

THE MINERAL INDUSTRY OF IOWA

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

In 2000, the estimated value¹ of nonfuel mineral production for Iowa was \$510 million, based upon preliminary U.S. Geological Survey (USGS) data. This was a more than 4% increase from that of 1999² and followed a 5.6% decrease in 1999 from that of 1998. The State rose to 28th from 30th in rank among the 50 States in total nonfuel mineral production value, of which Iowa accounted for more than 1% of the U.S. total.

Cement (portland and masonry), by value, was Iowa's leading commodity in 2000, closely followed by crushed stone, which accounted for more than 40% of the State's total nonfuel mineral value. Crushed stone had been first since taking over the lead from cement in 1982, except for 1990 when cement again had the highest value. Construction sand and gravel was third, accounting for 11% of Iowa's nonfuel mineral value. In 1999, most of the State's decrease in value resulted from a significant decrease in the value of cement, alongside a smaller drop of nearly \$7 million in the value of crushed stone. Construction sand and gravel rose by more than \$2 million, while lime was down by almost as much. All other changes were marginal (table 1).

Compared with USGS preliminary estimates of quantities produced in the other 49 States in 2000, Iowa remained second in crude gypsum and rose in rank to sixth from ninth in the production of peat. Additionally, the State produced significant quantities of portland cement, crushed stone, and construction sand and gravel (listed in descending order of value). No metals were mined in Iowa; all of the State's metal production, such as raw steel, resulted from the processing of materials acquired from other domestic and foreign sources.

The Geological Survey Bureau³ (GSB) of the Iowa Department of Natural Resources provided the following

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or 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 2000 USGS mineral production data published in this chapter are preliminary estimates as of July 2001 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. A telephone listing of the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1999 may vary from the Minerals Yearbook, Area Reports: Domestic 1999, Volume II, owing to the revision of preliminary 1999 to final 1999 data. Data for 2000 are preliminary and are expected to change; related rankings may also change.

³Robert M. McKay, Research Geologist, authored the text of minerals industry information provided by the Iowa Geological Survey Bureau.

narrative information. During calendar year 2000, Iowa recorded 237 licensed mineral producers operating 1,071 registered mineral production sites in 97 of the State's counties. Of the 237 licensed producers, 30 were Iowa county governments and 11 were from outside of the State.

The 30 licensed county governments operated a total of 115 registered sites. Of the county-operated sites, 13 produced crushed stone, 101 produced sand and gravel, and 1 site produced both crushed stone as well as sand and gravel. Five counties operated crushed stone quarries, and Fayette County, with eight registered sites, operated the greatest number of county licensed quarries. The other 25 county governments operated sand and gravel pits, and Kossuth County, with 10 registered sites, operated the greatest number of county-licensed sand and gravel pits.

The greatest number of registered sites and the widest production distribution in any product class was in sand and gravel. Sand and gravel was produced in 86 counties from a total of 612 registered sites. Western Iowa, with its deeply buried bedrock, hosted the top 10 counties in terms of the number of sand and gravel sites. These top 10 western counties had 198 active sand and gravel pits representing approximately 30 % of the total number of active sand and gravel pits statewide. Sac County, with 27 registered sand and gravel pits, had more sand and gravel production sites than any other county statewide. Hallett Materials Co. operated the greatest number of sand and gravel sites, with a total of 56 sites distributed across 23 counties.

Crushed stone (mined exclusively from sedimentary limestone and dolostone strata) was produced from 455 registered sites distributed across 66 counties. Of these 455 crushed stone sites, 11 were underground mine operations and the remainder were surface quarries. Northeastern Iowa, with its readily accessible shallow bedrock, hosted the top 10 counties in terms of the number of crushed stone sites. These top 10 northeastern counties had 236 active quarries representing 52% of the total number of active crushed stone production sites statewide. Winneshiek County, with 38 registered quarries, had the greatest number of crushed stone sites of all counties statewide. Wendling Quarries, Inc. operated the greatest number of quarries with a total of 63 sites distributed across 11 counties, while Martin Marietta Materials Inc. operated the greatest number of underground mines with 5 mines in 5 counties (Jasper, Marion, Poweshiek, Story, and Webster).

Two new underground limestone mines transitioned from initial development to normal production during 2000: the Lyle Mine in Keokuk County, operated by Douds Stone Co., and the Laughlin Mine in Marion County, operated by Bruening Rock Products Inc. Both mines have entry declines from existing quarries down to Mississippian limestone and dolostone strata. The Lyle Mine will operate primarily within the Burlington Formation, while the Laughlin Mine's initial mining level is the

Spergen Formation with potential for mining deeper horizons in the future.

Crude gypsum was produced in 3 counties by 5 companies operating at 13 sites and 1 solid waste agency operating 1 mine in Webster County. The U.S. Gypsum Co., having the largest number of production sites, operated 7 of these 13 sites with 6 quarries in Webster County and 1 underground mine in Des Moines County. Webster County remained the leader in the number of gypsum mines, having 12 quarries operated by 5 companies. New gypsum quarry operators included BPB America, Inc., which assumed operation of the Celotex #3 pit, and North Central Waste Agency, which is removing small quantities of gypsum from an older inactive pit in preparation for conversion to a regional landfill.

Clay was produced at 10 sites in 5 counties by 6 companies.

Clay used in the manufacture of portland cement was mined at six pits in Cerro Gordo and Scott Counties, and clay used for other clay products (primarily brick) was taken from four pits in Dallas and Woodbury Counties. Clay was mined at one registered site for fill material.

In May, the GSB completed a new open file map entitled "Surficial Geology of the Des Moines Lobe of Iowa: Hamilton and Webster Counties." The map, prepared at a scale of 1:100,000, delineates areas of potential sand and gravel resources along outwash terraces and upland landscape positions on Wisconsinan age glacial deposits of the Des Moines Lobe in north-central Iowa. The two-county mapping project was partially sponsored and funded by the USGS National Cooperative Geologic Mapping Program. The map is available from the GSB as Open File Map 2000-1.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN IOWA 1/ 2/

(Thousand metric tons and thousand dollars)

| Mineral | 1998 | | 1999 | | 2000 p/ | |
|---|----------|------------|----------|---------|----------|---------|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Cement, portland | 2,610 | 211,000 e/ | W | W | W | W |
| Clays, common | 301 | 1,040 | 302 | 1,040 | 302 | 1,040 |
| Gemstones | NA | 4 | NA | 2 | NA | 2 |
| Sand and gravel, construction | 13,500 | 58,500 | 13,500 | 60,600 | 12,100 | 56,000 |
| Stone, crushed | 41,800 | 219,000 | 42,100 | 212,000 | 43,000 | 222,000 |
| Combined values of cement (masonry), gypsum (crude), lime, peat, sand and gravel (industrial), and values indicated by symbol W | XX | 27,700 | XX | 216,000 | XX | 231,000 |
| Total | XX | 518,000 | XX | 489,000 | XX | 510,000 |

e/ Estimated. p/ Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "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.

TABLE 2
IOWA: CRUSHED STONE SOLD OR USED, BY KIND 1/

| Kind | 1998 | | | | 1999 | | | |
|--------------------|--------------------|---------------------------------|-------------------|------------|--------------------|---------------------------------|-------------------|------------|
| | Number of quarries | Quantity (thousand metric tons) | Value (thousands) | Unit value | Number of quarries | Quantity (thousand metric tons) | Value (thousands) | Unit value |
| Limestone | 216 r/ | 41,500 r/ | \$217,000 r/ | \$5.24 r/ | 208 | 41,800 | \$210,000 | \$5.02 |
| Dolomite | 2 r/ | W | W | W | 2 | W | W | W |
| Limestone-dolomite | 2 r/ | W | W | W | 2 | W | W | W |
| Total or average | XX | 41,800 | 219,000 | 5.25 | XX | 42,100 | 212,000 | 5.03 |

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

TABLE 3
IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 1999, BY USE 1/ 2/

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|--|---------------------------------------|----------------------|---------------|
| <u>Construction:</u> | | | |
| <u>Coarse aggregate (+1 1/2 inch):</u> | | | |
| Macadam | 288 | \$1,210 | \$4.20 |
| Riprap and jetty stone | 160 | 1,090 | 6.83 |
| Filter stone | 443 | 1,830 | 4.14 |
| Other coarse aggregate | 41 | 395 | 9.63 |
| <u>Coarse aggregate, graded:</u> | | | |
| Concrete aggregate, coarse | 977 | 5,540 | 5.67 |
| Bituminous aggregate, coarse | 559 | 3,560 | 6.37 |
| Bituminous surface-treatment aggregate | 140 | 792 | 5.66 |
| Railroad ballast | 3 | 13 | 4.33 |
| <u>Fine aggregate (-3/8 inch):</u> | | | |
| Stone sand, bituminous mix or seal | 161 | 801 | 4.98 |
| Screening, undesignated | 230 | 1,020 | 4.43 |
| <u>Coarse and fine aggregates:</u> | | | |
| Graded road base or subbase | 1,330 | 7,920 | 5.93 |
| Unpaved road surfacing | 4,170 | 22,100 | 5.29 |
| Crusher run or fill or waste | 729 | 3,090 | 4.24 |
| Other coarse and fine aggregates | 3 | 15 | 5.00 |
| Other construction materials | 277 | 1,400 | 5.06 |
| <u>Agricultural:</u> | | | |
| Agricultural limestone | 737 | 3,070 | 4.17 |
| Poultry grit and mineral food | W | W | W |
| Other agricultural uses | 567 | 2,130 | 3.76 |
| Chemical and metallurgical, cement manufacture | 1,130 | 4,380 | 3.86 |
| <u>Unspecified: 3/</u> | | | |
| Reported | 16,500 | 84,000 | 5.08 |
| Estimated | 14,000 | 67,000 | 4.96 |
| Total or average | 42,100 | 212,000 | 5.03 |

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

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

2/ Includes dolomite, limestone, and limestone-dolomite.

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

TABLE 4
IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999, BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

| Use | District 1 | | District 2 | | District 3 | | District 4 | |
|-----------------------------------|------------|----------|--------------|---------------|-----------------------|---------------|---------------|---------------|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Construction: | | | | | | | | |
| Coarse aggregate (+1 1/2 inch) 2/ | -- | -- | W | W | W | W | 559 | 2,360 |
| Coarse aggregate, graded 3/ | -- | -- | W | W | W | W | 583 | 2,870 |
| Fine aggregate (-3/8 inch) 4/ | -- | -- | W | W | W | W | 111 | 507 |
| Coarse and fine aggregate 5/ | -- | -- | 1,990 | 10,500 | 229 | 1,230 | 2,210 | 9,380 |
| Other construction materials | -- | -- | W | W | W | W | W | W |
| Agricultural 6/ | -- | -- | W | W | 626 | 2,380 | W | W |
| Chemical and metallurgical 7/ | -- | -- | -- | -- | -- | -- | 1,130 | 4,380 |
| Unspecified: 8/ | | | | | | | | |
| Reported | W | W | 2,790 | 14,600 | 5,930 | 29,100 | 2,100 | 11,300 |
| Estimated | -- | -- | 2,800 | 14,000 | -- | -- | 3,600 | 18,000 |
| Total | W | W | 8,990 | 47,200 | 6,940 | 33,400 | 10,700 | 50,100 |
| Use | District 5 | | District 6 | | Unspecified districts | | | |
| | Quantity | Value | Quantity | Value | Quantity | Value | | |
| Construction: | | | | | | | | |
| Coarse aggregate (+1 1/2 inch) 2/ | -- | -- | 162 | 1,080 | -- | -- | | |
| Coarse aggregate, graded 3/ | -- | -- | 285 | 1,930 | -- | -- | | |
| Fine aggregate (-3/8 inch) 4/ | -- | -- | 61 | 322 | -- | -- | | |
| Coarse and fine aggregate 5/ | -- | -- | 1,810 | 12,000 | -- | -- | | |
| Other construction materials | -- | -- | W | W | -- | -- | | |
| Agricultural 6/ | -- | -- | 198 | 843 | -- | -- | | |
| Chemical and metallurgical 7/ | -- | -- | -- | -- | -- | -- | | |
| Unspecified: 8/ | | | | | | | | |
| Reported | W | W | W | W | W | W | | |
| Estimated | W | W | W | W | -- | -- | | |
| Total | W | W | 5,920 | 33,300 | W | W | | |

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

3/ Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), and railroad ballast.

4/ Includes screening (undesignated), and stone sand (bituminous mix or seal).

5/ Includes crusher run (select material or fill), graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

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

7/ Includes cement manufacture.

8/ Reported and estimated production without a breakdown by end use.

TABLE 5
IOWA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
BY MAJOR USE CATEGORY 1/

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|---|---------------------------------------|----------------------|---------------|
| Concrete aggregate (including concrete sand) | 2,320 | \$11,100 | \$4.77 |
| Plaster and gunite sands | 73 | 395 | 5.41 |
| Concrete products (blocks, bricks, pipe, decorative, etc.) | 71 | 560 | 3.89 |
| Asphaltic concrete aggregates and other bituminous mixtures | 890 | 3,460 | 3.89 |
| Road base and coverings 2/ | 1,760 | 5,310 | 3.02 |
| Fill | 602 | 1,750 | 2.90 |
| Snow and ice control | 81 | 332 | 4.10 |
| Roofing granules | 4 | 27 | 6.75 |
| Other miscellaneous uses | 34 | 295 | 8.68 |
| Unspecified: 3/ | | | |
| Reported | 2,950 | 16,600 | 5.61 |
| Estimated | 4,700 | 21,000 | 4.47 |
| Total or average | 13,500 | 60,600 | 4.49 |

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

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

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

TABLE 6
IOWA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
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 (including concrete sand) | 454 | 2,830 | 574 | 2,690 | 116 | 450 |
| Plaster and gunite sands | 9 | 71 | W | W | W | W |
| Concrete products (blocks, bricks, pipe, decorative, etc.) | W | W | 47 | 459 | 4 | 25 |
| Asphaltic concrete aggregates and other bituminous mixtures | W | W | 501 | 2,070 | 176 | 498 |
| Road base and coverings 2/ | 994 | 3,080 | 307 | 865 | W | W |
| Fill | 44 | 127 | 117 | 478 | 87 | 259 |
| Snow and ice control | W | W | 26 | 121 | 22 | 101 |
| Other miscellaneous uses 3/ | 4 | 44 | W | W | 6 | 25 |
| Unspecified: 4/ | | | | | | |
| Reported | 841 | 6,120 | 265 | 1,300 | 1,250 | 6,250 |
| Estimated | 1,000 | 4,100 | 510 | 2,500 | 2,700 | 12,000 |
| Total | 3,560 | 16,900 | 2,380 | 10,700 | 4,750 | 20,900 |
| Use | Districts 4 | | District 5 | | District 6 | |
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Concrete aggregate (including concrete sand) | 795 | 3,290 | -- | -- | 385 | 1,820 |
| Plaster and gunite sands | 31 | 153 | -- | -- | W | W |
| Concrete products (blocks, bricks, pipe, decorative, etc.) | -- | -- | -- | -- | W | W |
| Asphaltic concrete aggregates and other bituminous mixtures | -- | -- | -- | -- | W | W |
| Road base and coverings 2/ | W | W | 71 | 208 | W | W |
| Fill | 97 | 291 | -- | -- | 257 | 593 |
| Snow and ice control | W | W | -- | -- | W | W |
| Other miscellaneous uses 3/ | W | W | -- | -- | 15 | 162 |
| Unspecified: 4/ | | | | | | |
| Reported | 152 | 641 | -- | -- | 446 | 2,250 |
| Estimated | 170 | 720 | 200 | 890 | 110 | 480 |
| Total | 1,260 | 5,170 | 266 | 1,100 | 1,290 | 5,850 |

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 road and other stabilization (cement and lime).

3/ Includes railroad ballast and roofing granules.

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