The Mineral Industry of Maryland

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

By William Kebblish[1]

The value of Maryland's mineral production in 1979 totaled $193 million, reflecting a substantial increase over the 1978 production value of $165 million. This overall increase was due to increases in both the production and value of stone, sand and gravel, and cement.

Stone and sand and gravel were the most valuable nonfuel mineral commodities produced in the State, followed by portland and masonry cement; all contributed significantly to the State's economy.

Table 1.—Nonfuel mineral production in Maryland[1]

Mineral	1977		1978		1979	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2] ---- thousand short tons	893	$2,344	948	$2,642	975	$2,854
Lime ---- do	W	W	12	436	12	444
Peat ---- do	3	W	3	W	3	W
Sand and gravel ---- do	11,702	29,562	13,310	34,950	13,988	39,033
Stone:						
Crushed ---- do	16,736	49,772	19,427	66,263	21,561	80,550
Dimension ---- do	30	908	28	1,048	30	1,150
Combined value of cement, clays (ball clay), gem stones (1977), and values indicated by symbol W ----	XX	50,405	XX	59,296	XX	68,931
Total ----	XX	132,991	XX	164,635	XX	192,962

W Withheld to avoid disclosing company proprietary data; value included in "Combined value" figure. XX Not applicable.

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

[2]Excludes ball clay; value included in "Combined value" figure.

Table 2.—Value of nonfuel mineral production in Maryland, by county[1]

(Thousands)

County	1977	1978	Minerals produced in 1978 in order of value
Allegany	$1,089	W	Stone.
Anne Arundel	4,066	$4,996	Sand and gravel.
Baltimore[2]	W	W	Stone, sand and gravel, clays.
Caroline	W	W	Sand and gravel.
Carroll	W	W	Cement, stone, clays.
Cecil	r8,927	10,996	Stone, sand and gravel.
Charles	W	3,910	Sand and gravel.
Dorchester	W	W	Do.
Frederick	W	W	Cement, stone, clays, lime.
Garrett	W	W	Stone, sand and gravel, peat.
Harford	W	3,540	Stone, sand and gravel.
Howard	2,406	1,881	Stone.
Kent	19	W	Clays.
Montgomery	6,065	W	Stone.
Prince Georges	12,125	13,679	Sand and gravel, clays.
Queen Annes	W	W	Stone.
St. Marys	451	398	Sand and gravel.
Washington	W	W	Cement, stone, clays.
Wicomico	W	W	Sand and gravel.
Worcester	695	1,048	Do.
Undistributed[3]	97,151	124,182	
Total[4]	132,991	164,635	

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Undistributed."
[1]Calvert, Somerset, and Talbot Counties are not listed because no production was reported.
[2]Includes Baltimore City.
[3]Includes gem stones and values indicated by symbol W.
[4]Data may not add to totals shown because of independent rounding.

Table 3.—Indicators of Maryland business activity

	1977	1978	1979p	1978-79 percent change
Employment and labor force, annual average:				
Total civilian labor force, thousands	1,944.0	2,032.0	2,092.0	+3.0
Unemployment, do	118.0	114.0	123.0	+7.9
Employment (nonagricultural):				
Mining[1], do	(2)	(2)	(2)	--
Manufacturing, do	235.1	242.0	245.7	+1.5
Contract construction, do	92.2	102.5	104.1	+1.6
Transportation and public utilities, do	80.9	84.6	87.2	+3.1
Wholesale and retail trade, do	368.4	378.6	382.5	+1.0
Finance, insurance, real estate, do	82.8	85.6	89.2	+4.2
Services, do	[3]305.4	[3]317.3	[3]331.2	+4.4
Government, do	374.3	383.0	380.2	-.7
Total nonagricultural employment[1], do	1,539.1	1,593.6	1,620.1	+1.7
Personal income:				
Total, millions	$31,519	$34,582	$37,955	+9.8
Per capita	$7,619	$8,348	$9,150	+9.6
Construction activity:				
Number of private and public residential units authorized	30,431	[4]30,442	26,056	-14.4
Value of nonresidential construction, millions	$439.0	$647.3	$678.9	+4.9
Value of State road contract awards, do	$98.0	$53.0	$100.6	+89.8
Shipments of portland and masonry cement to and within the State, thousand short tons	1,368	1,512	1,480	-2.1
Nonfuel mineral production value:				
Total crude mineral value, millions	$133.0	$164.6	$193.0	+17.2
Value per capita, resident population	$32	$40	$47	+17.5
Value per square mile	$12,597	$15,595	$18,244	+17.0

pPreliminary.
[1]Includes bituminous coal and gas extraction.
[2]Included in "Services."
[3]Includes "Mining."
[4]Series revised in 1978; data not comparable with those of prior years.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

Trends and Developments.—Studies have indicated that shortages of sand and gravel will develop in the Baltimore area within the next 35 years due to economic growth and the conversion of agricultural and mineral lands for other uses. In 1979, the Maryland Geological Survey compiled maps showing lands with potential sand and gravel deposits in Cecil, Harford, Baltimore, Anne Arundel, Howard, and Prince Georges Counties. These maps also indicate resources that have been preempted by development, government ownership, zoning restrictions, or other legal regulations. It was anticipated that land use planners, as well as the mining industry, will use this information to minimize future land use conflicts.

Employment.—A total of 2,705 workers was employed in Maryland's nonfuel mining industry in 1978. The stone industry was the leading employer in this sector, with 1,546 workers, including 487 cement industry employees. Sand and gravel operations employed 832 workers, and other nonmetallic mining operations employed 327 workers.

Legislation and Government Programs.—As of July 1, 1979, the Tidewater Administration began functioning within the Department of Natural Resources. The Administration coordinates and assumes responsibility for activities affecting the Chesapeake Bay. Included within the Administration is the former Coastal Zone Management Unit, which received Federal approval of the State's Coastal Zone Management Program on September 30, 1978.

An aeromagnetic map of the State on a scale of 1:250,000 was published through a cooperative effort of the U.S. Geological Survey and the Maryland Geological Survey. It is expected that this map will aid in interpreting geology and exploring for new mineral deposits. Other geophysical maps cover parts of Queen Annes, Dorchester, Kent, Cecil, Harford, and Baltimore Counties.

On October 20, 1978, the Bureau of Mines' Avondale Research Center was dedicated in Avondale, Md., about 6 miles from downtown Washington, D.C. The new site was obtained as a replacement for the Bureau's former College Park (Maryland) Metallurgy Research Center. Research at the center includes efforts to advance the technology of flotation for low-grade ores; identifying, recovering, and refining metals from scrap, industrial wastes, and urban refuse; and investigating ways to protect alloys from oxidation, corrosion, and water.

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Cement.—Production of portland cement reached an alltime high in Maryland in 1979 that was just slightly more than the previous production record established in 1978. Masonry cement production also continued to increase; 1979 production was slightly ahead of that of 1978. The average unit value for both types of cement increased each year since 1977. Four companies located in three counties produced portland cement; one company also produced masonry cement.

Raw materials used in making portland cement included limestone, cement rock, clay and shale, sand, gypsum, and iron-bearing materials.

Clays.—Both the production and value of clay in 1979, excluding ball clay, were slightly higher than the 948,000 short tons of common clay and shale, valued at $2.64 million, that was produced in 1978. In 1979, about 67% of the State's clay and shale output was used to manufacture portland cement; the remaining 33% was used for common and face brick. Seven companies with 10 operations were located in 6 counties. Frederick County, with three operations, was the leading producer, followed by Carroll and Washington Counties. Ball clay was produced in Baltimore County and was used mainly for crockery and other earthenware.

Gem Stones.—Gem stones and mineral specimens were collected principally by amateurs, and the estimated value of these stones and minerals totaled less than $1,000 in 1979.

Gypsum.—Gypsum mined in other States was shipped into Maryland and calcined by National Gypsum Co. and United States Gypsum Co. in Baltimore. Both production and value in 1979 increased slightly over 1978 levels. Calcined gypsum was used mainly for prefabricated products such as regular wallboard, fire-resistant type X wallboard, and lath.

Lime.—S. W. Barrick & Sons, Inc., Frederick County, was the only lime producer in the State. Nearly 60% of the lime

produced was quicklime; the remainder was hydrate. The lime output was used chiefly for agricultural purposes and was consumed mainly in Maryland.

Peat.—Garrett County Processing & Packaging Corp., in the western part of the State, was the only producer of peat. Both production and value remained relatively unchanged in 1978 and 1979. Peat was used mainly for soil improvement.

Perlite.—Prior to 1979, perlite was imported into the State and expanded in one plant in Baltimore. In 1979, production ceased because adequate supplies of the processed product were available from surrounding States. Expanded perlite was used as an aggregate in plaster and for horticultural purposes.

Sand and Gravel.—The production and value of construction sand and gravel in 1979 increased slightly over the 13.3 million short tons, valued at nearly $35 million, that was produced in 1978. No industrial sand was produced in the State.

In 1979, sand and gravel was produced in 12 of the State's 23 counties by 46 companies from 52 deposits. Leading producing counties were Prince Georges, Anne Arundel, and Cecil, all located near the highly industrialized areas of the State. Sand and gravel was used in building construction, paving, concrete products, and as fill.

Slag.—In 1979, Maryland was one of the 10 leading slag-producing States in the Nation. Iron blast-furnace slag, a byproduct of the steelmaking process, was produced in the Baltimore area. Of the total output, 70% was air-cooled slag and 30% was expanded slag. Air-cooled slag was used mainly in highway construction, and expanded slag, which is lightweight and has high fire resistance, was used for lightweight concrete blocks.

Table 4.—Maryland: Construction sand and gravel sold or used, by major use category

Use	1977			1978			1979		
	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregate	5,812	$15,581	$2.68	7,068	$19,867	$2.81	6,203	$18,177	$2.93
Plaster and gunite sands	NA	NA	NA	32	100	3.11	W	W	W
Concrete products	1,635	4,182	2.54	1,335	3,275	2.45	1,311	3,418	2.61
Asphaltic concrete	2,206	5,122	2.32	2,449	5,684	2.32	3,335	9,443	2.83
Roadbase and coverings	955	1,699	1.78	1,286	2,641	2.05	1,631	4,157	2.55
Fill	585	1,217	2.08	659	1,515	2.30	1,007	1,895	1.88
Snow and ice control	NA	NA	NA	W	W	W	4	9	2.06
Other uses	507	1,781	3.51	477	1,866	3.91	499	1,935	3.88
Total[1] or average	11,702	29,562	2.53	13,310	34,950	2.63	13,988	39,033	2.79

NA Not available. W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data may not add to totals shown because of independent rounding.

Table 5.—Maryland: Construction sand and gravel sold or used by producers

Use	1977			1978			1979		
	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton
Sand	7,080	$16,919	$2.39	7,808	$19,729	$2.53	8,024	$21,326	$2.66
Gravel	4,622	12,644	2.74	5,499	15,218	2.77	5,965	17,707	2.97
Total[1] or average	11,702	29,562	2.53	13,310	34,950	2.63	13,988	39,033	2.79

[1]Data may not add to totals shown because of independent rounding.

Stone.—Stone was Maryland's leading mineral commodity in 1979. Both production and value exceeded the 19.5 million short tons, valued at $67.3 million, that was produced in 1978.

In 1979, 36 quarries were operating in 11 of the State's 23 counties. Crushed stone was produced from 31 quarries, dimension stone was produced from 6 quarries, and one quarry produced both types. Leading counties for the production of crushed stone were Baltimore, Frederick, Montgomery, and Carroll, all located north of Washington, D.C.

Dimension stone was produced in Baltimore, Garrett, Howard, and Montgomery Counties. Nearly 70% of the the dimension stone quarried was sandstone; the remainder was mica schist.

Eight of the State's 36 quarries each produced over 900,000 short tons of stone annually, accounting for 67% of the total production in 1979 and 64% in 1978. There was a general trend toward fewer quarries with larger production due to local zoning ordinances, environmental regulations, and market locations.

Crushed stone was used primarily for roadstone, aggregate, and cement manufacture. Dimension stone was used mainly for flagging, structural shapes, roofing, and flooring.

Table 6.—Maryland: Construction sand and gravel sold or used, by county

(Thousand short tons and thousand dollars)

County	1977			1978			1979		
	Quantity	Value	Number of companies	Quantity	Value	Number of companies	Quantity	Value	Number of companies
Anne Arundel	2,076	4,066	15	2,199	4,996	12	1,899	4,382	8
Baltimore	1,502	4,446	3	1,514	4,468	3	W	W	2
Caroline	W	W	1	W	W	1	17	29	1
Cecil	1,895	4,013	3	1,973	4,224	3	1,966	4,214	3
Charles	W	W	2	1,344	3,910	3	1,394	3,938	3
Dorchester	W	W	2	W	W	2	W	W	2
Garrett	W	W	2	41	W	1	W	W	1
Harford	758	1,744	5	753	1,735	5	503	1,623	5
Prince Georges	4,189	11,927	11	4,539	13,456	11	5,381	18,075	12
St. Marys	223	451	4	217	398	3	328	531	3
Wicomico	W	W	1	W	W	1	W	W	1
Worcester	407	695	4	539	1,048	5	470	804	5
Total[1]	11,702	29,562	53	13,310	34,950	50	13,988	39,033	46

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data may not add to totals shown because of independent rounding.

Table 7.—Maryland: Crushed stone[1] sold or used by producers, by use

(Thousand short tons and thousand dollars)

Use	1977		1978		1979	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate	r2,164	r6,480	2,418	8,320	2,704	9,376
Bituminous aggregate	2,378	6,488	2,505	7,799	2,833	9,450
Macadam aggregate	1,667	4,203	1,807	6,085	2,266	7,404
Dense-graded roadbase stone	1,724	4,423	1,346	3,967	1,439	4,955
Surface treatment aggregate	330	981	337	1,162	436	1,442
Other construction aggregate and roadstone	5,036	14,670	6,299	18,904	7,171	23,800
Riprap and jetty stone	219	787	269	1,026	310	1,252
Railroad ballast	116	280	175	405	108	276
Manufactured fine aggregate (stone sand)	249	800	251	1,056	204	726
Cement manufacture	2,062	2,581	2,351	3,519	2,477	3,934
Lime manufacture	27	68	25	74	23	74
Other uses[2]	765	8,011	1,645	13,947	1,589	17,860
Total[3]	16,736	49,772	19,427	66,263	21,561	80,550

[r]Revised.
[1]Includes limestone, granite, sandstone, shell, traprock, and miscellaneous stone.
[2]Includes stone used for agricultural limestone, agricultural marl and other soil conditioners, poultry grit and mineral food, flux stone (1979), refractory stone, abrasives (1977-78), mine dusting, asphalt filler, whiting, other filler, and other miscellaneous uses.
[3]Data may not add to totals shown because of independent rounding.

Talc.—Harford Talc Co. ceased mining in Harford County in 1974. However, during 1978 and 1979, the company purchased talc from other States and from foreign countries and processed it for use in the manufacture of electrical insulators.

Vermiculite (Exfoliated).—W. R. Grace & Co.'s Muirkirk plant, Prince Georges County, exfoliated vermiculite produced in other States. Production and value in 1979 were slightly higher than in 1978. Exfoliated vermiculite was used mainly for concrete aggregate and fireproofing.

METALS

Aluminum.—Although no alumina-bearing ores were mined in Maryland, imported ores were used in the production of aluminum. Eastalco Aluminum Co., Frederick County, owned by Howmet Aluminum Corp. and Alumax, Inc., was the State's largest producer of primary aluminum. Eastalco had planned to increase its output by 50% through construction of a third potline, but plans were canceled due to Potomac Edison Electric Co.'s inability to provide the necessary electric power. Other producers of primary aluminum were Tomke Aluminum Co. and Cambridge Iron and Metal Co., Inc., both located in Baltimore.

Copper.—Although copper was not mined in the State, Kennecott Refining Co. operated a refinery at Hawkins Point, south east of Baltimore.

Iron Oxide Pigments.—Mineral Pigments Corp., Beltsville, Prince Georges County, was the only producer of natural and synthetic iron oxide pigments. Principal uses were in paints, rubber, plastics, paper, magnetic ink, and fertilizers.

Iron and Steel.—Bethlehem Steel Corp., Sparrows Point, near Baltimore, produced pig iron, raw steel, and semifabricated steel products from imported ore.

Bethlehem's new $200 million blast furnace, officially dedicated in late 1978, is the largest and most modern blast furnace in the Western Hemisphere. The computer-operated furnace, designated as Furnace "L" by the company, was designed to produce 8,000 short tons of pig iron daily. In operation, the design output was exceeded by 25%, setting a single-day company record. A monthly production of 270,000 short tons in December 1979 also established a new North American record. Furnace "L" stands 300 feet above ground level and replaces four older blast furnaces.

---

[1]State mineral specialist, Bureau of Mines, Pittsburgh, Pa.

Table 8.—Principal producers

Commodity and company	Address	Type of activity	County
Cement:			
Portland:			
Alpha Portland Cement Co.[1]	15 South 3d St. Easton, PA 18042	Plant and quarry.	Frederick.
Lehigh Portland Cement Co.[2]	718 Hamilton St. Allentown, PA 18101	do	Carroll.
Portland and masonry:			
Marquette Cement Manufacturing Co.[1]	First American Center Nashville, TN 37238	do	Washington.
Clays:			
Baltimore Brick Co	501 St. Paul Pl. Baltimore, MD 21202	Pits	Baltimore and Frederick.
Victor Cushwa & Sons, Inc	Box 228 Williamsport, MD 21795	Pit	Washington.
Cyprus Industrial Materials Co	555 South Flower St. Los Angeles, CA 90071	Pit	Baltimore.
Gypsum (calcined):			
National Gypsum Co	4100 First International Bldg. Dallas, TX 75270	Plant	Do.
United States Gypsum Co	101 South Wacker Dr. Chicago, IL 60606	do	Do.
Iron oxide pigments (finished, natural and manufactured):			
Minerals Pigments Corp	7011 Muirkirk Rd. Beltsville, MD 20705	do	Prince Georges.
Lime:			
S. W. Barrick & Sons, Inc.[1]	Woodsboro, MD 21798	do	Frederick.
Peat:			
Garrett County Processing & Packaging Corp.	Route 1 Accident, MD 21520	Bog	Garrett.
Sand and gravel:			
Campbell Sand & Gravel, Inc	4911 Calvert Rd. College Park, MD 20740	Pit	Prince Georges.
Harry T. Campbell Sons Co., a division of The Flintkote Co.[1]	White Marsh Plant Towson, MD 21225	Pits	Baltimore.
Charles City Sand & Gravel Co., Inc	Waldorf Industrial Center Box 322 Waldorf, MD 20601	Dredges	Charles.
Contee Sand & Gravel Co., Inc	Box 460 Laurel, MD 20810	Pit	Prince Georges.
York Building Products Co., Inc	Box 1708 York, PA 17405	Pit	Cecil.
Stone:			
Arundel Corp	501 St. Paul Pl. Baltimore, MD 21202	Quarries	Baltimore and Howard.
Martin-Marietta Aggregates	66 Long Clove Rd. Congers, NY 10920	Quarry	Washington.
Maryland Materials, Inc	Box W North East, MD 21901	do	Cecil.
Rockville Crushed Stone, Inc	Box 407 Rockville, MD 20850	do	Montgomery.
D. M. Stoltzfus & Sons, Inc	Talmage, PA 17580	Quarries	Cecil.

[1]Also stone.
[2]Also clays and stone.