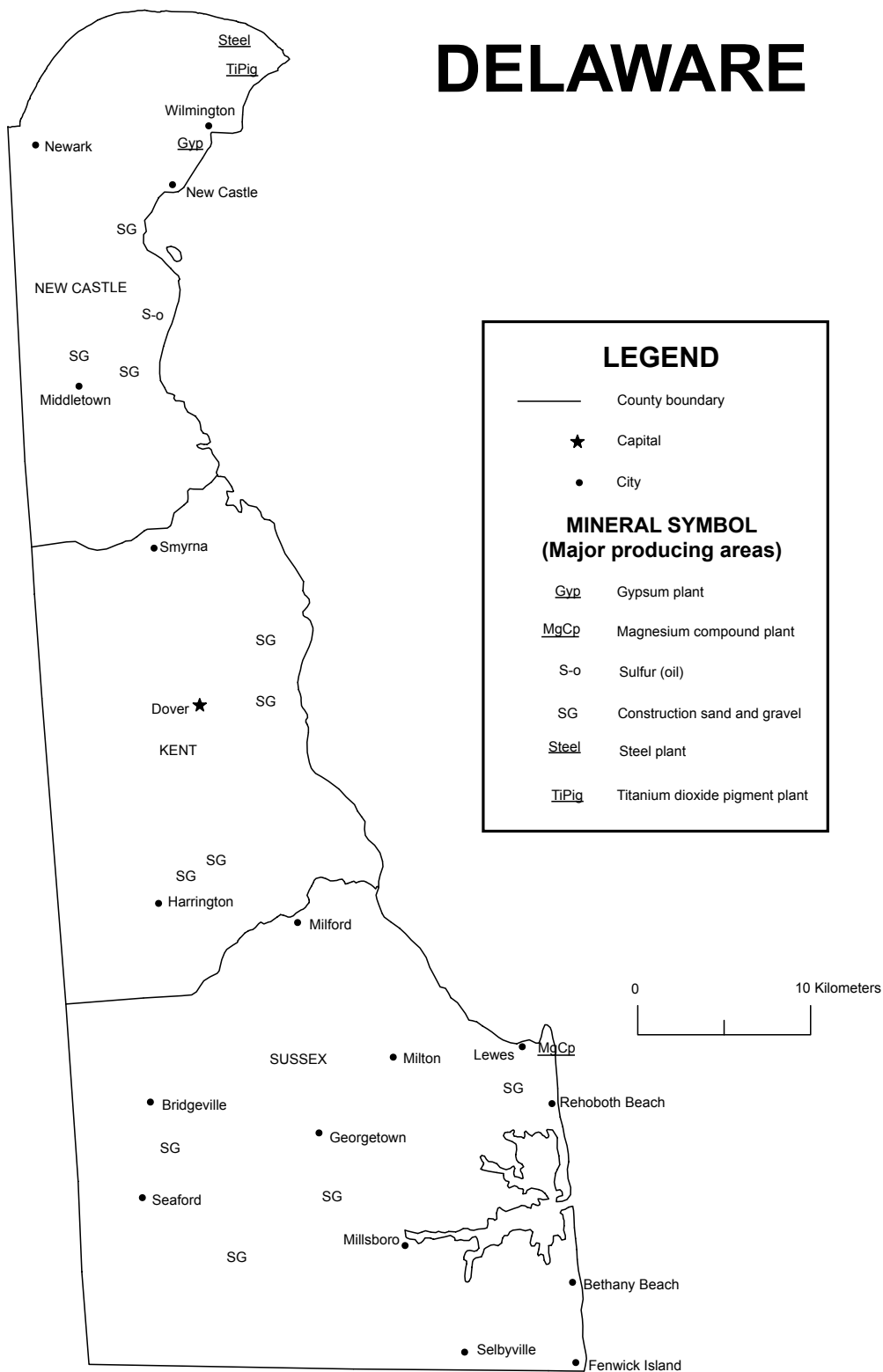


DELAWARE



Source: Delaware Geological Survey/U.S. Geological Survey (2004)

THE MINERAL INDUSTRY OF DELAWARE

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

In 2004, Delaware's nonfuel raw mineral production was valued¹ at \$21.9 million, based upon annual U.S. Geological Survey (USGS) data. This was a more than 22% increase from that of 2003² and followed a 3.4% increase from 2002 to 2003. Because production data for magnesium compounds were withheld to protect company proprietary data, the State's actual annual total values are significantly higher than those listed in table 1.

In 2004, Delaware's leading nonfuel mineral continued to be construction sand and gravel, the production of which rose by nearly 17% with a 22% or \$4 million increase in value. Magnesium compounds production was down slightly with a decrease in value of about \$1 million. In 2003, with a 16% increase in the production of construction sand and gravel, the increase in value was comparatively smaller, up about \$0.6 million. Magnesium compounds production rose with a more than \$1 million increase in value. Gemstones mined by hobbyists were valued at the same level for both years (table 1).

In 2004, Delaware continued to rank fourth of five producing States in the quantities of magnesium compounds produced. Magnesium compounds, extracted from seawater close to the mouth of the Delaware Bay, near Lewes, Sussex County, were used to manufacture chemical and pharmaceutical products.

The narrative information that follows was provided by the Delaware Geological Survey³ (DGS). According to the DGS, there are at least 11 major sand and gravel production operations in Delaware. General locations are shown on the map on the facing page and on the DGS Web site at URL <http://www.udel.edu/dgs/Minres/sandmap.html>. The DGS estimates of the quantities of sand and gravel produced from the State's natural resources are typically higher than those reported by the USGS (table 1). Reasons for this difference may include (1) not all major producers necessarily report production to the USGS, (2) Government agencies or companies that produce from pits for their own use do not necessarily report production, (3) many operations that mine relatively small amounts of sand and gravel may not have been contacted and, therefore, do not report production, and (4) production of sand from offshore areas for beach replenishment is not included in USGS figures. For example, according to the Delaware Department of Natural Resources and Environmental Control, in 1998, approximately 2.2 million metric tons of sand with an estimated value of \$6.9 million was dredged offshore Delaware and placed on beaches along the Atlantic Coast and Delaware Bay. These data, not included in the USGS final 1998 construction sand and gravel data would have nearly doubled that production data and significantly increased value for that year (U.S. Geological Survey, 2001). Based upon DGS estimates, an additional total of about 112,000 metric tons [65,700 cubic meters (86,000 cubic yards)] of sand at an estimated value of more than \$350,000 was dredged offshore and placed on Delaware Bay beaches from 1999 through 2003. During 2004, the DGS continued work to further evaluate sand resources offshore and anticipated that it would present its updated estimates during 2005. The DGS reported that the State dredged sand and gravel offshore to replenish areas along Delaware's Atlantic Coast.

The U.S. Department of the Interior's Minerals Management Service (MMS) continued to provide support for studies to characterize offshore sand resources in State and Federal waters for possible use in beach replenishment. Through 2003, the DGS had identified 16 coastal areas of Delaware (covering nearly 28 square kilometers) to be excellent or good sand resource areas containing an estimated 80 million cubic meters of the resource. This work initially was done through the evaluation of 268 vibracores along with geologic mapping and evaluation of seismic data. Exploration and evaluation activities including that of an additional 24 vibracores continued during 2004.

The DGS continues to operate and maintain the DGS Atlantic Outer Continental Shelf Core and Sample Repository. Federal agencies, other State agencies, and private institutions that recognize the value of having a centralized repository contributed samples. The repository contains samples from all 51 oil and gas exploratory wells drilled on the North, Middle, and South Atlantic Outer Continental Shelf between 1977 and 1984. Samples include cores, unwashed cuttings, vials containing samples processed for micropaleontology and palynology, thin sections of cores and cuttings, and micropaleontology and palynology slides. A description of the DGS repository can be found on the DGD Internet Web site at URL <http://www.udel.edu/dgs/Minres/ocsrepostxt.html>, and a summary of holdings can be viewed at URL <http://www.udel.edu/dgs/Minres/ocsrepos.htm>. The DGS is designated as the primary repository for these samples by the MMS.

The DGS continued to be actively involved in the mineral industry in Delaware through its identification and evaluation of sand and gravel resources as part of its geologic and hydrologic mapping programs and through service on a county committee involved in evaluating and renewing applications for extractive use operations.

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.

³John H. Talley, Director and State Geologist, authored the text of the State mineral industry information provided by the Delaware Geological Survey.

Reference Cited

U.S. Geological Survey, 2001, The mineral industry of Delaware, *in* Area reports—Domestic: U.S. Geological Survey Minerals Yearbook 1999, v. II, p. 10.1 – 10.2

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

(Thousand metric tons and thousand dollars unless otherwise specified)

| Mineral | 2002 | | 2003 | | 2004 | |
|-------------------------------|----------|--------|----------|--------|----------|--------|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Gemstones | NA | 1 | NA | 1 | NA | 1 |
| Magnesium compounds | W | (3) | W | (3) | W | (3) |
| Sand and gravel, construction | 2,190 | 17,300 | 2,550 | 17,900 | 2,980 | 21,900 |
| Total | XX | 17,300 | XX | 17,900 | XX | 21,900 |

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 2a
 DELAWARE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
 BY MAJOR USE CATEGORY¹

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|--|---------------------------------------|----------------------|---------------|
| Concrete aggregate and concrete products | 964 | \$7,290 | \$7.56 |
| Fill | 803 | 3,420 | 4.26 |
| Unspecified: ² | | | |
| Reported | 622 | 6,300 | 10.12 |
| Estimated | 160 | 940 | 5.95 |
| Total or average | 2,550 | 17,900 | 7.05 |

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

²Estimated production without a breakdown by end use.

TABLE 2b
 DELAWARE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
 BY MAJOR USE CATEGORY¹

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|---------------------------|---------------------------------------|----------------------|---------------|
| Fill ² | 1,040 | \$6,620 | \$6.33 |
| Unspecified: ³ | | | |
| Reported | 1,120 | 10,700 | 9.57 |
| Estimated | 820 | 4,600 | 5.62 |
| Total or average | 2,980 | 21,900 | 7.36 |

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

²Includes concrete aggregate and plaster and gunite sands.

³Estimated production without a breakdown by end use.