reported	15,000	170,000
Estimated	27,200	299,000
Total	89,100	981,000

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

TABLE 5
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2010, BY USE AND DISTRICT[1]

(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	345	3,310	935	10,300
Coarse aggregate, graded[3]	W	W	875	7,890	2,860	25,100
Fine aggregate (-⅜ inch)[4]	63	427	491	3,070	530	5,260
Coarse and fine aggregates[5]	123	841	2,060	15,800	3,050	29,800
Other construction materials	W	W	W	W	W	W
Agricultural[6]	W	W	W	W	86	776
Chemical and metallurgical[7]	W	W	W	W	1,010	14,800
Special[8]	W	W	--	--	W	W
Other miscellaneous uses and specified uses not listed[9]	--	--	31	272	--	--
Unspecified:[10]						
Reported	1,190	13,200	3,050	34,100	4,600	51,000
Estimated	3,290	31,200	5,530	60,200	7,100	64,600
Total[11]	6,370	113,000	12,700	130,000	20,700	213,000

Use	District 4	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	1,440	13,300
Coarse aggregate, graded[3]	6,550	61,600
Fine aggregate (-⅜ inch)[4]	3,160	32,000
Coarse and fine aggregates[5]	9,470	79,900
Other construction materials	83	881
Agricultural[6]	777	12,000
Chemical and metallurgical[7]	3,390	35,600
Special[8]	423	6,950
Other miscellaneous uses and specified uses not listed[9]	--	--
Unspecified:[10]		
Reported	5,570	61,800
Estimated	14,900	292,000
Total[11]	45,700	596,000

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 macadam, riprap and jetty stone, filter stone, and other coarse aggregates.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregates.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregates.
[5]Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, roofing granules, and other coarse and fine aggregates.
[6]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[7]Includes cement manufacture, lime manufacture, dead-burned dolomite manufacture, flux stone, chemical stone, glass manufacture, and sulfur oxide removal.
[8]Includes mine dusting or acid water treatment, whiting or whitening substance, and other fillers or extenders.
[9]Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.
[10]Reported and estimated production without a breakdown by end use.
[11]District totals may not add up to the published State total, owing to revisions made after the production of the table and (or) proprietary data being withheld.

TABLE 6

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2011, BY USE AND DISTRICT[1]

(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	616	5,310	1,810	19,700
Coarse aggregate, graded[3]	W	W	1,160	12,600	3,070	31,400
Fine aggregate (-⅜ inch)[4]	W	W	704	7,260	888	10,100
Coarse and fine aggregates[5]	W	W	2,370	20,500	5,160	51,100
Other construction materials	W	W	45	5,270	W	W
Agricultural[6]	W	W	W	W	136	1,050
Chemical and metallurgical[7]	W	W	W	W	W	W
Special[8]	W	W	--	--	W	W
Other miscellaneous uses and specified uses not listed[9]	--	--	27	81	W	W
Unspecified:[10]						
Reported	1,590	17,900	2,840	33,000	4,660	52,200
Estimated	2,980	33,400	6,270	68,700	3,080	34,600
Total	8,540	132,000	14,400	158,000	20,700	229,000

Use	District 4	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	W	W
Coarse aggregate, graded[3]	6,390	64,400
Fine aggregate (-⅜ inch)[4]	3,220	35,600
Coarse and fine aggregates[5]	7,880	65,800
Other construction materials	W	W
Agricultural[6]	300	4,200
Chemical and metallurgical[7]	3,890	31,000
Special[8]	W	W
Other miscellaneous uses and specified uses not listed[9]	--	--
Unspecified:[10]		
Reported	5,920	67,000
Estimated	15,600	168,000
Total	45,500	462,000

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

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

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

[5]Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, roofing granules, and other coarse and fine aggregates.

[6]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

[7]Includes cement manufacture, lime manufacture, dead-burned dolomite manufacture, flux stone, chemical stone, glass manufacture, and sulfur oxide removal.

[8]Includes mine dusting or acid water treatment, whiting or whitening substance, and other fillers or extenders.

[9]Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

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

TABLE 7
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2010,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products[2]	1,770	$17,400	$9.83
Asphaltic concrete aggregates and other bituminous mixtures	580	6,220	10.72
Road base and coverings[3]	589	3,960	6.72
Fill	778	4,050	5.21
Snow and ice control	182	1,090	5.99
Other miscellaneous uses[4]	221	2,730	12.35
Unspecified:[5]			
Reported	2,260	21,400	9.47
Estimated	7,010	61,100	8.72
Total or average	13,500	119,000	8.81

[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]Includes road and other stabilization (lime).
[4]Includes railroad ballast and filtration.
[5]Reported and estimated production without a breakdown by end use.

TABLE 8
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2011,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products[2]	1,740	$16,300	$9.37
Asphaltic concrete aggregates and other bituminous mixtures	419	4,780	11.41
Road base and coverings	582	5,390	9.26
Fill	1,110	7,140	6.43
Snow and ice control	149	1,030	6.91
Other miscellaneous uses[3]	149	1,740	11.68
Unspecified:[4]			
Reported	1,550	14,700	9.48
Estimated	6,970	62,500	8.97
Total or average	12,700	114,000	8.98

[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]Includes filtration and railroad ballast.
[4]Reported and estimated production without a breakdown by end use.

TABLE 9
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2010,
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 aggregates and concrete products[2]	W	W	325	3,550	W	W
Asphaltic concrete aggregates and road base materials[3]	W	W	419	3,050	W	W
Fill	15	72	3	11	7	50
Snow and ice control	176	1,020	--	--	1	5
Other miscellaneous uses[4]	197	1,170	--	--	88	55
Unspecified:[5]						
Reported	84	717	805	7,560	899	8,430
Estimated	2,130	19,100	1,870	16,800	3,230	28,100
Total[6]	2,600	22,000	3,420	31,000	4,230	36,600

	District 4		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[2]	489	7,150	--	--
Asphaltic concrete aggregates and road base materials[3]	229	2,730	--	--
Fill	753	3,920	--	--
Snow and ice control	6	64	--	--
Other miscellaneous uses[4]	206	2,640	--	--
Unspecified:[5]				
Reported	424	4,620	45	116
Estimated	718	6,200	272	913
Total[6]	2,830	27,300	317	1,030

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 and other stabilization (lime).

[4]Includes railroad ballast and filtration.

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

[6]District totals may not add up to the published State total, owing to revisions made after the production of the table and (or) proprietary data being withheld.

TABLE 10
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2011,
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 aggregates and concrete products[2]	W	W	469	4810	W	W
Asphaltic concrete aggregates and road base materials	W	W	368	3,870	W	W
Fill	13	62	75	488	51	345
Snow and ice control	115	784	33	226	--	--
Other miscellaneous uses[3]	17	132	6	74	--	--
Unspecified:[4]						
Reported	106	940	538	5,100	854	8,100
Estimated	1,850	16,500	1,780	15,100	2,340	20,900
Total	3,210	27,600	3,270	29,600	3,620	31,400

Use	District 4		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[2]	317	4,910	--	--
Asphaltic concrete aggregates and road base materials	113	1,710	--	--
Fill	972	6,250	--	--
Snow and ice control	1	14	--	--
Other miscellaneous uses[3]	126	1,530	--	--
Unspecified:[4]				
Reported	48	510	--	--
Estimated	997	10,000	4	33
Total	2,570	24,900	4	33

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 plaster and gunite sands.
[3]Includes filtration and railroad ballast.
[4]Reported and estimated production without a breakdown by end use.