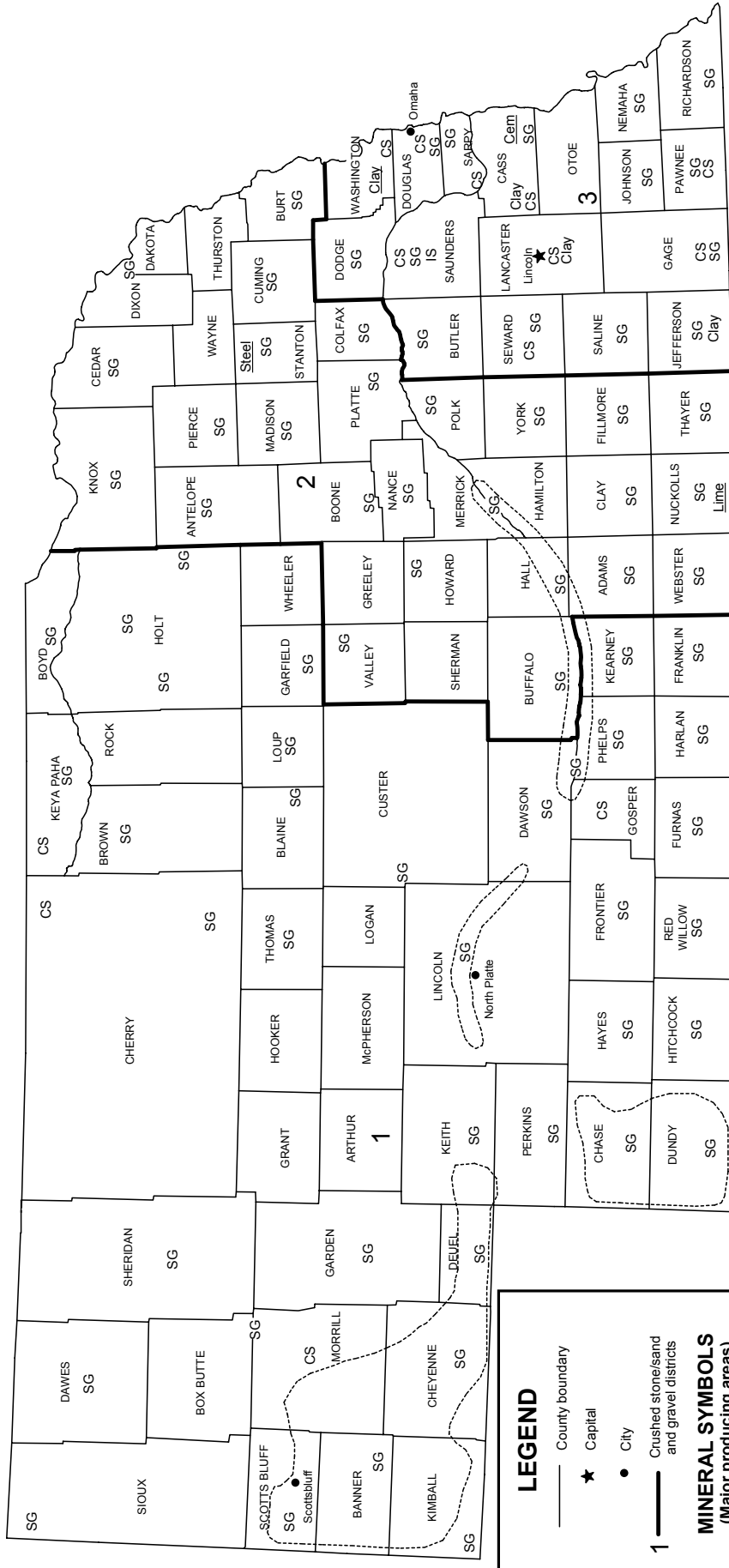


NEBRASKA



LEGEND

- County boundary
- ★ Capital
- City
- 1 — Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

- Cem Cement plant
- Clay Common clay
- Clay plant Clay plant
- CS Crushed stone
- IS Industrial sand
- Lime Lime plant
- SG Construction sand and gravel
- Steel Steel plant
- Concentration of mineral operations



Source: University of Nebraska-Lincoln, Nebraska Geological Survey/U.S. Geological Survey (2004)

THE MINERAL INDUSTRY OF NEBRASKA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the University of Nebraska-Lincoln, Nebraska Geological Survey, for collecting information on all nonfuel minerals.

In 2004, Nebraska's nonfuel raw mineral production was valued¹ at \$106 million, based upon annual U.S. Geological Survey (USGS) data. This was an 11.2% increase compared with that of 2003,² which was down about 3.2% from 2002. (The State's actual total nonfuel mineral values for 2002-04 were substantially higher than those reported in table 1, from which specific production data for industrial sand and gravel and masonry and portland cements were withheld to protect company proprietary data.)

In 2004, Nebraska's leading nonfuel mineral commodities were, in descending order of value, cement (portland and masonry), construction sand and gravel, and crushed stone. Increases in the values of each commodity took place in 2004. A nearly 14% increase in construction sand and gravel production in 2004 combined with a 4% increase in the average price per metric ton generated an 18%, or \$8.2 million, increase in the commodity's value from that of 2003. Although there was a slight decrease in production, the value of crushed stone increased by \$2.7 million, because of a 6% price increase in the average price per ton. Increases also took place in the values of masonry and portland cement, the latter of which rose by more than \$4 million (table 1).

Nebraska continued to be a producer of significant quantities of construction sand and gravel in 2004, as compared with other producing States. Metals that were produced in the State—mostly raw steel—were processed from materials acquired from other domestic and foreign sources.

In 2003, Nebraska's total nonfuel mineral value decreased mainly as a result of a \$4 million drop in the value of crushed stone (table 1). This was offset somewhat by an increase in value of construction sand and gravel by \$800,000. Cement (masonry and portland) production decreased and its value decreased about \$4 million from 2002 owing to drops in production and average price per ton.

The following narrative information was provided by the Nebraska Geological Survey³ (NGS).

Commodity Review

Industrial Minerals

Clays.—Yankee Hill Brick and Tile's new plant at Lincoln was completed in 2004 and was scheduled to open in 2005. Production was anticipated to double relative to previous levels. Robots are employed to load bricks on kiln cars and the entire facility is computer controlled. As a result, the company's yearly mining of Cretaceous Dakota Formation clays will probably increase from 45,000 to 54,000 metric tons per year (t/yr) to 90,000 to 109,000 t/yr. Most of the company's raw materials now come from one active mine and, therefore, additional suitable clay deposits will probably be sought in the near future.

Endicott Clay Products Co., which also uses Dakota Formation clays, supplied brick and tile to more than a dozen major construction projects across the United States and Canada in 2004. Included in these projects are: Canton Crossing Towers (Baltimore, MD), Institute of Arts (Flint, MI), Four Seasons Performing Arts Center (Toronto, Ontario, Canada), Riverwalk (Fort Lauderdale, FL), Walker Arts Center (Minneapolis, MN), and Lambeau Field renovation (Green Bay, WI). In addition to its mine at the plant site in Endicott, the company operated a new mine south of Fairbury, NE, and one in northern Kansas. Both of the latter yield gray sandy mudstones and mudstones, as opposed to the red-mottled mudstones mined at the plant site.

Blair Ag LLC (Blair) continued to ship dry attapulgite (palygorskite) clay by rail from Florida for the production of liquid clay suspensions for agrochemicals, a market that has been declining in recent years. In August 2004, however, the company also began transloading dry attapulgite onto trucks for distribution to other plants in Colorado, Iowa, Kansas, and Nebraska. Through an agreement with Engelhard Corporation, Blair was paid for consignment on these shipments.

Crushed stone and sand and gravel.—Aggregate demand and sales were high in 2004, generally showing a significant increase over 2003. This trend was apparent in both major centers of aggregate mining: the Weeping Water limestone-mining district in eastern Nebraska and the fluvial gravel operations concentrated along the Platte River system. The aggregates market is expected to remain highly favorable through 2005.

Martin Marietta Aggregates (Weeping Water) began work on a new plant at its underground limestone mining operations in May 2004. The new facility, located in the uplands to the south of the present valley-side decline, will include a primary crusher at the mine mouth and a secondary crusher at the plant itself. Material will be moved from the mine mouth to the plant by a conveyor system. Martin Marietta's Weeping Water Mine set alltime sales records for crushed stone and concrete aggregate in 2004. Kereford

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>.

²Values, percentage calculations, and rankings for 2003 may differ from the Minerals Yearbook, Area Reports: Domestic 2003, Volume II, owing to the revision of preliminary 2003 to final 2003 data. Data and rankings for 2004 are considered to be final and are not likely to change significantly.

³Matthew Joeckel, Research Geologist with the University of Nebraska-Lincoln and the Nebraska Geological Survey (NGS), authored the text of the State mineral industry information provided by the NGS.

Limestone Company (Weeping Water) also reported 2004 as a record year in total product sales. Aggregate for asphalt and concrete paving and for Ready-Mix™ concrete constituted major sales sectors. The company's fine-grind facilities also allowed it to supply granules for asphalt shingle production and fine calcium carbonate for liquid lime production, palletized lime, and other applications.

Rinker Materials Corp.'s Ft. Calhoun Stone (Ft. Calhoun) completed a major upgrade of its East Plant in 2004, increasing production capacity by 20%. The company began an upgrade of its barge-loading facility on the Missouri River, the only such facility in Nebraska, by adding a conveyor unit. Ft. Calhoun Stone also added a new aggregate-washing facility to meet Nebraska Department of Roads (NDOR) 47B concrete aggregate specifications. The company provided a total of 32,000 metric tons (t) of riprap for Corps of Engineers habitat restoration along the river.

Changes in NDOR specifications are relevant in the aggregate, concrete, and fly ash industries. A 2004 special provision in NDOR specifications now allows the use of bituminous millings, crushed concrete, or virgin aggregate as base course material. NDOR already uses essentially all of the crushed concrete that it produces through roadbuilding projects, but the change in specifications was still expected to increase the recycling of concrete in road projects. In a second specification change, the use of Class C fly ash was omitted in pavement use in a revision to NDOR supplemental and standard specifications in late 2003. This change was a provisional response to the cracking of pavements under certain conditions, but no actual link between pavement problems and the use of Class C fly ash has yet been demonstrated. Class F fly ash, produced outside Nebraska, can still be used in pavements. Class C fly ash from Nebraska's coal-fired powerplants continued to be used in soil stabilization operations and, in fact, demand in that area appeared to be increasing. Nebraska Class C fly ash was also used extensively in Ready-Mix™ concrete plants in Colorado, Iowa, and Nebraska.

ILC Resources (formerly Iowa Limestone) in Weeping Water continues to produce feed-grade calcium carbonate from materials mined at Kereford Limestone's Weeping Water operations. Favorable livestock prices in the United States in 2004 supported very good sales, although rising energy prices also forced product price increases. Sales increased approximately 8% more than that of 2003. Lime production continued at Lyon Lime's operation at Nelson, NE.

Metals

Iron and Steel.—Nucor-Nebraska (Norfolk) recycled 1 million metric tons of scrap steel in 2004, including more than 400,000 automobiles. On December 22, 2004, Nucor-Nebraska set a record of 900,000 t of product produced in a single year. The 2004 Household Scrap Day sponsored by the company recovered 54.4 t of steel scrap and 2.58 t of recyclable aluminum.

Uranium.—Crow Butte Resources, Inc. produced 375 t of U₃O₈ in 2004, an increase from that of 2003 production. Prospects for uranium production in Nebraska and elsewhere are improving significantly: prices have increased steadily since 2003, more than tripling since 2000 and reaching their highest level since the mid-1980s. Crow Butte is now in the process of permitting new in situ leaching production sites in Nebraska. Groundwater remediation at Crow Butte's Wellfield No. 2 was completed in 2004 and it is now in the stabilization phase.

Environmental Issues

In August of 2004, the State of Nebraska dropped an appeal effort and agreed to pay \$141 million to the Central Interstate Low-Level Radioactive Waste Compact in response to a Federal court judgment dating back to 2002. Negotiations toward disposal of low-level radioactive wastes in Texas were ongoing, and eventually an agreement might be reached.

Ash Grove Cement Co.'s Louisville plant received permission from the Nebraska Department of Environmental Quality (NDEQ) to burn scrap tires for fuel in its kiln in 2004, despite concerns expressed by some residents of the area and from environmental groups. Only a trial period of 60 days, with extensive monitoring of nitrogen and sulfur oxides emissions, was approved. Regular burning of scrap tires would require separate permitting from the NDEQ. It was projected that regular use of scrap tires as kiln fuel could reduce the plant's coal consumption by 10% to 20% and consume about 1 million waste tires.

Lead contamination in soils in urban Omaha, resulting from a former ASARCO Incorporated plant and possibly from two smaller operations, received much attention during 2004. The U.S. Environmental Protection Agency (EPA) reported that 35% of 15,012 residential yards analyzed in the Omaha area had lead values above the 400 parts per million (ppm). A full 42% of residential lawns from Ames Avenue to "L" Street and from 45th Street to the Missouri River exceeded EPA-mandated threshold levels. The EPA planned on cleaning up about 5,600 "high-priority" residential yards first. The costs for lead cleanup were estimated to be as much as \$100 million in June 2004. The city council of Bellevue, NE (immediately south of Omaha) voted in the summer of 2004 to oppose the use of as much as 340,000 t of lead-contaminated soil from Omaha as fill around its sewage-treatment plant, a plan that might otherwise have saved \$4.5 million for landfilling all of the Omaha's contaminated soil in Mills County, Iowa. Some lead-contaminated soil from the Asarco plant site already has been used as fill under Omaha's new, concrete-sheathed Lewis and Clark Landing along the Missouri River.

The Conservation and Survey Division (Nebraska Geological Survey) is scheduled to move into the newly renovated Hardin Hall on the University of Nebraska-Lincoln's East Campus in the fall of 2005, following its merger with the School of Natural Resources.

Government Programs

In 2004, the Conservation and Survey Division's USGS STATEMAP mapping efforts produced mineral-resource maps of the Reynolds, Fairbury SW, and Endicott 7.5-minute quadrangles (topographic). Pleistocene sand and gravel deposits and Cretaceous clay and limestone resources of the Dakota and Greenhorn formations, respectively, were mapped.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	W	(3)	W	(3)	W	(3)
Portland	W	(3)	W	(3)	W	(3)
Clays, common ⁶	133	338	133	338	133	338
Gemstones	NA	4	NA	4	NA	4
Lime	8	692	8	692	11	514
Sand and gravel:						
Construction	12,900	44,200	13,300	45,000	15,100	53,200
Industrial	W	(3)	W	(3)	W	(3)
Stone, crushed	7,220	53,200	6,960	49,200	6,900	51,900
Total	XX	98,400	XX	95,300	XX	106,000

⁶Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data. 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.

³Value excluded to avoid disclosing company proprietary data.

TABLE 2
NEBRASKA: 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	11	7,220	\$53,200	\$7.36	10	6,960	\$49,200	\$7.07	9	6,900	\$51,900	\$7.52

¹Data are rounded to no more than three significant digits.

TABLE 3a

NEBRASKA: 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):			
Riprap and jetty stone	W	W	\$9.39
Other coarse aggregate	W	W	9.36
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	10.34
Bituminous aggregate, coarse	W	W	6.15
Bituminous surface-treatment aggregate	W	W	5.27
Fine aggregate (-¾ inch), screening, undesignated	W	W	5.11
Coarse and fine aggregates:			
Unpaved road surfacing	336	\$3,170	9.42
Crusher run or fill or waste	265	2,330	8.80
Roofing granules	W	W	8.16
Total or average	601	5,500	9.15
Agricultural:			
Agricultural limestone	622	5,760	9.26
Other agricultural uses	79	550	6.96
Total or average	701	6,310	9.00
Chemical and metallurgical, cement manufacture	W	W	4.41
Special, asphalt fillers or extenders	W	W	19.01
Unspecified:²			
Reported	3,570	23,500	6.59
Estimated	60	220	3.75
Total or average	3,630	23,800	6.55
Grand total or average	6,960	49,200	7.07

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

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

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

TABLE 3b
NEBRASKA: 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), riprap and jetty stone	W	W	\$12.76
Coarse aggregate, graded:			
Concrete aggregate, coarse	(2)	(2)	9.53
Bituminous aggregate, coarse	(2)	(2)	8.85
Railroad ballast	(2)	(2)	11.35
Total or average	1,550	\$14,600	9.43
Coarse and fine aggregates:			
Graded road base or subbase	(2)	(2)	10.29
Unpaved road surfacing	(2)	(2)	9.82
Crusher run or fill or waste	(2)	(2)	7.72
Roofing granules	(2)	(2)	8.16
Total or average	965	8,400	8.70
Agricultural:			
Agricultural limestone	(2)	(2)	12.66
Other agricultural uses	(2)	(2)	6.99
Total or average	342	3,960	11.56
Chemical and metallurgical, cement manufacture	W	W	4.41
Special, asphalt fillers or extenders	W	W	20.23
Unspecified:³			
Reported	3,390	22,600	6.67
Estimated	51	190	3.73
Total or average	3,440	22,800	6.63
Grand total or average	6,900	51,900	7.52

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

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

NEBRASKA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	District 3	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch) ³	W	W
Coarse aggregate, graded ⁴	W	W
Fine aggregate (-¾ inch) ⁵	W	W
Coarse and fine aggregate ⁶	W	W
Agricultural ⁷	701	6,310
Chemical and metallurgical ⁸	W	W
Special ⁹	W	W
Unspecified ¹⁰		
Reported	3,570	23,500
Estimated	60	220
Total	6,960	49,200

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.²No production reported in Districts 1 and 2.³Includes riprap and jetty stone and other coarse aggregates.⁴Includes bituminous aggregate (coarse), bituminous surface treatment aggregate, and concrete aggregate (coarse).⁵Includes screening (undesignated).⁶Includes crusher run (select material or fill), roofing granules, and unpaved road surfacing.⁷Includes agricultural limestone and other agricultural uses.⁸Include cement manufacture.⁹Includes asphalt fillers or extenders.¹⁰Reported and estimated production without a breakdown by end use.

TABLE 4b

NEBRASKA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	District 3	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch) ³	W	W
Coarse aggregate, graded ⁴	W	W
Coarse and fine aggregate ⁵	W	W
Agricultural ⁶	342	3,960
Chemical and metallurgical ⁷	W	W
Special ⁸	W	W
Unspecified: ⁹		
Reported	3,390	22,600
Estimated	51	190
Total	6,900	51,900

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.²No production reported in Districts 1 and 2.³Includes riprap and jetty stone.⁴Includes bituminous aggregate (coarse), concrete aggregate (coarse), and railroad ballast.⁵Includes crusher run or fill or waste, graded road base or subbase, roofing granules, and unpaved road surfacing.⁶Includes agricultural limestone and other agricultural uses.⁷Include cement manufacture.⁸Includes asphalt fillers or extenders.⁹Reported and estimated production without a breakdown by end use.

TABLE 5a
NEBRASKA: 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)	1,830	\$6,090	\$3.32
Plaster and gunitite sands	74	310	4.19
Concrete products (blocks, bricks, pipe, decorative, etc.)	4	9	2.25
Asphaltic concrete aggregates and other bituminous mixtures	712	2,110	2.96
Road base and coverings	1,840	6,390	3.47
Fill	509	1,020	2.00
Snow and ice control	99	347	3.51
Roofing granules	15	50	3.33
Other miscellaneous uses ²	56	456	8.14
Unspecified: ³			
Reported	905	3,020	3.34
Estimated	7,200	25,000	3.49
Total or average	13,300	45,000	3.40

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

²Includes railroad ballast.

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

TABLE 5b
NEBRASKA: 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)	2,650	\$9,500	\$3.59
Plaster and gunite sands	78	244	3.13
Concrete products (blocks, bricks, pipe, decorative, etc.)	184	775	4.22
Asphaltic concrete aggregates and other bituminous mixtures	960	3,740	3.89
Road base and coverings	2,170	8,590	3.97
Fill	1,160	1,810	1.56
Snow and ice control	68	212	3.14
Roofing granules	3	21	7.00
Other miscellaneous uses ²	36	643	17.86
Unspecified: ³			
Reported	1,140	4,610	4.06
Estimated	6,700	23,000	3.46
Total or average	15,100	53,200	3.52

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

²Includes filtration and railroad ballast.

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

TABLE 6a
NEBRASKA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED 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
Concrete aggregate (including concrete sand) ²	W	W	714	2,760	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.)	1	3	--	--	3	6
Asphaltic concrete aggregates and other bituminous mixtures	W	W	275	912	W	W
Road base and coverings	702	1,900	961	3,490	180	994
Fill	164	340	236	490	109	186
Snow and ice control	69	215	27	111	4	21
Roofing granules	15	50	--	--	--	--
Other miscellaneous uses ³	687	1,960	12	135	745	2,660
Unspecified: ⁴						
Reported	55	224	2	22	848	2,780
Estimated	970	3,200	2,800	9,400	3,500	13,000
Total	2,660	7,860	5,010	17,300	5,370	19,300
	Unspecified districts					
	Quantity	Value				
Concrete aggregate (including concrete sand)	--	--				
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	--	--				
Asphaltic concrete aggregates and other bituminous mixtures	243	535				
Road base and coverings	--	--				
Fill	--	--				
Snow and ice control	--	--				
Roofing granules	--	--				
Other miscellaneous uses ³	--	--				
Unspecified: ⁴						
Reported	--	--				
Estimated	--	--				
Total	243	535				

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 railroad ballast.

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

TABLE 6b
 NEBRASKA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED 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
Concrete aggregates (including concrete sand)	482	1,390	W	W	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	81	214	3	10	178	794
Asphaltic concrete aggregates and other bituminous mixtures	W	W	591	1,980	W	W
Road base and coverings	951	3,110	997	4,040	218	1,440
Fill	115	272	251	438	792	1,100
Snow and ice control	43	95	W	W	W	W
Other miscellaneous uses ³	370	2,150	644	2,370	1,580	6,140
Unspecified: ⁴						
Reported	33	243	15	172	1,090	4,200
Estimated	1,200	4,000	2,800	9,900	2,600	9,200
Total	3,260	11,500	5,340	18,900	6,500	22,800

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.

²Includes plaster and gunite sands.

³Includes filtration, railroad ballast, and roofing granules.

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