2010–2011 Minerals Yearbook

MINNESOTA [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

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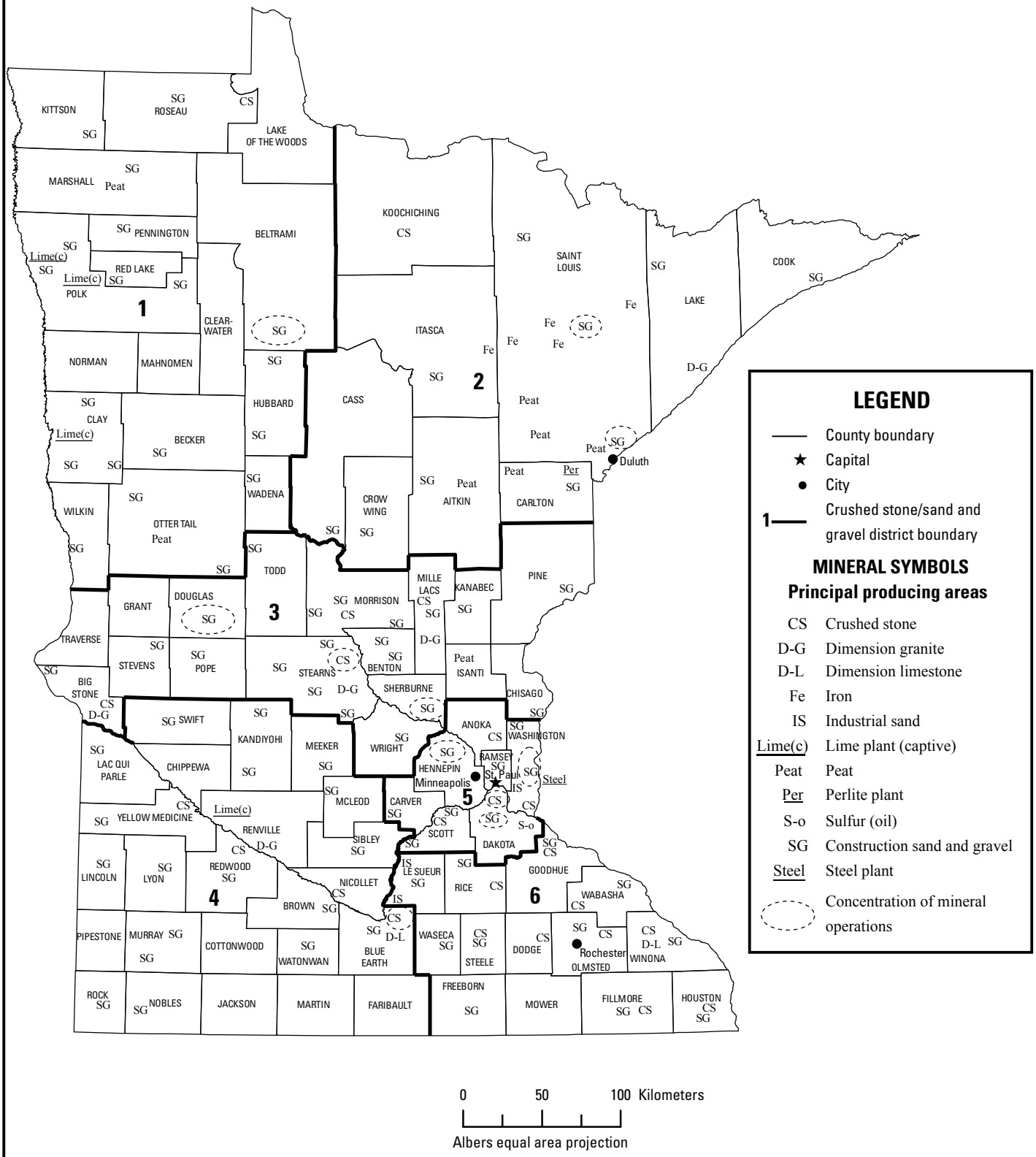
MINNESOTA



Source: Minnesota Department of Natural Resources, Division of Lands and Minerals/U.S. Geological Survey (2010–11).

The Mineral Industry of Minnesota

In 2011, Minnesota's nonfuel mineral production[1] was valued at $4.18 billion, based upon annual U.S. Geological Survey (USGS) data. This was a 11% increase from the State's total nonfuel mineral production value of $3.71 billion in 2010, which followed a 42% increase from $2.14 billion in 2009. Nonfuel mineral production in the State surpassed $3 billion in value for the first time in 2010 and $4 billion for the first time in 2011. Minnesota ranked fourth in 2011 and 2010 among the 50 States in total nonfuel mineral production value. Prior to 2010, it had ranked either seventh or eighth for 6 consecutive years. Minnesota accounted for approximately 6% of the total U.S. value in each of 2011 and 2010. On a per capita basis, the State ranked seventh in the country in nonfuel mineral production in 2011 with a value of $841, three-and-a-half times the national average of $240.

Since at least the 1950s, iron ore was the leading nonfuel mineral commodity in Minnesota. It was followed by, in order of descending production value, construction sand and gravel, industrial sand and gravel, and crushed stone. The combined value of these four commodities—construction and industrial sand and gravel, crushed stone, and iron ore—made up the bulk of the State's total nonfuel mineral production value. The State also produced clays, dimension stone, gemstones, lime, and peat.

Production of iron ore in Minnesota more than doubled in 2011 and 2010 compared to 2009; the quantity produced increased from 18.7 million metric tons (Mt) in 2009 to 38.8 Mt in 2010 to 42.4 Mt in 2011, an increase of 127% from 2009 to 2011. The production quantity of the other three major commodities (construction and industrial sand and gravel and crushed stone) also increased in both 2011 and 2010 and the production values of all but construction sand and gravel also increased. Approximately 37 Mt of construction sand and gravel was produced in Minnesota during 2011, up more than15% from 32 Mt in 2009, whereas the production value decreased by $13 million (7%). Nevertheless, 2011 ended 4 consecutive years of decreasing production values for construction sand and gravel.

The production quantity and production value of industrial sand and gravel also increased significantly from 2009 to 2011 (values withheld—proprietary company data). This increase was propelled by the sand required for hydraulic fracturing (frac sand) by the oil and gas industry. Among other nonfuel mineral commodities, the production values of dimension stone and lime increased in 2011, from 2009 values, while peat saw consecutive losses in production value. Production of gemstones, measured by value, has remained steady since 2008.

In both 2011 and 2010, Minnesota continued to be the top producer of iron ore out of four States. It also remained second in peat production out of 13 States, accounting for more than 7% of the total quantity of peat sold in the country (595,000 metric tons). The State remained 12th in dimension stone production out of 36 States. Minnesota rose in rank from fifth in 2009 to fourth in 2010 and 2011 among the 33 States that produced industrial sand and gravel, and from fifth in 2010 to third in 2011 in the production of construction sand and gravel.

[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 http://minerals.usgs.gov/minerals.

TABLE 1

NONFUEL RAW MINERAL PRODUCTION IN MINNESOTA[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2009		2010		2011	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones, natural	NA	7	NA	7	NA	7
Iron ore, usable shipped	18,700	W	38,800	W	42,400	W
Peat	44	2,850	41	2,500	44	2,490
Sand and gravel, construction	31,700 r	193,000 r	32,600	160,000	36,600	180,000
Stone:						
Crushed	7,440	92,300	7,140	87,600	8,600	105,000
Dimension	25	16,700	35	15,400	46	28,500
Combined values of lime, sand and gravel (industrial), and values indicated by symbol W	XX	1,830,000	XX	3,440,000 [3, *]	XX	3,870,000 [3, *]
Total	XX	2,140,000	XX	3,710,000 *	XX	4,180,000 *

[r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary 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]Partial total; excludes values that must be concealed to avoid disclosing company proprietary data .

*Correction posted June 6, 2016.

TABLE 2

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

Type	2009				2010				2011			
	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]	39	2,800 r	$33,300 r	$11.88	32	2,370	$27,200	$11.47	34	3,010	$34,400	$11.45
Dolomite	3	1,600	22,400	13.94	3	1,590	22,700	14.30	3	1,760	24,800	14.06
Granite	8 r	2,660 r	32,600 r	12.27	7	2,810	33,700	11.99	8	3,320	40,500	12.19
Miscellaneous stone	9 r	381 r	4,070 r	10.68	9	372	4,050	10.88	8	511	5,660	11.07
Total or average	XX	7,440 r	92,300 r	12.40	XX	7,140	87,600	12.27	XX	8,600	105,000	12.25

[r]Revised. XX Not applicable.

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

[2]Includes limestone-dolomite reported with no distinction between the two kinds of stone.

TABLE 3
MINNESOTA: 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):		
Riprap and jetty stone	77	1,410
Filter stone	21	373
Other coarse aggregate	65	1,220
Coarse aggregate, graded:		
Concrete aggregate, coarse	W	W
Bituminous aggregate, coarse	134	1,570
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Other graded coarse aggregate	W	W
Fine aggregate (-⅜ inch):		
Stone sand, concrete	W	W
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	W	W
Other fine aggregate	196	2,520
Coarse and fine aggregates:		
Graded road base or subbase	287	2,790
Unpaved road surface	118	661
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	108	651
Roofing granules	W	W
Other coarse and fine aggregates	W	W
Other construction materials	4	46
Agricultural:		
Agricultural, limestone	120	1,230
Poultry grit and mineral food	W	W
Unspecified:[2]		
Reported	3,760	45,600
Estimated	1,310	15,400
Total	7,140	87,600

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
MINNESOTA: 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	133	1,370
Filter stone	22	313
Unspecified coarse aggregate	117	2,260
Coarse aggregate, graded:		
Concrete aggregate, coarse	34	496
Bituminous aggregate, coarse	W	W
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Fine aggregate (-⅜ inch):		
Stone sand, concrete	W	W
Stone sand, bituminous mix or seal	208	1,040
Screening, undesignated	W	W
Unspecified fine aggregate	W	W
Coarse and fine aggregates:		
Graded road base or subbase	318	3,130
Unpaved road surface	163	861
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	62	929
Roofing granules	W	W
Unspecified coarse and fine aggregates	43	435
Agricultural:		
Agricultural, limestone	71	518
Poultry grit and mineral food	W	W
Unspecified:[2]		
Reported	4,860	58,900
Estimated	2,340	31,700
Total	8,600	105,000

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
MINNESOTA: 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
Coarse aggregate, graded[3]	--	--	--	--	48	524
Fine aggregate (-⅜ inch)[4]	--	--	--	--	W	W
Coarse and fine aggregates[5]	--	--	--	--	W	W
Other construction materials	--	--	--	--	--	--
Agricultural[6]	--	--	--	--	--	--
Unspecified:[7]						
Reported	--	--	1	$3	1,280	15,200
Estimated	33	397	4	51	329	3,900
Total[8]	33	397	5	54	1,730	20,400

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	100	2,170	W	W
Coarse aggregate, graded[3]	W	W	W	W	--	--
Fine aggregate (-⅜ inch)[4]	W	W	W	W	W	W
Coarse and fine aggregates[5]	W	W	W	W	W	W
Other construction materials	--	--	4	46	--	--
Agricultural[6]	W	W	W	W	W	W
Unspecified:[7]						
Reported	1,680	20,700	424	5,030	315	3,980
Estimated	86	974	54	646	797	9,460
Total[8]	2,080	25,200	2,170	29,300	1,280	14,300

Use	Unspecified District	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	--	--
Coarse aggregate, graded[3]	--	--
Fine aggregate (-⅜ inch)[4]	--	--
Coarse and fine aggregates[5]	--	--
Other construction materials	--	--
Agricultural[6]	--	--
Unspecified:[7]		
Reported	53	631
Estimated	--	--
Total[8]	53	631

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

[8]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

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

(Thousand metric tons and thousand dollars)

Use	District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	W	W	W	W
Coarse aggregate, graded[3]	--	--	W	W	W	W
Fine aggregate (-⅜ inch)[4]	--	--	W	W	W	W
Coarse and fine aggregates[5]	W	W	W	W	W	W
Agricultural[6]	--	--	--	--	W	W
Unspecified:[7]						
Reported	--	--	1,260	15,500	2,730	33,100
Estimated	4	45	547	6,610	24	294
Total	4	48	1,910	23,000	3,280	39,800

Use	District 5		District 6		Unspecified	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	W	W	--	--
Coarse aggregate, graded[3]	W	W	W	W	--	--
Fine aggregate (-⅜ inch)[4]	W	W	W	W	--	--
Coarse and fine aggregates[5]	W	W	W	W	--	--
Agricultural[6]	W	W	W	W	--	--
Unspecified:[7]						
Reported	624	7,490	173	2,080	63	756
Estimated	1,180	17,700	584	7,020	--	--
Total	2,260	30,700	1,080	11,000	63	756

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

TABLE 7
MINNESOTA: 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 (including concrete sand)	3,600	$24,100	$6.68
Plaster and gunite sands	166	991	5.97
Concrete products (blocks, bricks, pipe, decorative, etc.)	140	1,780	12.72
Asphaltic concrete aggregates and other bituminous mixtures	3,080	16,300	5.31
Road base and coverings[2]	7,830	24,800	3.16
Road stabilization (cement)	72	492	6.83
Road stabilization (lime)	78	582	7.46
Fill	1,390	4,670	3.36
Snow and ice control	112	732	6.54
Other miscellaneous uses[3]	233	2,300	9.85
Unspecified:[3]			
Reported	5,230	33,600	6.42
Estimated	10,300	48,100	4.66
Total or average	32,600	160,000	4.91

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes filtration, golf course, roofing granules, and railroad ballast.
[3]Reported and estimated production without a breakdown by end use.

TABLE 8
MINNESOTA: 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 (including concrete sand)	3,870	$24,700	$6.38
Plaster and gunite sands	142	875	6.16
Concrete products (blocks, bricks, pipe, decorative, etc.)	95	1,260	13.26
Asphaltic concrete aggregates and other bituminous mixtures	3,900	23,600	6.05
Road base and coverings[2]	8,590	28,700	3.34
Fill	1,850	5,740	3.10
Snow and ice control	97	531	5.47
Other miscellaneous uses[3]	220	1,960	8.91
Unspecified:[4]			
Reported	6,780	38,900	5.74
Estimated	11,000	53,300	4.85
Total or average	36,600	180,000	4.92

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

TABLE 9

MINNESOTA: 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 aggregate and concrete products[2]	939	7,120	856	5,310	797	6,100
Asphaltic concrete aggregates and road base materials[3]	2,820	10,400	204	971	3,990	13,900
Fill	260	770	36	206	465	1,490
Snow and ice control	6	31	29	109	23	196
Other miscellaneous uses[4]	3	15	10	143	121	1,040
Unspecified:[5]						
Reported	383	2,450	262	550	1,190	7,310
Estimated	2,530	12,300	2,130	10,400	2,270	10,600
Total[6]	6,950	33,100	3,520	17,700	8,860	40,700

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	617	3,850	389	2,950	66	453
Asphaltic concrete aggregates and road base materials[3]	1,270	7,080	W	W	W	W
Fill	234	744	289	965	107	495
Snow and ice control	9	62	W	W	W	W
Other miscellaneous uses[4]	77	560	16	258	27	282
Unspecified:[5]						
Reported	294	1,430	1,790	14,400	471	2,280
Estimated	1,600	7,880	1,590	7,860	1,180	5,940
Total[6]	4,090	21,600	4,070	26,500	1,850	9,440

	Unspecified districts	
	Quantity	Value
Concrete aggregate and concrete products[2]	245	1,050
Plaster and gunite sands	--	--
Asphaltic concrete aggregates and road base materials[3]	1,830	3,240
Fill	--	--
Snow and ice control	--	--
Other miscellaneous uses[4]	--	--
Unspecified:[5]		
Reported	844	5,110
Estimated	--	--
Total[6]	2,920	9,400

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 (cement and lime).

[4]Includes filtration, golf course, railroad ballast, and roofing granules.

[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

MINNESOTA: 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 aggregate and concrete products[2]	W	W	778	5,580	727	3,430
Asphaltic concrete aggregates and road base materials[3]	3,280	15,200	316	1,460	3,520	15,600
Fill	284	681	73	426	467	1,520
Snow and ice control	W	W	31	121	17	98
Other miscellaneous uses[4]	--	--	1	12	101	966
Unspecified:[5]						
Reported	404	2,540	129	269	1,340	7,830
Estimated	2,200	10,600	2,250	10,900	2,100	9,980
Total	7,210	37,000	3,580	18,800	8,270	39,400

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	503	2,970	W	W	95	639
Asphaltic concrete aggregates and road base materials[3]	1,180	6,100	998	6,120	293	1,720
Fill	234	610	515	1,470	273	1,030
Snow and ice control	8	58	W	W	35	149
Other miscellaneous uses[4]	11	130	17	241	91	610
Unspecified:[5]						
Reported	489	2,290	2,290	14,200	458	2,630
Estimated	1,590	7,690	2,050	9,940	847	4,110
Total	4,020	19,800	6,280	35,500	2,090	10,900

Use	Unspecified districts	
	Quantity	Value
Concrete aggregate and concrete products[2]	559	2,790
Asphaltic concrete aggregates and road base materials[3]	2,900	6,060
Fill	--	--
Snow and ice control	--	--
Other miscellaneous uses[4]	--	--
Unspecified:[5]		
Reported	1,670	9,190
Estimated	--	--
Total	5,130	18,000

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 plaster and gunite sands.

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

[4]Includes filtration, golf course, railroad ballast, and roofing granules.

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