


1991

Annual Report of Nebraska-1991

Eileen K. Peterson

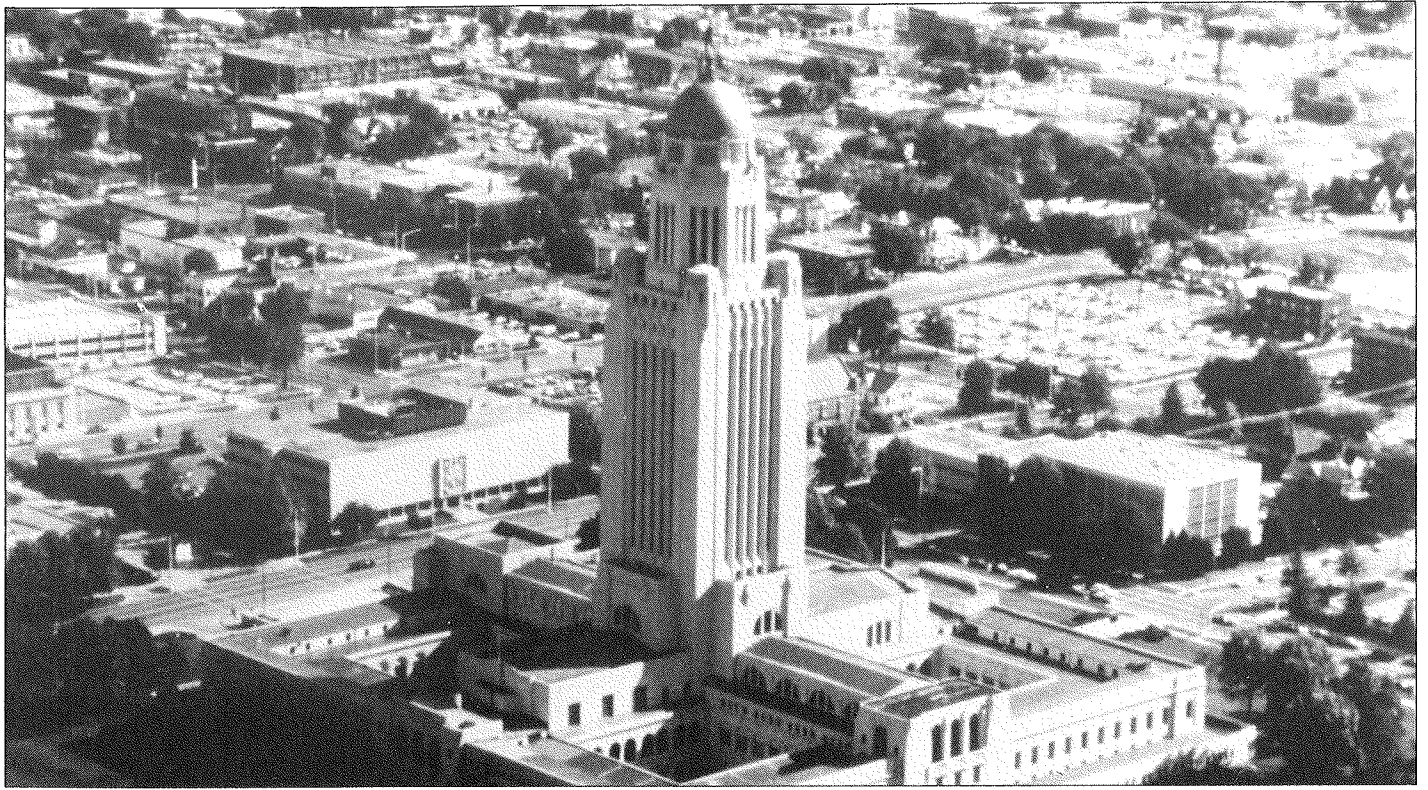
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NEBRASKA

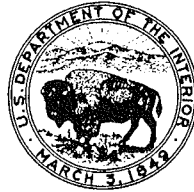
By Eileen K. Peterson and Raymond R. Burchett

1991

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

NEBRASKA



U.S.
DEPARTMENT
OF THE
INTERIOR

Bruce Babbitt
Secretary



BUREAU
OF
MINES

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COVER PHOTO:
 The Nebraska Capitol Building in
 Lincoln symbolizes the cooperative
 working relationship between the U.S.
 Bureau of Mines and the mineral
 agencies of the State.

THE MINERAL INDUSTRY OF NEBRASKA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Conservation and Survey Division of the University of Nebraska (Nebraska Geological Survey) for collecting information on all nonfuel minerals.

By Eileen K. Peterson¹ and Raymond R. Burchett²

The value of nonfuel mineral production in Nebraska decreased slightly from 1990's level. The \$89.4 million of production represented the second year in a row that values have fallen since the record-high level of 1989. Of the six minerals produced in Nebraska, only crushed stone increased in output and value over that of 1990. Nebraska ranked 44th nationally in the production of nonfuel minerals, accounting for less than 1% of the national total. Most nonfuel minerals produced in Nebraska were basic construction materials, and production reflected construction trends in the State. Industrial sand was used in the production of glass and had some applications outside of construction. Lime and talc were processed at plants in Nebraska, both from imported raw materials. Uranium and oil and gas were also produced in 1991. No metals were reported mined in Nebraska in 1991.

TRENDS AND DEVELOPMENTS

The decreases in nonfuel mineral output and value primarily can be ascribed to lower production of clays and sand and gravel. Lower production levels of these construction materials reflects a decrease in construction activities. The number of new private and public residential units authorized for construction during the year fell about 9% from 1990 figures to 6,235 units. The value of nonresidential construction awards for offices, stores, industrial plants, and alterations or additions to existing buildings, etc., fell to \$288 million from \$357 million in 1990. Major construction projects included work on I-80, I-480, I-680, and reconstruction of runways at Offutt Air Base south of Omaha.

The 8th U.S. Circuit Court of Appeals ruled that the U.S. Environmental Protection Agency was justified in approving injection mining of uranium by

Ferret Exploration Co. near Crawford, Dawes County.³

EMPLOYMENT

In 1991, about 2,000 persons were employed in mining industries and construction activities employed another 27,600 people. The average unemployment rate for Nebraska was 2.7%, up slightly from the 1990 figure of 2.2%.⁴

Average annual pay in mining was about \$24,000, while the average wage in Nebraska was \$18,400.

REGULATORY ISSUES

Work continued toward establishing a five-State, low-level radioactive waste facility in northeastern Nebraska. The Nebraska Department of Environmental Control began reviewing an application filed by US Ecology to build and operate the facility west of Butte in Boyd County. Nebraska was chosen as the host State for the facility by the Central Interstate Low-

TABLE 1
 NONFUEL MINERAL PRODUCTION IN NEBRASKA¹

Mineral	1989		1990		1991	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays metric tons	224,624	\$880	227,292	\$1,685	198,319	\$909
Gemstones	NA	2	NA	7	NA	1
Sand and gravel (construction) thousand short tons	*15,200	*41,800	11,453	30,056	*10,100	*27,300
Stone (crushed) do.	3,978	20,050	*4,000	*21,200	4,861	23,328
Combined value of cement, lime, and sand and gravel (industrial)	XX	41,085	XX	37,381	XX	37,854
Total	XX	103,817	XX	90,329	XX	89,392

¹Estimated. NA Not available. XX Not applicable.

²Production as measured by mine shipments, sales, or marketable production (including consumption by producers)

Level Radioactive Waste Compact. Members of the five-State compact are Arkansas, Kansas, Louisiana, Nebraska, and Oklahoma. Opposition to establishment of the waste facility in Nebraska continued.

A State-funded joint research project was initiated to study potential uses of the 336,000 metric tons (370,000 short tons) of fly ash produced in Nebraska each year as a byproduct of burning coal to make electricity. The \$165,000 research project will include the State, the University of Nebraska-Lincoln, two public power districts, and a private company.

The city of Fremont is seeking approval from the Nebraska Department of Environmental Control and the U.S. Army Corps of Engineers to use fly ash blocks as bank stabilization along the Platte River. The city powerplant generates about 10,911 metric tons (12,000 short tons) per year of fly ash that is now being shipped to a landfill.

LEGISLATION AND GOVERNMENT PROGRAMS

The 1991 Nebraska Legislature passed and the Governor signed LB837 giving the State more control over the proposed five-State, low-level radioactive waste facility to be built in Boyd County. The bill provided for all five States to accept proportional liability for waste stored at the facility. The bill also provided that Nebraska would have two additional members on the compact commission with one member voting, and that Nebraska would set fees for storage of waste. All five States in the compact will have to pass bills accepting the terms of Nebraska LB837.

The Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, has published a series of updated test-hole logbooks on exploration drilling in the State. Additional publications were completed on the mineral industry of Nebraska and coal, ocher, oil and gas, and uranium deposits in the State.

FUELS

The Nebraska Oil and Gas Conservation Commission reported that 1,716 wells produced about 5.8 million barrels of oil and 657 million cubic feet of casinghead gas. Of the 128 wells drilled in 1991, 49 were for exploration, 71 for development, and 8 were service wells. Well completions were up almost 7% from 1990 levels. Counties showing the most exploration and development wells were Cheyenne, Hays, Hitchcock, and Kimball. Two natural gas processing plants are in Nebraska, one in Kimball County and the other in Cheyenne County. The plants produced natural gasoline, cycle products, liquid petroleum gases, and ethane.

In May, Ferret Exploration Co. began in situ leaching of uranium under a 1,200-hectare tract (3,000 acres) southeast of Crawford in Dawes County. About 12.2 million kilograms (27 million pounds) of uranium oxide reserves is reported in the Ferret properties. Ferret holds leases on another 85,000 hectares (210,000 acres) in the panhandle of Nebraska. Ferret began production at a rate of 181,400 kilograms (400,000 pounds) per year. Ore grades range from 0.05% to 0.5% uranium oxide along the 9.7-kilometer-long (6-mile-long) ore trend. Bicarbonate of soda, carbon dioxide, and oxygen are being introduced into the ore body to dissolve and free the uranium. An on-site processing plant dewateres the yellowcake (uranium) before it is sent out of State for final processing. Ferret has a 3-year, 68,000-kilogram-per-year (150,000-pound-per-year) contract for uranium with a domestic utility.⁵

REVIEW BY NONFUEL MINERAL COMMODITIES

Industrial Minerals

Nonfuel mineral production in Nebraska consisted entirely of industrial minerals. In 1991, the Nebraska Geological Survey, Conservation and Survey Division, noted there were 737 mining operations active in the State, 26

limestone quarries, 676 sand and gravel pits, 8 clay or shale pits, 25 sandstone pits, 1 quartzite quarry, and 1 uranium mine.⁶ These 737 operations represented an increase of 11 over those of 1990. Total land disturbance during 1991 was estimated to be 156 hectares (385 acres); 75 hectares (186 acres) was restored.

Cement.—Cement was again the leading nonfuel mineral produced in Nebraska, in terms of total value of output. The Ash Grove Cement Co., with a single plant near Louisville in Cass County, remained Nebraska's only producer of portland and masonry cement. Production of portland cement increased slightly and masonry decreased slightly. Limestone, shale, and gypsum were the chief raw materials used in cement manufacture.

Clays.—Output of clay dropped almost 13% from that of 1990. Most of the production came from Jefferson and Cass Counties. Clay was used in the manufacture of common and face bricks and cement. Three brick companies operated in the State, Endicott Clay Products Co. near Endicott in Jefferson County, Yankee Hill Brick Manufacturing Co. near Lincoln in Lancaster County, and Omaha Brick Works near Ralston in Douglas County.

Lime.—Lime was produced by Western Sugar Co. primarily for use in refining sugar from sugar beets. Limekilns at Scottsbluff and Mitchell in Scotts Bluff County and at Bayard in Morrill County produced lime from limestone imported from Wyoming.

Sand and Gravel.—Construction.—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; data for odd-numbered years are based on annual company estimates. This chapter contains actual data for 1990 and estimates for 1989 and 1991.

Construction sand and gravel was the second most important nonfuel mineral commodity produced in Nebraska in

TABLE 2
NEBRASKA: CRUSHED STONE¹ SOLD OR USED BY PRODUCERS
IN 1991, BY USE

(Thousand short tons and thousand dollars)

Use	Quantity	Value	Unit value
Coarse aggregate (+1 inch): Riprap and jetty stone ²	114	668	\$5.86
Coarse and fine aggregates: Unpaved road surfacing ³	530	3,014	5.69
Other construction materials ⁴	1,388	7,293	5.26
Agricultural: Agricultural limestone ⁵	253	1,675	6.62
Chemical and metallurgical: Cement manufacture	W	W	1.92
Special: Asphalt fillers or extenders	W	W	10.00
Other miscellaneous uses ⁶	886	1,760	1.99
Unspecified: ⁷			
Actual	1,658	8,798	5.31
Estimated	31	121	3.87
Total ⁸	4,861	23,328	4.80

W Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

¹Includes limestone.

²Includes macadam.

³Includes graded road base or subbase and crusher run or fill or waste.

⁴Includes concrete aggregate, coarse, bituminous aggregate, coarse, stone sand, bituminous mix or seal, screening, undesignated, and roofing granules.

⁵Includes poultry grit and mineral food, and other agricultural uses.

⁶Includes withheld amounts for chemical and metallurgical and special.

⁷Includes production reported without a breakdown by use and estimates for nonrespondents.

⁸Data may not add to totals shown because of independent rounding.

terms of value and the largest in terms of distribution of activity and number of companies and people involved.

Sand and gravel was mined in all but 8 of Nebraska's 93 counties.⁷ Estimated output for 1991 declined slightly from 1990 levels. The largest producers operated in the east-central area of the State near Omaha and Lincoln. More than one-third of the State's total output comes from Cass, Douglas, Sarpy, and Saunders Counties in the Omaha area.

Industrial.—The amount of industrial sand produced in the State has remained nearly constant for 3 years with a very small level of output.

Stone (Crushed).—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; data for even-numbered years are based on annual company estimates. This chapter contains estimates for 1990 and actual data for 1989 and 1991.

In terms of quantity, crushed stone was the third most significant nonfuel mineral produced in Nebraska. Production of

crushed stone in 1991 was significantly higher than that in 1989, the last year of actual data. Production increased more than 20% from 1989 and almost 18% over the estimated 1990 figure. The average unit value was \$4.80 per short ton, compared with \$5.04 in 1989. Limestone was the principal type of stone produced.

Limestone was produced from 13 quarries in eastern Nebraska, 5 near Weeping Water in Cass County. Cass County was the leader in limestone production followed by Washington County. Principal producers of crushed limestone are Fort Calhoun Stone Co., Kerford Limestone Co., and Martin Marietta Aggregates with operations in Cass, Pawnee, and Washington Counties. In October, Kerford Limestone began work on a new limestone mine near Weeping Water when reserves at the company's other limestone mine were nearly depleted. The new underground mine has 50 years of limestone reserves.⁸ Nebraska's limestone is used primarily for aggregate in concrete, cement manufacture, road base, riprap,

agricultural lime, wallstone, and mineral fillers.

Limestone processing in Nebraska included three firms that produce agricultural lime exclusively near Garland in Seward County, near Nelson in Nuckolls County, and near Ponca in Dixon County. Most of the crushed limestone plants in southeastern Nebraska also produced some agricultural lime. Three firms produced finely ground limestone (calcium carbonate) for feed supplements and fillers for cement, paint, and rubber. Producers were Kerford Limestone and Iowa Limestone Co. west of Weeping Water in Cass County and Texasgulf Inc. southeast of Weeping Water. One plant located on a reclaimed quarry site west of Weeping Water in Cass County produced limestone pellets for agricultural, lawn, and garden use. Thirteen Nebraska firms, seven near Omaha, cut stone imported from other States.

Other Industrial Minerals.—Fertilizer plants in Nebraska produced anhydrous ammonia, urea, and ammonium nitrate. Major producers were Arcadian Corp. at La Platte in Sarpy County, Farmland Industries Inc. at Fremont in Dodge County and near Beatrice in Gage County, and Cominco-American, also operating near Beatrice in Gage County. One plant, owned by Cyprus Mines Corp., United Sierra Div., near Grand Island in Hall County, produced ground talc from raw material obtained outside the State. The talc was used in paper, ceramics, rubber, paint, insecticides, and textiles.

Perlite was manufactured by the Zonolite Div. of W. R. Grace & Co. near Omaha in Douglas County. Crude perlite was imported from other States and expanded at the Omaha plant. The expanded perlite was sold as filler material, as aggregate for plaster and concrete, and as a horticultural product.

The only producer of vermiculite in Nebraska was Construction Products Div. of W. R. Grace & Co. The plant, near Omaha, processes crude vermiculite from Montana. The expanded vermiculite was used principally for insulation, concrete

TABLE 4
PRINCIPAL PRODUCERS

Commodity and company	Address	Type of activity	County
Cement:			
Ash Grove Cement Co. ¹	Box 25900 Overland Park, KS 66225	Quarry, clay pit, plant	Cass.
Clays:			
Endicott Clay Products Co.	Box 17 Fairbury, NE 68352	Pit and plant	Jefferson.
Omaha Brick Works	Box 27073 Ralston, NE 68127	do.	Douglas.
Yankee Hill Brick Manufacturing Co.	Route 1 Lincoln, NE 68502	do.	Lancaster.
Lime:			
Western Sugar Co.	Anaconda Towers Suite 1400 555 17th St. Denver, CO 80202	Plants	Morrill and Scotts Bluff.
Sand and gravel (construction):			
Central Sand & Gravel Co. Inc.	Box 626 Columbus, NE 68601	Pits and plants	Butler, Madison, Nance, Platte.
Hartford Sand & Gravel Co.	Box Z Valley, NE 68064	Dredges and pits	Dodge and Douglas.
Lyman-Richey Sand & Gravel Corp.	4315 Cuming St. Omaha, NE 68131	Pits and plants	Cass, Douglas, Platte, Saunders.
Western Sand & Gravel Co. ²	Box 28 Ashland, NE 68003	Dredges and pits	Cass, Dodge, Saunders.
Stone (crushed):			
Limestone-dolomite:			
Fort Calhoun Stone Co.	1255 South St. Blair, NE 68008	Quarries and plants	Washington.
Kerford Limestone Co.	Box 449 Weeping Water, NE 68463	Quarry and plant	Cass.
Martin-Marietta Aggregates, Central Div.	Box 30013 Raleigh, NC 27622	Quarries and plants	Cass, Nemaha, Nuckolls, Pawnee, Saunders.

¹Also clays in Cass County.

²Also industrial sand in Saunders County.

MINERAL-RELATED GOVERNMENT AGENCIES

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