

MAINE

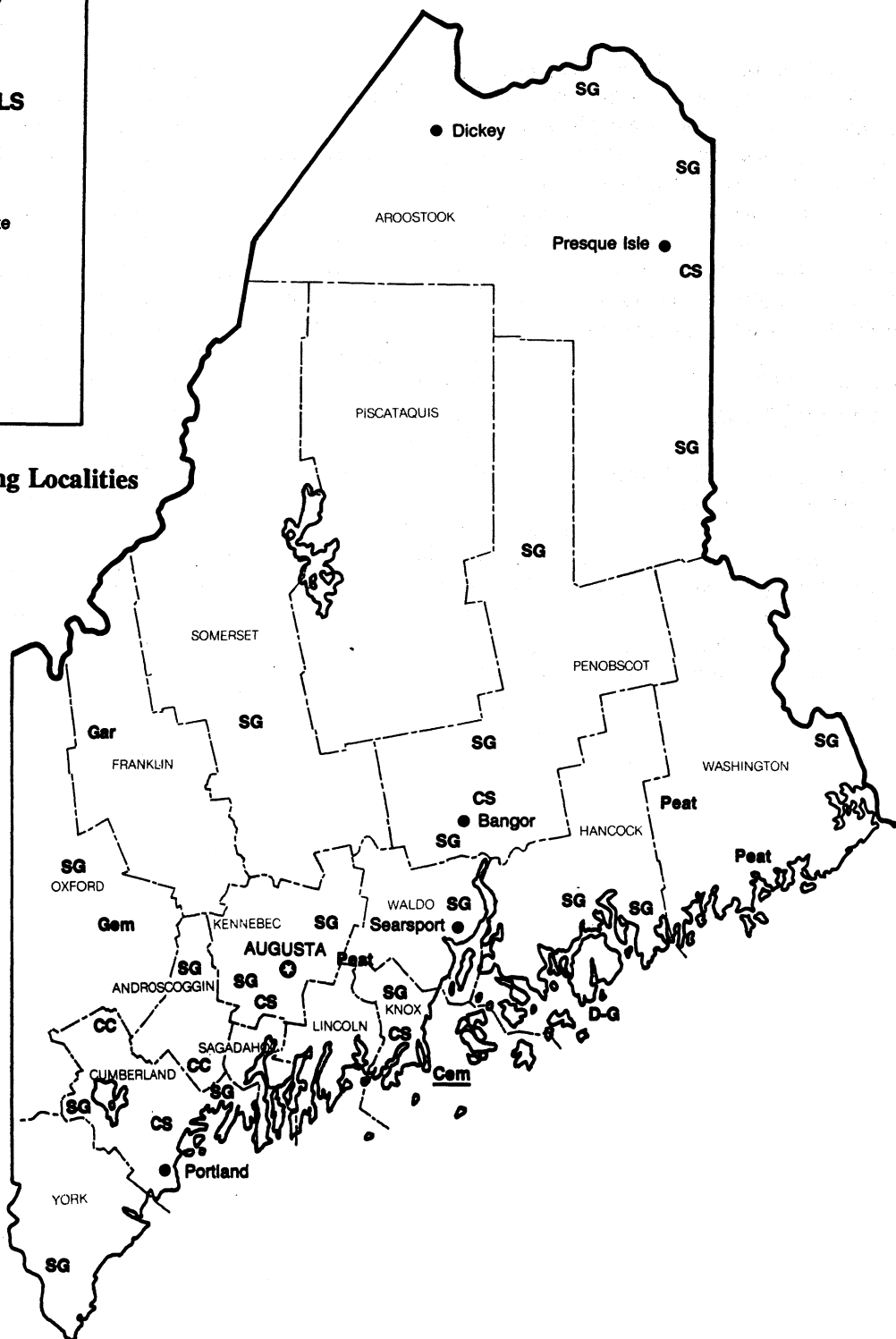
LEGEND

- State boundary
- - - County boundary
- ⊙ Capital
- City

MINERAL SYMBOLS

- CC Common Clay
- Cem Cement plant
- CS Crushed Stone
- D-G Dimension Granite
- Gar Garnet
- Gem Gemstones
- Peat Peat
- SG Sand and Gravel

Principal Mineral-Producing Localities



THE MINERAL INDUSTRY OF MAINE

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 Maine Geological Survey for collecting information on all nonfuel minerals.

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The value of Maine's nonfuel mineral production in 1990 was \$62.5 million, a \$2.1 million decrease compared with that of 1989. Construction sand and gravel accounted for almost one-half of the State's total mineral value. Other commodities produced, in descending order of value, were portland cement, crushed stone, dimension stone, masonry cement, gem stones, clay, and peat.

TRENDS AND DEVELOPMENTS

In 1990, the value of total construction contracts, which relied heavily on mineral aggregates, was down 23% from that of 1989. The hardest hit sector was in residential construction, which fell 39% from \$308 million in 1989 to \$189 million in 1990. The value of nonresidential building construction contracts was down 13% from \$127 million to \$110 million. The only increase reported was in nonbuilding

construction contracts, which rose by 23% from \$149 million to \$183 million in 1990. However, the increase in this category was not enough to offset the losses in the other two categories. As a result of these construction declines, demand for aggregates and building materials remained soft in 1990. Decreases in output were reported for construction sand and gravel, common clay, and portland and masonry cement. Estimated crushed stone output remained essentially the same as that of 1989.

However, there were some bright spots for the construction and mineral industries. A \$40 million bond issue for a passenger rail line had been passed, and the installation of new wastewater treatment systems, which received the bulk of the public works funds, was scheduled to continue. A 30-mile-long portion of the Maine Turnpike was also scheduled for expansion.⁴

Over the past decade, many mining companies have been exploring

throughout the State primarily for massive sulfide-base deposits. At least three companies have announced a desire to obtain the environmental permits necessary to place three deposits into production. As a result of this renewed interest in metal mining in the State, new legislation to rewrite the State's mining regulations was signed into law in 1990. The present rules were not written with mining in mind and would effectively preclude any metal mining activities in Maine. The State's last metal mine ceased operations in 1977.

REGULATORY ISSUES

The Maine Low Level Radioactive Waste Authority (MLLRWA) gave the go-ahead to examine about one-half of Maine Yankee nuclear powerplant's 740-acre site in Wiscasset for a possible low-level radioactive waste (LLRW) site. The nuclear powerplant was the first "volunteer" to offer its compound as a

TABLE 1
NONFUEL MINERAL PRODUCTION IN MAINE¹

Mineral	1988		1989		1990	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones	NA	\$150	NA	W	NA	W
Sand and gravel thousand short tons	10,183	33,007	*8,600	*\$30,100	7,865	\$29,349
Stone:						
Crushed do.	*1,400	*5,300	1,591	8,801	*1,700	*8,700
Dimension short tons	*7,512	*5,924	W	W	W	W
Combined value of cement, clays (common), garnet (abrasive 1988), peat, and values indicated by symbol W	XX	23,379	XX	25,753	XX	24,495
Total	XX	67,760	XX	64,654	XX	62,544

*Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" figure. XX Not applicable.

¹Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

disposal site for the State's low-level radioactive waste. The majority of the radioactive waste in the State is generated by Maine Yankee. The MLLRWA was also considering a site in Aroostook County. In September, the Maple Mountain Manganese Co. offered its 500-acre site west of Bridgewater in Aroostook County as another possible disposal site. The company purchased Maple Mountain in 1987 to mine manganese, but after feasibility studies indicated that mining was neither possible nor profitable, offered the site to the waste authority. However, in November, voters in the community overwhelmingly voted to reject the mining company's offer. The MLLRWA, in turn, also rejected the proposal because before any site can be used as a LLRW dump, it must be approved by 60% of the voters in the community, according to Maine law. The MLLRWA must find a low-level radioactive waste disposal site in Maine in the event the State is unable to negotiate a contract with an out-of-State disposal facility.

EMPLOYMENT

In 1990, the average number of workers⁵ employed in the mineral extractive industries in 1990 was 1,058. This included 449 workers in the sand and gravel industry, 300 in the stone industry, and 7 at other nonmetal operations. In addition, 302 workers were employed at mineral-related mills and preparation plants in the State.

LEGISLATION AND GOVERNMENT PROGRAMS

Legislation to rewrite Maine's nonferrous metal mining regulations was signed into law (Public Law 1990, Chapter 874) in April. Chapter 874 established upfront fees to process nonferrous metal mining applications and an annual licensing fee of \$10,000. The nonferrous metal mining applications are distinguished from other mining applications such as those for sand and gravel pits and stone quarries. The law

also required the Maine Department of Environmental Protection and the Maine Land Use Regulation Commission to jointly adopt or amend rules for this activity by February 1, 1991.

Several bills concerning environmental issues were signed into law in 1990. Some of the bills addressed the disposal of dredged material, air and water quality improvement, and amending the State's existing hazardous and solid waste laws.

The Maine Geological Survey (MGS), a bureau of the Department of Conservation, continued to map, interpret, and publish geological information and provide technical assistance to the minerals industry, planning and regulatory agencies, and the general public. During the year, the MGS continued on an aggregate assessment of the offshore sand and gravel resources, including an evaluation of the heavy-mineral content of the sands. The study was in response to the continuing pressure on land-based aggregate resources.

REVIEW BY NONFUEL MINERAL COMMODITIES

Industrial Minerals

Cement.—Maine remained the only New England State that produced cement. Dragon Products Co., a subsidiary of CDN Cementos del Norte, produced portland and masonry cement at a plant in Thomaston, Knox County. The company also operated 16 ready-mixed concrete plants throughout the State. In 1990, both production and value of portland and masonry cement declined from 1989 levels. The primary reason for the decline was the continuing depressed construction market in the Northeast.

A new \$9.4 million scrubbing system began operating at the Thomaston plant in 1990. The new system recycles waste cement kiln dust (CKD) and reduces sulfur dioxide (SO₂) emissions. The process, named the Passamaquoddy Technology Recovery Scrubber, uses 90% of the SO₂ and a portion of the carbon dioxide (CO₂) in the kiln exhaust

gas to recycle all of the plant's CKD into kiln feed, potassium fertilizer, and distilled water. The system can also be used to reclaim landfilled CKD. One-half of the cost of constructing the new scrubber was funded through the U.S. Department of Energy's Innovative Clean-Coal Technology Programs.

During the year, Dragon submitted a proposal to the Wiscasset planning board to build a railroad-to-barge transfer station at the city's waterfront. The company plans to ship the cement by rail to the terminal from its Thomaston plant and then barge it to Boston and New Hampshire. Although the proposal received unanimous approval by the town planning board, construction of the transfer station is contingent on a number of conditions. These conditions include meeting State Department of Environmental Protection standards for dust emission, monitoring noise levels, alerting lobstermen of barge traffic schedules, and that there be no stockpiles of materials at the station.

Clays.—Morin Brick Co., the State's only producer of clay, mined common clay at operations in Androscoggin and Cumberland Counties primarily for use in brick manufacturing. After almost 4 years of seeking approval, the company received State Department of Environmental Protection (DEP) approval to mine clay on an 89-acre parcel of land near Auburn, Androscoggin County. The area to be mined is adjacent to the area currently being worked by the company. In order to mine the parcel, Morin must abide by DEP regulations concerning truck traffic movement, air quality, streamwater runoff, establishment of buffer zones, and noise control.

Gemstones.—Semiprecious and gem-quality mineral specimens continued to attract rockhounds and mineral specimen collectors to the State. Many fine specimens of amethyst, aquamarine, citrine, heliodor, morganite, topaz, and tourmaline, to name a few, have been collected in the State. Popular collecting localities include quarries in

Androscoggin, Oxford, and Sagadahoc Counties.

In late 1989, the world's largest gem morganite crystal was unearthed at the Buckfield Quarry in Buckfield. The crystal, dubbed the "Rose of Maine," was 115,000 carats and weighed 50 pounds. Shortly thereafter, following a dispute over whether to form a company to sell the gem and market the site as a tourist attraction, the owners split the crystal into at least three pieces to increase its marketability.⁶ A separate, large morganite crystal, which came from the same rock cavity, was donated to the Maine State Museum for display.

The Plumbago Mining Co. continued to mine a significant commercial amethyst deposit near the town of Sweden. The company began mining gem-quality amethyst from the deposit in 1989.

Graphite (Synthetic).—Synthetic graphite was produced by Fiber Materials Inc. at its plant in Biddeford, York County.

Peat.—Peat was mined by two companies in Maine. Dear Hill Farms Inc. mined peat for horticultural purposes in Waldo County, and Down East Peat LP hired a private contractor to mine peat for use as fuel at a 22.8-megawatt, peat-fired electric powerplant near Deblois, Washington County. Fuel for the plant was harvested from the adjacent 1,200 acre Denbo Heath Bog.

Perlite (Expanded).—Crude perlite shipped in from New Mexico was expanded by the Chemrock Corp. at a plant in Rockland, Knox County. Both quantity and value increased over 1989 levels. The expanded perlite was sold primarily as a filter aid.

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 1988 and 1990 and estimates for 1989.

Construction sand and gravel was the State's leading mineral commodity produced and accounted for almost one-half of the State's total value. In 1990, output declined about 9% from the estimated output of 1989; value remained essentially the same, the result of higher average unit values. The average unit value in 1990 was \$3.73. A total of 80 companies or towns mined construction sand and gravel from 103 operations at 344 pits in 16 counties. Leading counties, in order of output, were York, Cumberland, Androscoggin, Penobscot, and Somerset. Major uses were for construction and roadbuilding.

Stone.—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 1988 and 1990 and actual data for 1989.

Crushed.—Crushed stone was the State's third leading mineral commodity after construction sand and gravel and portland cement. The estimated crushed stone production of 1.7 million short tons was 7% higher than that of 1989. Leading counties, in order of output, were Cumberland, Knox, and Penobscot. Limestone, sandstone, traprock, and marl were quarried primarily for cement manufacture, concrete aggregate, and railroad ballast.

In response to citizens' complaints concerning blasting at a crushed stone quarry in Topsham, the township enacted a blasting ordinance. The ordinance, the first of its kind in Maine, set limits for ground vibration and shock waves from blasting in quarries, at construction sites, and in other areas where explosives are used. Town officials used ordinances developed in Huntsville, AL, to write the ordinance, which requires blasters to get town permits and notify nearby residents of expected blasts. The ordinance also requires testing of nearby wells following blasts and seismographic recordkeeping.

Dimension.—New England Stone Industries Inc. quarried dimension granite

at Crotch Island, Hancock County. In 1990, estimated output and value increased over 1989 levels. Most of the stone was used for veneer, flagging, curbing, and rough blocks.

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⁴Rock Products. Aggregate: Fearful but Cautiously Optimistic in 1991. V. 93, No. 11, Dec. 1990, p. 39.

⁵"Average number of workers" is summary of the average number of workers at individual mining establishments during periods (not necessarily continuous) of active operations.

⁶Portland Herald Press. "Ross of Maine" Morganite Spilt by Mining Brothers. Jan. 9. 1990, p. 1.

TABLE 2
MAINE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1990, BY MAJOR USE CATEGORY

Use	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregates (including concrete sand)	\$775	\$3,942	\$5.09
Plaster and gunite sands	2	9	4.50
Concrete products (blocks, bricks, pipe, decorative, etc.)	W	W	7.73
Asphaltic concrete aggregates and other bituminous mixtures	405	2,791	6.89
Road base and coverings ¹	1,676	4,848	2.90
Fill	987	2,976	3.02
Snow and ice control	757	1,846	
Other ²	105	742	7.07
Unspecified: ³			
Actual	267	472	1.77
Estimated	2,892	11,723	4.05
Total or average	47,865	29,349	3.73

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

¹Includes road and other stabilization (cement and lime.)

²Includes filtration.

³Includes production reported without a breakdown by end use and estimates for nonrespondents.

⁴Data do not add to total shown because of independent rounding.

TABLE 3
PRINCIPAL PRODUCERS

Commodity and company	Address	Type of activity	County
Cement:			
Dragon Products Co. ¹	Box 191 Thomaston, ME 04861	Quarry and plant	Knox.
Clays:			
Morin Brick Co.	Mosher Rd. Gorham, ME 04038	Pits and mills	Androscoggin and Cumberland.
Graphite (synthetic):			
Fiber Materials Inc.	Biddleford Industrial Park Biddleford, ME 04005	Plant	York.
Perlite (expanded):			
Chemrock Corp.	1101 Kermit Dr. Suite 503 Nashville, TN 37217	do.	Knox.
Sand and gravel (construction):			
W. E. Cloutier Co. Inc.	Box 1849 Lewiston, ME 04240	Pit	Androscoggin.
Harry C. Crooker & Sons Inc.	Old Bath Rd. Brunswick, ME 04011	Pits and plants	Androscoggin, Lincoln, Sagadahoc.
Dragon Products Co.	Box 191 Thomaston, ME 04861	do.	Androscoggin, Hancock, Oxford, Somerset.
R. J. Grondin & Son	Rural Route 4 Gorham, ME 04038	Pits	Cumberland and York.
Lane Construction Corp.	Box 103 Bangor, ME 04401	do.	Aroostook, Penobscot, Waldo, Washington.
Maine Department of Transportation	State House Station 16 Augusta, ME 04333	Pits and plants	Androscoggin, Kennebec, Knox, Oxford, Penobscot, Waldo.
Portland Sand & Gravel	94 Walnut St. Portland, ME 04091	Pit	Cumberland.
Tilcon Inc.	Box 209 Fairfield, ME 04937	Pits	Penobscot and York.
Stone (1989):			
Crushed:			
Blue Rock Industries	58 Main St. Westbrook, ME 04092	Quarries and mill	Cumberland and Kennebec.
The Cook Concrete Co.	960 Ocean Ave. Portland, ME 04103	Quarry and mill	Cumberland.
Dragon Products Co.	Box 191 Thomaston, ME 04861	Quarries	Aroostook and Knox.
Lane Construction Corp.	Box 103 Bangor, ME 04401	do.	Aroostook and Penobscot.
Dimension:			
New England Stone Industries Inc.	Providence Pike Smithfield, RI 02917	Quarry	Hancock.

¹Also sand and gravel and stone.