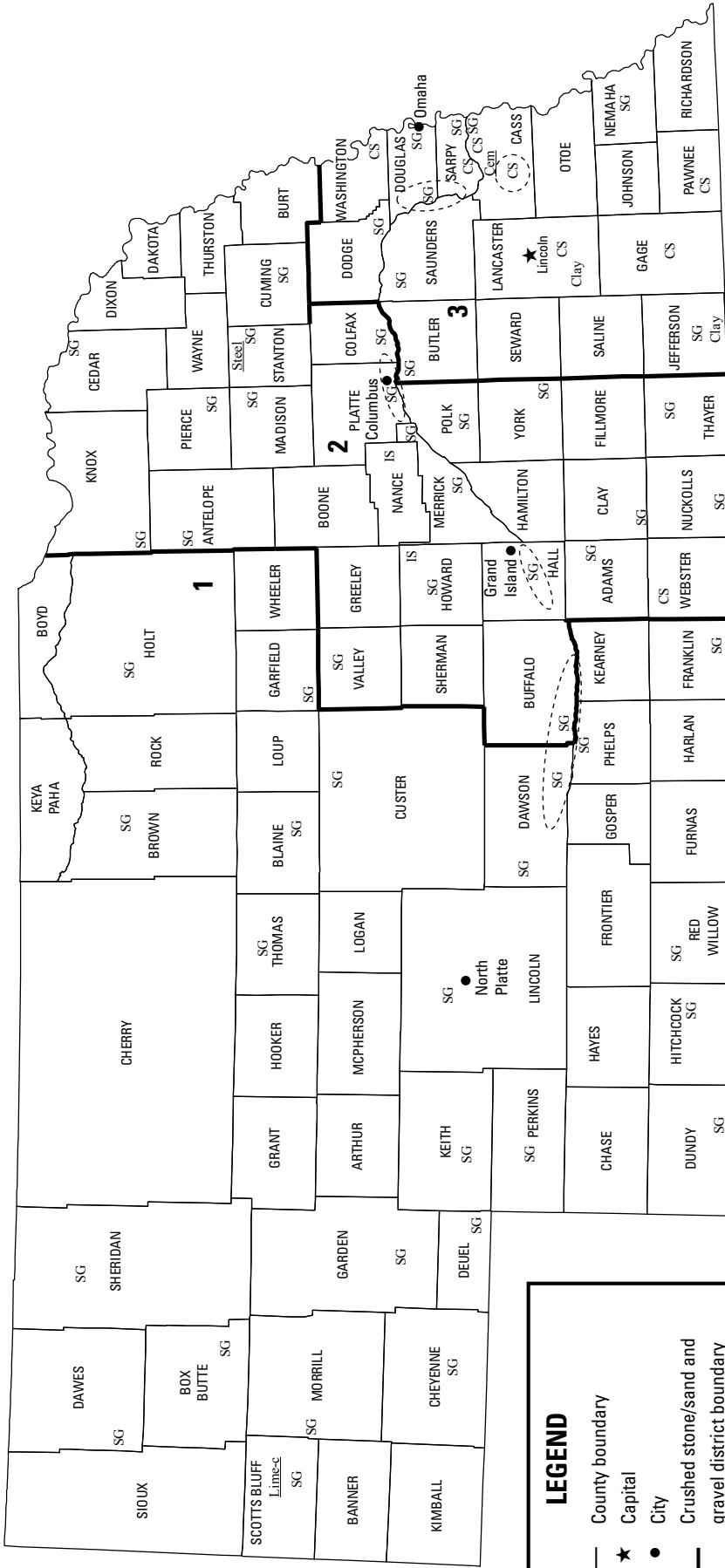




2009 Minerals Yearbook

NEBRASKA

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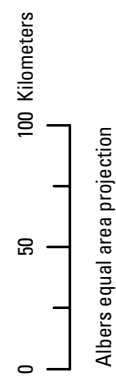


LEGEND

- 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
- IS Industrial sand
- Lime-c Lime plant (captive)
- SG Construction sand and gravel
- Steel Steel plant
- Concentration of mineral operations



Albers equal area projection

THE MINERAL INDUSTRY OF NEBRASKA

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

In 2009, Nebraska's nonfuel raw mineral production¹ was valued at \$248 million, based upon annual U.S. Geological Survey (USGS) data. This was a \$95 million increase from the State's total nonfuel mineral production value of \$153 million in 2008. With the addition of industrial sand and gravel being reported to the USGS in 2009, this apparent increase in total nonfuel mineral production value from 2008 to 2009 was due to the inclusion of previously withheld mineral commodities in the State's total mineral production value in 2009. These mineral commodities—common clay, portland cement, masonry cement, and lime—had been previously excluded from the State's total nonfuel mineral production value to protect company proprietary data (table 1). The combined production value of the remaining mineral commodities in 2008—gemstones, construction sand and gravel, and crushed stone—decreased by a combined \$18 million, or nearly 12%, in 2009. The State's total nonfuel mineral production value increased by \$6.7 million, or 4.6%, from 2007 to 2008. In 2009, the State was ranked 38th among the 50 States in total nonfuel mineral production value and accounted for 0.42% of the U.S. total. Per capita, the State ranked 23d in the Nation in its mineral industry value of nonfuel mineral production; with a population of about 1.8 million, the value of production was about \$138 per capita.

Portland cement, by value, continued to be Nebraska's leading nonfuel mineral commodity, followed by construction sand and gravel, crushed stone, and industrial sand and gravel. The combined values of these four commodities accounted for 99% of the State's total nonfuel mineral production value. The only significant increase in production value took place in lime (actual values withheld—company proprietary data). The largest decrease in production value took place in crushed stone, down by \$18.4 million. Smaller, yet significant, decreases also took place in common clays and portland cement (actual values withheld—company proprietary data). The production value of natural gemstones remained the same as that of 2008.

In 2009, Nebraska ranked 17th in the production of industrial sand and gravel among 34 producing States. This is the first year since 2004 that Nebraska produced industrial sand and gravel. The State ranked among the top 25 producing States for construction sand and gravel and portland cement.

The following narrative information was provided by the University of Nebraska-Lincoln, Nebraska Geological Survey

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 URL <http://minerals.usgs.gov/minerals>.

(NGS).² Production data and information in the text that follows are those reported by the NGS and are based on the agency's own surveys and estimates. These may differ from production figures published by the USGS.

Commodity Review

Industrial Minerals

Cement.—Ash Grove Cement Co. (Overland Park, KS) operated the sole cement plant in the State, located in Louisville, Cass County. Ash Grove decreased cement shipments markedly in 2009 owing to the overall economic downturn. A seasonal layoff began in late December, but a recall of employees was anticipated for the first quarter of 2010. The company celebrated its 80th anniversary in September and opened a new office building designed to meet the Environmental Protection Agency's (EPA) Energy Star Rating. A new monitoring system was also installed throughout the plant's electrical power grid, thereby reducing consumption of electricity and decreasing the operation's overall carbon footprint. Ash Grove received the first annual Business Recognition Award from the Cass County Economic Development Council in 2009 (Ash Grove Cement, 2012). The company exceeded 600 days without a lost-time accident, but reported three lost-time accidents in the second half of the year. Ash Grove will focus on improving safety in 2010.

Clay, Brick, and Tile.—Endicott Clay Products Co., Endicott Tile, LLC (Fairbury, NE) was scheduled to complete several major contracts for the following projects in 2009: Health Services Building at Yale University in New Haven, CT; sites 23 and 24 at Battery Park City in New York, NY; Oak Ridge National Laboratory in Oak Ridge, TN; and Wright-Patterson Air Force Base in Dayton, OH.

Blair Ag, LLC, located in Blair, Washington County, continued to receive shipments of attapulgite (palygorskite) from BASF Corp. in Florida for use in liquid fertilizers and livestock liquid feed supplements. The feed supplements were processed by Blair's sister company, Liquid Feed Commodities, Inc., in Fremont, Dodge County. The market for liquid fertilizers has declined, but there has been some increase in the market for the liquid feed supplements for livestock. Attapulgite is used in combination with xanthan gum as a thixotropic suspending agent in molasses-based liquid feed supplements, which Liquid Feed Commodities supplied to dealers in Colorado, Iowa, Kansas, Minnesota, Missouri, and Nebraska. For the past 2 years, Blair Ag has relied on CSX Corp. as a rail hauler out of BASF's Florida terminal, with interchange to the Union Pacific Railroad for eventual shipment to Nebraska.

²R.M. Joeckel, Ph.D., Research Geologist and Associate Professor, authored the text of the State mineral industry information provided by the Nebraska Geological Survey at the University of Nebraska-Lincoln.

Fly Ash.—NEBCO Inc.'s Nebraska Ash division in Lincoln used 237,000 t of fly ash in 2009, or 59.4% of the fly ash output from source power plants and 71,300 t of bottom ash, or 86.4 % of the output from source power plants—the largest percentage of output used registered since 2006. Tonnages of fly ash and bottom ash used by Nebraska Ash in 2009 represent increases of 29,900 t and 4,400 t, respectively, as compared to those of 2008. In 2009, approximately 60% of Nebraska Ash fly ash was used in concrete and approximately 40% was used in soil stabilization. Approximately 55% of bottom ash recovered was used as aggregate on farm and county roads, and the remaining 45% was incorporated as aggregate in asphaltic concrete.

Omaha Public Power District began producing electricity at the new coal-fired Nebraska City 2 (NC2) generating unit, but owing to environmental regulations, the ash produced there cannot be utilized in any industrial applications; all ash at the site was disposed of in an onsite landfill. NC2 produced 164,200 t of fly ash and 23,600 t of bottom ash in 2009.

Rare-Earth Elements.—In the last quarter of 2009, there was a renewal of interest in the subsurface Elk Creek Carbonatite (ECC) deposit in Johnson and Pawnee Counties in southeastern Nebraska as a source of light rare-earth elements (REEs). Molycorp, Inc., carried out an extensive drilling program in the area in the mid-1980s, but lease agreements were allowed to expire thereafter. By October, several companies, including Gold Canyon Resources, Inc., Puget Ventures, Inc., and Canadian International Minerals, Inc., were making preliminary inquiries about the ECC, investigating datasets, and circulating lease agreements among landowners in Johnson and Pawnee Counties. Multiple public meetings were held for the dissemination of information. Very preliminary discussions of the potential for niobium production from the ECC followed interest in the deposit's potential as a source of REEs, but no specific actions were taken during 2009. Initial discussions of the potential development of phosphate resources associated with the ECC accompanied interest in that deposit's potential as a source of REEs.

Sand and Gravel, Industrial.—Demand for Nebraska hydraulic fracturing (frac) sands began to increase in late 2009 and was projected to continue to increase into 2010. Preferred Sands of Genoa, LLC (a subsidiary of Preferred Sands LLC), which produces almost solely frac sands, began expanding its wet-process capabilities in Genoa, Nance County, approximately 120 km west of Omaha. Nebraska Sand Company, LLC, in Elba, Howard County, shut down temporarily in 2009, but operations were scheduled to start up again in the spring of 2010.

Stone, Crushed.—In June, Martin Marietta Materials Inc. (Raleigh, NC) purchased the Fort Calhoun stone operation of CEMEX Construction Materials South LLC; the Fort Calhoun operation is located in Douglas County, about 20 kilometers (km) north of Omaha. CEMEX had acquired the Fort Calhoun stone operation with its purchase of Rinker Materials Western Inc. (Raleigh, NC) in 2007. Martin Marietta also purchased operations in Wyoming and Utah (Martin Marietta Materials Inc., 2009, p. 19).

The Nebraska Department of Roads (NDOR) recycled more than 16,000 metric tons (t) of crushed concrete, mostly as base-course material and to a lesser extent as material for

surface courses and in soil embedment. The NDOR initiated the use of recycled asphalt pavement (RAP) and the implementation of high-recycle asphalt mixes, thereby decreasing the demand for virgin aggregates. Average RAP use in the NDOR asphalt paving work increased from 2007 to 2009 from 7% to 27%. The NDOR also worked towards developing a new concrete mix (47BR) that is expected to use 100% local aggregates instead of the currently required 30% limestone mix. If this new mix passes testing and is implemented, it may eliminate the need to ship limestone aggregates from southeastern Nebraska to western Nebraska (Nebraska Department of Roads, 2009, p. 22).

Mineral Fuels and Related Materials

Uranium.—The new Class III Underground Injection Control Permit filed in August of 2008 by Crow Butte Resources, Inc., remained under review through 2009. The permit was filed with the Nebraska Department of Environmental Quality (NDEQ) and was intended to address Crow Butte's proposed North Trend Expansion Area. Additional information was requested from Crow Butte by the NDEQ prior to the rendering of a decision. The company's Aquifer Exemption Petition, filed simultaneously in 2008, also remained under review through 2009 (U.S. Nuclear Regulatory Commission, 2008).

Environmental Issues and Recycling

In May, officials from the EPA's Region 7 signed the Final Record of Decision regarding the Omaha Lead Superfund Site. The EPA's selected remedy for the site involved the excavation and replacement of soils that exceeded a value of 400 parts per million lead in 10,000 residential properties in an area of 7,000 hectares. The remediation was estimated to cost \$237 million. In May, the EPA announced that more than \$25 million from the American Recovery and Reinvestment Act of 2009 would be added to the cleanup fund (U.S. Environmental Protection Agency, 2009).

In 2009, Nucor Corp. (Charlotte, NC) employed 422 workers at its electric arc furnace plant in Norfolk, Madison County. The Norfolk plant recycled 700,000 t of scrap steel during the year and continued to invest millions of dollars in its mill's upgrades. Nucor remained a member of the Occupational Safety and Health Administration's Voluntary Protection Program. The company's annual Earth Day scrap drive yielded about 42 t of scrap steel; almost 26 t of computers, televisions, and other electronics; and 3.6 t of aluminum cans. Another company, Magnolia Metal Corp., used 90% recycled copper, bronze, tin, and lead in its casting mix at its foundry and machine shop in Auburn, Nemaha County, approximately 100 km south of Omaha.

Government Programs

The NGS, part of the University of Nebraska-Lincoln's School of Natural Resources, continued as an active participant in the STATEMAP program in 2009. 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 grant 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. The Duncan, Hallam, and Obert 7.5-minute-quadrangle surficial geologic maps were completed and published in November. Sand and gravel resources exist in the area of the Duncan Quadrangle, and potential sand and gravel and agricultural lime resources from the Niobrara Formation were identified in the area of the Obert Quadrangle. Fill material from Pleistocene outwash sands was excavated near the northeastern edge of the area encompassed by the Hallam Quadrangle, and additional sand deposits exist near the land surface in the northern part of the map area.

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

(Thousand metric tons and thousand dollars)

Mineral	2007		2008		2009	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	135 ^e	W	109 ^e	W	W	(3)
Gemstones, natural	NA	4	NA	4	NA	4
Sand and gravel, construction	13,500 ^r	71,100 ^r	14,000 ^r	75,400 ^r	12,900	75,500
Stone, crushed	7,690	75,600	7,960	78,100	6,340	59,700
Combined values of cement, lime, sand and gravel [industrial (2009)], and value indicated by footnote 3	XX	W	XX	W	XX	113,000
Total	XX	147,000 ^r	XX	153,000 ^r	XX	248,000

^eEstimated. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; excluded from "Total." 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.

³Withheld value included in "Combined values" data.

TABLE 2
NEBRASKA: 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	7	7,910	\$77,700	9	6,130	\$58,500
Miscellaneous stone	1	45	443	4	204	1,230
Total	XX	7,960	78,100	XX	6,340	59,700

XX Not applicable.

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

TABLE 3
NEBRASKA: 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	W	W
Other coarse aggregate	14	176
Coarse aggregate, graded:		
Concrete aggregate, coarse	W	W
Bituminous aggregate, coarse	W	W
Fine aggregate (-¾ inch):		
Stone sand, concrete	W	W
Screening (undesignated)	W	W
Other fine aggregate	3	37
Coarse and fine aggregates:		
Unpaved road surfacing	W	W
Crusher run or fill or waste	W	W
Agricultural:		
Limestone	W	W
Other agricultural uses	43	547
Special, asphalt fillers or extenders	W	W
Unspecified: ²		
Reported	4,120	38,300
Estimated	85	811
Total	6,340	59,700

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
NEBRASKA: 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)	872	\$3,750	\$4.30
Plaster and gunite sands	897	4,780	5.33
Asphaltic concrete aggregates and other bituminous mixtures	690	5,810	8.41
Road base and coverings ²	1,840	11,600	6.31
Fill	362	1,080	2.99
Snow and ice control	51	272	5.33
Filtration	3	25	8.33
Other miscellaneous uses	17	392	23.06
Unspecified: ³			
Reported	697	4,100	5.88
Estimated	7,450	43,700	5.87
Total or average	12,900	75,500	5.87

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

²Includes road and other stabilization (lime and cement).

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

TABLE 5
NEBRASKA: 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 (including concrete sand) ²	W	W	574	2,600	W	W
Asphaltic concrete aggregates and road base materials ³	W	W	1,490	10,700	W	W
Fill	49	101	293	930	21	51
Snow and ice control	13	49	30	153	8	71
Other miscellaneous uses ⁴	994	5,020	9	280	1,250	7,730
Unspecified: ⁵						
Reported	36	183	2	28	659	3,890
Estimated	2,290	13,200	2,840	16,500	2,330	14,000
Total	3,380	18,600	5,230	31,200	4,270	25,700

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 gunitite sands.

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

⁴Includes filtration.

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