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MINERALS YEARBOOK

AREA REPORTS: DOMESTIC 1993-94

Volume II

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

UNITED STATES DEPARTMENT OF THE INTERIOR • Bruce Babbitt, Secretary

BUREAU OF MINES

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people by encouraging care. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Foreword

This edition of the Minerals Yearbook discusses the performance of the worldwide minerals and materials industry during 1994 and provides background information to assist in interpreting that performance. Content of the individual Yearbook volumes follows:

Volume I, Metals and Minerals, contains chapters of virtually all metallic and industrial mineral commodities important to the U.S. economy. Chapters on survey methods, statistical summary of nonfuel minerals, and trends in mining and quarrying in the metals and industrial mineral industries in the United States are also included.

Volume II, Area Reports: Domestic, contains chapters on the minerals industry of each of the 50 States and Puerto Rico. This volume also has a chapter that describes survey methods used in data collection and a chapter that contains a statistical summary of domestic nonfuel minerals. A directory of State Geologists and other minerals information contacts for all 50 States and Puerto Rico is contained in an Appendix.

Volume III, the International Review portion of the Minerals Yearbook, contains the latest available mineral data on more than 180 foreign countries and discusses the importance of minerals to the economies of these nations and the United States. The annual International Review section begins with an overview of the world's mineral industries during the year. It continues with individual country chapters that examine, in detail, the mining, refining, processing, and utilization of minerals in each country and how they relate to U.S. industry. The chapters incorporate production tables, location maps, industry structure tables, and an outlook section.

The U.S. Bureau of Mines continually strives to improve the value of its publications to users. Constructive comments and suggestions by readers of the Yearbook are welcomed.

Acknowledgments

The State chapters of this volume were written by Arnold Tanner, a physical scientist, with editorial assistance from David Delzingaro, writer/editor, both with the Division of Statistics and Information Services (DSIS) of the U.S. Bureau of Mines (USBM). All rankings and statistical analyses were performed by Mr. Tanner and were based on data reported to the Bureau by companies responding to the annual canvass of nonfuel mineral production in the United States. Data for 1994 are preliminary owing to publication of this volume earlier during the year than has been customary in conjunction with a revision of its format; data prior to 1994 are from final tabulations. The narrative portions of each chapter reporting information on mining, mineral exploration, and other mining-related activities or legislation, tailored for each State, were derived from information submitted by officials from each participating State. These submissions significantly broadened the scope of the subject chapters. All chapters underwent technical review by USBM mineral commodity specialists. The melding of their knowledge and expertise into this project was invaluable in producing accurate individual documents and is greatly appreciated. Previous to this compiled volume, all State chapters were individually published under the title "Mineral Industry Surveys" except for the tables of detailed crushed stone data (1993) by State and State districts. These data are included in this Minerals Yearbook volume as they traditionally have been.

The Survey Methods and Statistical Summary of Nonfuel Minerals chapters and the tabular material covering total State nonfuel mineral production (and mineral production by county) also were prepared in DSIS. Compilations of data contained in this volume were largely based on statistics and other data provided by the mineral industries. The Bureau gratefully acknowledges the willing contribution on these essential data by both companies and individuals.

In the collection of statistical and other mineral industry information, the Bureau also was assisted by various State agencies through cooperative Memorandum of Understanding (MOU) agreements. Some of the chapters in Volume II were reviewed by staff members of these agencies. The State agencies contributing mining and minerals industry information included in the chapter narratives are recognized below by an asterisk (*). Our sincere appreciation for all agency cooperation is extended to the following organizations which currently have MOU's with USBM:

Alabama: Geological Survey of Alabama.*
Arizona: Arizona Department of Mines and Mineral Resources.*
Arkansas: Arkansas Geological Commission.*
California: California Department of Conservation, Division of Mines and Geology.*
Colorado: Colorado Geological Survey.*
Connecticut: Connecticut Geological and Natural History Survey, Department of Environmental Protection.*
Delaware: Delaware Geological Survey.*
Florida: Florida Geological Survey.*
Georgia: Georgia Geologic Survey, Environmental Protection Division, Georgia Department of Natural Resources.*
Hawaii: Department of Land and Natural Resources of the State of Hawaii.
Idaho: Idaho Geological Survey.*
Illinois: State Geological Survey, Illinois Department of Energy and Natural Resources.*
Indiana: Indiana Geological Survey.*
Iowa: Geological Survey Bureau, Iowa Department of Natural Resources.
Kansas: Kansas Geological Survey.*

Kentucky: Kentucky Geological Survey.*
Louisiana: Louisiana Geological Survey.
Maine: Maine Geological Survey.*
Maryland: Maryland Geological Survey, Department of Natural Resources.*
Massachusetts: Commonwealth of Massachusetts, Executive Office of Environmental Affairs.
Michigan: Geological Survey Division, Michigan Department of Natural Resources.*
Mississippi: Office of Geology, Mississippi Department of Environmental Quality.*
Missouri: Missouri Department of Natural Resources, Division of Geology and Land Survey.*
Montana: Montana Bureau of Mines and Geology.*
Nebraska: Nebraska Geological Survey, Conservation and Survey Division, University of Nebraska-Lincoln.*
Nevada: Nevada Geological Survey, Nevada Bureau of Mines and Geology.
New Hampshire: New Hampshire Department of Environmental Services.
New Jersey: New Jersey Geological Survey, New Jersey Department of Environmental Protection and Energy, Division of Science and Research.*
New Mexico: New Mexico Bureau of Mines and Mineral Resources.*
New York: New York Geological Survey, New York State Education Department.*
North Carolina: Division of Land Resources, Geological Survey Section, North Carolina Department of Environment, Health, and Natural Resources.*
North Dakota: North Dakota Geological Survey.*
Ohio: Ohio Department of Natural Resources, Division of Geological Survey.*
Oklahoma: Oklahoma Geological Survey.*
Pennsylvania: Pennsylvania Geological Survey, Department of Environmental Resources.*
Puerto Rico: Department of Natural Resources, Commonwealth of Puerto Rico.
Rhode Island: Office of the Rhode Island State Geologist, Department of Environmental Management.*
South Carolina: South Carolina Geological Survey.*
South Dakota: South Dakota Geological Survey.*
Tennessee: Tennessee Division of Geology.*
Texas: Bureau of Economic Geology, The University of Texas at Austin.*
Utah: Utah Geological Survey.*
Vermont: Office of the State Geologist, Vermont Geological Survey, Agency of Natural Resources.*
Virginia: Virginia Department of Mines, Minerals and Energy, Division of Mineral Resources.*
Washington: Washington State Department of Natural Resources, Geology and Earth Resources Division.*
West Virginia: West Virginia Geological and Economic Survey.
Wisconsin: Wisconsin Geological and Natural History Survey.*
Wyoming: Wyoming State Geological Survey.*

While not executing MOU agreements with the Bureau, Alaska's Division of Geological and Geophysical Surveys (Alaska Department of Natural Resources), the Minnesota Geological Survey, Nevada Department of Business and Industry (Division of Minerals), and the Oregon Department of Geology and Mineral Industries contributed mining and minerals information concerning the mining and minerals processing industry in their States for inclusion in the chapter narratives. Our sincere appreciation also is extended to them for their cooperation and assistance.

Michael J. McKinley
Chief, Division of Statistics and Information Services

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STATISTICAL SUMMARY OF NONFUEL MINERALS

By Stephen D. Smith

Mr. Smith, industry data analyst in the Section of Industry Data Analysis and Coordination, was assisted in the preparation of the Statistical Summary by Imogene P. Bynum, Chief, Section of Metals Data; Maria Arguelles and Christopher Lindsay, Co-chiefs, Section of Industrial Minerals Data; and Raymond L. Cantrell, Physical scientist, Branch of Industrial Minerals.

Statistical Summary

The following tables summarize data on crude nonfuel mineral production for the United States, its island possessions, and the Commonwealth of Puerto Rico. Although crude mineral production may be measured at any of several stages of extraction and processing, the stage of measurement used in these tables is what is termed "mine output." It usually refers to minerals or ores in the form in which they are first extracted from the ground, but customarily includes the output from auxiliary processing at or near the mines.

Because of inadequacies in the statistics available, some series deviate from the foregoing definition. For copper, gold, lead, silver, tin, and zinc, the quantities are recorded on a mine basis (as the recoverable content of ore sold or treated). However, the values assigned to these quantities are based on the average selling price of refined metal, not the mine value. Mercury is measured as recovered metal and valued at the average New York price for the metal.

The values shown are in current dollars, with no adjustments made to compensate for changes in the purchasing power of the dollar.

TABLE 1
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES

Mineral		1992		1993		1994[p] [1] [2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
METALS							
Beryllium concentrates	metric tons	4,826	$5	4,939	$5	5,000	$6
Copper[3]	do.	1,764,756	4,178,942	1,801,382	3,636,188	1,840,000	4,380,000
Gold[3]	kilograms	329,212	3,662,390	331,012	3,840,876	[4]331,000	[4]3,840,000
Iron ore (usable)	thousand metric tons	55,569	1,732,416	56,251	1,642,842	57,000	1,700,000
Iron oxide pigments (crude)	metric tons	39,272	4,669	35,843	5,021	35,500	5,150
Lead[3]	do.	397,076	307,337	355,185	248,540	365,000	286,000
Magnesium metal	do.	136,947	359,534	132,144	377,287	W	W
Mercury	do.	64	376	W	W	W	W
Molybdenum[5]	do.	49,554	208,657	39,208	165,096	39,000	215,000
Nickel ore[6]	do.	6,671	W	2,464	W	—	—
Palladium metal	kilograms	6,470	18,097	6,500	25,287	6,500	25,100
Platinum metal	do.	1,840	21,060	1,800	21,412	1,800	21,400
Silver[3]	metric tons	1,804	228,563	1,645	227,378	1,400	192,000
Zinc[3]	do.	523,430	673,686	488,283	496,795	540,000	549,000
Combined value of antimony, bauxite, manganiferous ore (5% to 35%), rare-earth metal concentrates, tin, titanium concentrates (ilmenite and rutile), tungsten, vanadium, zircon concentrates, and values indicated by symbol W		XX	151,091	XX	130,199	XX	526,000
Total		XX	11,547,000	XX	10,817,000	XX	11,700,000

See footnotes at end of table.

TABLE 1—Continued

NONFUEL MINERAL PRODUCTION IN THE UNITED STATES

Mineral		1992		1993		1994[p 1 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS (EXCLUDING FUELS)							
Abrasives[7]	metric tons	1,732	$239	528	$330	NA	NA
Asbestos	do.	15,573	6,138	13,704	5,957	9,660	$5,130
Barite	thousand metric tons	326	19,633	315	19,265	336	12,700
Boron minerals (B_2O_3)	metric tons	1,008,889	338,700	1,054,615	372,839	560,000	370,000
Bromine[e]	do.	171,000	170,000	177,000	123,000	197,000	157,000
Cement:							
Masonry	thousand metric tons	2,658	195,000	2,962	228,893	3,420	264,000
Portland	do.	66,058	3,500,150	71,570	3,915,736	75,800	4,160,000
Clays	do.	40,712	1,481,893	41,074	1,487,474	42,400	1,600,000
Diatomite	metric tons	595,122	141,092	598,931	150,133	596,000	162,000
Feldspar	do.	726,000	28,500	770,000	31,400	740,000	29,800
Garnet (abrasive)	do.	54,139	4,842	W	W	48,300	4,980
Gemstones		NA	66,195	NA	57,681	NA	51,600
Gypsum (crude)	thousand metric tons	14,759	100,583	15,812	106,539	17,300	118,000
Helium:							
Crude	million cubic meters	W	W	29	25,763	34	33,200
Grade-A	do.	94	187,179	94	189,492	96	191,000
Iodine	metric tons	1,995	20,877	1,935	15,443	2,030	15,300
Lime	thousand metric tons	16,199	949,674	16,932	977,079	17,300	996,000
Mica (scrap)	do.	85	4,638	88	4,453	96	4,890
Peat	do.	652	16,747	612	16,841	682	17,900
Perlite	metric tons	541,164	16,368	568,581	17,425	610,000	19,000
Phosphate rock	thousand metric tons	46,965	1,058,393	35,494	758,983	41,000	902,000
Potash (K_2O equivalent)	do.	1,767	334,407	1,636	286,002	1,430	274,000
Pumice	metric tons	480,855	14,903	469,030	12,045	W	W
Salt	thousand metric tons	34,784	802,563	38,665	892,979	42,500	906,000
Sand and gravel:							
Construction	do.	833,975	3,341,300	r868,700	r3,530,100	922,000	3,830,000
Industrial	do.	25,195	434,474	26,220	454,431	W	W
Sodium compounds:							
Soda ash	do.	9,379	836,431	8,959	734,157	9,100	650,000
Sodium sulfate (natural)	do.	337	26,262	W	W	300	25,000
Stone:[8]							
Crushed	do.	r1,053,695	r5,593,700	1,116,000	5,915,500	r1,190,000	r6,530,000
Dimension	metric tons	r980,604	r180,942	1,231,864	215,574	W	W
Sulfur (Frasch)	thousand metric tons	2,600	158,727	1,904	100,672	2,700	135,000
Talc and pyrophyllite	metric tons	W	W	W	W	1,050,000	31,800
Tripoli	do.	84,924	3,256	93,988	4,093	NA	NA
Vermiculite	do.	190,052	15,062	187,121	14,869	190,000	W
Zeolites	do.	W	NA	41,002	NA	NA	NA
Combined value of brucite, calcium chloride [natural[p] (1992)], emery (1992-93), fluorspar, greensand, kyanite, lithium minerals, magnesite, magnesium compounds, olivine, pyrites[10] (1992-93), sand and gravel (construction), staurolite (1992-93), wollastonite, and values indicated by symbol W		XX	524,763	XX	r422,408	XX	1,050,000
Total		XX	20,574,000	XX	r21,088,000	XX	22,500,000

See footnotes at end of table.

TABLE 1—Continued

NONFUEL MINERAL PRODUCTION IN THE UNITED STATES

Mineral	1992		1993		1994[P 1 2]	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS (EXCLUDING FUELS)—Continued						
Grand total	XX	$32,121,000	XX	[r]$31,905,000	XX	$34,300,000

[e]Estimated. [P]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Data rounded to the first three significant digits.

[3]Recoverable content of ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Content of ore and concentrate.

[6]The Riddle nickel smelter uses lateritic ore mined on Nickel Mountain, lateritic ore imported from New Caledonia, and small tonnages of recycled Ni-bearing catalysts. In 1989, the Glenbrook Nickel Co. purchased the idled mining and smelting complex and restarted the operation. Production of ferronickel on a contained Ni basis has been as follows: 1992—8,962 metric tons (mt) valued at $62.7 million; and 1993—4,878 mt valued at $28.0 million.

[7]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

[8]Excludes abrasive stone and bituminous limestone and sandstone; all included elsewhere in table.

[9]Calcium chloride (natural) canvassing discontinued beginning 1993.

[10]Pyrites canvassing discontinued beginning 1994.

TABLE 2

TOTAL U.S. NONRENEWABLE ORGANIC MATERIALS PRODUCTION, BY QUANTITY AND VALUE[1]

(Million metric tons and million dollars)

Category	1992		1993[P]		1994	
	Quantity	Value	Quantity	Value	Quantity	Value
Asphalt and road oil	25.28	2,798	27.18	2,693	(2)	(2)
Lubricants, waxes, and miscellaneous products	12.43	1,534	12.67	1,373	(2)	(2)
Petrochemical industries	66.61	7,540	66.00	6,824	(2)	(2)
Petroleum coke and coal	12.71	1,113	12.89	986	(2)	(2)
Total	117.03	12,986	118.74	11,877	(2)	(2)

[P]Preliminary.

[1]Quantities valued at the fossil fuel prices given in the Department of Energy, Energy Information Administration, Annual Energy Review 1992.

[2]Coverage discontinued beginning 1994.

Note: Nonrenewable organic materials represent all nonfuel uses in physical structure applications. The petrochemical industries category includes feedstocks for the production of plastics, synthetic rubber, synthetic fibers, pesticides, coatings, solvents, fertilizers, and other petrochemicals.

TABLE 3

NONFUEL MINERALS PRODUCED IN THE UNITED STATES AND PRINCIPAL PRODUCING STATES IN 1994[P]

Mineral	Principal producing States, in order of quantity	Other producing States
Abrasives[1]	(2)	
Antimony[3]	ID	
Asbestos	CA and VT	
Barite	NV, GA, MO, MT	
Bauxite	AL and GA	
Beryllium concentrate	UT	
Boron minerals	CA	
Bromine	AR and MI	
Brucite	NV	

See footnotes at end of table.

TABLE 3—Continued

NONFUEL MINERALS PRODUCED IN THE UNITED STATES AND PRINCIPAL PRODUCING STATES IN 1994[p]

Mineral	Principal producing States, in order of quantity	Other producing States
Cement:		
Masonry	FL, IN, TX, SC	All other States except AK, CT, DE, IL, LA, MA, MN, MS, MT, NV, NH, NJ, NC, ND, OR, RI, VT, WI, WY.
Portland	CA, TX, PA, MI	All other States except AK, CT, DE, LA, MA, MN, NH, NJ, NC, ND, RI, VT, WI.
Clays	GA, AL, TX, WY	All other States except AK, DE, HI, RI, VT, WI.
Copper[3]	AZ, UT, NM, MI	CO, ID, IL, MO, MT, NV, OR, TN, and WI.
Diatomite	CA, NV, OR, WA	
Emery	[2]	
Feldspar	NC, VA, OK, CA	GA, ID, SD
Fluorspar	IL, TX, NV	
Garnet (abrasive)	ID and NY	
Gemstones (natural)[4]	TN, AR, AZ, MT	All other States except AK, CT, DE, MD, MS, NJ, PA, RI, VT, WV.
Gold[3]	NV, CA, UT, SD	AK, AZ, CO, ID, MT, NM, SC, WA, WI.
Greensand	NJ	
Gypsum (crude)	OK, IA, TX, MI	AR, AZ, CA, CO, IN, KS, LA, NM, NV, NY, OH, SD, UT, VA, WY.
Helium (crude and Grade-A)	KS, WY, TX, UT	CO.
Iodine	OK	
Iron ore (usable)	MN, MI, UT, MO	CA, MT, NM, SD, TX.
Iron oxide pigments (crude)	MI, MO, GA, VA	AZ.
Lead[3]	MO, AK, ID, MT	CO, IL, NY, TN, WA.
Lime	OH, MO, AL, PA	All other States except AK, CT, DE, FL, GA, HI, KS, ME, MD, MS, NH, NJ, NM, NY, NC, RI, SC, VT.
Lithium minerals	NC and NV	
Magnesite	NV	
Magnesium compounds	MI, CA, FL, UT	DE and TX.
Magnesium metal	TX, WA, UT	
Manganiferous ore	SC	
Mercury	NV, UT, CA	
Mica (scrap)	NC, GA, NM, SC	SD.
Molybdenum	AZ, CO, UT, ID	MT and NM.
Nickel ore	[5]	
Olivine	WA and NC	
Palladium metal	MT	
Peat	FL, MI, ME, MN	CO, IA, IL, IN, MA, MT, NC, ND, NJ, NY, OH, PA, SC, WA, WI, WV.
Perlite	NM, AZ, CA, NV	
Phosphate rock	FL, NC, ID, UT	MT.
Platinum metal	MT	
Potash	NM, UT, CA, MI	
Pumice	OR, NM, CA, ID	AZ and KS.
Pyrites (ore and concentrate)	[6]	
Rare-earth metal concentrates	CA and FL	
Salt	LA, TX, NY, OH	AL, AZ, CA, KS, MI, NM, NV, OK, UT, WV.
Sand and gravel:		
Construction	CA, MI, OH, AZ	All other States.
Industrial	IL, MI, NJ, CA	All other States except AK, DE, HI, KY, ME, NH, NM, OR, SD, UT, VT, WY.
Silver[3]	NV, AZ, ID, UT	AK, CA, CO, IL, MI, MO, MT, NM, NY, SC, SD, WA, WI.
Sodium compounds:		
Soda ash	WY and CA	
Sodium sulfate (natural)	CA and TX	

See footnotes at end of table.

TABLE 3—Continued

NONFUEL MINERALS PRODUCED IN THE UNITED STATES AND PRINCIPAL PRODUCING STATES IN 1994[p]

Mineral	Principal producing States, in order of quantity	Other producing States
Staurolite	(2)	
Stone:		
Crushed	TX, PA, FL, IL	All other States except DE.
Dimension	GA, IN, WI, MA	All other States except AK, DE, FL, HI, KY, LA, MS, NE, NV, NJ, ND, OR, RI, WV, WY.
Sulfur (Frasch)	LA and TX	
Talc and pyrophyllite	MT, TX, VT, NY	AL, AR, CA, NC, OR, VA.
Tin	AK	
Titanium concentrates	FL and CA	
Tripoli	(2)	
Tungsten[3]	CA	
Vanadium[3]	ID	
Vermiculite (crude)	SC and VA	
Wollastonite	NY	
Zeolites	(2)	
Zinc[3]	AK, TN, NY, MO	CO, ID, IL, MT, WA
Zircon concentrates	FL	

[p]Preliminary.
[1]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.
[2]Preliminary estimates not available.
[3]Content of ores, etc.
[4]Principal producing States based on value.
[5]No production estimated.
[6]Canvassing discontinued.

TABLE 4

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 1994[p]

State	Value[1] (thousands)	Rank[2]	Percent of U.S. total[2]	Principal minerals, in order of value
Alabama	$576,000	19	1.68	Stone (crushed and broken), cement (portland), lime, sand and gravel (construction).
Alaska	429,000	27	1.25	Zinc, gold (lode), sand and gravel (construction), lead.
Arizona	3,320,000	1	9.69	Copper, sand and gravel (construction), cement (portland), molybdenum.
Arkansas	392,000	30	1.14	Bromine, stone (crushed and broken), sand and gravel (construction), cement (portland).
California	2,500,000	3	7.28	Cement (portland), sand and gravel (construction), gold (lode), boron.
Colorado	440,000	25	1.28	Sand and gravel (construction), cement (portland), gold (lode), stone (crushed and broken).
Connecticut	97,300	44	.28	Stone (crushed and broken), sand and gravel (construction), sand and gravel (industrial), stone (dimension).
Delaware[3]	8,700	50	.03	Magnesium compounds, sand and gravel (construction).
Florida	1,470,000	6	4.28	Phosphate rock, stone (crushed and broken), cement (portland), sand and gravel (construction).
Georgia	1,540,000	5	4.48	Clays, stone (crushed and broken), cement (portland), stone (dimension).
Hawaii	137,000	41	.40	Stone (crushed and broken), cement (portland), sand and gravel (construction), cement (masonry).
Idaho	343,000	32	1.00	Phosphate rock, gold (lode), sand and gravel (construction), molybdenum.
Illinois	770,000	16	2.25	Stone (crushed and broken), sand and gravel (construction), cement (portland), sand and gravel (industrial).

See footnotes at end of table.

TABLE 4—Continued

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 1994[p]

State	Value[1] (thousands)	Rank[2]	Percent of U.S. total[2]	Principal minerals, in order of value
Indiana	$517,000	21	1.51	Stone (crushed and broken), cement (portland), sand and gravel (construction), lime.
Iowa	426,000	28	1.24	Stone (crushed and broken), cement (portland), sand and gravel (construction), gypsum.
Kansas	495,000	23	1.45	Salt, helium (Grade-A), stone (crushed and broken), cement (portland).
Kentucky	431,000	26	1.26	Stone (crushed and broken), lime, cement (portland), sand and gravel (construction).
Louisiana	328,000	34	.96	Salt, sulfur (Frasch), sand and gravel (construction), stone (crushed and broken).
Maine	57,500	45	.17	Sand and gravel (construction), cement (portland), stone (crushed and broken), cement (masonry).
Maryland	325,000	35	.95	Stone (crushed and broken), cement (portland), sand and gravel (construction), cement (masonry).
Massachusetts	157,000	40	.46	Stone (crushed and broken), sand and gravel (construction), stone (dimension), lime.
Michigan	1,620,000	4	4.73	Iron ore (usable), cement (portland), sand and gravel (construction), magnesium compounds.
Minnesota	1,350,000	9	3.94	Iron ore (usable), sand and gravel (construction), stone (crushed and broken), sand and gravel (industrial).
Mississippi[3]	112,000	43	.33	Sand and gravel (construction), clays, cement (portland), stone (crushed and broken).
Missouri	1,000,000	10	2.93	Stone (crushed and broken), cement (portland), lead, lime.
Montana	492,000	24	1.44	Gold (lode), copper, cement (portland), palladium.
Nebraska	137,000	42	.40	Cement (portland), stone (crushed and broken), sand and gravel (construction), clays.
Nevada	2,840,000	2	8.27	Gold (lode), sand and gravel (construction), diatomite, cement (portland).
New Hampshire[3]	36,900	47	.11	Sand and gravel (construction), stone (crushed and broken), stone (dimension), clays.
New Jersey	274,000	37	.80	Stone (crushed and broken), sand and gravel (construction), sand and gravel (industrial), greensand marl.
New Mexico	914,000	12	2.67	Copper, potash, sand and gravel (construction), cement (portland).
New York	869,000	14	2.54	Salt, sand and gravel (construction), stone (crushed and broken), cement (portland).
North Carolina	705,000	17	2.06	Stone (crushed and broken), phosphate rock, sand and gravel (construction), lithium minerals.
North Dakota	26,300	49	.08	Sand and gravel (construction), lime, sand and gravel (industrial), clays.
Ohio	893,000	13	2.61	Stone (crushed and broken), sand and gravel (construction), salt, lime.
Oklahoma	338,000	33	.99	Stone (crushed and broken), cement (portland), sand and gravel (construction), sand and gravel (industrial).
Oregon	254,000	38	.74	Stone (crushed and broken), sand and gravel (construction), cement (portland), lime.
Pennsylvania	964,000	11	2.81	Stone (crushed and broken), cement (portland), lime, sand and gravel (construction).
Rhode Island[3]	27,400	48	.08	Sand and gravel (construction), stone (crushed and broken), sand and gravel (industrial).
South Carolina	415,000	29	1.21	Stone (crushed and broken), cement (portland), gold (lode), clays.
South Dakota	322,000	36	.94	Gold (lode), cement (portland), sand and gravel (construction), stone (crushed and broken).
Tennessee	577,000	18	1.68	Stone (crushed and broken), zinc, cement (portland), sand and gravel (construction).

See footnotes at end of table.

TABLE 4—Continued

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 1994[P]

State	Value[1] (thousands)	Rank[2]	Percent of U.S. total[2]	Principal minerals, in order of value
Texas	$1,410,000	8	4.11	Cement (portland), stone (crushed and broken), magnesium metal, sand and gravel (construction).
Utah	1,430,000	7	4.17	Copper, gold (lode), magnesium metal, sand and gravel (construction).
Vermont[3]	48,000	46	.14	Stone (dimension), stone (crushed and broken), sand and gravel (construction), talc and pyrophyllite.
Virginia	514,000	22	1.50	Stone (crushed and broken), cement (portland), lime, sand and gravel (construction).
Washington	556,000	20	1.62	Sand and gravel (construction), magnesium metal, stone (crushed and broken), gold (lode).
West Virginia	176,000	39	.51	Stone (crushed and broken), cement (portland), sand and gravel (industrial), salt.
Wisconsin	344,000	31	1.00	Stone (crushed and broken), sand and gravel (construction), copper, sand and gravel (industrial).
Wyoming	781,000	15	2.28	Soda ash, clays, helium (Grade-A), cement (portland).
Undistributed	108,000	—	.32	
Total	34,300,000	XX	100.00	

[P]Preliminary. XX Not applicable.
[1]Data rounded to the first three significant digits.
[2]Based on unrounded data
[3]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Concealed values included with "Undistributed" figure.

TABLE 5

VALUE OF NONFUEL MINERAL PRODUCTION PER CAPITA AND PER SQUARE MILE IN 1994,[P] BY STATE

State	Area (square miles)	Population (thousands)	Total value[1] (thousands)	Per square mile[2]		Per capita[2]	
				Dollars	Rank	Dollars	Rank
Alabama	51,705	4,219	$576,000	11,136	25	136	17
Alaska	591,004	606	429,000	726	49	708	5
Arizona	114,000	4,075	3,320,000	29,147	3	815	3
Arkansas	53,187	2,453	392,000	7,362	31	160	15
California	158,706	31,431	2,500,000	15,731	17	79	34
Colorado	104,091	3,656	440,000	4,229	40	120	18
Connecticut	5,018	3,275	97,300	19,398	12	30	47
Delaware	2,044	706	[3]8,700	4,256	39	12	50
Florida	58,664	13,953	1,470,000	25,018	7	105	23
Georgia	58,910	7,055	1,540,000	26,058	5	218	11
Hawaii	6,471	1,179	137,000	21,233	11	117	19
Idaho	83,564	1,133	343,000	4,102	42	303	9
Illinois	56,345	11,752	770,000	13,674	21	66	39
Indiana	36,185	5,752	517,000	14,293	19	90	28
Iowa	56,275	2,829	426,000	7,578	29	151	16
Kansas	82,277	2,554	495,000	6,021	35	194	12
Kentucky	40,409	3,827	431,000	10,673	26	113	21
Louisiana	47,751	4,315	328,000	6,860	33	76	37
Maine	33,265	1,240	57,500	1,730	48	46	42
Maryland	10,460	5,006	325,000	31,032	2	65	40
Massachusetts	8,284	6,041	157,000	18,976	13	26	49
Michigan	58,527	9,496	1,620,000	27,703	4	171	14
Minnesota	84,402	4,567	1,350,000	16,015	16	296	10
Mississippi	47,689	2,669	[3]112,000	2,341	46	42	43
Missouri	69,697	5,278	1,000,000	14,394	18	190	13

See footnotes at end of table.

TABLE 5—Continued

VALUE OF NONFUEL MINERAL PRODUCTION PER CAPITA AND PER SQUARE MILE IN 1994,[P] BY STATE

State	Area (square miles)	Population (thousands)	Total value[1] (thousands)	Per square mile[2]		Per capita[2]	
				Dollars	Rank	Dollars	Rank
Montana	147,046	856	$492,000	3,346	44	575	6
Nebraska	77,355	1,623	137,000	1,767	47	84	29
Nevada	110,561	1,457	2,840,000	25,651	6	1,946	1
New Hampshire	9,279	1,137	[3]36,900	3,978	43	32	46
New Jersey	7,787	7,904	274,000	35,165	1	35	45
New Mexico	121,593	1,654	914,000	7,516	30	553	7
New York	49,107	18,169	869,000	17,701	14	48	41
North Carolina	52,669	7,070	705,000	13,378	22	100	26
North Dakota	70,703	638	2,630	372	50	41	44
Ohio	41,330	11,102	893,000	21,612	9	80	32
Oklahoma	69,956	3,258	338,000	4,835	38	104	25
Oregon	97,073	3,086	254,000	2,619	45	82	31
Pennsylvania	45,308	12,052	964,000	21,273	10	80	33
Rhode Island	1,212	997	27,400	22,607	8	27	48
South Carolina	31,113	3,664	415,000	13,347	23	113	20
South Dakota	77,116	721	322,000	4,170	41	446	8
Tennessee	42,144	5,175	577,000	13,679	20	111	22
Texas	266,807	18,378	1,410,000	5,280	36	77	36
Utah	84,899	1,908	1,430,000	16,820	15	748	4
Vermont	9,614	580	[3]48,000	4,995	37	83	30
Virginia	40,767	6,552	514,000	12,597	24	78	35
Washington	68,138	5,343	556,000	8,166	27	104	24
West Virginia	24,231	1,822	176,000	7,274	32	97	27
Wisconsin	56,153	5,082	344,000	6,117	34	68	38
Wyoming	97,809	476	781,000	7,982	28	1,640	2
Undistributed	XX	XX	108,000	XX	XX	XX	XX
Total[4] or average	3,618,700	259,771	34,300,000	9,474	XX	132	XX

[P]Preliminary. XX Not applicable.
[1]Data rounded to the first three significant digits.
[2]Based on unrounded data.
[3]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Concealed values included with "Undistributed" figure.
[4]Excludes Washington, DC (which has no mineral production), with an area of 69 square miles and a population of 570,000.

Sources: U.S. Bureau of Mines and Bureau of the Census.

TABLE 6

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[P 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
ALABAMA							
Cement:							
Masonry	thousand metric tons	193	$11,105	277	$21,908	276	$21,800
Portland	do.	3,721	180,763	3,748	190,770	3,650	186,000
Clays[3]	do.	2,381	20,914	2,492	23,195	2,580	27,300
Lime	do.	1,454	82,619	1,625	89,457	1,660	91,500
Sand and gravel:							
Construction	do.	11,153	42,038	[r]10,300	[r]39,100	10,600	41,300
Industrial	do.	605	6,768	559	6,802	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p 2] Quantity	1994[p 2] Value (thousands)
ALABAMA—Continued							
Stone (crushed)	thousand metric tons	•[4]25,945	•[4]$175,600	28,863	$175,607	•30,500	•$187,000
Combined value of bauxite, clays [bentonite, kaolin (1992)], gemstones, salt, stone [crushed dolomite and granite (1992), dimension], talc and pyrophyllite (1994), and value indicated by symbol W		XX	22,907	XX	14,937	XX	21,100
Total		XX	542,714	XX	561,776	XX	576,000
ALASKA							
Gemstones		NA	10	NA	10	NA	—
Gold[5]	kilograms	5,003	55,492	2,777	32,223	[6]4,540	[6]52,700
Sand and gravel (construction)	thousand metric tons	13,613	43,335	•13,100	•42,600	13,500	45,200
Stone (crushed)[4]	do.	•2,722	•13,400	2,425	11,294	•2,500	•11,900
Combined value of lead, silver, stone (crushed sandstone), tin (1993-94), and zinc		XX	413,875	XX	291,489	XX	319,000
Total		XX	526,112	XX	377,616	XX	429,000
ARIZONA							
Clays	thousand metric tons	[3]102	[3]463	[3]97	[3]451	92	421
Copper[5]	metric tons	1,152,878	2,730,015	1,158,759	2,339,018	1,180,000	2,820,000
Gemstones		NA	5,416	NA	5,626	NA	3,780
Gold[5]	kilograms	6,656	73,818	2,711	31,459	[6]2,490	[6]28,900
Iron oxide pigments (crude)	metric tons	77	62	77	62	68	38
Sand and gravel (construction)	thousand metric tons	30,701	123,517	•35,000	•138,300	45,000	185,000
Silver[5]	metric tons	165	20,873	200	27,684	170	23,500
Stone (crushed)	thousand metric tons	•4,990	•26,300	6,430	36,823	•6,600	•38,300
Combined value of cement, clays (bentonite), gypsum (crude), lead (1992), lime, molybdenum, perlite, pumice, pyrites[7] (1992-93), salt, sand and gravel (industrial), stone (dimension), and tin (1992)		XX	184,337	XX	196,417	XX	225,000
Total		XX	3,164,801	XX	2,775,840	XX	3,320,000
ARKANSAS							
Abrasives[8]	metric tons	W	W	W	W	NA	NA
Bromine[9]	do.	171,000	170,000	177,000	123,000	W	W
Clays[3]	thousand metric tons	837	2,972	1,026	2,357	1,120	2,310
Gemstones		NA	1,493	NA	5,532	NA	5,290
Sand and gravel:							
Construction	thousand metric tons	9,896	39,627	•10,100	•40,900	11,000	45,600
Industrial	do.	806	10,458	642	7,597	W	W
Stone (crushed)[4]	do.	•22,861	•118,900	21,706	102,555	•23,500	•114,000
Combined value of cement, clays (fire, kaolin), gypsum (crude), lime, stone [crushed dolomite and quartzite (1993-94), crushed dolomite and traprock (1992), dimension], talc and pyrophyllite (1993-94), tripoli (1992-93), and values indicated by symbol W		XX	60,372	XX	65,140	XX	224,000
Total		XX	403,822	XX	347,081	XX	392,000
CALIFORNIA							
Asbestos	metric tons	10,998	4,452	10,043	4,426	8,530	4,000
Boron minerals	do.	1,008,889	338,700	1,054,615	372,839	560,000	370,000
Cement (portland)	thousand metric tons	7,289	428,016	8,511	468,349	10,100	555,000
Clays[3]	do.	1,906	26,173	1,961	26,482	1,990	29,900
Gemstones		NA	9,916	NA	673	NA	17,700
Gold[5]	kilograms	33,335	369,723	35,763	414,977	[6]33,000	[6]383,000
Lime	thousand metric tons	254	18,072	193	14,751	187	14,100
Mercury	metric tons	(r)	(r)	W	W	W	W
Rare-earth metal concentrates	do.	20,699	W	17,754	W	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
CALIFORNIA—Continued							
Sand and gravel:							
Construction	thousand metric tons	102,410	$522,108	r96,300	r$475,700	93,000	$465,000
Industrial	do.	1,915	42,512	1,797	41,668	W	W
Silver[5]	metric tons	18	2,259	14	2,002	12	1,660
Stone:							
Crushed	thousand metric tons	r37,013	r198,300	38,167	249,740	r40,000	r266,000
Dimension	metric tons	r21,130	r4,148	29,082	6,299	r29,000	r6,560
Combined value of calcium chloride[10] (1992), cement (masonry), clays (fuller's earth), copper (1994), diatomite, feldspar, gypsum (crude), iron ore (usable), magnesium compounds, molybdenum (1992), perlite, potash, pumice, salt, silver (1991), soda ash, sodium sulfate (natural), talc and pyrophyllite, titanium (ilmenite), tungsten, and values indicated by symbol W		XX	402,975	XX	362,328	XX	400,000
Total		XX	2,367,354	XX	2,440,234	XX	2,500,000
COLORADO							
Clays	thousand metric tons	r3242	r3 1,796	281	2,158	281	2,160
Gemstones		NA	225	NA	258	NA	62
Gold[5]	kilograms	3,763	41,741	W	W	W	W
Peat	thousand metric tons	W	333	W	W	W	W
Sand and gravel (construction)	do.	26,721	105,281	r29,000	r117,500	31,000	130,000
Stone:							
Crushed	thousand metric tons	r10,886	r60,400	10,338	61,950	r9,800	r59,800
Dimension	metric tons	r5,855	r252	4,315	1,374	W	W
Combined value of cement, clays [fire (1992)], copper (1992-93), gypsum (crude), helium (Grade-A), lead, lime, molybdenum, perlite (1992-93), sand and gravel (industrial), silver, zinc, and values indicated by symbol W		XX	174,761	XX	216,245	XX	248,000
Total		XX	384,789	XX	399,485	XX	440,000
CONNECTICUT							
Gemstones		NA	5	NA	5	—	—
Sand and gravel (construction)	thousand metric tons	5,466	30,107	r6,400	r34,900	6,700	37,200
Stone: (crushed)[4]	do.	r5,352	r54,500	4,599	39,525	r5,000	r43,800
Combined value of clays (common), sand and gravel (industrial), and stone (crushed dolomite and miscellaneous, dimension)		XX	13,451	XX	16,246	XX	16,300
Total		XX	98,063	XX	90,676	XX	97,300
DELAWARE							
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	2,257	8,574	r2,500	r10,300	2,100	8,700
Total[11]		XX	8,575	XX	10,301	XX	8,700
FLORIDA							
Cement:							
Masonry	thousand metric tons	310	22,424	351	27,264	462	35,900
Portland	do.	2,898	161,969	4,195	210,762	4,120	207,000
Clays[3]	do.	367	37,201	407	52,699	408	52,800
Gemstones		NA	1	NA	W	NA	W
Peat	thousand metric tons	191	3,158	219	3,781	250	4,060
Sand and gravel:							
Construction	do.	21,107	66,141	r22,800	r73,100	25,000	83,700
Industrial	do.	433	5,167	504	5,911	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p 2] Quantity	1994[p 2] Value (thousands)
FLORIDA—Continued							
Stone (crushed)[4]	thousand metric tons	r53,796	r$266,900	64,926	$313,270	r72,000	r$360,000
Combined value of clays [common, kaolin (1994)] magnesium compounds, phosphate rock, rare-earth metal concentrates, staurolite, stone [crushed dolomite and limestone (1993-94), crushed marl (1992)], titanium concentrates (ilmenite and rutile), zircon concentrates, and values indicated by symbol W		XX	876,799	XX	623,845	XX	724,000
Total		XX	1,439,760	XX	1,310,632	XX	1,470,000
GEORGIA							
Clays	thousand metric tons	[3]8,962	[3]970,905	[3]9,759	[3]995,013	10,400	1,080,000
Gemstones		NA	645	NA	51	NA	44
Sand and gravel:							
Construction	thousand metric tons	4,409	15,581	r4,600	r16,600	4,800	17,800
Industrial	do.	533	8,783	491	7,941	W	W
Stone:							
Crushed	do.	r[4]39,916	r[4]244,200	49,353	292,144	r53,000	r318,000
Dimension	metric tons	r[4]144,327	r[4]13,138	[4]176,291	[4]18,746	r157,000	r31,000
Combined value of barite, bauxite, cement, clays [fire (1992-93)], feldspar, iron oxide pigments (crude), mica (scrap), stone [crushed marl, marble, and miscellaneous (1992), dimension marble (1992-93)], and value indicated by symbol W		XX	93,002	XX	101,223	XX	92,600
Total		XX	1,346,254	XX	1,431,718	XX	1,540,000
HAWAII							
Cement:							
Masonry	thousand metric tons	7	1,421	7	880	6	764
Portland	do.	520	53,936	451	48,269	415	44,300
Stone (crushed)[4]	do.	r9,525	r93,500	8,456	81,412	r8,700	r84,000
Combined value of other industrial minerals		XX	(12)	XX	8,143	XX	8,290
Total		XX	[11]148,857	XX	138,704	XX	137,000
IDAHO							
Gemstones		NA	390	NA	566	NA	119
Gold[5]	kilograms	4,037	44,774	W	W	[6]5,600	[6]65,000
Molybdenum	metric tons	W	W	—	—	5,550	30,600
Phosphate rock	thousand metric tons	5,208	84,000	4,355	78,432	W	W
Pumice	metric tons	55,525	401	43,438	327	W	W
Sand and gravel:							
Construction	thousand metric tons	13,522	40,728	r13,600	r44,900	15,500	52,700
Industrial	do.	728	9,214	W	W	W	W
Silver[5]	metric tons	254	32,131	190	26,232	162	22,400
Stone (crushed)	thousand metric tons	r3,629	r19,200	4,602	20,770	r4,000	r18,400
Combined value of antimony, cement, clays (common), copper, feldspar, garnet (abrasive), lead, lime, perlite (1992), stone (dimension), vanadium ore, zinc, and values indicated by symbol W		XX	78,980	XX	102,983	XX	154,000
Total		XX	309,818	XX	274,210	XX	343,000
ILLINOIS							
Cement (portland)	thousand metric tons	2,595	118,982	2,430	122,779	2,330	118,000
Clays[3]	do.	535	2,362	477	1,086	477	1,090
Gemstones		NA	715	NA	328	NA	325
Sand and gravel:							
Construction	thousand metric tons	32,382	123,720	r34,500	r137,300	36,500	151,000
Industrial	do.	4,241	57,454	4,224	61,734	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p 2] Quantity	1994[p 2] Value (thousands)
ILLINOIS—Continued							
Stone (crushed)[4]	thousand metric tons	r65,952	r$322,800	61,487	$315,149	r65,000	r$345,000
Combined value of barite (1992-93), cement [masonry (1992)], clays (fuller's earth), copper, fluorspar, lead, lime, peat, silver, stone [crushed sandstone (1993-94), crushed sandstone and limestone (1992), dimension], tripoli (1992-93), zinc, and value indicated by symbol W		XX	108,252	XX	95,929	XX	155,000
Total		XX	734,285	XX	734,305	XX	770,000
INDIANA							
Cement:							
Masonry	thousand metric tons	337	24,822	W	W	W	W
Portland	do.	2,237	110,737	2,065	108,702	2,280	120,000
Clays	do.	r3842	r3,016	r3600	r2,540	700	2,520
Gemstones		NA	720	NA	47	NA	W
Peat	thousand metric tons	24	512	24	W	22	472
Sand and gravel:							
Construction	do.	26,183	95,889	r27,000	r102,600	28,600	112,000
Industrial	do.	107	1,278	W	W	W	W
Stone:							
Crushed	do.	r39,009	r178,000	36,862	165,861	r41,000	r193,000
Dimension	metric tons	r172,739	r26,767	r4155,616	r422,876	r126,000	r18,100
Combined value of clays (ball), gypsum (crude), lime, stone [dimension sandstone (1993)], and values indicated by symbol W		XX	35,145	XX	70,368	XX	71,700
Total		XX	476,886	XX	472,994	XX	517,000
IOWA							
Cement:							
Masonry	thousand metric tons	45	4,120	W	W	W	W
Portland	do.	2,562	116,477	2,302	136,316	2,500	148,000
Clays	do.	389	1,612	358	1,667	371	2,030
Gemstones		NA	1,606	NA	46	NA	W
Gypsum (crude)	thousand metric tons	1,989	11,626	1,988r	12,280	2,180	13,600
Sand and gravel (construction)	do.	15,263	58,382	r16,600	r64,700	18,500	74,000
Stone (crushed)	do.	r4 34,473	r4 186,200	30,500	168,597	r31,000	r174,000
Combined value of lime, peat, sand and gravel (industrial), stone [crushed dolomite and limestone (1992), dimension], and values indicated by symbol W		XX	11,140	XX	13,920	XX	15,000
Total		XX	391,163	XX	397,526	XX	426,000
KANSAS							
Cement:							
Masonry	thousand metric tons	31	1,914	35	2,408	43	2,880
Portland	do.	1,551	79,464	1,383	73,914	1,810	97,000
Clays	do.	544	3,921	r3513	r31,965	561	3,370
Helium:							
Crude	million cubic meters	W	W	23	20,378	28	27,300
Grade-A	do.	W	W	52	103,949	53	105,000
Salt[13]	thousand metric tons	1,852	98,620	2,316	103,019	2,590	105,000
Sand and gravel (construction)	do.	10,867	27,289	r11,900	r30,700	13,500	37,100
Stone:							
Crushed[4]	do.	r15,331	r69,600	18,847	90,663	r21,000	r104,000
Dimension	metric tons	W	W	24,728	2,539	r19,100	r2,330

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[P 2] Quantity	1994[P 2] Value (thousands)
KANSAS—Continued							
Combined value of clays [fuller's earth (1993)], gemstones, gypsum (crude), pumice, salt (brine), sand and gravel (industrial), stone [crushed quartzite (1992), crushed sandstone (1993-94), dimension (1992), dimension sandstone (1993)], and values indicated by symbol W		XX	$124,274	XX	$12,577	XX	$11,900
Total		XX	405,082	XX	442,112	XX	495,000
KENTUCKY							
Clays[3]	thousand metric tons	760	3,777	768	3,057	762	2,960
Sand and gravel (construction)	do.	6,710	24,412	r7,700	r29,900	8,900	35,600
Stone (crushed)	do.	r53,342	r251,100	r49,028	r226,058	p r53,500	p r257,000
Combined value of cement, clays (ball), gemstones, lime, and stone [crushed sandstone (1993-94)]		XX	121,285	XX	128,488	XX	136,000
Total		XX	400,574	XX	387,503	XX	431,000
LOUISIANA							
Clays	thousand metric tons	384	3,589	375	496	375	496
Gemstones		NA	3,960	NA	141	NA	W
Salt	thousand metric tons	12,054	112,334	12,374	115,464	14,400	135,000
Sand and gravel:							
Construction	do.	11,489	48,698	r11,900	r51,500	12,600	56,000
Industrial	do.	471	9,267	465	9,359	W	W
Sulfur (Frasch)	do.	1,105	W	740	W	W	W
Combined value of gypsum (crude), lime, stone [crushed limestone, shell, and miscellaneous (1993-94), crushed shell and miscellaneous (1992)], and values indicated by symbol W		XX	131,432	XX	54,649	XX	136,000
Total		XX	309,280	XX	231,609	XX	328,000
MAINE							
Gemstones		NA	108	NA	9,685	NA	W
Sand and gravel (construction)	thousand metric tons	6,081	26,932	r4,400	r18,900	5,800	25,800
Stone (crushed)	do.	r1,724	r11,400	1,832	10,359	r2,100	r12,300
Combined value of cement, clays (common), peat, stone (dimension), and value indicated by symbol W		XX	17,479	XX	21,184	XX	19,400
Total		XX	55,919	XX	60,128	XX	57,500
MARYLAND							
Cement (portland)	thousand metric tons	1,514	84,191	1,634	81,639	1,540	77,000
Clays	do.	227	980	294	705	254	731
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	10,875	69,297	r11,200	r72,200	10,800	70,200
Stone:							
Crushed	do.	r21,591	r180,400	23,051	152,273	r25,000	r170,000
Dimension	metric tons	r10,310	r1,024	19,345	2,024	r16,600	r1,770
Combined value of other industrial minerals		XX	3,473	XX	4,677	XX	4,860
Total		XX	339,366	XX	313,519	XX	325,000
MASSACHUSETTS							
Gemstones		NA	1	NA	W	NA	W
Sand and gravel:							
Construction	thousand metric tons	10,916	48,671	r10,800	r1,300	11,600	56,300
Industrial	do.	8	151	2	42	W	W
Stone:							
Crushed	do.	r9,435	r77,200	r9,455	r76,267	p r8,500	p r68,900
Dimension	metric tons	r59,725	r9,292	152,536	21,323	W	W
Combined value of clays (common), lime, peat, and stone [crushed dolomite and miscellaneous (1993-94)], and values indicated by symbol W		XX	12,086	XX	11,280	XX	32,000
Total		XX	147,401	XX	160,212	XX	157,000

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994p[2] Quantity	1994p[2] Value (thousands)
MICHIGAN							
Cement:							
Masonry	thousand metric tons	212	$20,381	216	$17,376	238	$19,200
Portland	do.	4,998	262,063	5,116	313,246	5,700	349,000
Clays	do.	1,265	4,345	1,234	4,848	1,140	11,700
Gemstones		NA	1	NA	1	NA	W
Gypsum (crude)	thousand metric tons	1,606	13,889	1,687	14,230	1,850	15,700
Iron ore (usable)	do.	12,881	W	12,940	W	13,100	W
Lime	do.	577	31,253	596	30,926	598	31,000
Peat	do.	181	5,894	186	6,114	188	6,190
Salt	do.	W	W	W	W	1,010	112,000
Sand and gravel:							
Construction	do.	43,539	143,107	r45,000	r157,500	49,800	182,000
Industrial	do.	1,954	22,585	2,567	25,129	W	W
Stone (crushed)	do.	r35,017	r125,500	31,019	111,763	r30,500	r111,000
Combined value of bromine,e calcium chloride [natural[10] (1992)], copper, iron oxide pigments (crude), magnesium compounds, potash, silver, stone (dimension), and values indicated by symbol W		XX	961,038	XX	823,112	XX	784,000
Total		XX	1,590,056	XX	1,504,245	XX	1,620,000
MINNESOTA							
Gemstones		NA	686	NA	65	NA	W
Iron ore (usable)	thousand metric tons	42,348	1,180,563	42,459	1,126,576	43,000	1,170,000
Peat	do.	36	2,764	33	1,931	29	2,260
Sand and gravel (construction)	do.	34,114	98,673	r30,500	r85,400	31,800	92,200
Stone:							
Crushed	do.	r9,525	r39,500	9,423	37,736	r10,200	r44,400
Dimension	metric tons	r32,833	r11,436	33,466	11,766	W	W
Combined value of clays (common, kaolin), lime, sand and gravel (industrial), and values indicated by symbol W		XX	30,364	XX	35,250	XX	47,000
Total		XX	1,363,986	XX	1,298,724	XX	1,350,000
MISSISSIPPI							
Clays	thousand metric tons	r1,120	r38,090	1,100	38,228	1,100	39,400
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	10,403	44,124	r14,500	r57,300	16,000	65,600
Stone (crushed)	do.	r2,268	r10,400	2,102	8,122	r1,700	r6,600
Combined value of other industrial minerals		XX	28,780	XX	(12)	XX	(12)
Total		XX	121,395	XX	r11103,651	XX	r11112,000
MISSOURI							
Cement (portland)	thousand metric tons	4,286	196,073	4,057	201,016	4,920	244,000
Clays[3]	do.	1,195	8,327	1,184	7,737	1,290	8,040
Copper[5]	metric tons	10,766	25,497	6,982	14,094	7,130	17,000
Gemstones		NA	862	NA	46	NA	W
Iron ore (usable)	thousand metric tons	19	W	287	W	291	W
Lead[5]	metric tons	299,741	231,946	277,427	194,129	285,000	224,000
Sand and gravel:							
Construction	thousand metric tons	8,186	26,457	r6,400	r19,800	9,500	30,800
Industrial	do.	644	10,931	520	9,389	W	W
Silver[5]	metric tons	32	4,084	40	5,578	34	4,700
Stone (crushed)	thousand metric tons	r47,355	r187,400	53,368	239,297	r61,000	r290,000
Zinc[5]	metric tons	44,031	56,670	40,171	40,872	44,500	45,200
Combined value of barite, cement (masonry), clays (fuller's earth), iron oxide pigments (crude), lime, stone (dimension), and values indicated by symbol W		XX	148,286	XX	123,466	XX	140,000
Total		XX	896,533	XX	855,424	XX	1,000,000

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
MONTANA							
Clays	thousand metric tons	[3]35	[3]$101	W	W	W	W
Gemstones		NA	674	NA	$281	NA	$3,400
Gold[5]	kilograms	13,994	155,210	14,325	166,219	[6]13,600	[6]158,000
Palladium	do.	6,470	18,097	6,500	25,287	6,500	25,100
Platinum	do.	1,840	21,060	1,800	21,412	1,800	21,400
Sand and gravel (construction)	thousand metric tons	10,078	31,375	e10,000	e32,000	7,500	24,000
Silver[5]	metric tons	197	24,990	127	17,566	108	14,900
Stone (crushed)	thousand metric tons	e1,996	e6,200	2,816	10,375	e2,100	e8,000
Talc and pyrophyllite	metric tons	407,657	16,162	349,559	11,892	W	W
Zinc[5]	do.	20,588	26,498	W	W	W	W
Combined value of barite, cement [masonry (1992), portland], clays [bentonite, common (1993-94), fire (1993-94)], copper, iron ore (usable), lead, lime, molybdenum, peat, phosphate rock, sand and gravel (industrial), stone (dimension), vermiculite (1992), and values indicated by symbol W		XX	238,787	XX	198,998	XX	237,000
Total		XX	539,154	XX	484,030	XX	492,000
NEBRASKA							
Clays	thousand metric tons	183	879	192	932	202	8,430
Gemstones		NA	645	NA	W	NA	W
Lime	thousand metric tons	26	1,741	24	1,233	12	617
Sand and gravel (construction)	do.	11,980	38,108	e12,900	e41,900	12,400	40,900
Stone (crushed)	do.	e5,352	e29,100	6,763	38,871	e7,200	e42,500
Combined value of cement, sand and gravel (industrial), and values indicated by symbol W		XX	44,317	XX	43,240	XX	44,200
Total		XX	114,790	XX	126,176	XX	137,000
NEVADA							
Barite	thousand metric tons	W	W	242	9,100	W	W
Clays[3]	do.	51	7,722	16	3,434	16	3,430
Gemstones		NA	661	NA	660	NA	300
Gold[5]	kilograms	203,393	2,255,837	210,763	2,445,590	[6]212,000	[6]2,460,000
Mercury	metric tons	64	373	W	W	W	W
Sand and gravel:							
Construction	thousand metric tons	22,020	93,585	e24,900	e107,600	26,400	116,000
Industrial	do.	482	W	480	W	W	W
Silver[5]	metric tons	614	77,724	713	98,546	607	82,900
Stone (crushed)	thousand metric tons	e1,089	e6,700	1,067	12,529	e1,750	e13,800
Combined value of brucite, cement (portland), clays [fuller's earth (1993-94), kaolin], copper, diatomite, fluorspar (1993-94), gypsum (crude), lime, lithium minerals, magnesite, perlite, salt, and values indicated by symbol W		XX	148,181	XX	143,798	XX	158,000
Total		XX	2,590,783	XX	2,821,257	XX	2,840,000
NEW HAMPSHIRE							
Clays	thousand metric tons	W	W	3	16	3	16
Gemstones		NA	4	NA	9	NA	W
Sand and gravel (construction)	thousand metric tons	5,839	25,570	e4,800	e20,700	6,000	26,400
Stone:							
Crushed	do.	e1,542	e11,000	1,390	7,794	e1,800	e10,500
Dimension	metric tons	e34,153	e5,460	53,106	8,674	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
NEW HAMPSHIRE—Continued							
Combined value of other industrial minerals and values indicated by symbol W		XX	([12])	XX	—	XX	([12])
Total		XX	[11]$42,034	XX	$37,193	XX	[11]$36,900
NEW JERSEY							
Gemstones		NA	1	NA	1	—	—
Sand and gravel:							
Construction	thousand metric tons	14,892	79,993	r14,700	r80,100	15,300	84,900
Industrial	do.	1,377	24,727	1,826	28,640	W	W
Stone (crushed)[4]	do.	r15,513	r126,000	16,702	137,872	r17,500	r148,000
Combined value of clays [common, fire (1992-93)], greensand, peat, stone [crushed sandstone and miscellaneous (1992-93), crushed limestone and sandstone (1994)], titanium concentrates [ilmenite and rutile (1992)], zircon concentrates (1992), and value indicated by symbol W		XX	9,718	XX	15,734	XX	41,100
Total		XX	240,439	XX	262,347	XX	274,000
NEW MEXICO							
Clays[3]	thousand metric tons	33	79	33	101	56	129
Copper[5]	metric tons	211,337	500,504	224,305	452,771	229,000	546,000
Gemstones		NA	34	NA	10	NA	W
Gold[5]	kilograms	W	W	995	11,550	[6]933	[6]10,800
Potash	thousand metric tons	1,436	256,620	1,311	215,858	1,150	212,000
Sand and gravel (construction)	do.	10,170	46,176	r11,100	r51,100	13,500	63,400
Silver[5]	metric tons	W	W	22	3,089	19	2,630
Stone (crushed)	thousand metric tons	r2,722	r14,400	r3,503	r18,411	e r3,800	e r20,700
Combined value of cement, clays (fire), gypsum (crude), iron ore [usable (1993-94)], lead (1992), mica (scrap), molybdenum, perlite, pumice, salt, stone [crushed quartzite (1993-94), dimension], and values indicated by symbol W		XX	53,466	XX	51,159	XX	58,300
Total		XX	871,279	XX	804,049	XX	914,000
NEW YORK							
Cement:							
Masonry	thousand metric tons	W	W	75	5,422	75	5,420
Portland	do.	W	W	2,966	149,491	2,850	144,000
Clays	do.	415	2,412	508	9,250	454	8,440
Gemstones		NA	170	NA	W	NA	W
Salt	thousand metric tons	4,703	164,729	5,619	191,491	6,050	200,000
Sand and gravel (construction)	do.	28,538	130,379	r34,900	r161,500	41,000	197,000
Stone:							
Crushed	do.	r33,384	r212,700	38,448	223,293	r33,500	r196,000
Dimension	metric tons	r16,526	r2,779	19,275	3,436	r21,400	r3,590
Combined value of emery (1993), garnet (abrasive), gypsum (crude), lead, peat, sand and gravel (industrial), silver, stone [crushed traprock (1993-94)], talc and pyrophyllite, wollastonite, zinc, and values indicated by symbol W		XX	252,578	XX	107,624	XX	115,000
Total		XX	765,747	XX	851,507	XX	869,000
NORTH CAROLINA							
Clays[3]	thousand metric tons	2,120	9,775	2,381	11,165	2,200	11,100
Feldspar	metric tons	438,624	15,498	471,879	16,687	448,000	16,400

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
NORTH CAROLINA—Continued							
Gemstones		NA	$1,219	NA	$546	NA	W
Mica (scrap)	thousand metric tons	51	2,967	51	2,696	56	$2,950
Peat	do.	W	108	W	162	W	W
Sand and gravel:							
Construction	do.	9,283	42,717	r11,100	r53,800	12,000	59,400
Industrial	do.	1,088	17,533	1,344	18,597	W	W
Stone:							
Crushed[4]	do.	r44,089	r262,400	47,787	297,657	r52,000	r338,000
Dimension	metric tons	r23,014	r7,469	31,733	12,268	r51,700	r21,700
Combined value of clays (kaolin), lithium minerals, olivine, phosphate rock, stone [crushed quartzite, slate and volcanic cinder (1993-94), volcanic cinder (1992)], talc and pyrophyllite, and values indicated by symbol W		XX	235,962	XX	203,812	XX	255,000
Total		XX	595,648	XX	617,390	XX	705,000
NORTH DAKOTA							
Gemstones		NA	643	NA	W	NA	W
Lime	thousand metric tons	101	4,288	W	4,512	W	W
Peat	do.	W	W	(3)	W	W	W
Sand and gravel (construction)	do.	7,929	20,609	r7,700	r20,400	8,000	22,000
Stone (crushed)	do.	10	W	W	W	W	W
Combined value of clays (common), sand and gravel (industrial), stone (crushed volcanic cinder), and values indicated by symbol W		XX	210	XX	131	XX	4,290
Total		XX	25,750	XX	25,043	XX	26,300
OHIO							
Cement:							
Masonry	thousand metric tons	103	10,260	93	11,305	104	12,800
Portland	do.	1,320	77,053	1,494	90,305	1,240	75,100
Clays	do.	2,288	12,062	r2,161	r12,023	2,120	11,800
Gemstones		NA	5	NA	5	NA	W
Lime	thousand metric tons	1,670	96,739	1,699	100,721	1,910	113,000
Peat	do.	W	W	W	W	19	158
Salt	do.	W	W	W	W	4,180	179,000
Sand and gravel:							
Construction	do.	42,874	177,508	r46,400	r202,900	47,000	209,000
Industrial	do.	1,276	26,445	1,360	27,533	W	W
Stone:							
Crushed	do.	r,4 43,998	r,4 194,500	52,167	228,364	r56,000	r260,000
Dimension	metric tons	r31,805	r2,244	4 25,738	4 1,207	r28,200	r1,450
Combined value of abrasives (1992-93), clays [ball (1993)], gypsum (crude), stone [crushed limestone and dolomite (1992), dimension limestone (1993)], and values indicated by symbol W		XX	145,092	XX	176,276	XX	30,400
Total		XX	741,908	XX	850,639	XX	893,000
OKLAHOMA							
Cement:							
Masonry	thousand metric tons	W	W	85	6,719	99	7,760
Portland	do.	931	39,280	1,696	77,624	1,910	87,500
Clays	do.	622	3,296	613	2,938	662	2,950
Gemstones		NA	1,863	NA	W	NA	W
Gypsum (crude)	thousand metric tons	2,361	14,915	2,651	15,434	2,900	17,000

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p,2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
OKLAHOMA—Continued							
Iodine (crude)	metric tons	1,995	$20,877	1,935	$15,443	2,030	$15,300
Sand and gravel:							
Construction	thousand metric tons	8,985	24,204	r9,700	r27,300	10,500	31,000
Industrial	do.	972	19,011	1,208	23,155	W	W
Stone:							
Crushed	do.	r,4 24,948	r,4 105,300	27,055	113,958	r30,500	r136,000
Dimension	metric tons	r4,701	r706	r,4 2,350	r,4 838	r9,110	r472
Combined value of feldspar, lime, salt, stone [crushed granite (1992), dimension limestone and sandstone (1993)], tripoli (1992-93), and values indicated by symbol W		XX	23,144	XX	14,930	XX	40,500
Total		XX	252,596	XX	298,339	XX	338,000
OREGON							
Clays	thousands metric tons	r,3 203	r,3 326	221	1,410	160	1,320
Copper[5]	metric tons	152	361	703	1,420	718	1,710
Gemstones		NA	2,723	NA	2,143	NA	2,280
Nickel ore[14]	metric tons	6,671	W	2,464	W	—	—
Sand and gravel (construction)	thousand metric tons	14,958	69,536	r15,800	r74,800	18,000	86,400
Silver[5]	metric tons	(6)	1	—	—	—	—
Stone (crushed)	thousand metric tons	r,4 15,241	r,4 74,900	18,891	84,655	r20,300	r95,400
Talc and pyrophyllite	metric tons	64	67	64	67	W	W
Combined value of cement [masonry (1992), portland], clays [bentonite (1992)], diatomite, emery (1992-93), gold (1992), lime, pumice, stone [crushed slate (1992)], and values indicated by symbol W		XX	66,256	XX	61,613	XX	67,200
Total		XX	214,170	XX	226,108	XX	254,000
PENNSYLVANIA							
Cement:							
Masonry	thousand metric tons	296	21,924	248	18,741	254	19,200
Portland	do.	5,016	258,887	5,365	282,630	5,800	305,000
Clays	do.	649	3,455	765	3,777	686	2,930
Gemstones		NA	1	NA	1	—	—
Lime	thousand metric tons	1,506	94,543	1,535	95,377	1,530	94,900
Peat	do.	15	250	9	249	13	319
Sand and gravel (construction)	do.	17,540	94,643	r16,100	r83,900	16,400	86,500
Stone:							
Crushed[4]	do.	r64,954	r380,200	69,361	405,346	r73,000	r434,000
Dimension	metric tons	r37,855	r10,822	35,665	9,892	r28,300	r5,890
Combined value of sand and gravel (industrial), stone [crushed limestone, dolomite, and quartzite (1992), crushed quartzite (1993-94)], and tripoli (1992-93)		XX	16,218	XX	13,249	XX	14,300
Total		XX	880,943	XX	913,162	XX	964,000
RHODE ISLAND							
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	2,227	11,964	r2,500	r13,900	2,800	15,800
Stone (crushed)	do.	r1,361	r9,500	1,291	9,251	r1,600	r11,600
Total[11]		XX	21,465	XX	23,152	XX	27,400

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
SOUTH CAROLINA							
Cement (portland)	thousand metric tons	2,083	$93,385	2,132	$109,369	2,280	$117,000
Clays	do.	1,608	27,694	1,539	31,304	1,830	32,500
Gemstones		NA	641	NA	W	NA	W
Gold[5]	kilograms	6,747	74,832	W	W	W	W
Sand and gravel:							
Construction	thousand metric tons	6,256	19,923	r6,800	r21,800	7,900	26,100
Industrial	do.	770	17,316	749	18,964	W	W
Stone (crushed)	do.	r 4 15,966	r 4 83,800	19,765	120,939	r20,500	r128,000
Combined value of cement (masonry), manganiferous ore, mica (scrap), peat, silver, stone [crushed dolomite (1992), dimension], vermiculite, and values indicated by symbol W		XX	29,305	XX	88,671	XX	112,000
Total		XX	346,896	XX	391,047	XX	415,000
SOUTH DAKOTA							
Gemstones		NA	967	NA	163	NA	W
Gold[5]	kilograms	18,681	207,195	19,241	223,267	6 17,000	6 197,000
Sand and gravel (construction)	thousand metric tons	7,511	22,187	r8,300	r25,000	9,500	29,900
Silver[5]	metric tons	6	802	5	651	4	553
Stone (crushed)	thousand metric tons	r4,082	r18,900	4,227	4 18,684	r 4 4,400	r 4 20,000
Combined value of cement, clays (common), feldspar, gypsum (crude), iron ore (usable), lime, mica (scrap), stone [crushed sandstone and miscellaneous (1993-94), dimension], and value indicated by symbol W		XX	50,619	XX	69,391	XX	73,700
Total		XX	300,670	XX	337,156	XX	322,000
TENNESSEE							
Clays[3]	thousand metric tons	574	24,097	607	25,703	641	27,500
Gemstones		NA	23,347	NA	21,795	NA	W
Sand and gravel:							
Construction	thousand metric tons	7,691	35,077	r7,200	r34,000	8,100	38,900
Industrial	do.	614	10,665	644	11,736	W	W
Stone:							
Crushed	do.	r42,366	r243,800	43,534	226,521	r50,000	r273,000
Dimension	metric tons	r3,084	r320	4,553	552	W	W
Combined value of cement, clays (bentonite, common, fuller's earth), copper, lead, lime, silver (1992-93), zinc, and values indicated by symbol W		XX	238,498	XX	189,358	XX	238,000
Total		XX	575,804	XX	509,665	XX	577,000
TEXAS							
Cement:							
Masonry	thousand metric tons	W	W	245	18,365	316	23,700
Portland	do.	6,840	308,749	8,127	397,600	7,820	383,000
Clays[3]	do.	2,237	12,610	2,183	17,441	2,260	21,200
Gemstones		NA	3,834	NA	400	NA	W
Gypsum (crude)	thousand metric tons	1,624	9,920	1,756	10,088	1,920	11,100
Helium (crude)	million cubic meters	W	W	6	5,385	6	5,940
Lime	thousand metric tons	1,337	83,359	1,604	103,274	1,280	82,100
Salt	do.	7,985	76,125	8,253	76,054	7,960	76,000
Sand and gravel:							
Construction	do.	41,404	166,362	r47,100	r195,000	42,000	176,000
Industrial	do.	1,392	26,501	1,433	28,558	W	W

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
TEXAS—Continued							
Stone:							
Crushed	thousand metric tons	r64,682	r$253,100	70,772	$279,245	r75,800	r$315,000
Dimension	metric tons	W	W	W	W	r46,500	r7,900
Sulfur (Frasch)	do.	1,495	W	1,164	W	W	W
Talc and pyrophyllite	do.	235,919	5,720	235,857	5,662	262,000	5,630
Combined value of clays [ball, bentonite, fuller's earth, kaolin), fluorspar (1993-94), helium (Grade-A), iron ore (usable), magnesium compounds, magnesium metal, sodium sulfate (natural), and values indicated by symbol W		XX	357,458	XX	311,041	XX	301,000
Total		XX	1,303,738	XX	1,448,113	XX	1,410,000
UTAH							
Beryllium concentrates	metric tons	4,826	5	4,939	5	5,000	6
Clays[3]	thousand metric tons	243	2,714	216	3,129	300	3,270
Gemstones		NA	634	NA	1,156	NA	1,920
Potash	thousand metric tons	W	W	210	49,690	W	W
Salt	do.	1,367	44,498	2,251	46,759	2,630	35,000
Sand and gravel (construction)	do.	16,037	54,819	r16,000	r56,000	18,000	65,700
Silver[5]	metric tons	W	W	135	18,703	W	W
Stone (crushed)	thousand metric tons	r4,808	r22,400	4,555	29,400	r5,400	r36,200
Combined value of cement, clays [bentonite, fuller's earth (1992-93)], copper, gold,[6] gypsum (crude), helium [Grade-A, (1994)], iron ore (usable), lime, magnesium compounds, magnesium metal, mercury, molybdenum, phosphate rock, sodium sulfate [natural (1992-93)], stone [dimension (1993-94)], and values indicated by symbol W		XX	1,221,160	XX	1,108,695	XX	1,290,000
Total		XX	1,346,230	XX	1,313,537	XX	1,430,000
VERMONT							
Asbestos	metric tons	4,575	1,686	3,661	1,531	1,130	1,130
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	3,152	11,291	r3,000	r10,400	2,500	8,800
Stone:							
Crushed	do.	r2,268	r12,200	2,520	12,899	r2,600	r13,900
Dimension	metric tons	r113,398	r34,639	97,352	27,875	r80,300	r24,200
Total[11]		XX	59,817	XX	52,706	XX	48,000
VIRGINIA							
Clays[3]	thousand metric tons	754	3,367	775	2,950	846	3,000
Lime	do.	764	40,271	756	40,039	785	41,600
Sand and gravel (construction)	do.	8,659	37,336	r9,000	r40,500	8,900	40,900
Stone (crushed)	do.	r43,091	r261,300	50,998	292,345	r5,600	r333,000
Combined value of cement, clays (bentonite, fuller's earth), feldspar, gemstones, gypsum (crude), iron oxide (crude), kyanite, sand and gravel (industrial), stone (dimension), talc and pyrophyllite, and vermiculite		XX	119,589	XX	88,913	XX	94,900
Total		XX	461,863	XX	464,747	XX	514,000
WASHINGTON							
Clays[3]	thousand metric tons	306	1,889	238	1,373	153	1,080
Gemstones		NA	379	NA	24	NA	2,000
Gold[5]	kilograms	8,802	97,619	7,108	82,469	[6]7,280	[6]84,500
Lime	thousand metric tons	W	W	213	W	W	W
Sand and gravel (construction)	do.	37,134	140,994	r40,200	r158,000	43,500	174,000

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p 2] Quantity	1994[p 2] Value (thousands)
WASHINGTON—Continued							
Silver[5]	metric tons	W	W	14	$1,939	12	$1,660
Stone (crushed)	thousand metric tons	r12,247	r$63,200	13,204	68,648	r15,500	r84,500
Combined value of cement, clays (fire), diatomite, lead, magnesium metal, olivine, peat, sand and gravel (industrial), stone (dimension), zinc, and values indicated by symbol W		XX	164,958	XX	192,740	XX	209,000
Total		XX	469,039	XX	505,193	XX	556,000
WEST VIRGINIA							
Clays	thousand metric tons	80	221	115	334	126	326
Gemstones		NA	1	NA	1	NA	—
Sand and gravel (construction)	thousand metric tons	1,256	5,730	r1,400	r6,700	1,300	6,200
Stone (crushed)	do.	r10,342	r57,800	r10,313	79,661	r16,400	r103,000
Combined value of cement, lime, peat, salt, and sand and gravel (industrial)		XX	47,846	XX	62,756	XX	66,300
Total		XX	111,598	XX	149,452	XX	176,000
WISCONSIN							
Gemstones		NA	5	NA	45	NA	W
Lime	thousand metric tons	473	26,579	511	30,880	511	30,900
Peat	do.	56	553	W	W	W	W
Sand and gravel:							
Construction	do.	26,415	77,066	r27,600	r82,800	28,100	87,000
Industrial	do.	1,303	26,026	1,479	31,399	W	W
Stone:							
Crushed	do.	r,e23,133	r,e89,300	26,248	98,026	r28,500	r115,000
Dimension	metric tons	r32,809	r4,227	121,573	13,098	r110,000	r12,400
Combined value of other industrial minerals and values indicated by symbol W		XX	(12)	XX	57,109	XX	97,800
Total		XX	11r23,756	XX	313,357	XX	344,000
WYOMING							
Cement (portland)	thousand metric tons	438	30,182	W	W	W	W
Clays[3]	do.	2,535	83,094	2,407	73,399	2,400	73,400
Gemstones		NA	12	NA	13	NA	W
Sand and gravel (construction)	do.	2,855	11,438	r3,400	r15,000	3,300	14,700
Stone (crushed)	do.	r4,082	r19,900	3,456	19,837	r3,700	r22,000
Combined value of cement (masonry), clays (common), gypsum [crude 1994)], helium (Grade-A), lime, soda ash, and values indicated by symbol W		XX	803,888	XX	745,608	XX	671,000
Total		XX	948,514	XX	853,857	XX	781,000

See footnotes at end of table.

TABLE 6—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES, BY STATE

Mineral	1992		1993		1994[P 2]	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
UNDISTRIBUTED						
Delaware, Hawaii (1992), Mississippi (1993-94), New Hampshire (1992, 1994), Rhode Island, Vermont, and Wisconsin (1992)	XX	$94,923	XX	$102,530	XX	$108,000

[e]Estimated. [P]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Data rounded to the first three significant digits.

[3]Excludes certain clays; kind and value included with "Combined value" data.

[4]Excludes certain stones; kind and value included with "Combined value" data.

[5]Recoverable content of ores, etc.

[6]Placer canvassing discontinued beginning 1994.

[7]Pyrites canvassing discontinued beginning 1994.

[8]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

[9]Less than 1/2 unit.

[10]Calcium chloride (natural) canvassing discontinued beginning 1993.

[11]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Values excluded from partial total included with "Undistributed States."

[12]Value excluded to avoid disclosing company proprietary data.

[13]Excludes salt in brines; value included with "Combined value" data.

[14]The Riddle nickel smelter uses lateritic ore mined on Nickel Mountain, lateritic ore imported from New Caledonia, and small tonnages of recycled Ni-bearing catalysts. In 1989, the Glenbrook Nickel Co. purchased the idled mining and smelting complex and restarted the operation. Production of ferronickel on a contained Ni basis has been as follows: 1992—8,962 metric tons (mt) valued at $62.7 million; and 1993—4,878 mt valued at $28.0 million.

TABLE 7

NONFUEL MINERAL PRODUCTION[1] IN THE COMMONWEALTH OF PUERTO RICO AND ISLANDS ADMINISTERED BY THE UNITED STATES

Mineral		1992		1993		1994[P 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
PUERTO RICO							
Cement (portland)	thousand metric tons	1,298	$119,643	1,310	$72,619	1,440	$72,600
Clays	do.	W	527	155	508	149	519
Lime	do.	27	3,717	—	—	25	3,830
Sand and gravel (industrial)	do.	W	W	58	1,396	W	W
Stone (crushed)	do.	NA	NA	7,845	51,059	[e]8,000	[e]51,000
Total		XX	[3]123,887	XX	125,582	XX	[3]128,000
ADMINISTERED ISLANDS							
American Samoa: Stone (crushed)	thousand metric tons	—	—	83	W	[e]100	W
Guam: Stone (crushed)	do.	—	—	1,373	15,095	[e]1,400	[e]15,100
Total		XX	—	XX	[3]15,095	XX	[3]15,100

[e]Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in "Total." XX Not applicable.

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

[2]Data rounded to the first three significant digits.

[3]Total does not include value of item withheld.

SURVEY METHODS FOR NONFUEL MINERALS

By Jacqueline A. McClaskey

Ms. McClaskey, an operations research analyst with 8 years of Government experience, has been with the U.S. Bureau of Mines Branch of Statistics and Methods Development since 1990.

The U.S. Bureau of Mines (USBM) Information and Analysis Directorate collects worldwide data on virtually every commercially important nonfuel mineral commodity. These data form the base for tracking and assessing the health of the minerals sector of the U.S. economy.

The USBM's data collection activity was instituted by the 47th Congress in an appropriations act of August 7, 1882 (22 Stat. 329), which placed the collection of mineral statistics on an annual basis. The most recent authority for the USBM survey activity is the National Materials and Minerals Policy, Research and Development Act of 1980 (Public Law 96-479, 96th Congress). This act strengthens protection for proprietary data provided to the U.S. Department of the Interior by persons or firms engaged in any phase of mineral or mineral-material production or consumption.

Data Collection Surveys

The USBM begins the collection of domestic nonfuel minerals and materials statistics by appraising the information requirements of Government and private organizations of the United States. Requirements that can be met by collecting data from minerals establishments are posed as questions on USBM surveys. Figure 1 shows a typical survey form.

Specific questions about the production, consumption, shipments, etc., of mineral commodities are structured in the survey forms to provide meaningful aggregated data. Thus, the entire mineral economic cycle from production through consumption is covered by 149 monthly, quarterly, semiannual, and annual surveys.

After the survey form has been designed, a list of the appropriate establishments to be canvassed is developed. Many sources are used to determine which companies, mines, plants, and other operations should be included on the survey mailing list. State geologists, Federal organizations (e.g., Mine Safety and Health Administration), trade associations, industry representatives, and trade publications and directories are some of the sources that are used to develop and update survey listings. With few exceptions, a complete canvass of the list of establishments is employed rather than a sample survey. The iron and steel scrap industry is one of the exceptions where a sample survey is conducted.

The Paperwork Reduction Act requires that any Government agency wishing to collect information from 10 or more individuals or establishments first obtain approval from the Office of Management and Budget (OMB). OMB approves the need to collect the data and protects industry from unwarranted Government paperwork.

Survey Processing

The USBM surveys approximately 25,000 establishments. Each year the USBM mails about 43,500 forms that gather information for 149 different surveys. Each completed survey form returned to the USBM undergoes extensive scrutiny to ensure the highest possible accuracy of the mineral data. The statistical staff monitors all surveys to ensure that errors are not created by reporting in physical units different from the units requested on the form. Relationships between related measures, such as produced crude ore and marketable crude ore, are analyzed for consistency. Engineering relationships, such as recovery factors from ores and concentrates, are also employed. The totals for each form are verified, and currently reported data are checked against prior reports to detect possible errors or omissions.

All surveys forms are reviewed for completeness and accuracy prior to data entry. The computer is

programmed to conduct a series of automated checks to verify mathematical consistency and to identify discrepancies between the data reported and logically acceptable responses.

The USBM is modernizing and automating all of its survey processing and data dissemination functions. Automated commodity data system functions include computerized preparation of statistical tables; the use of desktop publishing to integrate text and tables; and electronic dissemination through a bulletin board system and the Internet. Also, information on minerals and mineral-related publications is now available through an easy-to-use automated facsimile (fax) response system known as MINES FaxBack.

To produce reliable aggregated data, the USBM employs efficient procedures for handling instances of nonresponse. Failure to return the initial survey form results in a second mailing of the form. If the second form is not returned, telephone calls are made to the nonrespondents. The followup calls provide the necessary data to complete the survey forms and/or verify questionable data entries. Periodic visits to important minerals establishments also are made by USBM commodity specialists to gather missing data and to explain the importance of the establishment's reporting. By describing the use of the published statistics and showing the impact of nonresponse, the USBM strives to encourage respondents to give a complete and accurate reply.

The OMB "Guidelines for Reducing Reporting Burden" stipulates that the minimum acceptable response rate shall be 75% of the panel surveyed. In addition, the USBM strives for a minimum reporting level of 75% of the quantity produced or consumed (depending on the survey) for certain key statistics. Response rates are periodically reviewed. For those surveys not meeting the minimum reporting level, procedures are developed and implemented to improve response rates.

Estimation for Nonresponse.—When efforts to obtain a response to a survey fail, it becomes necessary to employ estimation or imputation techniques to account for missing data. These techniques are most effective when the response rate is relatively high. Some of the estimation methods depend on knowledge of prior establishment reporting, while other techniques rely on external information to estimate the missing data. When survey forms are received after the current publication has been completed, the forms are edited, necessary imputations are made for missing data, and the survey data base is updated. The revised data are reported in later publications.

Protection of Proprietary Data.—The USBM relies on the cooperation of the U.S. minerals industry to provide the mineral data that are presented in this and other USBM publications. Without a strong response to survey requests, the USBM would not be able to present reliable statistics. The USBM in turn respects the proprietary nature of the data received from the individual companies and establishments. To ensure that proprietary rights will not be violated, the USBM analyzes each of the aggregated statistics to determine if the data reported by an individual establishment can be deduced from the aggregated statistics. If, for example, there are only two significant producers of a commodity in a given State, the USBM will not publish the State total because either producer could readily estimate the production of the other. It is this obligation to protect proprietary information that results in the "Withheld" or "W" entries in the published tables. However, if a company gives permission in writing, the USBM will publish the data as long as the data from other respondents are protected from disclosure.

Publications

The USBM disseminates current and historical minerals information through a broad range of printed publications.

The Minerals Yearbook summarizes annually, on a calendar-year basis, the significant economic and technical developments in the mineral industries. Three separate volumes are issued each year: Volume I, Metals and Minerals; Volume II, Area Reports, Domestic; and Volume III, Area Reports, International. Chapters in all volumes are issued separately as Mineral Industry Surveys (MIS) before the bound volume is available. Volume I of the Minerals Yearbook presents, by mineral commodity, salient statistics on production, trade, consumption, reserves, and other measures of economic activity. Volume II of the Minerals Yearbook reviews the U.S. minerals industry by State and island possessions. Volume III of the Minerals Yearbook contains the latest available mineral data for the year of review on more than 180 foreign countries and discusses the importance of minerals to the economies of these nations.

MIS contain timely statistical and economic data on minerals. The surveys are designed to keep Government agencies and the public, particularly the

mineral industry and the business community, informed of trends in the production, distribution, inventories, and consumption of minerals. Frequency of issue depends on the demand for current data. MIS are released monthly, quarterly, semiannually, or annually.

Mineral Commodity Summaries, an up-to-date summary of about 80 nonfuel mineral commodities, is the earliest Government publication to furnish estimates covering the previous year's nonfuel mineral industry data. It contains information on the domestic industry structure, Government programs, tariffs, 5-year salient statistics, and a summary of international mining news.

Metal Industry Indicators, published monthly, contains indexes that measure the current and future performance of four U.S. minerals industries. For each of the four industries, a composite coincident index and a composite leading index have been developed based on procedures and data similar to those used to construct the U.S. Department of Commerce's coincident and leading cyclical indicators for the national economy.

Information Circulars and special publications are primarily concerned with USBM economic reviews and interpretative analyses. These series also include surveys of mining and operating activities, guides to marketing of mineral commodities, and compilations of historical information and statistical and economic data on minerals.

Order free copies of the Mineral Industry Surveys, the Metal Industry Indicators, or the current bimonthly list of new USBM publications from Publication Distribution, U.S. Bureau of Mines, Cochrans Mill Rd., P.O. Box 18070, Pittsburgh, PA 15236, (412) 892-4338.

To purchase Minerals Yearbooks, Mineral Commodity Summaries, or Special Publications, order from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 512-1800.

Information Circulars may be purchased from the National Technical Information Service, Springfield, VA 22161, 1-800-553 NTIS (in Virginia and foreign countries: 1-703-487-4650). Bureau publications are also available on a CD-ROM format. The CD-ROM is updated on a quarterly basis. It is available from the Government Printing Office at the number listed above.

Electronic Data Dissemination

In addition to the USBM's printed publications, current Mineral Industry Surveys for all commodities are now available through the USBM's bulletin board system. Using this system, the public may obtain information up to 4 weeks before published copies of the reports would arrive in the mail. The system may be accessed by calling (202) 501-0373 using a modem set to 1200, 2400, 9600, or 14,4000 baud, 8 data bits, no parity, and 1 stop bit. Further information on how to use the system may be obtained from the system operator by calling (202) 501-0406.

Also, current information on minerals and mineral-related publications from the USBM is now available through an easy-to-use automated facsimile response system. The MINES FaxBack service allows callers to retrieve information and order some publications for delivery to their fax machines in minutes, 24 hours per day, 7 days per week. MINES FaxBack makes monthly and quarterly Mineral Industry Surveys publications available to the public at the same time they are forwarded to the printer.

MINES FaxBack works from any Group III-compatible fax machine equipped with a touch-tone telephone (either a built-in handset with touch-tone capability or a separate touch-tone telephone plugged into the fax machine's phone jack). After calling MINES FaxBack, the requestor is guided by a series of voice messages that assist the caller in ordering the desired documents. The caller pays for the phone call that also includes the time needed to deliver the requested document to the caller's fax machine.

To access the MINES FaxBack System, use a touch-tone handset attached to a fax machine or connect a touch-tone telephone to the fax machine's telephone jack and dial (202) 219-3644. Listen to the menu options and select an option using the touch-tone telephone. After completing a selection, press the start button on the fax machine.

FIGURE 1

A TYPICAL SURVEY FORM

Form 6-1066-M
Fer. (9-93)

A03

O.M.B.No. 1032-0006.
Approval Expires: 11/30/95

INDIVIDUAL COMPANY
DATA-PROPRIETARY

Unless authorization is granted in the section above the signature, the data furnished in this report will be treated in confidence by the Department of the Interior, except that they may be disclosed to Federal defense agencies, or to the Congress upon official request for appropriate purposes.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241

IRON ORE (Usable ore)

FACSIMILE NUMBER
1-800-543-0661

(Please correct if name or address has changed.)

Public reporting burden for this collection of information is estimated to average 30 MINUTES per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Bureau of Mines, Branch of Statistics and Methods Development, Washington D.C. 20241; and Office of Information and Regulatory Affairs, Office of Management and Budget, Washington D.C. 20503.

Please complete and return this form in the enclosed envelope by the 15th of the month following the report period. Additional forms are available upon request.

In completing this form, reasonable estimates may be used wherever exact figures are not available. Use zero (0) when appropriate. DO NOT REPORT DECIMALS OR FRACTIONS.

"Collection of non-fuel minerals information is authorized by Public Law 96-479 and the Defense Production Act. This information is used to support executive policy decisions pertaining to emergency preparedness and defense and analyses for minerals legislation and industrial trends. The Bureau relies on your voluntary and timely response to assure that its information is complete and accurate."

SECTION 1. Mine or group covered by this report.

Name_____ State_____ County_____

SECTION 2. Stocks, production, and shipments of usable ore for the report month.
Report only ore products as shipped to consumer, such as direct-shipping ore, concentrates, or agglomerates.
Report ores produced in the United States only; do not include imports.

Usable ore (1)	Code	Weight unit Mark (X) one (2)		Physical inventory Adjustment only (3)	Beginning stocks (4)	Production (5)	Shipments (6)	Ending stocks (7)
		Long tons (4)	Metric tons (6)					
Iron ore (Containing less than 5% Mn, natural)...	201							

SECTION 3. Please indicate any mines opened or closed by your company during the month. _____

Remarks:

Name of person to be contacted regarding this report		Tel. area code	No.	Ext.
Address No. Street	City		State	Zip

May tabulations be published which could indirectly reveal the data reported above? ☐ (1) Yes ☐ (2) No

Signature	Title	Date

THE MINERAL INDUSTRY OF ALABAMA

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 Geological Survey of Alabama for collecting information on all nonfuel minerals.

Alabama ranked 19th in the Nation in nonfuel mineral value[1] in 1994, down from 18th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $576 million, a 2.5% increase over that of 1993. This followed a 3.5% increase in 1993 over that of 1992. The State accounted for a little less than 2% of the U.S. total. Nonfuel mineral production in Alabama consisted entirely of industrial minerals; no metals were mined in the State. Bauxite materials mined in the State are a natural mixture of bauxitic clay and bauxite having very low iron oxide content and are primarily used to make refractory (high temperature resistant) products, rather than in the production of primary aluminum. In descending order of dollar value, the top four mineral commodities produced in Alabama were crushed stone, portland cement, lime, and construction sand and gravel. These commodities accounted for almost 88% of the State's total nonfuel mineral value, while crushed stone and portland cement together represented almost 65% of the total. In estimated mineral production for 1994, Alabama remained first in common clays and first of only two States that produced bauxite; third in lime, kaolin clays, and fire clays; seventh in portland cement and salt; and was one of the top seven States that produce bentonite clays. The State dropped from third to fifth in masonry cement. Production of talc and pyrophyllite resumed in 1994. Compared with 1993, the value of crushed stone, lime, construction sand and gravel, common clays, kaolin clays, fire clays, bauxite, and talc and pyrophyllite increased. Decreases occurred in portland cement, masonry cement, industrial sand and gravel, and dimension stone.

According to the Geological Survey of Alabama, crushed stone production continued to lead nonfuel mineral mining activity in Alabama during 1994. The types of stone quarried were limestone, dolomite, marble, granite, quartzite, and sandstone. Mine production (by quantity produced) of crushed stone was followed by that of construction sand and gravel, a variety of clays, including common clays and shale, fire clays, bentonite, fuller's earth clays and kaolin, and lime. Vance Material L.L.C. reopened a crushed stone quarry in eastern Tuscaloosa County adjacent to one of the largest construction sites in the State, the Mercedes-Benz automobile assembly plant. The Drummond Co. Inc. began production from its Shoal Creek underground mine in western Jefferson County. Low-sulfur coal was mined at a depth of 360 meters (1,190 feet) with expected annual production of 4.1

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ALABAMA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	193	$11,105	277	$21,908	276	$21,800
Portland	do.	3,721	180,763	3,748	190,770	3,650	186,000
Clays[2]	do.	2,381	20,914	2,492	23,195	2,850	27,300
Lime	do.	1,454	82,619	1,625	89,457	1,660	91,500
Sand and gravel:							
Construction	do.	11,153	42,038	e10,300	e39,100	10,600	41,300
Industrial	do.	605	6,768	559	6,802	W	W
Stone (crushed)	do.	e[3]25,945	e[3]175,600	28,863	175,607	e30,500	e187,000
Combined value of bauxite, clays [bentonite, kaolin (1992)], gemstones, salt, stone [crushed dolomite and granite (1992), dimension], talc and pyrophyllite (1994), and value indicated by symbol W		XX	22,907	XX	14,937	XX	21,110
Total		XX	542,714	XX	561,776	XX	e576,000

eEstimated. pPreliminary. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes certain clays; kind and value included with "Combined value" data.
[3]Excludes certain stones; kind and value included with "Combined value" data.
[4]Data do not add to total shown because of independent rounding.

million metric tons (Mmt), or 4.5 million short tons (Mst), making Shoal Creek one of the five largest underground coal mines in the United States. Coal production through the third quarter of fiscal year 1994 totaled 16.4 Mmt (18.1 Mst). Underground mine production was 10.1 Mmt (11.1 Mst) and surface mine production totaled 6.3 Mmt (6.9 Mst). Jefferson, Tuscaloosa, and Walker Counties were the principal areas of coal production. The Geological Survey of Alabama completed several geologic studies to establish baseline data related to the State's future mineral resource development efforts.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
ALABAMA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	699	$3,016	$4.31
Filter stone	1	4	4.00
Coarse aggregate, graded:			
Concrete aggregate, coarse	4,045	18,076	4.47
Bituminous aggregate, coarse	2,419	10,862	4.49
Bituminous surface-treatment aggregate	399	1,824	4.57
Railroad ballast	W	W	4.43
Fine aggregate (-3/8 inch):			
Stone sand, concrete	596	2,682	4.50
Stone sand, bituminous mix or seal	W	W	4.55
Screening, undesignated	476	1,509	3.17
Coarse and fine aggregates:			
Graded road base or subbase	2,403	9,289	3.87
Unpaved road surfacing	W	W	4.60
Terrazzo and exposed aggregate	W	W	4.84
Crusher run or fill or waste	2,105	9,131	4.34
Other coarse and fine aggregates	W	W	4.08
Other construction materials[2]	1,909	8,639	4.53
Agricultural:			
Agricultural limestone	287	2,089	7.28
Chemical and metallurgical:			
Cement manufacture	2,113	5,086	2.41
Lime manufacture	1,760	8,063	4.58
Flux stone	(2)	(2)	4.12
Special:			
Mine dusting or acid water treatment	(2)	(2)	5.30
Asphalt fillers or extenders	(2)	(2)	20.38
Other fillers or extenders	(2)	(2)	66.10
Other specified uses not listed	835	47,477	56.86
Unspecified:[3]			
Actual	8,035	42,650	5.31
Estimated	781	5,210	6.67
Total	28,863	175,607	6.08
Total[4 5]	31,816	175,607	5.52

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, limestone-dolomite,marble, and slate.
[2]Included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 3
ALABAMA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	37	r23,029	r$100,386	r$4.36	36	24,937	$107,217	$4.30
Dolomite	3	W	W	4.63	3	W	W	5.89
Marble	3	W	W	r42.14	2	W	W	41.40
Granite	1	W	W	5.97	1	W	W	6.58
Sandstone	1	34	222	6.52	—	—	—	—
Slate	1	W	W	6.57	2	W	W	5.61
Total[2]	XX	r27,057	r173,864	6.43	XX	28,863	175,607	6.08
Total[3 4]	XX	r29,825	r173,864	r5.83	XX	31,816	175,607	5.52

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "Limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

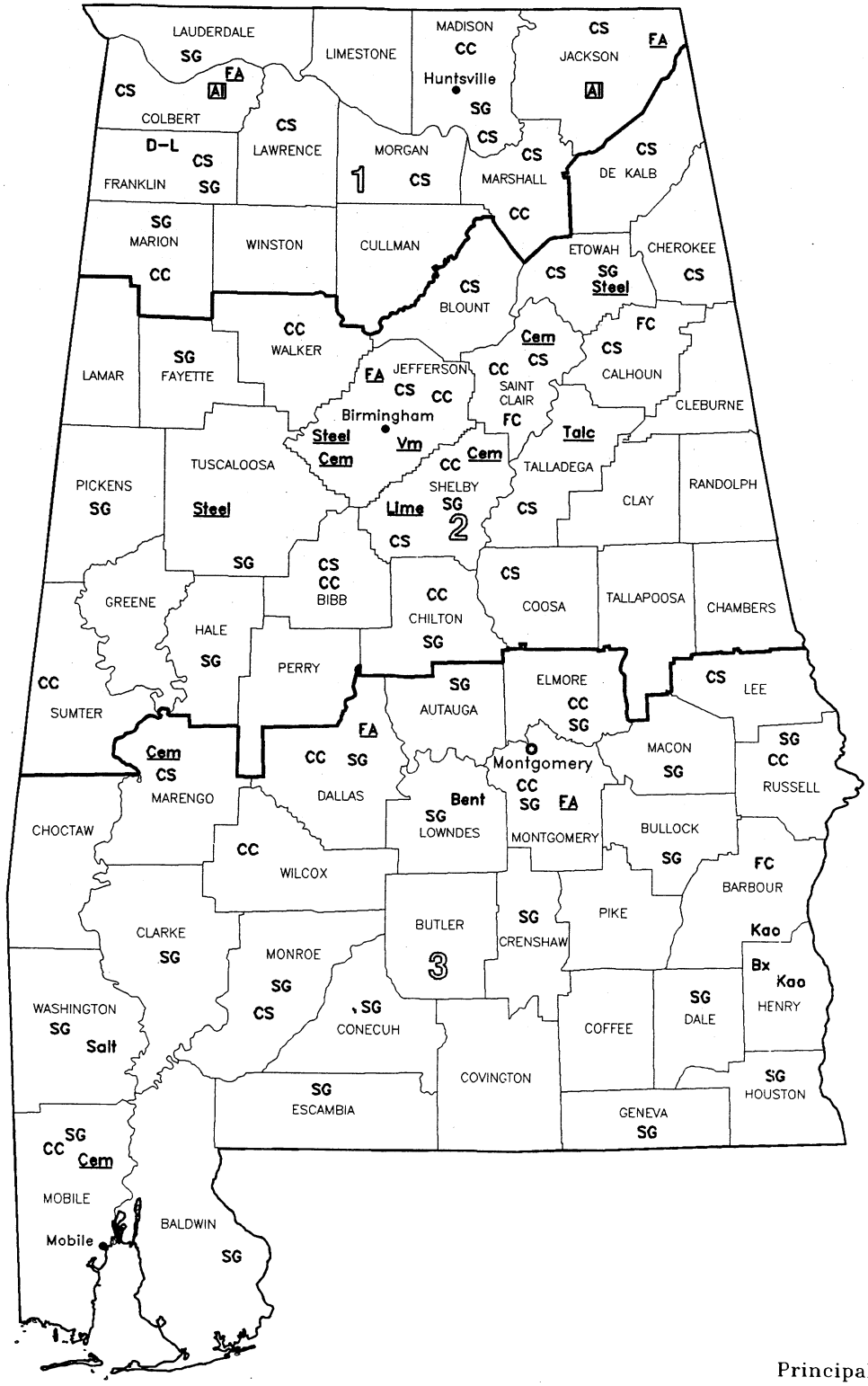
TABLE 4
ALABAMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) [1]	W	W	W	W	—	—
Coarse aggregate, graded [2]	2,140	9,370	4,790	21,690	—	—
Fine aggregate (-3/8 inch) [3]	W	W	W	W	—	—
Coarse and fine aggregate [4]	W	W	W	W	—	—
Other construction materials	3,638	13,950	4,484	20,022	—	—
Agricultural [5]	(6)	(6)	(7)	(7)	—	—
Chemical and metallurgical [8]	—	—	3,974	13,564	—	—
Special [9]	—	—	(7)	(7)	—	—
Other miscellaneous uses	—	—	896	48,320	—	—
Unspecified: [10]						
Actual	(6)	(6)	(6)	(6)	2,292	11,962
Estimated	228	1,494	552	3,716	—	—
Total [11]	7,906	34,300	18,665	129,345	2,292	11,962
Total [12 13]	8,715	34,300	20,575	129,345	2,526	11,962

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes riprap and jetty stone.
[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface treatment-aggregate, and railroad ballast.
[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[4]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.
[5]Includes agricultural limestone.
[6]Withheld to avoid disclosing company proprietary data; included with "Total."
[7]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[8]Includes cement manufacture, lime manufacture, and flux stone.
[9]Includes mine dusting or acid water treatment, asphalt fillers or extenders, other fillers or extenders, and other specified uses not listed.
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.
[11]Data may not add to totals shown because of independent rounding.
[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[13]Total shown in thousand short tons and thousand dollars.

ALABAMA



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Al	Aluminum plant
Bent	Bentonite
Bx	Bauxite
CC	Common Clay
Cem	Cement plant
CS	Crushed Stone
D-L	Dimension Limestone
FA	Ferroalloys plant
FC	Fire Clay
Kao	Kaolin
Lime	Lime plant
Salt	Salt
SG	Sand and Gravel
Steel	Iron and Steel plant
Talc	Talc plant
Vm	Vermiculite plant

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF ALASKA

The State of Alaska ranked 27th nationally in total nonfuel mineral value[1] in 1994, rising from 29th in 1993, according to the U.S. Bureau of Mines. The State had been 21st in 1992. The estimated value for 1994 was $429 million, about a 14% increase from that of 1993. This followed a 28% decrease in 1993 from that of 1992. The State accounted for more than 1% of U.S. total value. Overall, metallic minerals accounted for about 86% of Alaska's total nonfuel mineral value, while construction sand and gravel and crushed stone almost entirely made up the remaining 14% represented by industrial minerals. In 1994, increased average metal prices for lead (80%), silver (21%), and gold (8%), as well as for zinc (16%) late in the year, together with increased zinc production at the Red Dog Mine, were the main causes for the State's increased mineral value, according to Alaska's Department of Natural Resources (DNR). The substantial decrease that occurred from 1992 to 1993 resulted mainly from low zinc and lead prices, which were largely responsible for the temporary closing of the Greens Creek polymetallic—zinc, lead, silver, and gold—mine in April 1993. Compared with 1993, the value of zinc, gold, construction sand and gravel, lead, and crushed stone increased. Decreases occurred for silver and tin.

In estimated mineral production for 1994, Alaska remained 1st in zinc, 2d in lead, 3d in peat, 1 of the top 7th silver producers, 8th[2] of the 13 U.S. gold producing States, and the only State with significant production of tin.

According to Alaska's DNR, Division of Geological and Geophysical Surveys, exploration expenditures in Alaska were reported to be $28.3 million. As in past years, projects in the southeastern and eastern interior regions dominated the exploration expenditures with investments of $8.2 million and $9.9 million, respectively. Reported development expenditures increased from $27.3 million in 1993 to $42.5 million in 1994, an increase of 56%. Major developments at Echo Bay Alaska Inc.'s Alaska-Juneau Mine the "A-J" and Kennecott Corp.'s Greens Creek Mine, both in southeast Alaska, accounted for most of these expenditures. Final Federal permits were approved for Fairbanks Gold Mining Inc.'s gold project at the Fort Knox Mine, near Fairbanks. Cominco Alaska Inc. mined and milled more than 2.1 million metric tons (almost 2.4 million short tons) of zinc-lead-silver ore from the Red Dog Mine in northwest Alaska. A record 598,000 tons of zinc, lead, and bulk concentrates were shipped to overseas and Canadian smelters. Red Dog continues to be the largest zinc mine in North America, accounting for more than one-half of U.S. production in 1994, and an estimated 7 percent of the world's production. For the first time in 15 years, all gold production was derived exclusively from placer deposits. However, several new hardrock gold projects, including Nixon Fork, Illinois Creek, and Fort Knox, should result in significant Alaskan hardrock gold output in the near future. Usibelli Coal Mine Inc. again produced steam coal. About one-half of the nearly 1.4 million tons of

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ALASKA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$10	NA	$10	NA	—
Gold[2]	kilograms	5,003	55,492	2,777	32,223	[3]4,540	[3]$52,700
Sand and gravel (construction)	thousand metric tons	13,613	43,335	e13,100	e42,600	13,500	45,200
Stone (crushed)[4]	do.	e2,722	e13,400	2,425	11,294	e2,500	e11,900
Combined value of lead, silver, stone crushed sandstone), tin (1993-94), and zinc		XX	413,875	XX	291,489	XX	319,000
Total		XX	526,112	XX	377,616	XX	[5]429,000

eEstimated. pPreliminary. NA Not available. XX Not applicable.

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

[2]Recoverable content of ores, etc.

[3]Placer canvassing discontinued beginning 1994.

[4]Excludes certain stones; kind and value included with "Combined value" data.

[5]Data do not add to total shown because of independent rounding.

coal was used in Alaska, while the remainder was exported. Commercial construction projects in the Anchorage, Fairbanks, and Juneau urban areas; road maintenance and construction; and maintenance of the Trans Alaska Pipeline kept the crushed stone and sand and gravel industries at stable levels. Mining and mineral exploration companies reported 137,681 meters (451,710 feet) of drilling in 1994, including placer exploration and hardrock core and rotary drilling, an almost 63 percent increase compared with that of 1993. Although Greens Creek mine remained closed, Kennecott Greens Creek Mining Company and the U.S.D.A. Forest Service, which manages the land underlying part of the mineral deposit, announced an agreement in which Kennecott would pay $1 million and up to a 3% royalty to the Forest Service when the mine resumes operations. In return, the Forest Service would open an additional 3,000 hectares (7,500 acres) near the mine to mineral development.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

[2]Gold figures in table 1, as reported to the U.S. Bureau of Mines, probably understate production. Data collected by the State indicate production to have been as follows, in kilograms: 1992—8,163: 1993—5,948; and 1994—5,737. This correspondingly would raise Alaska's ranking from eighth to seventh among the U.S. gold-producing States.

TABLE 2
ALASKA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch)[2]	9	$82	$9.11
Coarse aggregate, graded[3]	287	2,127	7.41
Fine aggregate (-3/8 inch)[4]	49	342	6.98
Coarse and fine aggregates:			
Graded road base or subbase	1,171	4,077	3.48
Unpaved road surfacing	50	428	8.56
Crusher run or fill or waste	156	1,004	6.44
Other coarse and fine aggregates	W	W	7.72
Other construction materials	34	240	7.06
Other specified uses not listed[5]	116	569	4.91
Unspecified:[6]			
Actual	69	204	2.96
Estimated	484	2,221	4.59
Total	2,425	11,294	4.66
Total[7 8]	2,673	11,294	4.23

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, miscellaneous stone, sandstone, slate, and traprock; excludes value for sandstone from State total to avoid disclosing company proprietary data.
[2]Includes riprap and jetty stone and other coarse aggregate.
[3]Includes concrete aggregate, coarse, bituminous aggregate, coarse, bitumimous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[4]Includes stone sand, concrete and other fine aggregate.
[5]Includes other agricultural uses and other fillers or extenders.
[6]Includes production reported without a breakdown by use and estimates for nonrespondents.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

TABLE 3

ALASKA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	4	51	$225	$4.41	—	—	—	—
Granite	3	56	246	4.39	4	172	$1,322	$7.69
Traprock	6	407	1,970	4.84	6	528	2,607	4.94
Sandstone	(1)	(1)	(1)	(1)	1	6	(2)	(2)
Slate	1	7	32	4.57	1	19	90	4.74
Volcanic cinder and scoria	1	64	200	3.13	—	—	—	—
Miscellaneous stone	6	426	2,116	4.97	15	1,700	7,275	4.28
Total	XX	1,011	[3]4,788	4.74	XX	2,425	11,294	4.66
Total[4 5]	XX	1,114	$4,788	4.30	XX	2,673	$11,294	4.23

XX Not applicable.

[1]Excludes sandstone from State total to avoid disclosing company proprietary data.

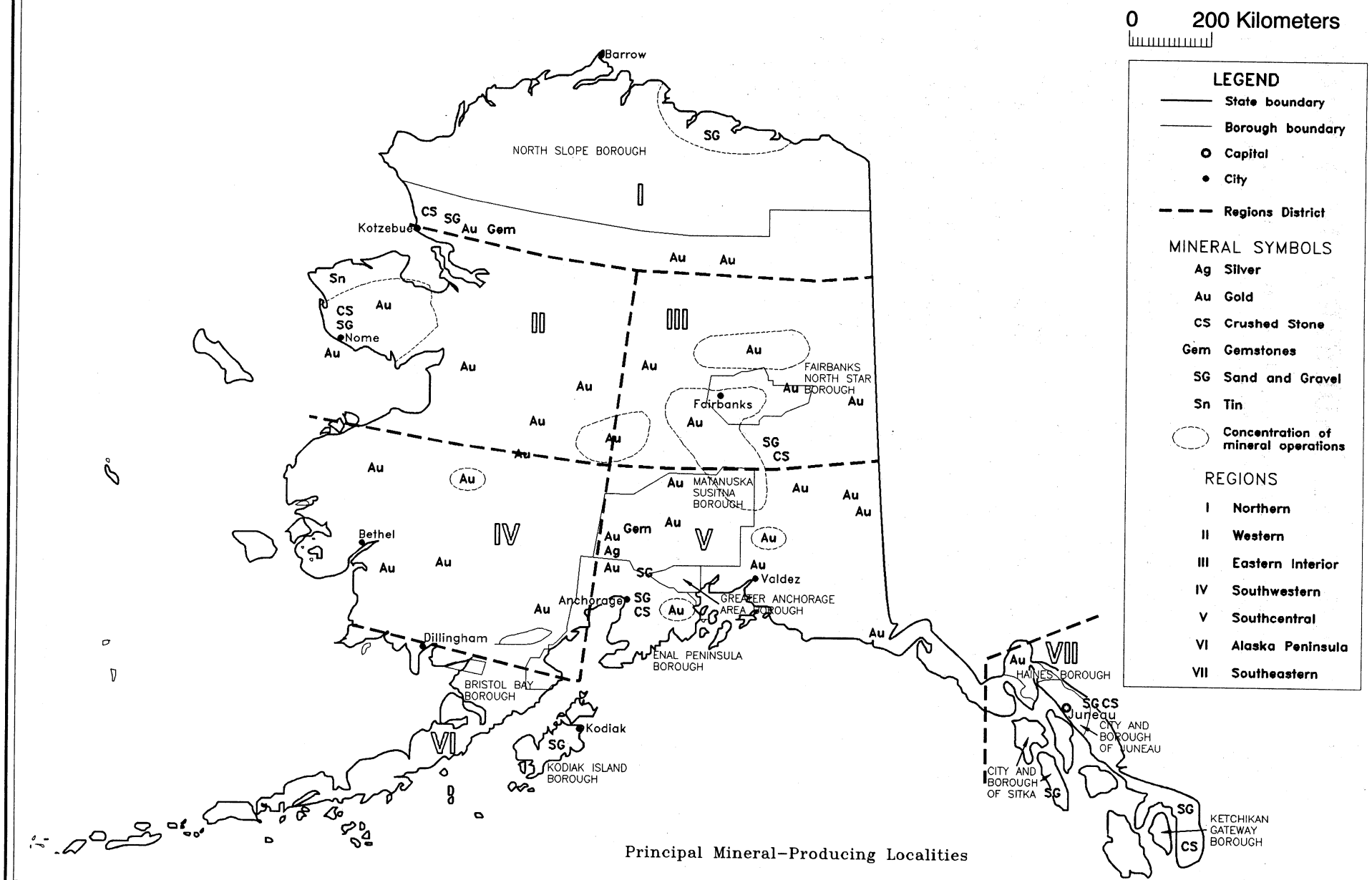
[2]Excludes sandstone value from State total to avoid disclosing company proprietary data.

[3]Data do not add to total shown because of independent rounding.

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

ALASKA



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF ARIZONA

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 Arizona Department of Mines and Mineral Resources for collecting information on all nonfuel minerals.

For the sixth time in the last 7 years, Arizona was first in the Nation in total U.S. nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines. The estimated value for 1994 was $3.3 billion, a 19.7% increase over that of 1993. This followed a 12.2% decrease in 1993 from that of 1992. The State accounted for nearly 10% of the U.S. total of mineral production. Arizona continued as the top U.S. copper producer, representing 64% of both production and value. The decrease in 1993 and increase in 1994 in the State's nonfuel mineral value were mainly the result of fluctuations in copper prices. Overall, copper represented 84.8% of Arizona's nonfuel mineral value; industrial minerals, 11%; and the remaining 4% was divided between molybdenum, gold, and silver. In mineral production, Arizona remained first in copper and molybdenum, second in silver and perlite, fourth in construction sand and gravel, and fifth in the production of pumice. Compared with 1993, the value of construction sand and gravel, portland cement, molybdenum, crushed stone, lime, salt, gypsum, masonry cement, and industrial sand and gravel increased in 1994. The value of silver, gemstones, pumice, perlite, clays, dimension stone, and iron oxide pigments decreased.

Copper companies continued to invest in their operations to expand production and lower costs. The rising prices allowed for increased company profits in 1994. The producer price for refined copper, which averaged $0.92 per pound in 1993, averaged $1.11 per pound in 1994, and traded in the $1.30 range in December. A number of significant copper mine developments occurred in 1994, as reported by the Arizona Department of Mines and Mineral Resources (ADMMR). In September, ASARCO Incorporated announced plans to develop an underground mine at the Mission Complex, Pima County, to produce about 13,000 metric tons of copper per year beginning in early 1996. The Silver Bell Mine, Pinal County, received an Aquifer Protection Permit necessary to construct an 16,300-ton-annual-capacity solvent extraction-electrowinning (SX-EW) plant. The plant will be supplied with oxide ore from the new Silver Bell North deposit. AZCO Mining Inc. announced receipt of all environmental permits for its Sanchez Mine near Safford, Graham County. With financing completed in November, 1-year construction of the mine and a 22,700-ton-annual-capacity SX-EW plant was scheduled to begin in early 1995. The Tohono O'Odham Nation granted Cyprus Climax Co. a permit

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ARIZONA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	[2]102	[2]$463	[2]97	[2]$451	92	$421
Copper[3]	metric tons	[r]1,152,878	[r]2,730,015	1,158,759	2,339,018	1,180,000	2,820,000
Gemstones		NA	5,416	NA	5,626	NA	3,780
Gold[3]	kilograms	6,656	73,818	2,711	31,459	[4]2,490	[4]28,900
Iron oxide pigments (crude)	metric tons	77	62	77	62	68	38
Sand and gravel (construction)	thousand metric tons	30,701	123,517	[e]35,000	[e]138,300	45,000	185,000
Silver[3]	metric tons	165	20,873	200	27,684	170	23,500
Stone (crushed)	thousand metric tons	[e]4,990	[e]26,300	6,430	36,823	[e]6,600	[e]38,300
Combined value of cement, clays (bentonite), gypsum (crude), lead (1992), lime, molybdenum, perlite, pumice, pyrites (1992-93), salt, sand and gravel (industrial), stone (dimension), and tin (1992)		XX	[r]184,337	XX	196,417	XX	225,000
Total		XX	[r]3,164,801	XX	2,775,840	XX	[5]3,320,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes certain clays; kind and value included with "Combined value" data.
[3]Recoverable content of ores, etc.
[4]Placer canvassing discontinued beginning 1994.
[5]Data do not add to total shown because of independent rounding.

to develop a 550-million-ton copper deposit at Casa Grande, Pinal County. Magma Copper Co. proceeded with its $135 million development of the Kalamazoo ore body, from which an estimated 1 million tons of contained copper will add about 12 years of production to the San Manuel underground mine, Pinal County. Production will be phased in with the depletion of the an Manuel ore body from 1997-99. A 20% expansion of capacity at the San Manuel Outokumpu flash smelter, the industry's largest single furnace smelter, was completed in March. In the summer, Phelps Dodge Corp. began a $200 million expansion at its Morenci Mine's SX-EW facility—already the world's largest. Development of the 136-million-ton Southside deposit, adjacent to the Morenci pit, Greenlee County, was announced by the company. Carlota Copper Co.(Cambior USA) continued the permitting process for its open pit SX-EW Carlota project straddling the Gila/Pinal County line near Globe; the company projected annual production of 27,000 tons of copper per year out of 91 million tons of oxide reserves. In December, Addwest Minerals Inc. constructed a new mine entrance and a 450-ton-per-day carbon-in-pulp mill for the reopening of the Gold Road Gold Mine, Mohave County. The Arizona legislature passed legislation funding an abandoned mines location program and creating mine reclamation requirements. ADMMR published a *Directory of Active Mines in Arizona 1995*, listing producing companies, mines, personnel, and an industry operation summary.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
ARIZONA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate, graded:			
Concrete aggregate, coarse	4	$22	$5.50
Bituminous aggregate, coarse	65	231	3.55
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	12	34	2.83
Coarse and fine aggregates:			
Graded road base or subbase	70	208	2.97
Unpaved road surfacing	96	185	1.93
Terrazzo and exposed aggregates	343	2,340	6.82
Crusher run or fill or waste	47	254	5.4
Other construction materials[2]	41	343	8.37
Agricultural:			
Other agricultural uses	W	W	5.74
Chemical and metallurgical:			
Cement manufacture	W	W	6.00
Lime manufacture	W	W	4.66
Special:			
Other fillers or extenders	W	W	7.72
Other specified uses not listed	3,721	20,582	5.53
Unspecified:[3]			
Actual	537	3,454	6.43
Estimated	1,495	9,171	6.13
Total[4]	6,430	36,823	5.73
Total[5 6]	7,088	36,823	5.20

W Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[1]Includes granite, limestone, marble, miscellaneous stone, traprock, and volcanic cinder.
[2]Includes riprap and jetty stone, and stone sand (concrete.)
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3
ARIZONA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	10	r3,592	r$17,729	r$4.94	11	4,161	$23,183	$5.57
Marble	3	W	W	r5.49	2	W	W	5.74
Granite	r13	r1,944	r10,184	r5.24	12	1,764	9,861	5.59
Traprock	3	r67	436	6.51	2	W	W	5.09
Quartzite	r1	W	W	r9.85	—	—	—	—
Volcanic cinder and scoria	2	24	52	2.17	3	112	405	3.62
Miscellaneous stone	r3	280	1,363	4.87	3	251	2,110	8.41
Total[1]	XX	6,405	32,842	5.13	XX	6,430	36,823	5.73
Total[2 3]	XX	7,060	32,842	4.65	XX	7,088	36,823	5.20

rRevised. W Withheld to avoid disclosing compay proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

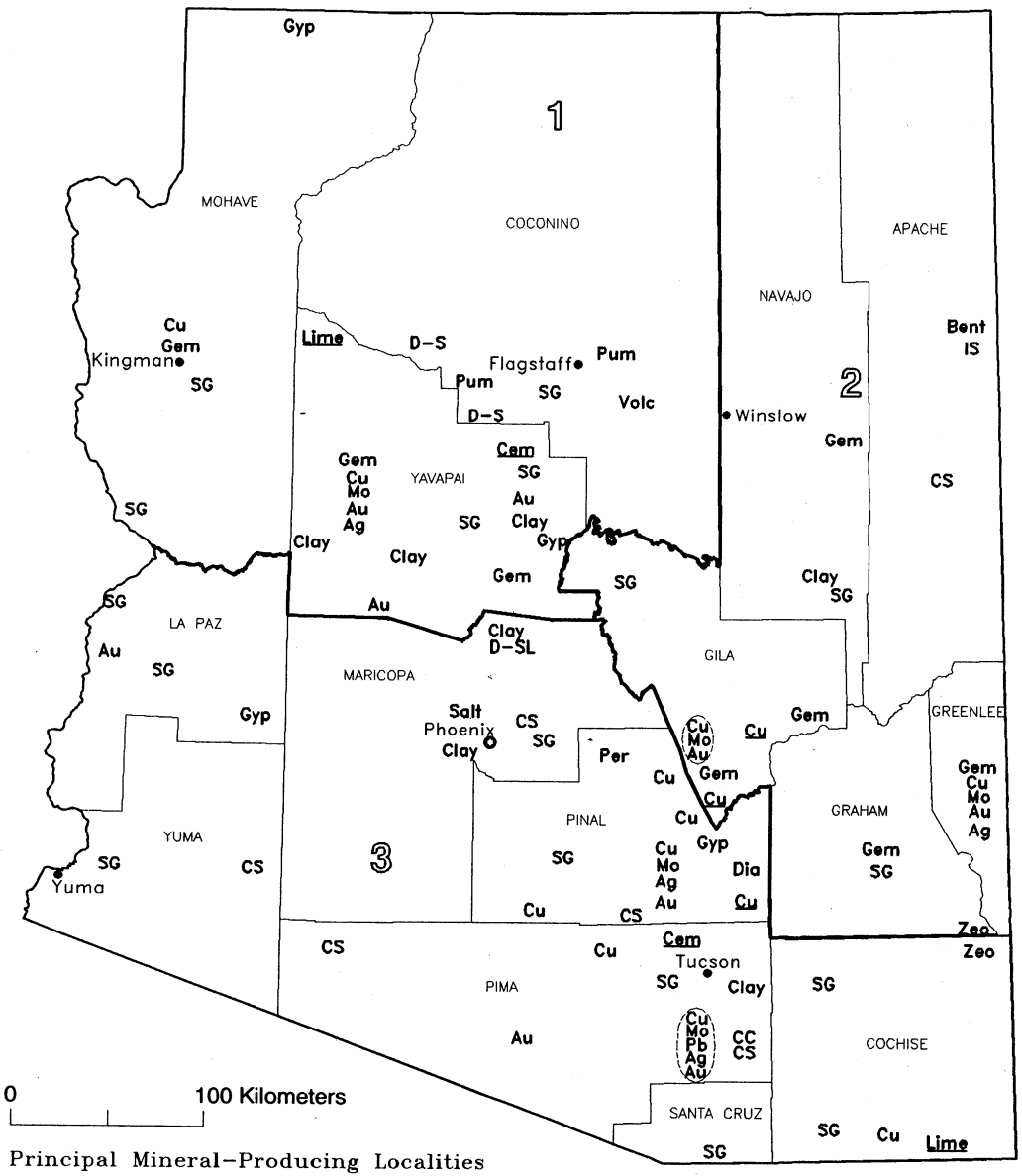
TABLE 4
ARIZONA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified within all districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[1]	—	—	—	—	W	W	—	—
Coarse aggregate, graded[2]	—	—	—	—	W	W	—	—
Fine aggregate (-3/8 inch)[3]	—	—	—	—	W	W	—	—
Coarse and fine aggregate[4]	(5)	(5)	(5)	(5)	430	2,631	—	—
Other construction materials	—	—	—	—	122	630	—	—
Agricultural[6]	—	—	—	—	(7)	(7)	—	—
Chemical and metallurgical[8]	(5)	(5)	—	—	(7)	(7)	—	—
Special[9]	—	—	—	—	(7)	(7)	—	—
Other miscellaneous uses	20	222	—	—	1,335	7,650	—	—
Unspecified:[10]								
Actual	—	—	(5)	(5)	(5)	(5)	146	642
Estimated	161	788	—	—	1,334	8,383	—	—
Total[11]	2,622	13,967	67	513	3,595	21,702	146	642
Total[12 13]	2,890	13,967	74	513	3,963	21,702	161	642

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes riprap and jetty stone.
[2]Includes concrete aggregate (coarse) and bituminous aggregate (coarse).
[3]Includes stone sand (concrete) and stone sand (bituminous mix or seal).
[4]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, and crusher run (select material or fill).
[5]Withheld to avoid disclosing company proprietary data; included with "Total."
[6]Includes other agricultural uses.
[7]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[8]Includes cement manufacture and lime manufacture.
[9]Includes other fillers or extenders, and other specified uses not listed.
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.
[11]Data may not add to totals shown because of independent rounding.
[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[13]Total shown in thousand short tons and thousand dollars.

ARIZONA



Principal Mineral-Producing Localities

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Ag	Silver
Au	Gold
Bent	Bentonite
Cem	Cement plant
Clay	Clay
CC	Calcium Carbonate
CS	Crushed Stone
Cu	Copper
Cu	Copper plant
D-S	Dimension Sandstone
D-SL	Dimension Slate
Dia	Diatomite
Gem	Gemstones
Gyp	Gypsum
IS	Idustrial Sand
Lime	Lime plant
Mo	Molybdenum
Pb	Lead
Per	Perlite
Pum	Pumice
Salt	Salt
SG	Sand and Gravel
Volc	Volcanic cinder
Zeo	Zeolite

Concentration of mineral operations

THE MINERAL INDUSTRY OF ARKANSAS

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 Arkansas Geological Commission for collecting information on all nonfuel minerals.

Arkansas remained 30th among the States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $392 million, nearly a 13% increase compared with that of 1993. This followed a 14% decrease in 1993 from that of 1992. The State accounted for more than 1% of the U.S. total value. Considerably higher values for bromine and crushed stone plus a moderate increase for construction sand and gravel value were responsible for most of the State's rising mineral value in 1994, while a decline in the first two mineral commodities was the major reason for the decrease in total value the previous year. Compared with 1993, the mineral commodity values increased for the following: bromine, crushed stone, construction sand and gravel, gypsum, lime, kaolin, dimension stone, and talc and pyrophyllite. Decreases occurred in portland cement, industrial sand and gravel, gemstones, common clays, and masonry cement.

Based on a comparison of USBM-estimated quantities of minerals produced in the United States during 1994, Arkansas continued to be the leading bromine-producing State, accounting for a large majority of U.S. production. Michigan was the only other State producing the element. Mining operations in both States extracted subsurface bromine-rich natural brines by submersible pump for subsequent processing. Arkansas remained a leading abrasives-producing State, and was first in the production of whetstones. The State also remained fourth in kaolin clay production, seventh in talc and pyrophyllite, and ninth in gypsum. Arkansas rose from 5th to 4th in fire clay-production, while continuing as the 10th largest common clay-producing State. Because of the difficulty in establishing a common physical unit that properly measures quantities of gemstones produced, gem production is measured in dollars. By value, Arkansas was the second leading gemstone-producing State. Arkansas' mines produced significant quantities of crushed stone, both construction and industrial sand and gravel, and dimension stone, while significant

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ARKANSAS[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Abrasives[2]	metric tons	W	W	W	W	NA	NA
Bromine[e]	do.	171,000	$170,000	177,000	$123,000	W	W
Clays[3]	thousand metric tons	837	2,972	1,026	2,357	1,145	$2,310
Gemstones		NA	1,493	NA	5,532	NA	5,290
Sand and gravel:							
Construction	thousand metric tons	9,896	39,627	[e]10,100	[e]40,900	11,000	45,600
Industrial	do.	[r]806	10,458	642	7,597	W	W
Stone (crushed)[4]	do.	[e]22,861	118,900	21,706	102,555	[e]23,500	[e]114,000
Other[5]		XX	[r]60,372	XX	65,140	XX	224,000
Total		XX	[r]403,822	XX	347,081	XX	[6]392,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

[3]Excludes certain clays; kind and value included with "Combined value" data.

[4]Excludes certain stones; kind and value included with "Combined value" data.

[5]Combined value of cement, clays (fire, kaolin), gypsum (crude), lime, stone [crushed dolomite and quartzite (1993-94), crushed dolomite and traprock (1992), dimension], talc and pyrophyllite (1993-94), tripoli (1992-93), and values indicated by symbol W

[6]Data do not add to total shown because of independent rounding.

quantities of portland cement were produced at manufacturing plants within the State. The State's mines exclusively produced industrial minerals; no metal mining has been reported in Arkansas since 1991, when bauxite and vanadium ore mining ceased following decades of metal mine production in the State. The State's metal production, mostly raw steel, resulted from materials received from other domestic and foreign sources.

According to the Arkansas Geological Commission (AGC), diamond exploration work by several companies in Crater of Diamonds State Park remained suspended in 1994, awaiting issuance by the U.S. Department of the Interior (DOI) of a temporary variance to a previous agreement between DOI and the State. Issuance of a non-compliance use permit would allow for exploration in the park for a limited period of time. A number of years ago, DOI allocated funds to the State for park improvements at Crater of Diamonds under an agreement that the State comply with a restriction against commercial mining in the park. In 1993, following several years of intermittent exploratory drilling, the exploration companies proposed to dig about 30 trenches across a 32.4-hectare (about an 81-acre) pipe outcrop to recover a targeted 1,000 carats of diamonds for evaluation. (A pipe is a cylindrically shaped, somewhat vertical ore body; an outcrop is the natural or man-made occurrence of a rock formation at the earth's surface.) Opponents claimed that exploration activities, apparent precursors to the potential mining of park lands, violated Federal Law. On leased land northeast of the park, Texas Star Resources Corp., a diamond exploration company based in Houston, TX, assembled a 10-ton-per-day testing plant, acquired by the company from Africa, and began processing diamondiferous rock.

In other mineral commodity developments, Ethyl Corp. (Richmond, VA) spun-off its two chemical production facilities in Columbia County in southern Arkansas and renamed it Albemarle Corp. with its administrative offices in Baton Rouge, LA. Albemarle produced a variety of materials and chemicals, including bromine and bromine compounds. A 1993 lawsuit brought against MidState Construction and Materials Co. by the Arkansas Attorney General's office was dismissed as unprovable. Claims of the company being a "nuisance" included complaints of excessive noise, local household damage due to blasting, and untimely blasting practices. Charges were unsubstantiated by the evidence presented in court and the company's daily activity records showed evidence of the company's claims of following proper procedures. The judgement was, in part, contingent upon MidState's agreement that it furnish the attorney general with activity records covering the subsequent 2 years. Herzog Co. sold its Hatton quarry operation in Polk County to Meredian, based in Engelwood, CO. Operations continued uninterrupted in the Hatton formation portion of the quarry. This thick, lense-shaped aggregate deposit of volcanic origin is a particularly good resource because the rock is less wearing and damaging to mining and crushing equipment than many of the other area aggregate deposits.

AGC geologists collected more than 700 rock samples throughout the Ouachita Mountains to analyze for mercury and other base metals. The sampling was done to assist in a State investigation of the possible sources of elevated mercury in large predator fish from the Ouachita and Saline Rivers. State geologists also received funding from the U.S. Geological Survey to map a Cretaceous Period (65 to 135 million years ago) rock outcrop area in southwestern Arkansas with a particular interest in the industrial mineral deposits of sand, gravel, gypsum, and chalk, as well as ilmenite, the principal ore of the metal titanium, and celestite, the principal ore of the metallic element strontium. Mapping was underway and is to cover 58 7.5-minute quadrangles.

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[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

ARKANSAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$2.43
Riprap and jetty stone	123	$272	2.21
Filter stone	W	W	5.57
Other coarse aggregates	118	501	4.25
Coarse aggregate, graded:			
Concrete aggregate, coarse	855	2,571	3.01
Bituminous aggregate, coarse	680	3,359	4.94
Bituminous surface-treatment aggregate	288	719	2.50
Railroad ballast	129	W	W
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	6.78
Stone sand, bituminous mix or seal	W	W	6.05
Screening, undesignated	470	641	1.36
Coarse and fine aggregates:			
Graded road base or subbase	2,939	10,666	3.63
Unpaved road surfacing	W	W	3.16
Crusher run or fill or waste	109	539	4.94
Other coarse and fine aggregates	69	98	1.42
Other construction materials	839	3,094	3.69
Roofing granules	W	W	8.38
Agriculture: Agricultural limestone[2]	156	1,600	10.26
Special:			
Mine dusting or acid water treatment	(3)	(3)	6.59
Asphalt fillers or extenders	(3)	(3)	12.23
Other fillers or extenders	(3)	(3)	14.23
Other specified uses not listed	224	2,701	12.06
Unspecified:[4]			
Actual	8,046	37,452	4.65
Estimated	6,662	38,344	5.76
Total[5]	21,706	102,555	4.72
Total[6 7]	23,927	102,555	4.29

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, miscellaneous stone, quartzite, sandstone, and traprock; excludes dolomite; also excludes values for quartzite and traprock from State total to avoid disclosing company proprietary data.
[2]Includes poultry grit and mineral food, and other agricultural uses.
[3]Included with "Other specified uses not listed."
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

ARKANSAS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r19	r5,475	r$24,566	$4.49	18	5,999	$30,471	$5.08
Dolomite	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Granite	8	8,962	49,296	5.50	8	7,888	41,472	5.26
Traprock	(1)	(1)	(1)	(1)	1	760	(2)	(2)
Sandstone	r16	r4,150	r18,936	4.56	15	4,676	20,358	4.35
Quartzite	—	—	—	—	1	786	(2)	(2)
Miscellaneous stone	7	1,497	8,629	5.76	6	1,598	10,255	6.42
Total[3]	XX	r20,084	r101,428	5.05	XX	21,706	102,555	4.72
Total[4 5]	XX	r22,139	r101,428	4.58	XX	23,927	102,555	4.29

rRevised. XX Not applicable.

[1]Excludes dolomite and traprock from State total to avoid disclosing company proprietary data.

[2]Excludes values for quartzite and traprock from State total to avoid disclosing company proprietary data.

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

TABLE 4

ARKANSAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[2]	W	W	W	W
Coarse aggregate, graded[3]	W	W	W	W
Fine aggregate (-3/8 inch)[4]	W	W	W	W
Coarse and fine aggregate[5]	2,147	8,666	1,131	3,739
Other construction materials	1,459	6,724	1,881	3,330
Agricultural[6]	(7)	(7)	—	—
Special[8]	(7)	(7)	—	—
Other miscellaneous uses	380	4,301	—	—
Unspecified:[9]				
Actual	3,459	18,250	4,586	19,203
Estimated	1,132	5,386	5,530	32,957
Total [10]	8,577	43,326	13,129	59,229
Total[11 12]	9,455	43,326	14,472	59,229

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

[1]Excludes dolomite and values for quartzite and traprock from State total to avoid disclosing company proprietary data.

[2]Includes macadam, riprap and jetty stone.

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

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).

[5]Includes graded road base or subbase, unpaved road surfacing, other coarse and fine aggregates, and roofing granules.

[6]Includes agricultural limestone and other agricultural uses.

[7]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[8]Includes mine dusting or acid water treatment, asphalt fillers or extenders, and other fillers or extenders.

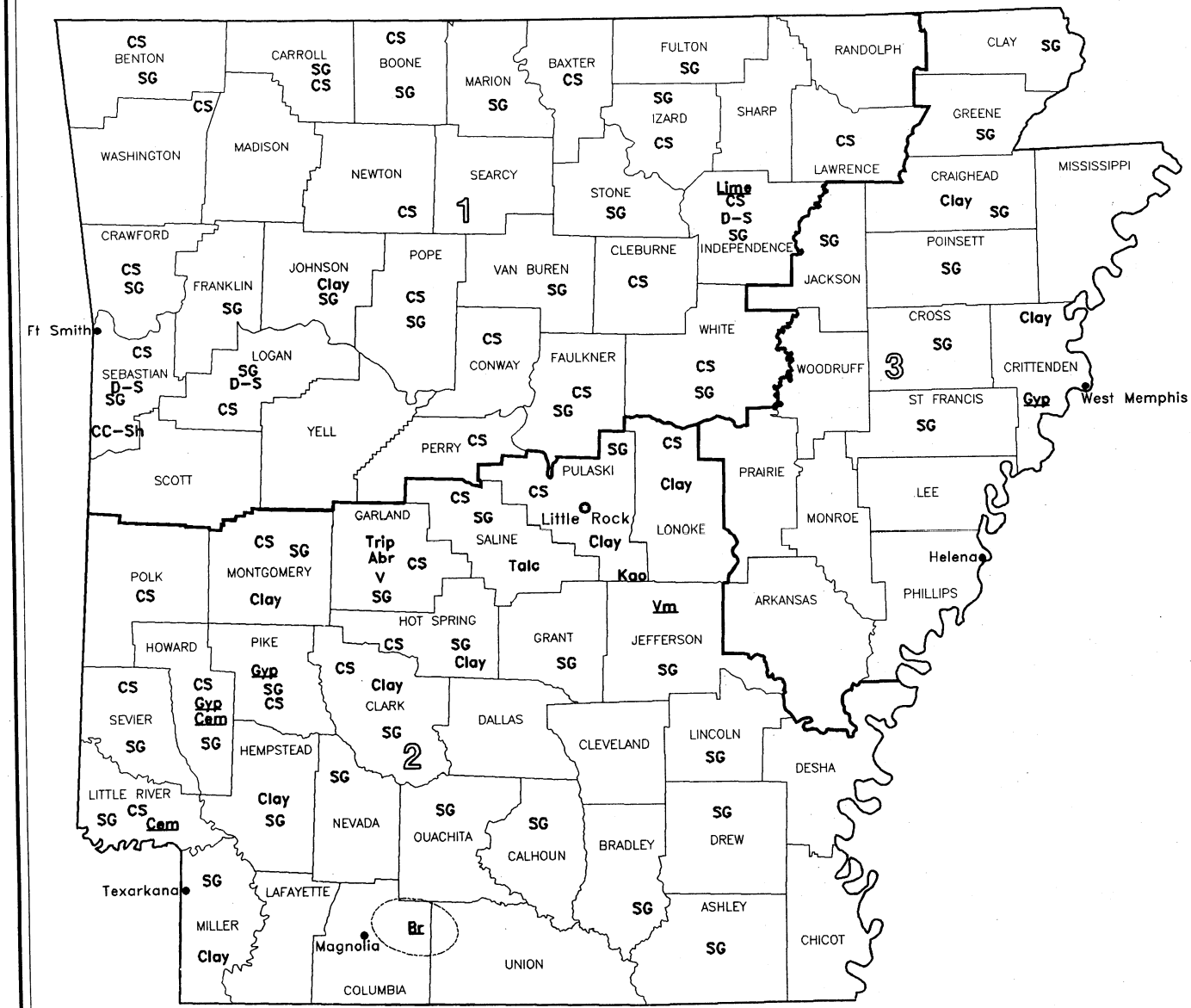
[9]Includes production reported without a breakdown by use and estimates for non-respondents.

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

[11]One short ton is equal to 907 kilogram or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[12]Total shown in thousand short tons and thousand dollars.

ARKANSAS



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Abr	Abrasives
Br	Bromine plant
CC–Sh	Common Clay & Shale
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
D–S	Dimension Stone
Gyp	Gypsum plant
Kao	Kaolin
Lime	Lime plant
SG	Sand and Gravel
Talc	Talc
Trip	Tripoli
V	Vanadium
Vm	Vermiculite Plant
	Concentration of mineral operations

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF CALIFORNIA

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 California Department of Conservation, Division of Mines and Geology, for collecting information on all nonfuel minerals.

In 1994, for the third consecutive year, California was the third leading State in the Nation in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines. The estimated value for 1994 was $2.5 billion, a 2% increase over that of 1993. This followed a 3% increase in 1993 over that of 1992. The State accounted for more than 7% of the U.S. total. Among a significantly diverse selection of minerals produced in California, almost 85% of the State's nonfuel mineral value came from industrial minerals, especially portland cement, construction sand and gravel, boron, dimension stone, and diatomite. Most of the remaining 15% resulted from gold, followed by silver, tungsten, and copper. In estimated mineral production for 1994, California remained the Nation's only producer of boron and tungsten; first in the production of construction sand and gravel, portland cement, rare-earth concentrates, and diatomite; first of two States that produced natural sodium sulfate and asbestos; second in gold and magnesium compounds; second of two States producing soda ash and titanium (ilmenite); third in

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN CALIFORNIA[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Asbestos	metric tons	10,998	$4,452	10,043	$4,426	8,530	$4,000
Boron minerals	do.	1,008,889	338,700	1,054,615	372,839	560,000	370,000
Cement (portland)	thousand metric tons	7,289	428,016	8,511	468,349	10,100	555,000
Clays[2]	do.	1,906	26,173	1,961	26,482	1,990	29,900
Gemstones		NA	9,916	NA	673	NA	17,700
Gold[3]	kilograms	33,335	369,723	35,763	414,977	[4]33,000	[4]383,000
Lime	thousand metric tons	254	18,072	193	14,751	187	14,100
Mercury	metric tons	(5)	(5)	W	W	W	W
Rare-earth metal concentrates	do.	20,699	W	17,754	W	W	W
Sand and gravel:							
Construction	thousand metric tons	102,410	522,108	[e]96,300	[e]475,700	93,000	465,000
Industrial	do.	[r]1,915	[r]42,512	1,797	41,668	W	W
Silver[3]	metric tons	18	2,259	14	2,002	12	1,660
Stone:							
Crushed	thousand metric tons	[e]37,013	[e]198,300	38,167	249,740	[e]40,000	[e]266,000
Dimension	metric tons	[e]21,130	[e]4,148	29,082	6,299	[e]29,000	[e]6,560
Combined value of calcium chloride[6] (1992), cement (masonry), clays (fuller's earth), copper (1994), diatomite, feldspar, gypsum (crude), iron ore (usable), magnesium compounds, molybdenum (1992), perlite, potash, pumice, salt, silver (1991), soda ash, sodium sulfate (natural), talc and pyrophyllite, titanium (ilmenite), tungsten, and values indicated by symbol W		XX	402,975	XX	362,328	XX	400,000
Total		XX	[r]2,367,354	XX	2,440,234	XX	[7]2,500,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes certain clays; kind and value included with "Combined value" data.
[3]Recoverable content of ores, etc.
[4]Placer canvassing discontinued beginning 1994.
[5]Less than 1/2 unit.
[6]Calcium chloride canvassing discontinued beginning 1993.
[7]Data do not add to total shown because of independent rounding.

perlite, potash, and pumice; fourth in bentonite clay, feldspar, and industrial sand and gravel; and sixth in fuller's earth clays, kaolin clays, gypsum, talc, and pyrophyllite. The State dropped from fifth to sixth in the production of common clays. Compared with 1993, the value of the following nonfuel minerals increased: crushed stone, diatomite, rare-earth concentrates, fuller's earth clays, sodium sulfate, common clays, gypsum, dimension stone, pumice, gemstones, tungsten, and copper. The value of the following decreased: portland cement, construction and industrial sand and gravel, gold, boron, soda ash, salt, lime, potash, magnesium compounds, asbestos, feldspar, masonry cement, silver, and perlite.

Permits for new and expanded sand and gravel operations were granted by several city and county municipal officials, according to the California Department of Conservation, Division of Mines and Geology. The Alameda County Board of Supervisors approved a surface mining permit for the Mission Valley Rock expansion proposal making available an additional 24.5 million metric tons (27 million short tons) of sand and gravel to the San Francisco Bay area. The U.S. Bureau of Land Management granted a permit for in-situ solution mining of borates at the Ft. Cady Minerals Corp.'s Cady Mine in San Bernardino County. Homestake's McLaughlin Mine in Lake, Napa, and Yolo Counties continued as the leading gold producer in California, followed closely by the Santa Fe Pacific Gold Corp.'s Mesquite Mine in Imperial County. Two major gold mines in northern California's Mother Lode District closed in 1994. In July, following 8 consecutive years of operation, the Sonora Mining Corp. closed its Jamestown Mine in Tuolumne County as a result of falling gold prices and for other economic reasons. Meridian Gold Co.'s Royal Mountain King Mine in Calaveras County also closed in May after 6 years of operation. Marine Magnesium Co.'s dolomite quarry in Tuolumne County ceased operation in 1994. The passage of the California Desert Protection Act (Public Law 103-433) by Congress closed more than 2.6 million hectares—about 6.5 million acres—of public land to mining and mineral exploration in Imperial, Inyo, Kern, Riverside, San Bernardino, and San Diego Counties.

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[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

CALIFORNIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	865	$8,502	$9.83
Filter stone	220	1,155	5.25
Other coarse aggregate	255	1,163	4.56
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,343	10,141	7.55
Bituminous aggregate, coarse	1,806	11,481	6.36
Bituminous surface-treatment aggregate	448	6,140	13.71
Railroad ballast	1,260	9,143	7.26
Other graded coarse aggregate	409	2,580	6.31
Fine aggregate (-3/8 inch):			
Stone sand, concrete	343	3,082	8.99
Stone sand, bituminous mix or seal	759	4,629	6.10
Screening, undesignated	660	7,504	11.37
Coarse and fine aggregates:			
Graded road base or subbase	5,170	31,213	6.04
Unpaved road surfacing	198	1,149	5.80
Terrazzo and exposed aggregates	91	982	10.79
Crusher run or fill or waste	1,313	4,573	3.48
Other coarse and fine aggregates	212	974	4.59
Other construction materials[2]	793	5,855	7.38
Agricultural: Agricultural limestone[3]	50	685	13.70
Chemical and metallurgical:			
Cement manufacture	13,097	48,130	3.67
Flux stone	W	W	16.69
Chemical stone	W	W	16.53
Glass manufacture	106	1,919	18.10
Sulfur oxide removal	W	W	16.53
Special:			
Asphalt fillers or extenders	W	W	6.70
Whiting or whiting substitute	W	W	28.10
Other fillers or extenders	157	897	5.71
Flour (slate)	W	W	49.43
Other specified uses not listed	2,066	53,234	25.77
Unspecified:[4]			
Actual	2,286	11,374	4.98
Estimated	4,262	23,238	5.45
Total[5]	38,167	249,740	6.54
Total[6 7]	42,072	249,740	5.94

W Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[1]Includes dolomite, granite, limestone, marble, miscellaneous stone, quartzite, sandstone, shell, slate, traprock, and volcanic cinder and scoria.
[2]Includes macadam.
[3]Includes poultry grit and mineral food.
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

CALIFORNIA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r27	r17,687	r$81,559	r$4.61	35	17,944	$119,247	$6.65
Dolomite	3	119	1,117	9.39	4	164	1,438	8.77
Marble	3	529	2,931	5.54	3	467	2,626	5.62
Shell	r2	W	W	r6.83	2	W	W	6.96
Granite	r128	r7,471	r36,333	r4.86	112	6,695	43,737	6.53
Traprock	r38	r8,652	r64,214	r7.42	39	7,567	54,206	7.16
Sandstone	r9	r1,436	r5,548	r3.86	8	620	2,946	4.75
Quartzite	2	W	W	2.91	2	W	W	8.00
Slate	r1	W	W	W	3	299	2,376	7.95
Volcanic cinder and scoria	r29	r480	r2,554	r5.32	38	356	1,762	4.95
Miscellaneous stone	r29	r3,192	r15,363	r4.81	53	3,916	20,301	5.18
Total[1]	XX	r41,546	r216,052	5.20	XX	38,167	249,740	6.54
Total[2 3]	XX	r45,797	r216,052	4.72	XX	42,072	249,740	5.94

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[1]	30	197	W	W	329	3,344	W	W
Coarse aggregate, graded[2]	—	—	W	W	W	W	W	W
Fine aggregate (-3/8 inch)[3]	—	—	12	W	W	W	W	W
Coarse and fine aggregate[4]	(5)	211	195	W	1,212	7,310	W	W
Other construction materials	(5)	30	135	1,653	1,168	7,130	1,414	11,125
Agricultural[6]	—	—	1,944	(5)	—	—	—	—
Chemical and metallurgical[7]	—	—	(5)	(5)	—	—	—	—
Special[9]	—	—	—	—	—	—	—	—
Other miscellaneous uses	(5)	(10)	(5)	(5)	(5)	(5)	—	—
Unspecified:[11]								
Actual	—	—	39	96	—	—	45	271
Estimated	264	1,548	52	296	(5)	(5)	—	—
Total[12]	330	1,987	1,061	5,678	3,185	20,451	1,459	11,395
Total[13 14]	364	1,987	1,170	5,678	3,511	20,451	1,608	11,395

See footnotes at end of table.

TABLE 4—Continued

CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[1]	W	W	W	W	W	W	(10)	(10)
Coarse aggregate, graded[2]	W	W	884	8,334	W	W	—	—
Fine aggregate (-3/8 inch)[3]	W	W	W	W	W	W	—	—
Coarse and fine aggregate[4]	W	W	2,214	11,538	1,538	8,215	(10)	(10)
Other construction materials	581	3,313	322	2,717	2,524	16,226	—	—
Agricultural[6]	—	—	(5)	(5)	—	—	—	—
Chemical and metallurgical[7]	(8)	(8)	—	—	(8)	(8)	(5)	(5)
Special[9]	(8)	(8)	(5)	(5)	(8)	(8)	—	—
Other miscellaneous uses	93	2,108	—	—	2,481	10,449	(5)	(5)
Unspecified: [11]								
Actual	254	1,453	(10)	(10)	—	—	—	—
Estimated	869	6,697	417	1,702	185	1,059	(5)	(5)
Total [12]	1,796	13,573	3,971	24,700	6,728	35,948	2,375	11,078
Total [13 14]	1,980	13,573	4,377	24,700	7,416	35,948	2,618	11,078

	District 9		District 10		District 11		District 12	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[1]	527	3,198	(10)	(10)	138	(5)	W	W
Coarse aggregate, graded[2]	526	4,375	—	—	727	5,053	W	W
Fine aggregate (-3/8 inch)[3]	W	W	—	—	23	(5)	W	W
Coarse and fine aggregate[4]	59	164	13	51	117	413	W	W
Other construction materials	475	7,454	—	—	—	—	1,271	7,213
Agricultural[6]	(8)	(8)	(5)	(5)	—	—	—	—
Chemical and metallurgical[7]	8,039	26,246	(5)	(5)	—	—	—	—
Special[9]	(8)	(8)	(5)	(5)	—	—	—	—
Other miscellaneous uses	1,821	50,415	—	—	(10)	(10)	—	—
Unspecified:[11]								
Actual	836	5,345	—	—	1,112	4,208	—	—
Estimated	912	4,884	(5)	(5)	28	160	458	2,618
Total [12]	13,194	102,082	195	2,245	2,144	10,772	1,729	9,831
Total [13 14]	14,544	102,082	215	2,245	2,363	10,772	1,906	9,831

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

[1]Includes filter stone, riprap and jetty stone, and other coarse aggregate.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Includes stone sand (concrete), stone sand (bituminous mix and seal), and screening (undesignated).

[4]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.

[5]Withheld to avoid disclosing company proprietary data; included with "Total."

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

[7]Includes cement manufacture, chemical stone for alkali works, flux stone, glass manufacture, and sulfur oxide removal.

[8]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[9]Includes asphalt fillers or extenders, flour (slate), whiting or whiting substitute, other fillers or extenders, and other specified uses not listed.

[10]Less than 1/2 unit.

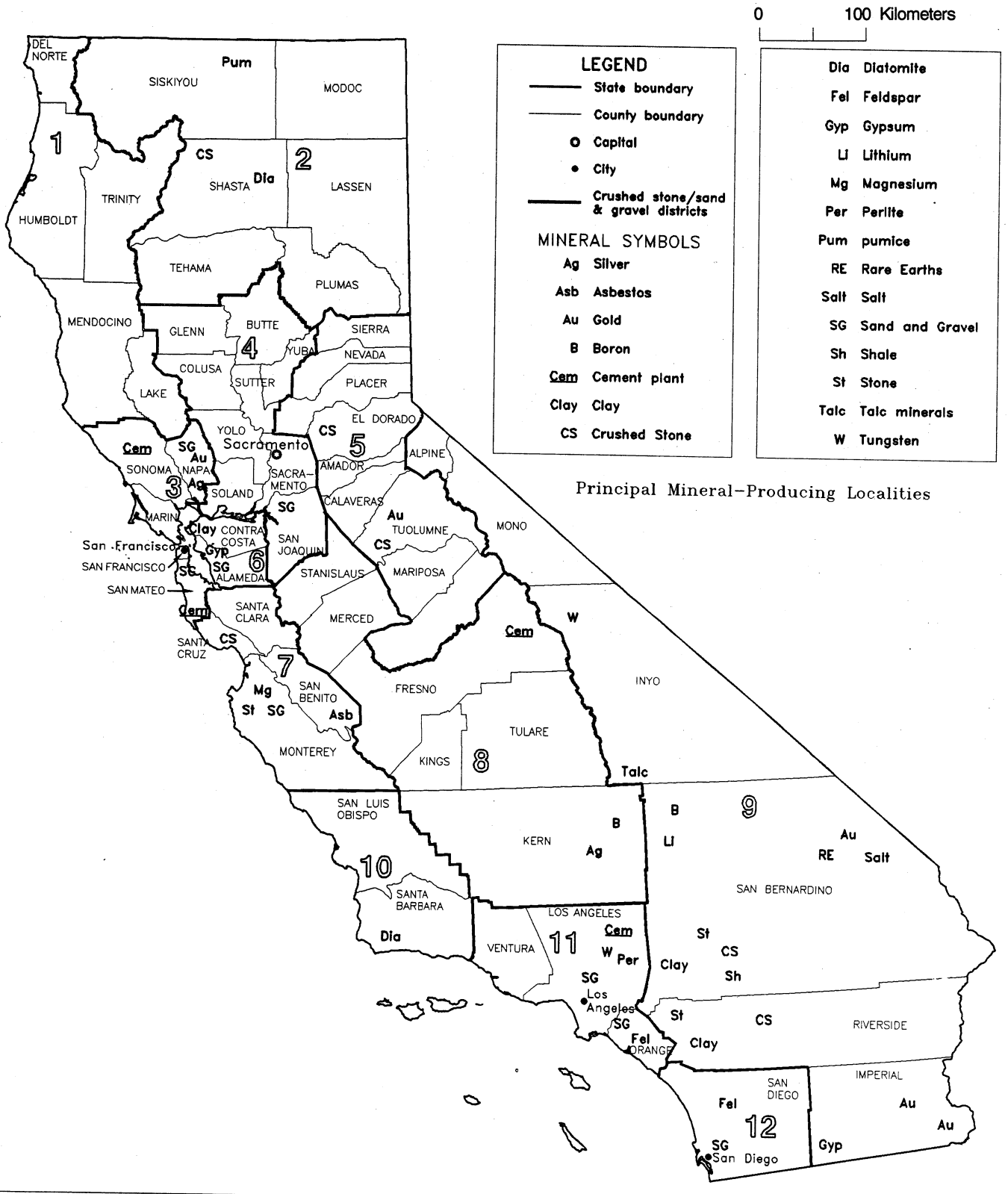
[11]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[14]Total shown in thousand short tons and thousand dollars.

CALIFORNIA


0 100 Kilometers
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Ag Silver
Asb Asbestos
Au Gold
B Boron
Cem Cement plant
Clay Clay
CS Crushed Stone
Dia Diatomite
Fel Feldspar
Gyp Gypsum
Li Lithium
Mg Magnesium
Per Perlite
Pum pumice
RE Rare Earths
Salt Salt
SG Sand and Gravel
Sh Shale
St Stone
Talc Talc minerals
W Tungsten
Principal Mineral-Producing Localities
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
MENDOCINO
GLENN
BUTTE
SIERRA
NEVADA
COLUSA
SUTTER
YUBA
PLACER
LAKE
YOLO
Sacramento
EL DORADO
SONOMA
NAPA
SOLANO
SACRAMENTO
AMADOR
ALPINE
MARIN
CALAVERAS
CONTRA COSTA
San Francisco
SAN FRANCISCO
ALAMEDA
SAN JOAQUIN
TUOLUMNE
MONO
SAN MATEO
STANISLAUS
MARIPOSA
SANTA CLARA
MERCED
SANTA CRUZ
FRESNO
INYO
SAN BENITO
TULARE
MONTEREY
KINGS
SAN LUIS OBISPO
KERN
SANTA BARBARA
LOS ANGELES
SAN BERNARDINO
VENTURA
Los Angeles
RIVERSIDE
ORANGE
IMPERIAL
SAN DIEGO
San Diego
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THE MINERAL INDUSTRY OF COLORADO

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 Colorado Geological Survey for collecting information on all nonfuel minerals.

Colorado remained 25th in the ranking of the 50 States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines. The estimated value for 1994 was $440 million, a 10% increase over that of 1993. This followed nearly a 4% increase in 1993 over that of 1992. The State accounted for more than 1% of the U.S. total. A little more than two-thirds of the State's nonfuel mineral value came from industrial minerals, especially construction sand and gravel, portland cement, and crushed stone. Most of the remaining one-third resulted from gold, molybdenum, and zinc, in descending order of value. Most of the State's increased value resulted from gold, which climbed 45%; molybdenum, up 13%; and construction sand and gravel, up 11% from that of 1993. Compared with 1993, the following increased in value: construction sand and gravel, portland cement, gold, crushed stone, molybdenum, zinc, lead, industrial sand and gravel, masonry cement, gypsum, dimension stone, and kaolin clays. Decreases occurred in silver, grade-A helium, lime, peat, and gemstones.

In estimated mineral production for 1994, Colorado remained second in molybdenum, fifth in lead, and sixth in zinc. The State also dropped from 7th to 9th of the 13 U.S. gold-producing States. Colorado continued to produce a small portion of the Nation's grade-A helium, but dropped from fourth to fifth of five producing States.

According to the Colorado Geological Survey (CGS), diamond exploration continued in the State line district of Larimer County. A 14.2-carat gem diamond was recovered at the Kelsey Lake kimberlite and bulk mineral sampling continued at the Sloan prospect. The Pikes Peak Mining Co. began mining at the Cresson Gold Mine in the Cripple Creek district in late 1994. Annual gold production from this new open pit mine was expected to be about 3,700 kilograms (120,000 troy ounces). Nearly 2,300 kilograms (73,000 ounces) of gold and about 600 kilograms (19,000 ounces) of silver were produced at Battle Mountain Gold's San Luis Gold Mine in 1994. With improvements in the economies of a number of the world's nations, the demand and the price paid for molybdenum increased. According to CGS, this, in part, spurred increases in

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN COLORADO[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	[2]242	[2]$1,796	281	$2,158	281	$2,160
Gemstones		NA	225	NA	258	NA	62
Gold[3]	kilograms	3,763	41,741	W	W	W	W
Peat	thousand metric tons	W	333	W	W	W	W
Sand and gravel (construction)	do.	26,721	105,281	e29,000	e117,500	31,000	130,200
Stone:							
Crushed	thousand metric tons	e10,886	e60,400	10,338	61,950	e9,800	e59,800
Dimension	metric tons	e5,855	e252	4,315	1,374	W	W
Combined value of cement, clays [fire (1992)], copper (1992-93), gypsum (crude), helium (Grade-A), lead, lime, molybdenum, perlite (1992-93), sand and gravel (industrial), silver, zinc, and values indicated by symbol W		XX	174,761	XX	216,245	XX	248,000
Total		XX	384,789	XX	399,485	XX	[4]440,000

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

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

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

molybdenum production at Cyprus-Amax Minerals Co.'s Henderson Mine. Molybdenum production at the Henderson Mine increased more than 8% compared with that of 1993 from nearly 10,900 metric tons in 1993 to about 11,800 tons in 1994. The demand for high-quality, low-sulfur coal increased production an estimated 13% compared with the record 22 million tons mined in 1993.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
COLORADO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	140	$709	$5.06
Filter stone	16	69	4.31
Other coarse aggregate	45	195	4.33
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,628	8,747	5.37
Bituminous aggregate, coarse	472	2,993	6.34
Bituminous surface-treatment aggregate	W	W	3.40
Railroad ballast	11	53	4.82
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	875	3,040	3.47
Screening, undesignated	592	2,560	4.32
Coarse and fine aggregates:			
Graded road base or subbase	226	816	3.61
Unpaved road surfacing	39	142	3.64
Terrazzo and exposed aggregate	43	294	6.84
Crusher run or fill or waste	14	24	1.71
Other coarse and fine aggregates	386	2,285	5.92
Other construction materials	64	266	4.16
Agricultural:			
Poultry grit and mineral food	(2)	(2)	32.76
Chemical and metallurgical:			
Cement manufacture	1,765	8,267	4.68
Sulfur oxide removal	(2)	(2)	3.92
Special:			
Asphalt fillers or extenders	18	151	8.39
Other fillers or extenders	45	375	8.33
Unspecified:[3]			
Actual	3,608	28,158	7.80
Estimated	305	1,643	5.39
Total[4]	10,338	61,950	5.99
Total[5 6]	11,396	61,950	5.44

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, sandstone, and traprock; excludes quartzite, volcanic cinder and scoria, and miscellaneous stone from State total to avoid disclosing company proprietary data.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

COLORADO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r17	r2,637	r$12,192	r$4.62	[1]12	[1]2,819	[1]$15,011	[1]$5.32
Granite	r10	r2,645	r12,704	r4.80	8	3,432	16,935	4.93
Traprock	1	W	W	4.72	—	—	—	—
Sandstone	r10	r1,891	r13,342	r7.06	1	3,212	27,035	8.42
Quartzite	1	W	W	7.00	1	W	W	6.29
Volcanic cinder and scoria	1	W	W	5.76	2	W	W	5.44
Miscellaneous stone	r1	W	W	r6.50	11	W	W	3.29
Total[2]	XX	7,621	41,022	5.38	XX	10,338	61,950	5.99
Total[3 4]	XX	8,401	$41,022	4.88	XX	11,396	$61,950	5.44

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

[1]Includes "Limestone-dolomite," reported with no distinction between the two.

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

[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	W	W	(2)	(2)	—	—
Coarse aggregate, graded[3]	2	17	—	—	—	—
Fine aggregate (-3/8 inch)[4]	—	—	(2)	(2)	—	—
Coarse and fine aggregate[5]	W	W	(2)	(2)	—	—
Other construction materials	12	76	—	—	—	—
Agricultural[6]	—	—	(2)	(2)	—	—
Chemical and metallurgical[7]	—	—	1,123	(2)	—	—
Special[8]	—	—	64	(2)	—	—
Unspecified:[9]						
Actual	—	—	8	49	—	—
Estimated	5	23	264	1,407	—	—
Total[10]	20	115	1,710	10,196	—	—
Total[11 12]	22	115	1,885	10,196	—	—

See footnotes at end of table.

TABLE 4—Continued

COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Coarse aggregate (+1 1/2 inch)[1]	(W)	(W)	20	114	45	195
Coarse aggregate, graded[3]	(W)	(W)	(W)	(W)	—	—
Fine aggregate (-3/8 inch)[4]	1,163	2,921	(W)	(W)	—	—
Coarse and fine aggregate[5]	580	2,954	61	175	(W)	(W)
Other construction materials	—	—	12	90	—	—
Agricultural[6]	—	—	—	—	—	—
Chemical and metallurgical[7]	(W)	(W)	—	—	(W)	(W)
Special[8]	—	—	—	—	—	—
Unspecified:[9]						
Actual	2,809	23,773	791	4,336	—	—
Estimated	37	214	—	—	—	—
Total[10]	7,381	45,004	1,142	6,237	85	398
Total[11 12]	8,136	45,004	1,259	6,237	94	398

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

[1]Includes filter stone, riprap and jetty stone, and other coarse aggregate.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

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

[4]Includes stone sand (bituminous mix or seal) and screening (undesignated).

[5]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.

[6]Includes poultry grit and mineral food.

[7]Includes cement manufacture, and sulfur oxide removal.

[8]Includes asphalt fillers or extenders, and other fillers or extenders.

[9]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[12]Total shown in thousand short tons and thousand dollars.

COLORADO

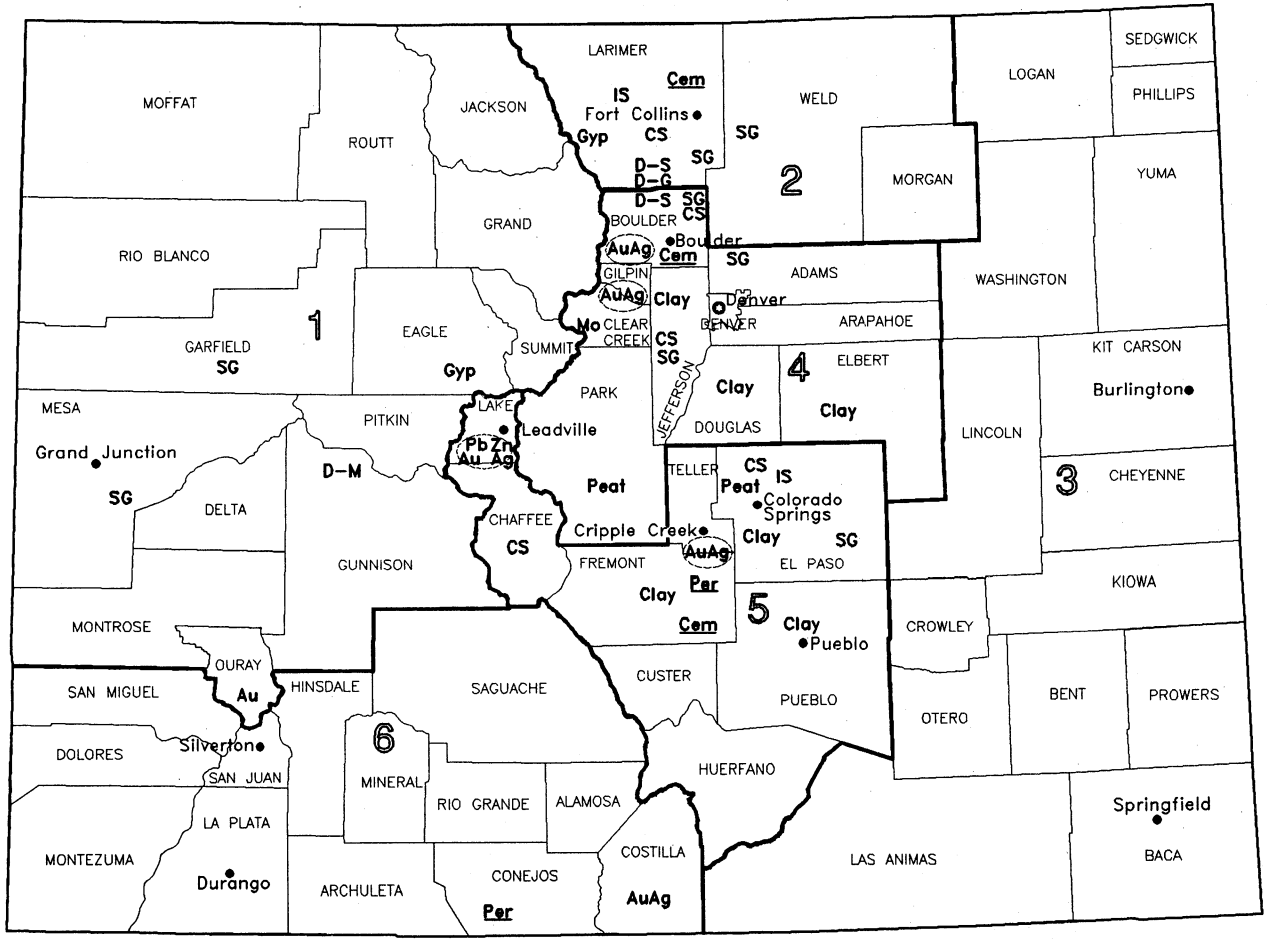
0 100 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

AuAg	Gold–Silver
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
D–G	Dimension Granite
D–M	Dimension Marble
D–S	Dimension Sandstone
Gyp	Gypsum
IS	Industrial Sand
Mo	Molybdenum
Pb	Lead
Peat	Peat
Per	Perlite plant
SG	Sand and Gravel
Zn	Zinc
	Concentration of mineral operations



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF CONNECTICUT

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 State Geological and Natural History Survey of Connecticut, Department of Environmental Protection, for collecting information on all nonfuel minerals.

In 1994, for the 3d consecutive year, Connecticut was 44th among the 50 States in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $97 million, a more than 7% increase compared with that of 1993. This followed a 7.5% decrease in 1993 from that of 1992. The State accounted for less than 0.5% of the U.S. total value. Crushed stone and construction sand and gravel, the State's leading mineral commodities by value, accounted for 83% of the State's total mineral value. In 1994, the increased values of crushed stone and construction sand and gravel accounted for most of the year's change. The change in value in 1993 mainly resulted from decreases in the value of crushed stone and dimension stone, the full impact of which was moderated by an increase in construction sand and gravel.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Connecticut mines produced significant quantities of crushed stone, construction sand and gravel, and dimension stone.

According to the Connecticut Geological and Natural History Survey, brownstone quarrying was resumed in Portland, south of the capital city of Hartford, in June 1994, representing the first such activity in the State since the 1930's. Brownstone is a dark, reddish-brown, iron oxide-cemented quartz sandstone, once extensively quarried in the Connecticut River valley for use as building stones. A new company, Portland Brownstone Quarries, was formed to begin removing the commodity from leased property. The first order was for stone to repair an old brownstone chapel on the campus of Gallaudet College in Washington, DC. The brownstone blocks removed from the quarry were being sent to Barre, VT, for shaping before shipment to the college.

In other industry developments, the Mashantucket-Pequot Tribe purchased 145.2 hectares (363 acres) at Lantern Hill, in Ledyard and North Stonington, from U.S. Silica Co., which previously had quarried the site for industrial sand. Although the Pequots reportedly did not intend to mine the site, the tribe has not yet announced what its plans are for the property. Lantern Hill is near the tribal reservation, which contains a large casino and hotel complex.

[1]The term value, referring always to nonfuel mineral value unless otherwise specified, means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN CONNECTICUT[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$5	NA	$5	—	—
Sand and gravel (construction)	thousand metric tons	5,466	30,107	e6,400	e,3 4,900	6,700	$37,200
Stone, crushed[2]	do.	e5,352	e54,500	4,599	39,525	e5,000	e43,800
Combined value of clays (common), sand and gravel (industrial), and stone (crushed dolomite and miscellaneous, dimension)		XX	r13,451	XX	16,246	XX	16,300
Total		XX	r98,063	XX	90,676	XX	3,97,300

eEstimated. pPreliminary. rRevised. NA Not available. XX Not applicable.

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

[2]Excludes certain stones; kind and value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

CONNECTICUT: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Filter stone[2]	19	$217	$11.42
Coarse and fine aggregates:			
Other construction materials[3]	78	1,059	13.58
Unspecified:[4]			
Actual	2,750	24,077	8.76
Estimated	1,753	14,173	8.08
Total[5]	4,599	39,525	8.59
Total[6 7]	5,070	39,525	7.80

[1]Includes granite, limestone, and traprock; excludes dolomite and miscellaneous stone from State total to avoid disclosing company proprietary data.
[2]Includes riprap and jetty stone.
[3]Includes agricultural limestone, screening (undesignated), grade roadbase or subbase, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

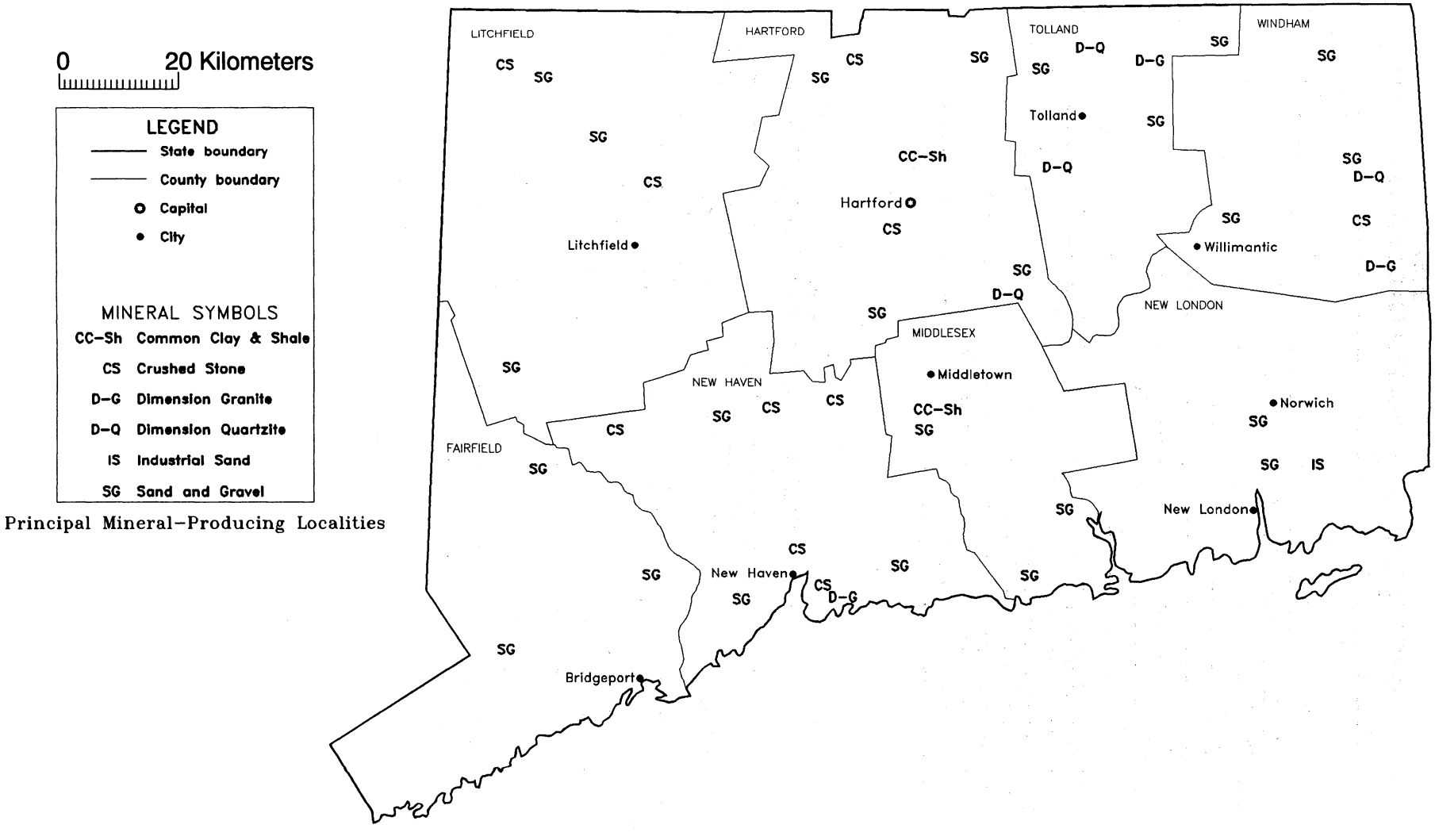
TABLE 3

CONNECTICUT: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993[1]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r6	r1,169	r$10,380	r$8.88	6	1,154	$9,398	$8.14
Dolomite	—	—	—	—	—	—	r—	—
Granite	3	203	1,646	8.11	3	129	1,485	11.51
Traprock	r8	r3,955	r40,675	r10.28	8	3,317	28,641	8.63
Miscellaneous stone	—	—	—	—	—	—	—	—
Total[2]	XX	5,328	52,701	9.89	XX	4,599	39,525	8.59
Total[3 4]	XX	5,873	52,701	8.97	XX	5,070	39,525	7.80

rRevised. XX Not applicable.
[1]Excludes dolomite and miscellaneous stone from State total to avoid disclosing company proprietary data.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

CONNECTICUT



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF DELAWARE

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 Delaware Geological Survey for collecting information on all nonfuel minerals.

Delaware remained 50th in the Nation in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). However, this position in rank, which the State has held for decades, is the result of the withholding of data from the State's totals in order to protect company proprietary data. In actuality, Delaware ranked higher. Compared with that of 1993, the value of construction sand and gravel decreased, while the value of magnesium compounds edged down only slightly. Only construction sand and gravel was mined in the State. No gemstone production was reported to USBM for 1994. Magnesium compounds, Delaware's leading nonfuel mineral commodity by value, were produced within the State for use in manufacturing chemical and pharmaceutical products. Delaware was one of six States that had reported production for magnesium compounds in the United States.

According to the Delaware Geological Survey (DGS), in addition to the USBM, the agency continued its interaction in 1994 with two other U.S. Department of the Interior agencies. Working with the U.S. Geological Survey, DGS completed a Statewide topographic mapping project and in cooperation with the Minerals Management Service, funding was continued for a studies to characterize Delaware's offshore sand resources.

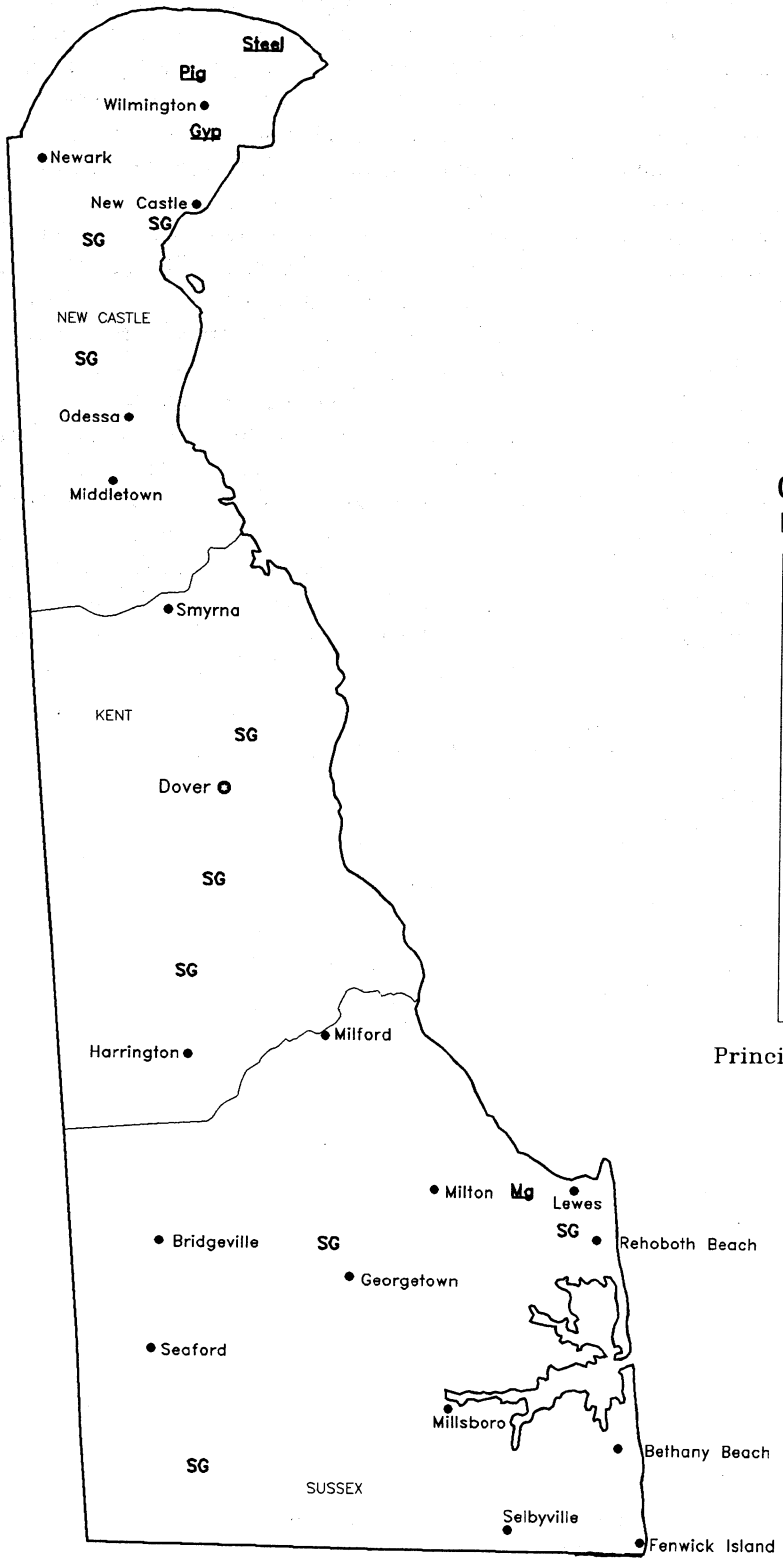
[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN DELAWARE[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$1	NA	$1	—	—
Sand and gravel (construction)	thousand metric tons	2,257	8,574	e2,500	e10,300	2,100	$8,700
Total[2]		XX	8,575	XX	10,301	XX	8,700

[e]Estimated. [p]Preliminary. NA Not available. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Partial total, excludes value of magnesium compounds which must be concealed to avoid disclosing company proprietary data.

DELAWARE



0 10 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City

MINERAL SYMBOLS

Gyp	Gypsum plant
Mg	Magnesium metal plant
Pig	Titanium Dioxide pigments
SG	Sand and Gravel
Steel	Iron and Steel plant

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF FLORIDA

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 Florida Geological Survey for collecting information on all nonfuel minerals.

Florida ranked sixth among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 8th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $1.5 billion, an 12% increase over that of 1993. This followed a 9% decrease in 1993 from that of 1992. The State accounted for 5% of the U.S. total value and continued to lead significantly the other U.S. States in phosphate rock production and value. The total value decreased in 1993, mainly due to a drop in phosphate rock values. But the rebound in 1994 was attributed to a combination of increased values for phosphate rock, crushed stone, construction sand and gravel, and masonry cement. The latter three commodities have increased consistently during the last 3 years. Florida, almost exclusively an industrial mineral producing State, remained first in the production of phosphate rock, masonry cement, peat, titanium concentrates, and metal; second in rare-earth concentrates and fuller's earth clay; and third in crushed stone and magnesium compounds. The State rose from sixth to fifth in portland cement production. Compared with 1993, the value of phosphate rock, crushed stone, construction sand and gravel, masonry cement, industrial sand and gravel, and peat increased in 1994. Decreases occurred in the value of portland cement, common and kaolin clays, and the rare-earth metal concentrates.

In 1994, the phosphate industry rebounded somewhat from significant production and value drops in 1993—one of the most difficult of recent years. Production of phosphate rock, primarily used to manufacture fertilizer, increased moderately in 1994 and some previously closed operations were able to reopen. Consumption increased substantially, especially for diammonium phosphate, in large part to supply increased export demands. The industry continued research to develop technologies that would enable mining companies to further reduce the need for deep-aquifer water. Presently, the industry recirculates about 80% of the water it uses in certain manufacturing processes. Limestone production was moderately up in 1994 compared with that of 1993;

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN FLORIDA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	310	$22,424	351	$27,264	462	$35,900
Portland	do.	2,898	161,969	4,195	210,762	4,120	207,000
Clays[2]	do.	367	37,201	407	52,699	408	52,800
Gemstones		NA	1	NA	W	NA	W
Peat	thousand metric tons	191	3,158	219	3,781	250	4,060
Sand and gravel:							
Construction	do.	21,107	66,141	e22,800	e73,100	25,000	83,700
Industrial	do.	433	5,167	504	5,911	W	W
Stone (crushed)[3]	do.	e53,796	e266,900	64,926	313,270	e72,000	e360,000
Combined value of clays [common, kaolin (1994)], magnesium compounds, phosphate rock, rare-earth metal concentrates, staurolite, stone [crushed dolomite and limestone (1993-94), crushed marl (1992)], titanium concentrates (ilmenite and rutile), zircon concentrates, and values indicated by symbol W		XX	876,799	XX	623,845	XX	724,000
Total		XX	1,439,760	XX	1,310,632	XX	[4]1,470,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Excludes certain stones; kind and value included with "Combined value" data.

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

this was due, in part, to increased highway and residential construction. Compliance with the 1990 amendments to the Clean Air Act (CAA) was a controversial issue for mining facility operators who were required to obtain permits for work already in progress in addition to all new work, according to the Florida Limerock Institute.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
FLORIDA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	125	$572	$4.58
Filter stone	349	2,228	6.38
Other coarse aggregate	W	W	2.21
Coarse aggregate, graded:			
Concrete aggregate, coarse	10,937	63,806	5.83
Bituminous aggregate, coarse	3,280	21,821	6.65
Bituminous surface-treatment aggregate	936	6,891	7.36
Railroad ballast	W	W	5.07
Other graded coarse aggregate	W	W	8.00
Fine aggregate (-3/8 inch):			
Stone sand, concrete	5,097	29,924	5.87
Stone sand, bituminous mix or seal	2,116	11,564	5.47
Screening, undesignated	5,167	20,816	4.03
Other fine aggregate	W	W	6.84
Coarse and fine aggregates:			
Graded road base or subbase	19,884	72,266	3.63
Unpaved road surfacing	418	1,881	4.50
Crusher run or fill or waste	2,043	4,493	2.20
Other coarse and fine aggregates	963	3,113	3.23
Other construction materials[2]	2,727	18,490	6.78
Agricultural:			
Agricultural limestone	366	3,111	8.50
Poultry grit and mineral food	593	4,787	8.07
Other agricultural uses	238	(2)	(2)
Chemical and metallurgical:			
Cement manufacture	3,515	18,297	5.21
Glass manufacture	46	701	15.24
Special:			
Asphalt fillers or extenders	150	2,294	15.29
Other fillers or extenders	169	1,562	9.24
Other specified uses not listed	871	2,759	3.17
Unspecified:[3]			
Actual	891	4,193	4.71
Estimated	4,045	17,698	4.38
Total	64,926	[4]313,270	4.83
Total[5 6]	71,569	313,270	4.38

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, limestone-dolomite, calcareous marl, and shell.
[2]Excludes limestone-dolomite value from State total to avoid disclosing company proprietary data.
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data do not add to total shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

FLORIDA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	r96	r52,774	r$252,422	r$4.78	85	62,492	[2]$300,827	[2]$4.81
Dolomite	3	822	5,059	6.15	3	W	5,015	W
Calcareous marl	(3)	(3)	(3)	(3)	1	W	3	W
Shell	5	1,043	5,103	4.89	8	1,126	4,239	3.76
Total[4]	XX	r55,005	r264,847	4.81	XX	64,926	313,270	4.83
Total[5 6]	XX	r60,633	r264,847	r4.37	XX	71,569	313,270	4.38

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "Limestone-dolomite," reported with no distinction between the two.
[2]Excludes limestone-dolomite value from State total to avoid disclosing company proprietary data.
[3]Excludes calcareous marl from State totals to avoid disclosing company proprietary data.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 4

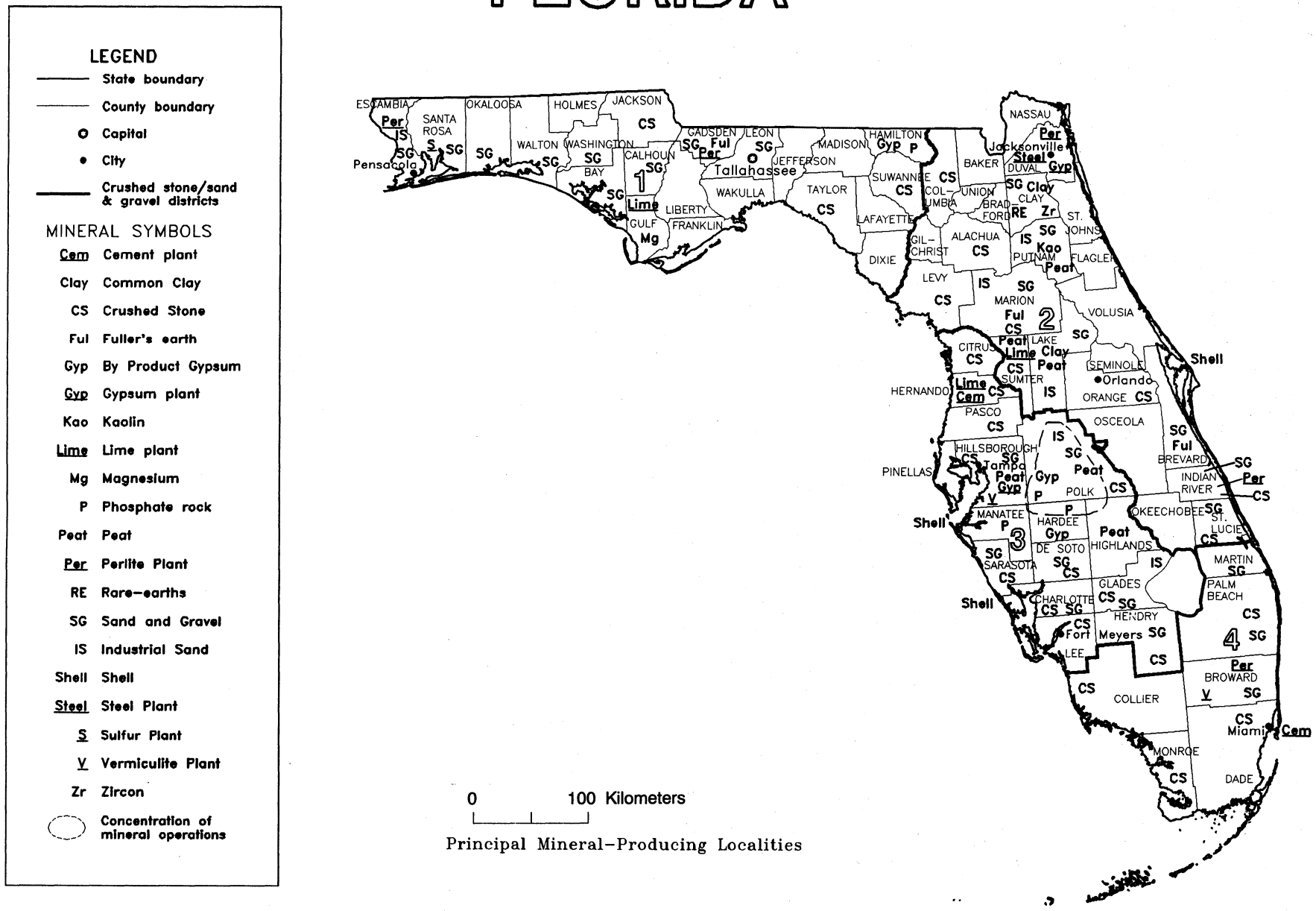
FLORIDA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	—	—	(3)	(3)	W	W	669	3,037
Coarse aggregate, graded[4]	(3)	(3)	(3)	(3)	5,836	38,367	10,056	59,597
Fine aggregate (-3/8 inch)[5]	(3)	(3)	(3)	(3)	3,493	13,952	8,660	47,136
Coarse and fine aggregate[6]	(3)	(3)	6,201	23,195	W	W	12,721	43,647
Other construction materials	—	—	(9)	(3)	4,135	14,181	(3)	(3)
Agricultural[7]	(3)	(3)	(3)	(3)	786	3,026	—	—
Chemical and metallurgical[8]	—	—	46	701	(3)	(3)	(3)	(3)
Special[10]	—	—	(3)	(3)	(3)	(3)	—	—
Other miscellaneous uses	—	—	—	—	1,906	8,817	3,531	18,800
Unspecified:[11]								
Actual	321	2,409	447	2,683	122	653	—	—
Estimated	713	4,050	819	3,624	563	2,863	1,950	8,804
Total[12]	1,873	8,024	8,623	42,364	16,842	81,862	37,588	181,020
Total[13 14]	2,065	8,024	9,505	42,364	18,565	81,862	41,434	181,020

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Excludes limestone - dolomite value from State total to avoid disclosing company proprietary data.
[2]Includes filter stone, riprap and jetty stone, and other coarse aggregate.
3Withheld to avoid disclosing company proprietary data; included with "Total."
[4]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[5]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[6]Includes graded road base or subbase, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.
[7]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[8]Includes cement manufacture and glass manufacture.
[9]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[10]Includes asphalt fillers or extenders, other fillers or extenders, and other specified uses not listed.
[11]Includes production reported without a breakdown by use and estimates for nonrespondents.
[12]Data may not add to totals shown because of independent rounding.
[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[14]Total shown in thousand short tons and thousand dollars.

FLORIDA


LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Cem Cement plant
Clay Common Clay
CS Crushed Stone
Ful Fuller's earth
Gyp By Product Gypsum
Gyp Gypsum plant
Kao Kaolin
Lime Lime plant
Mg Magnesium
P Phosphate rock
Peat Peat
Per Perlite Plant
RE Rare-earths
SG Sand and Gravel
IS Industrial Sand
Shell Shell
Steel Steel Plant
S Sulfur Plant
V Vermiculite Plant
Zr Zircon
Concentration of mineral operations
ESCAMBIA
SANTA ROSA
OKALOOSA
HOLMES
JACKSON
WALTON
WASHINGTON
BAY
CALHOUN
GADSDEN
LEON
Tallahassee
JEFFERSON
MADISON
HAMILTON
LIBERTY
GULF
FRANKLIN
WAKULLA
TAYLOR
LAFAYETTE
SUWANNEE
COLUMBIA
BAKER
NASSAU
DUVAL
Jacksonville
UNION
BRADFORD
CLAY
ST. JOHNS
GILCHRIST
ALACHUA
PUTNAM
FLAGLER
DIXIE
LEVY
MARION
VOLUSIA
CITRUS
LAKE
SUMTER
SEMINOLE
Orlando
HERNANDO
ORANGE
PASCO
OSCEOLA
HILLSBOROUGH
Tampa
BREVARD
INDIAN RIVER
PINELLAS
POLK
OKEECHOBEE
ST. LUCIE
MANATEE
HARDEE
DE SOTO
HIGHLANDS
SARASOTA
MARTIN
GLADES
PALM BEACH
CHARLOTTE
HENDRY
Fort Myers
LEE
BROWARD
COLLIER
Miami
MONROE
DADE
Shell
0 100 Kilometers
Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF GEORGIA

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 Georgia Geologic Survey, Environmental Protection Division, Georgia Department of Natural Resources, for collecting information on all nonfuel minerals.

Georgia ranked fifth nationally in total nonfuel mineral value[1] in 1994, up from sixth in 1993, according to the U.S. Bureau of Mines. The estimated value was more than $1.5 billion, an increase of more than 7% compared with that of 1993. This followed more than 6% growth in 1993 compared with that of 1992. The State accounted for almost 5% of the U.S. total. The value of kaolin clay, which was primarily responsible for both yearly total increases, remained Georgia's foremost mineral, accounting for more than 64% of the State's estimated nonfuel mineral value. Kaolin clay production was up about 10% in 1994, following a 32% jump the year before. Crushed stone, representing almost 21% of the State's value, also had a significant impact on overall output, rising 20% in value in 1993 and 21% in 1994. In estimated mineral production for 1994, Georgia remained 1st among the 50 States in fuller's earth and kaolin clays and dimension stone, 2d in barite and 2d of only two bauxite-producing States, 3d in iron oxide pigments, and 5th in feldspar. The State rose from third to second in the production of mica and from sixth to fifth in common clays. Compared with 1993, the value of kaolin clays, crushed stone, dimension stone, construction sand and gravel, masonry cement, industrial sand and gravel, iron oxide pigments, mica, and bauxite increased. Decreases occurred in fuller's earth clays, portland cement, barite, common clays, and feldspar.

According to the Georgia Geologic Survey, 1994 generally was a good year for the Georgia mining industry. Shipments of crushed stone were up about 10% from that of 1993 and quarries operated with fewer lost-work-time accidents. Due to construction associated with the 1996 Summer Olympics in Atlanta, the outlook for stone production for 1995 was good. The dimension stone industry was experiencing increased competition from foreign producers—especially Canada and India—in addition to South America and China. The imports included significant increases in finished monumental products that were shipped directly directly to memorialists, thus bypassing local suppliers. A significant increase occurred in the use of diamond wire contour saws for cutting intricate profiles on monumental stone. Manufactured in Italy and Germany, these machines replace time consuming and expensive hand

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN GEORGIA[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Clays	thousand metric tons	[2]8,962	[2]$970,905	[2]9,759	[2]$995,013	10,400	$1,080,000
Gemstones		NA	645	NA	51	NA	44
Sand and gravel:							
Construction	thousand metric tons	4,409	15,581	[e]4,600	[e]16,600	4,800	17,800
Industrial	do.	533	8,783	491	7,941	W	W
Stone:							
Crushed	do.	[e][3]39,916	[e][3]244,200	49,353	292,144	[e]53,000	[e]318,000
Dimension	metric tons	[e][3]144,327	[e][3]13,138	[3]176,291	[3]18,746	[e]157,000	31,000
Combined value of barite, bauxite, cement, clays [fire (1992-93)], feldspar, iron oxide pigments (crude), mica (scrap), stone [crushed marl, marble, and miscellaneous (1992), dimension marble (1992-93)], and value indicated by symbol W		XX	93,002	XX	101,223	XX	92,600
Total		XX	1,346,254	XX	1,431,718	XX	[4]1,540,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Excludes certain stones; kind and value included with "Combined value" data.

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

labor methods. In a separate development, the Georgia Legislature considered a severance tax on all mineral production; however, an economic study by the Georgia Institute of Technology indicated that it would be a regressive form of taxation and no bill was reported out of committee.

[r]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
GEORGIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	654	$5,187	$7.93
Filter stone	W	W	5.83
Other coarse aggregate	9	50	5.56
Coarse aggregate, graded:			
Concrete aggregate, coarse	7,440	45,740	6.15
Bituminous aggregate, coarse	4,694	28,778	6.13
Bituminous surface-treatment aggregate	W	W	7.43
Railroad ballast	866	5,669	6.55
Other graded coarse aggregate	W	W	6.19
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,729	9,491	5.49
Stone sand, bituminous mix or seal	1,387	7,147	5.15
Screening, undesignated	2,578	13,438	5.21
Other fine aggregate	W	W	5.82
Coarse and fine aggregates:			
Graded road base or subbase	6,690	33,747	5.04
Unpaved road surfacing	W	W	6.16
Terrazzo and exposed aggregate	W	W	5.92
Crusher run or fill or waste	1,267	6,753	5.33
Other coarse and fine aggregates	W	W	6.16
Other construction material	3,943	23,374	5.93
Agricultural: Agricultural limestone	(2)	(2)	8.10
Chemical and metallurgical: Cement manufacture	(2)	(2)	4.92
Special:			
Asphalt fillers or extenders	(2)	(2)	4.62
Other fillers or extenders	227	1,750	7.71
Other specified uses not listed	2,681	13,232	4.94
Unspecified:[3]			
Actual	14,492	93,254	6.43
Estimated	695	4,535	6.53
Total[4]	49,353	292,144	5.92
Total[5 6]	54,402	292,144	5.37

W Withheld to avoid disclosing company proprietary data; included with "Other contruction materials."
[1]Includes dolomite, granite, limestone, marble, calcareous marl, and quartzite.
[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for respondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

GEORGIA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r13	r3,857	r$27,579	r$7.15	12	4,875	$29,451	$6.04
Dolomite	1	163	1,040	6.38	1	W	W	6.50
Marble	(1)	(1)	(1)	(1)	7	W	W	7.20
Calcareous marl	(1)	(1)	(1)	(1)	1	W	W	4.00
Granite	r54	r33,224	r192,748	r5.80	52	41,582	245,179	5.90
Quartzite	3	258	1,533	5.94	3	357	2,103	5.89
Total[2]	XX	r37,502	r222,901	5.94	XX	49,353	292,144	5.92
Total[3 4]	XX	41,339	r222,901	5.39	XX	54,402	292,144	5.37

rRevised. W Withheld to avoid disclosing company propietary data; included with "Total." XX Not applicable.

[1]Excludes marble and calcareous marl from State total to avoid disclosing company proprietary data.

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

[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

GEORGIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY DISTRICT AND USE

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	111	794	W	W	(2)	(2)
Coarse aggregate, graded[3]	W	W	8,597	54,108	(2)	(2)
Fine aggregate (-3/8 inch)[4]	1,367	8,560	W	W	(2)	(2)
Coarse and fine aggregate[5]	W	W	5,611	27,012	(2)	(2)
Other construction materials	7,512	46,164	6,620	35,503	—	—
Agricultural[6]	(7)	(7)	—	—	—	—
Chemical and metallurgical[8]	(7)	(7)	—	—	—	—
Special[9]	(7)	(7)	(2)	(2)	—	—
Other miscellaneous uses	1,726	9,264	(2)	(2)	—	—
Unspecified[10]						
Actual	3,606	24,014	(2)	(2)	(2)	(2)
Estimated	695	4,535	—	—	—	—
Total[11]	15,018	93,332	22,556	125,638	11,779	73,174
Total[12 13]	16,555	93,332	24,864	125,638	12,984	73,174

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

[1]Includes filter stone, riprap and jetty stone, and other coarse aggregate.

[2]Withheld to avoid disclosing company propietary data; included with "Total."

[3]Includes concrete agggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[5]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, and crusher run (select material or fill), and other coarse and fine aggregates.

[6]Includes agricultural limestone.

[7]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[8]Inlcudes cement manufacture.

[9]Includes asphalt fillers or extenders, and other fillers or extenders.

[10]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[13]Total shown in thousand short tons and thousand dollars.

GEORGIA

Principal Mineral–Producing Localities

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Au	Gold	DM	Dimension Marble	Mul	Synthetic Mullite
Ba	Barite	DQ	Dimension Quartzite	Per	Perlite plant
Baux	Bauxite	Fel	Feldspar	SG	Sand and Gravel
Cem	Cement plant	FePg	Iron Oxide pigments	IS	Industrial Sand
Clay	Clay	Ful	Fuller's earth	Steel	Iron and Steel plant
CS	Crushed Stone	Gyp	Gypsum plant	Ti	Titanium plant
Cu	Copper smelter	Kao	Kaolin		Concentration of mineral operations
DG	Dimension Granite	Mica	Mica		

THE MINERAL INDUSTRY OF HAWAII

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 Department of Land and Natural Resources of the State of Hawaii for collecting information on all nonfuel minerals.

Hawaii remained 41st in the Nation in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $137 million, a decrease of about 1% as compared with that of 1993. This followed a 7% decrease in 1993 from that of 1992. The State accounted for about 0.5% of the U.S. total value. In 1994, a decrease in the value of portland cement was significantly moderated by the increase in crushed stone. The State's decreased mineral value in 1993 mostly resulted from decreases in crushed stone and portland cement. Compared with 1993, the mineral commodity values for crushed stone and gemstones increased. Decreases occurred for both portland and masonry cements.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Hawaiian mines, compared with those in other States, were significant producers of crushed stone, while similar production of portland cement was achieved mostly at one manufacturing plant on the Island of Oahu, Honolulu County. Mining in the State consisted mostly of the quarrying of stone to produce crushed stone and the excavation of sand and gravel from open pits, both for use by the Islands' construction industry.

[1]The term value in this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN HAWAII[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Cement:							
Masonry	thousand metric tons	7	$1,421	7	$880	6	$764
Portland	do.	520	53,936	451	48,269	415	44,300
Stone (crushed)[2]	do.	e9,525	e93,500	8,456	81,412	e8,700	e84,000
Combined value of other industrial minerals		XX	(3)	XX	8,143	XX	8,300
Total		XX	4148,857	XX	138,704	XX	5137,000

eEstimated. pPreliminary. XX Not applicable.

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

[2]Excludes certain stones; data excluded to avoid disclosing company proprietary data.

[3]Value excluded to avoid disclosing company proprietary data.

[4]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data.

[5]Data do not add to total shown because of independent rounding.

TABLE 2

HAWAII: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$12.00
Riprap and jetty stone	18	$191	10.61
Filter stone	35	316	9.03
Other coarse aggregate	W	W	15.88
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,843	20,562	11.16
Bituminous aggregate, coarse	89	737	8.28
Bituminous surface-treatment aggregate	W	W	12.65
Other graded coarse aggregate	W	W	8.40
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,227	14,880	12.13
Stone sand, bituminous mix or seal	358	2,883	8.05
Screening, undesignated	80	716	8.95
Other fine aggregate	208	1,987	9.55
Coarse and fine aggregates:			
Graded road base or subbase	1,606	16,391	10.21
Unpaved road surfacing	67	418	6.24
Terrazzo and exposed aggregate	W	W	13.25
Crusher run or fill or waste	986	6,202	6.29
Other coarse and fine aggregates	W	W	8.22
Other construction materials	1,571	13,112	8.35
Roofing granules	23	249	10.83
Agricultural:			
Agricultural limestone	(2)	(2)	16.54
Other agricultural uses	(2)	(2)	7.57
Chemical and metallurgical:			
Cement manufacture	291	2,121	7.29
Special:			
Other fillers or extenders	(2)	(2)	12.94
Other specified uses not listed	51	621	12.18
Unspecified:[3]			
Actual	3	28	9.33
Total	8,456	[4]81,412	9.63
Total[5 6]	9,321	81,412	8.73

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes limestone, traprock, volcanic cinder and scoria; excludes miscellaneous stone.
[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data do not add to total shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

HAWAII: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993[1]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	7	2,544	$24,471	$9.62	6	1,416	$14,416	$10.18
Traprock	r15	r7,210	r69,698	r9.67	14	6,848	65,244	9.53
Volcanic cinder and scoria	r8	271	1,820	r6.72	6	192	1,752	9.13
Total	XX	r10,025	r[2]95,990	r9.58	XX	8,456	81,412	9.63
Total[3 4]	XX	r11,051	r95,990	r8.69	XX	9,321	81,412	8.73

rRevised. XX Not applicable.

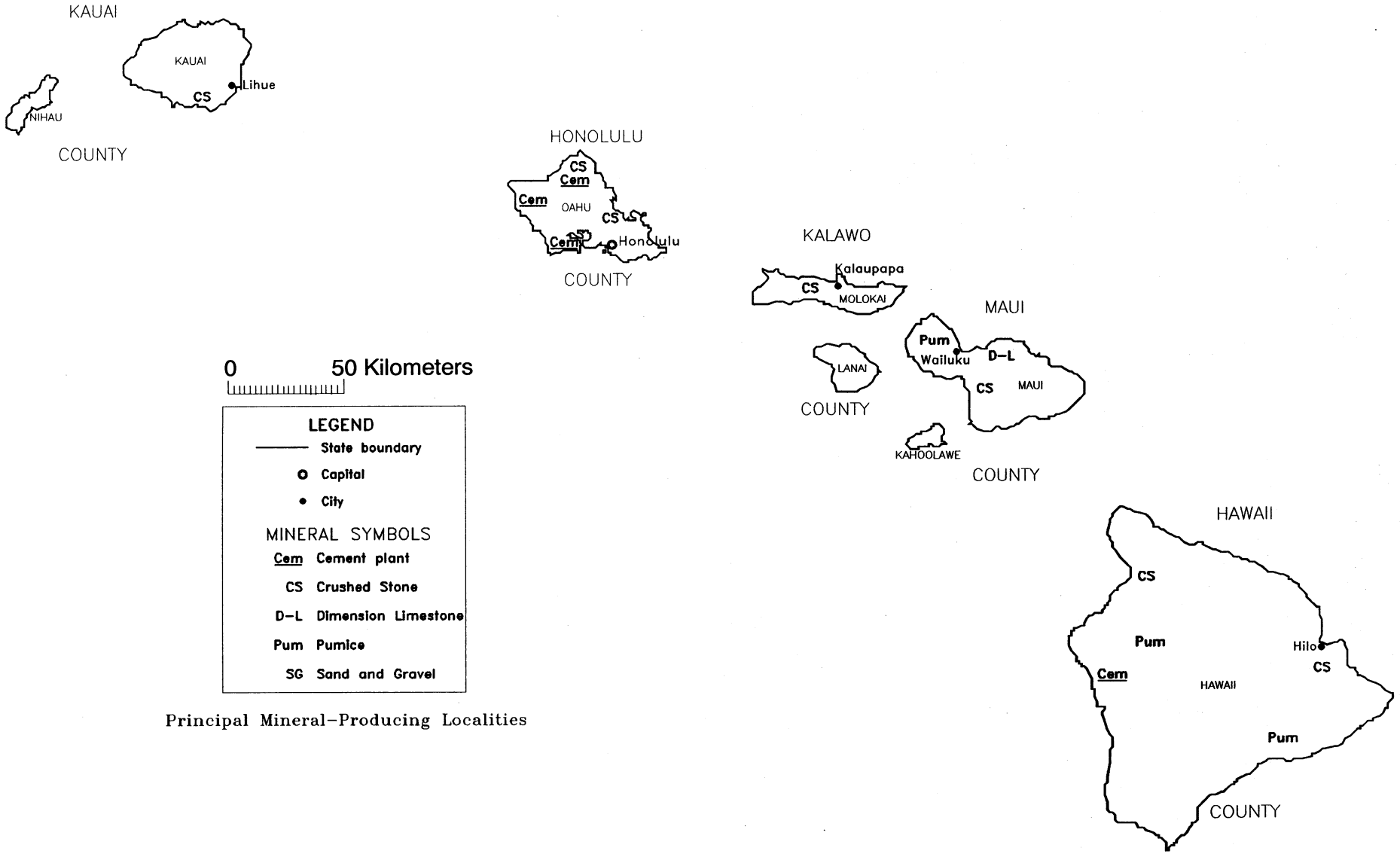
[1]Excludes miscellaneous stone from State total to avoid disclosing company proprietary data.

[2]Data do not add to total shown because of independent rounding.

[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[4]Total shown in thousand short tons and thousand dollars.

HAWAII



Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF IDAHO

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 Idaho Geological Survey for collecting information on all nonfuel minerals.

Idaho ranked 32d among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 35th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $343 million, a nearly 24% increase compared with that of 1993. This followed an 11.5% decrease in 1993 from that of 1992. These changes in value between 1992 and 1994 were mainly due to decreases in molybdenum, gold, and phosphate rock in 1993, followed by significant increases for the same commodities in 1994. Molybdenum had the greatest single effect on the State's overall mineral production and related nonfuel mineral value. In the latter half of 1992, molybdenum production ceased at the State's only molybdenum mine, the Thompson Creek Mine, which remained closed in 1993 but was reopened in mid-1994. Industrial minerals, lead by phosphate rock and construction sand and gravel, accounted for more than 58% of Idaho's total nonfuel mineral value. Of the remaining 42%, gold, molybdenum, silver, and lead, in descending order of value, were the leading metals. Compared with 1993, the value of the following nonfuel minerals increased: phosphate rock, gold, construction sand and gravel, molybdenum, lead, vanadium ore, garnet, zinc, dimension stone, copper, masonry cement, antimony, and pumice. Decreases occurred in silver, crushed stone, portland cement, lime, industrial sand and gravel, feldspar, and gemstones.

In estimated U.S. mineral production for 1994, Idaho remained the only State to produce antimony and vanadium ore; first of two garnet producing States; third in phosphate rock, silver, and lead; fourth in pumice; sixth in feldspar; and eighth in zinc. The State climbed to 4th of 6 States that produced molybdenum and was 10th of the 13 U.S. gold producing States and 1 of 5 States that produced zeolites.

According to the Idaho Geological Survey, although operations in the Coeur d'Alene District were bolstered by the rise in silver prices, only two mines, Sunshine Mining & Refining Co.'s Sunshine Mine and Hecla Mining Co.'s Lucky Friday Mine, were in production. Idaho's phosphate mines and four processing plants worked at full capacity, while most other industrial mineral operations had a good year. In addition to the reopening of the Thompson Creek molybdenum mine near Challis, new developments occurring in the metals industry included the construction of two new gold mines. FMC Corp. began work on its open-pit heap leach Beartrack Mine in Lemhi County, and Hecla started up the new Grouse

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN IDAHO[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$390	NA	$566	NA	$119
Gold[3]	kilograms	r4,037	r44,774	W	W	e5,600	e65,000
Molybdenum	metric tons	W	W	—	—	5,550	30,600
Phosphate rock	thousand metric tons	5,208	84,000	4,355	78,432	W	W
Pumice	metric tons	55,525	401	43,438	327	W	W
Sand and gravel:							
Construction	thousand metric tons	13,522	40,728	e13,600	e44,900	15,500	52,700
Industrial	do.	728	9,214	W	W	W	W
Silver[3]	metric tons	254	32,131	190	26,232	162	22,400
Stone (crushed)	thousand metric tons	e3,629	e19,200	4,602	20,770	e4,000	e18,400
Combined value of antimony, cement, clays (common), copper, feldspar, garnet (abrasive), lead, lime, perlite (1992), stone (dimension), vanadium ore, zinc, and values indicated by symbol W		XX	r78,980	XX	102,983	XX	154,000
Total		XX	r309,818	XX	274,210	XX	5343,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Data do not add to total shown because of independent rounding.

Creek Mine at Sunbeam. Grouse Creek processed its gold-silver ore through a more than 5,400-metric-ton-per-day (6,000-short-ton-per-day) mill. Other gold producers included Pegasus Gold Corp.'s Black Pine Mine, Kinross Gold Corp.'s DeLamar Mine (silver and gold), the Yellow Jacket Mine owned by United States Antimony Corp., and CSC Mining Co.'s Rescue Mine at Warren. Major exploration projects were underway at Hecla's Gold Hunter Mine, a silver/lead property in the Silver Valley area; Dewey Mining Co.'s Dewey Mine (gold), near Stibnite; Ican Minerals Ltd.'s Idaho-Almaden Mine (gold), near Weiser (Atlanta District) in Elmore County; and Newmont Mining Corp.'s Musgrove gold project and Formation Capital Corp.'s Blackpine copper, gold, and cobalt property, both in Lemhi County. Gold was the commodity attracting the most interest, but exploration at Blackpine and nearby areas focused on the Idaho Cobalt Belt.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
IDAHO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	16	$32	$2.00
Filter stone	W	W	5.44
Other coarse aggregate	43	58	1.35
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	6.73
Bituminous aggregate, coarse	277	1,100	3.97
Bituminous surface-treatment aggregate	41	136	3.32
Railroad ballast	W	W	9.37
Other graded coarse aggregate	13	90	6.92
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	2	7	3.50
Coarse and fine aggregates:			
Graded road base or subbase	2,580	10,252	3.97
Unpaved road surfacing	84	340	4.05
Terrazzo and exposed aggregates	50	115	2.30
Crusher run or fill or waste	304	1,368	4.50
Other coarse and fine aggregates	36	128	3.56
Other construction materials	175	925	5.29
Roofing granules	(2)	(2)	5.53
Agricultural:			
Agricultural limestone	(3)	(3)	16.53
Poultry grit and mineral food	6	19	3.17
Other agricultural uses	16	54	3.38
Chemical and metallurgical:			
Cement manufacture	(3)	(3)	3.95
Flux stone	(2)	(2)	3.20
Sulfur oxide removal	(2)	2	3.30
Special:			
Mine dusting or acid water treatment	(2)	(2)	3.43
Other fillers or extenders	9	115	12.78
Other specified uses not listed	308	1,345	4.37
Unspecified:[4]			
Actual	215	498	2.32
Estimated	425	4,184	9.84
Total[5]	4,602	20,770	4.51
Total[6 7]	5,073	20,770	4.09

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, miscellaneous stone, quartzite, shell, traprock, and volcanic cinder and scoria.
[2]Less than 1/2 unit.
[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

IDAHO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r10	r704	r$3,120	r$4.43	6	316	$1,426	$4.51
Shell	2	48	200	4.17	2	W	W	4.83
Granite	r7	r359	r1,865	r5.19	6	382	1,834	4.80
Traprock	r20	r1,013	r4,161	r4.11	38	2,845	10,866	3.82
Volcanic cinder and scoria	2	W	W	4.64	1	W	W	5.11
Miscellaneous stone	2	W	W	1.36	7	418	1,590	3.80
Total[1]	XX	r2,701	r12,614	r4.67	XX	4,602	20,770	4.51
Total[2 3]	XX	r2,977	r12,614	r4.24	XX	5,073	20,770	4.09

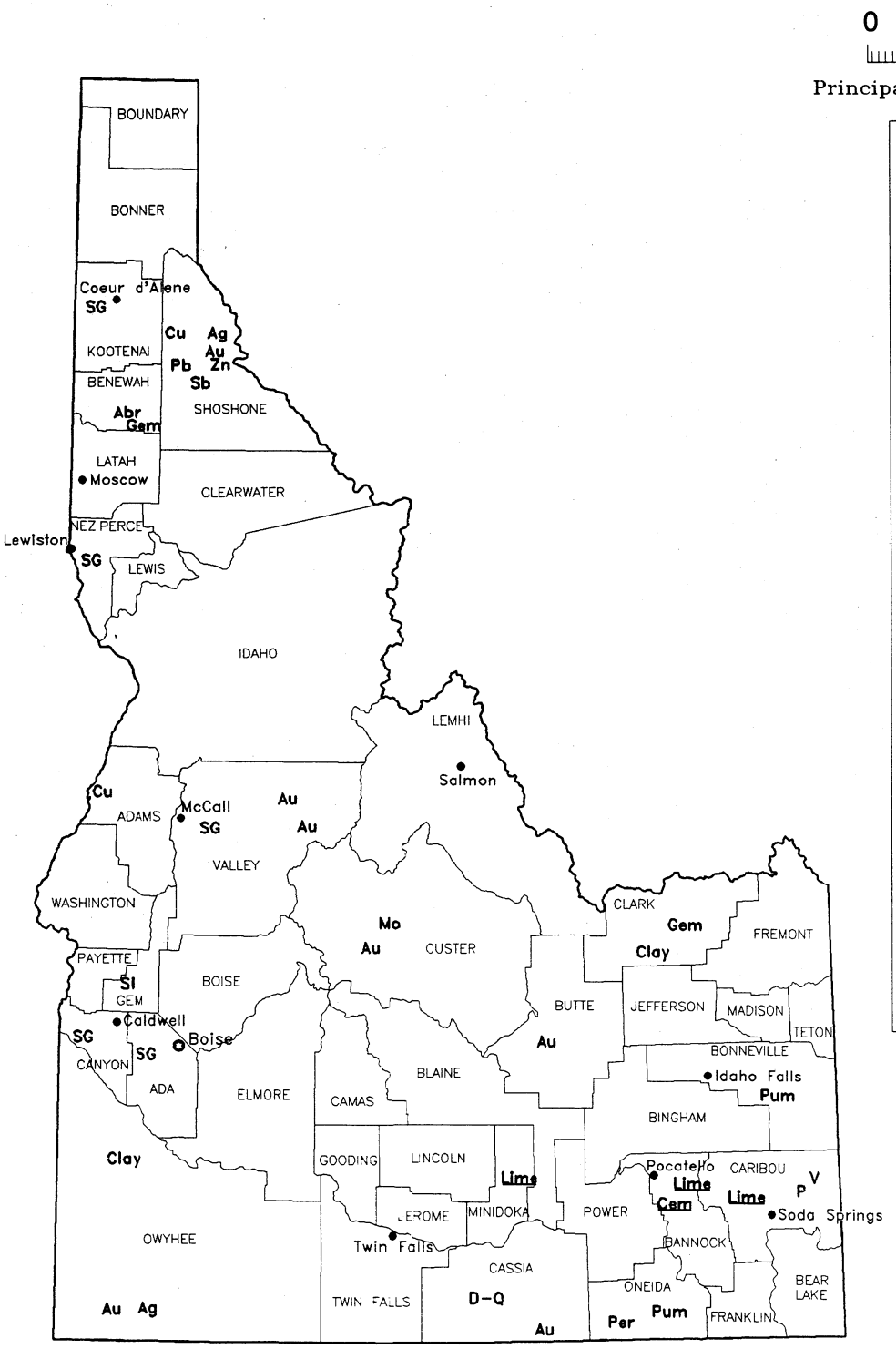
rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

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

[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[3]Total shown in thousand short tons and thousand dollars.

IDAHO


0 100 Kilometers
Principal Mineral-Producing Localities
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Abr Abrasives (natural)
Ag Silver
Au Gold
Cem Cement plant
Clay Clay
Cu Copper
D-Q Dimension Quartzite
Gem Gemstones
Lime Lime plant
Mo Molybdenum
P Phosphate rock
Pb Lead
Per Perlite
Pum Pumice
Sb Antimony
SG Sand and Gravel
Sl Silica
V Vanadium
Zn Zinc
BOUNDARY
BONNER
Coeur d'Alene
SG
KOOTENAI
Cu Ag Au Pb Zn Sb
BENEWAH
Abr Gem
SHOSHONE
LATAH
Moscow
CLEARWATER
NEZ PERCE
Lewiston
SG
LEWIS
IDAHO
LEMHI
Salmon
Cu
ADAMS
McCall
SG
Au
Au
VALLEY
WASHINGTON
Mo
Au
CUSTER
CLARK
Gem
Clay
FREMONT
PAYETTE
Sl
GEM
BOISE
BUTTE
JEFFERSON
MADISON
TETON
Caldwell
SG
Boise
SG
CANYON
ADA
ELMORE
Au
BONNEVILLE
Idaho Falls
Pum
BLAINE
CAMAS
BINGHAM
Clay
GOODING
LINCOLN
Lime
Pocatello
CARIBOU
Lime
Cem
Lime
P
V
Soda Springs
JEROME
MINIDOKA
POWER
OWYHEE
Twin Falls
BANNOCK
CASSIA
ONEIDA
BEAR LAKE
Au Ag
TWIN FALLS
D-Q
Au
Per
Pum
FRANKLIN

THE MINERAL INDUSTRY OF ILLINOIS

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 State Geological Survey, Illinois Department of Energy and Natural Resources, for collecting information on all nonfuel minerals.

For the 5th year in a row and the 7th in the last 9 years, Illinois ranked 16th among the 50 States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was more than $770 million, a 5% increase compared with that of 1993. This followed almost identical values for the previous 2 years, with only a slight increase occurring in 1993 compared with that of 1992. The State accounted for more than 2% of the U.S. total. Illinois is almost entirely an industrial mineral-producing State, accounting for more than 97% of the total nonfuel mineral value in 1994. Of these, crushed stone, the State's leading commodity, represented 45% of the total, and construction sand and gravel was 20%. The largest value mineral commodity to decline in value was portland cement, which accounted for more than 15% of the total value. The only metal produced in significant quantities from Illinois' mines is zinc. Compared with 1993, the value of crushed stone, construction sand and gravel, lime, zinc, lead, dimension stone, and copper increased. Decreases occurred in portland cement, industrial sand and gravel, fuller's earth, fluorspar, and gemstones. Minerals that increased in value accounted for more than 73% of the total nonfuel mineral value.

Compared with USBM estimates of the quantities of minerals produced in the other 49 States during 1994, Illinois remained first in industrial sand and gravel and fluorspar; fourth in crushed stone; one of the top six States producing fuller's earth; seventh in lime, zinc, and lead; and eighth in construction sand and gravel. The State dropped from 9th to 10th in the manufacture of portland cement.

According to the Illinois State Geological Survey (ISGS), 1994 production of construction aggregates exceeded 100 million metric tons. Mineral production in Illinois is dominated by construction aggregates, which have been increasing since the mid-1980's, although industrial sand and gravel and portland cement also are major mineral products. In the last several years, obtaining permits to open new sites for the mining of minerals has proven to be more difficult

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ILLINOIS[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland)	thousand metric tons	2,595	$118,982	2,430	$122,779	2,332	$118,000
Clays[2]	do.	535	2,362	477	1,086	477	1,090
Gemstones		NA	715	NA		NA	325
Sand and gravel:							
Construction	thousand metric tons	32,382	123,720	e34,500	e37,300	36,500	151,000
Industrial	do.	r4,241	r57,454	4,224	61,734	W	W
Stone (crushed)[3]	do.	e65,952	e322,800	61,487	315,149	e65,000	e345,000
Combined value of barite (1992-93), cement [masonry (1992)], clays (fuller's earth), copper, fluorspar, lead, lime, peat, silver, stone [crushed sandstone (1993-94), crushed sandstone and limestone (1992), dimension], tripoli (1992-93), zinc, and value indicated by symbol W		XX	108,252	XX	95,929	XX	155,000
Total		XX	r734,285	XX	734,305	XX	e770,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Excludes certain stones; kind and value included with "Combined value" data.

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

TABLE 2

ILLINOIS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	1,473	$6,668	$4.53
Riprap and jetty stone	491	3,171	6.46
Filter stone	364	1,813	4.98
Other coarse aggregate	111	612	5.51
Coarse aggregate, graded:			
Concrete aggregate, coarse	6,280	31,380	5.00
Bituminous aggregate, coarse	3,876	22,730	5.86
Bituminous surface-treatment aggregate	1,125	6,241	5.55
Railroad ballast	666	3,523	5.29
Other graded coarse aggregate	368	2,052	5.58
Fine aggregate (-3/8 inch):			
Stone sand, concrete	832	4,094	4.92
Stone sand, bituminous mix or seal	412	1,855	4.50
Screening, undesignated	662	2,528	3.82
Other fine aggregate	1	4	4.00
Coarse and fine aggregates:			
Graded road base or subbase	12,421	53,753	4.33
Unpaved road surfacing	1,861	8,578	4.61
Crusher run or fill or waste	797	3,917	4.91
Other coarse and fine aggregates	W	W	4.22
Other construction materials	247	1,197	4.85
Roofing granules	3	95	31.67
Agricultural:			
Agricultural limestone	2,339	9,161	3.92
Poultry grit and mineral food	36	553	15.36
Other agricultural uses	36	188	5.22
Chemical and metallurgical:			
Cement manufacture	3,333	14,345	4.30
Flux stone	(2)	(2)	4.19
Chemical stone	(2)	(2)	6.18
Sulfur oxide removal	(2)	(2)	4.01
Special:			
Asphalt fillers or extenders	15	200	13.33
Other fillers or extenders	(2)	(2)	5.51
Other specified uses not listed	667	3,598	5.39
Unspecified:[3]			
Actual	14,813	89,130	6.02
Estimated	8,257	43,762	5.30
Total[4]	61,487	315,149	5.13
Total[5 6]	67,778	315,149	4.65

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

[1]Includes dolomite, limestone, and limestone-dolomite; excludes sandstone from State totals to avoid disclosing company proprietary data.

[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

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

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

[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[6]Total shown in thousand short tons and thousand dollars.

than in previous years. In an Illinois' crushed-stone producing area, one company needed more than 4 years to obtain a permit. In another example, a company was thwarted in its permitting attempts when a county circuit court ruled in favor of the county board of supervisors, which had denied an application for a zoning change from prime agricultural to stone quarrying. In other developments, two quarries were purchased by Martin Marietta Aggregates, signaling its reentry into the Illinois aggregate industry after nearly a 10-year absence. Union Pacific Minerals, Inc., owner of a high-calcium limestone prospect in southern most Illinois adjacent to the Mississippi River, reportedly was looking for a company with appropriate expertise to develop the property. Ozark-Mahoning Co., described by ISGS as the only primary producer of fluorspar in the United States, mined out and closed the Denton Mine, one of its three mines in Hardin County.

According to the company, output from the two remaining mines was being increased to make up for the reduced mine production caused by the closure of Denton. Additionally, Ozark-Mahoning arranged the purchase of a large tonnage of acid-grade fluorspar (flotation concentrates) from a Wilmington, DE, facility operated by the U.S. Defense Logistics Agency's National Defense Stockpile Center. The material was to be processed at the company's recently modernized plant near its mines in southern Illinois. However, reprocessing the concentrates by the plant's existing methods of flotation was not efficient enough, so the company began research on how best to reprocess the concentrate materials.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
ILLINOIS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993[2]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r154	r40,205	r$203,346	r$5.06	152	46,948	$242,544	$5.17
Dolomite	r18	r17,547	r86,379	r4.92	18	14,538	72,605	4.99
Sandstone	1	381	W	W	3	3	3	3
Total[4]	XX	r58,133	r309,610	r5.33	XX	61,487	315,149	5.13
Total[5 6]	XX	r64,081	r309,610	r4.83	XX	67,778	315,149	4.65

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes limestone-dolomite quantity from State total to avoid disclosing company proprietary data; value included with "Total."
[2]Includes "Limestone-Dolomite," reported with no distinction between the two.
[3]Excludes sandstone from state total to avoid disclosing company proprietary data.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 4

ILLINOIS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	1,247	6,229	244	1,462	367	1,628	581	2,945
Coarse aggregate, graded[3]	5,806	31,426	799	4,445	2,853	16,185	2,857	13,870
Fine aggregate (-3/8 inch)[4]	846	3,541	37	163	W	W	W	W
Coarse and fine aggregate[5]	7,048	29,676	1,351	6,252	2,794	13,317	3,927	17,253
Other construction materials[6]	60	194	—	—	368	1,515	806	4,111
Agricultural[7]	499	1,570	(8)	(8)	(8)	(8)	(8)	(8)
Chemical and metallurgical[9]	(10)	(10)	46	186	(8)	(8)	(8)	(8)
Special[11]	—	—	(8)	(8)	(8)	(8)	—	—
Other miscellaneous use	—	—	903	4,446	2,349	10,364	1,850	9,262
Unspecified:[12]								
Actual	(10)	(10)	3,925	33,507	(10)	(10)	—	—
Estimated	(10)	(10)	1,513	6,221	(10)	(10)	2,091	11,933
Total[13]	29,884	145,149	8,817	56,682	10,674	53,944	12,112	59,374
Total[14 15]	32,941	145,149	9,719	56,682	11,766	53,944	13,351	59,374

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

[1]Excludes sandstone from State total to avoid disclosing company proprietary data.

[2]Includes filter stone, macadam, and riprap and jetty stone.

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregates.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

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

[6]Includes roofing granules.

[7]Includes agricultural limestone, poultry grit and mineral food, and other argicultural uses.

[8]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[9]Includes cement manufacturing, chemical stone for alkali works, flux stone, and sulfur oxide removal.

[10]Withheld to avoid disclosing company proprietary data; included with "Total."

[11]Includes asphalt fillers or extenders, other fillers or extenders, and other specified uses not listed.

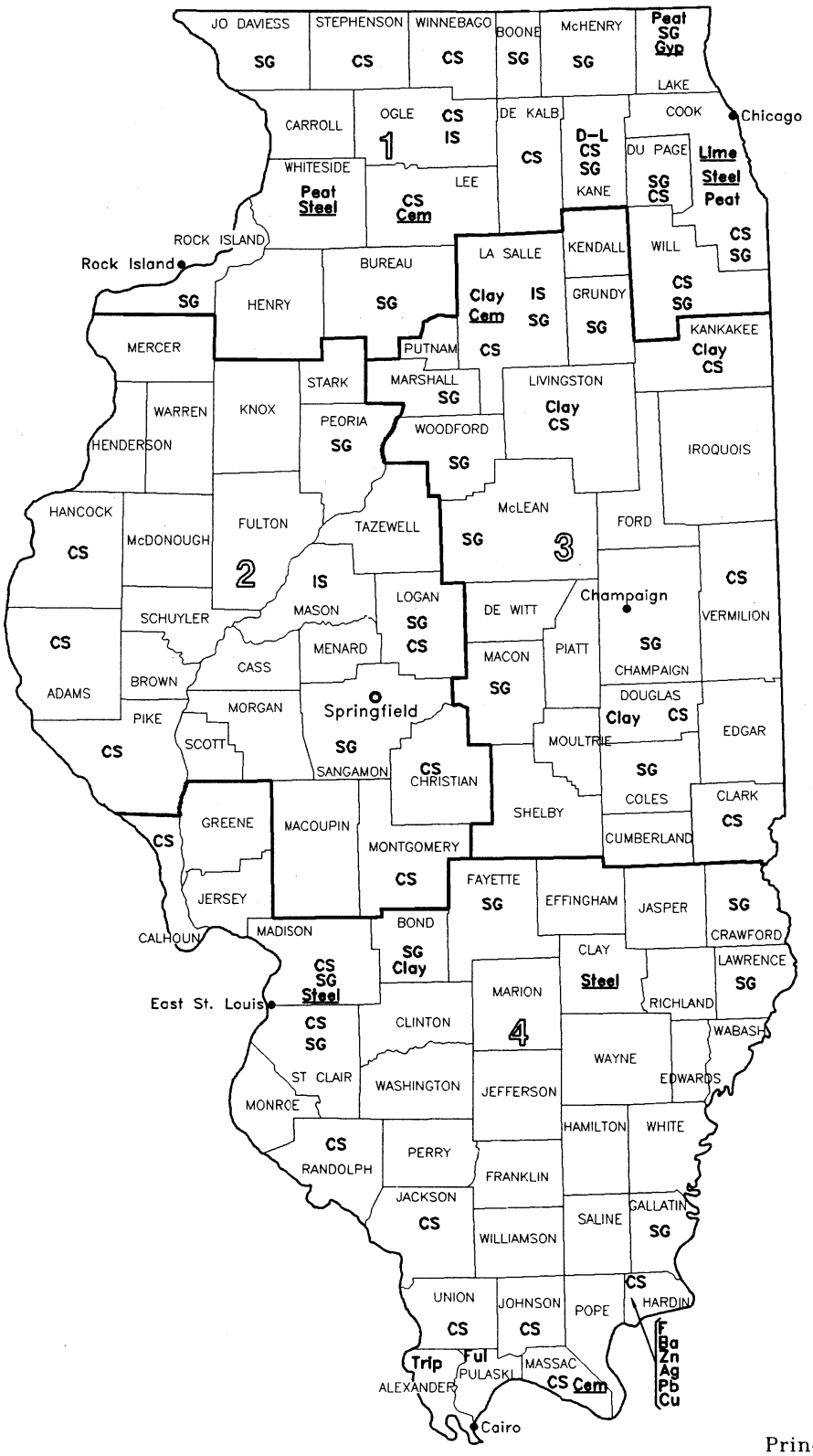
[12]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[14]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[15]Total shown in thousand short tons and thousand dollars.

ILLINOIS



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Ag	Silver
Ba	Barite
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
Cu	Copper
D-L	Dimension Limestone
F	Fluorspar
Ful	Fuller's earth
Gyp	Calcined Gypsum
IS	Industrial Sand
Lime	Lime plant
Pb	Lead
Peat	Peat
SG	Sand and Gravel
Steel	Iron and Steel plant
Trip	Tripoli
Zn	Zinc

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF INDIANA

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 Geological Survey, Indiana Department of Natural Resources, for collecting information on all nonfuel minerals.

Indiana ranked 21st among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 22d in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $517 million, an increase of more than 9% compared with that of 1993. This followed a slightly less than 1% increase in 1993 over that of 1992. The State accounted for around 1.5% of the U.S. total. In 1994, the value attributed to nonfuel minerals exceeded $0.5 billion for the first time in Indiana's history. Compared with 1993, the value of crushed stone, portland cement, construction sand and gravel, masonry cement, gypsum, and industrial sand and gravel increased. Decreases occurred in lime, dimension stone, common clays, and gemstones.

In estimated mineral production for 1994, Indiana remained second in masonry cement and dimension stone and seventh in gypsum. While not ranking among the top 10 States, Indiana mines, nonetheless, produced significant quantities of crushed stone, construction sand and gravel, and common clays; similar production of both portland cement and lime was achieved at manufacturing plants within the State. Indiana was 11th in the production of construction sand and gravel and lime, 12th in crushed stone and portland cement, and 13th in common clays. The State's mines exclusively produce industrial minerals and coal; any metals, especially steel and aluminum, produced in the State are processed from materials received from other domestic and foreign sources. Indiana continued to lead the Nation in the production of raw steel with an estimated output of more than 19 million metric tons (21 million short tons), as reported by the American Iron and Steel Institute. Of similar importance, the State climbed from fourth to third in the production of primary aluminum.

According to the Indiana Geological Survey, production of aggregates—crushed stone and sand and gravel—continued to show strong growth during 1994 primarily due to improving conditions in the construction industry, especially an increased demand

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN INDIANA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	337	$24,822	W	W	W	W
Portland	do.	2,237	110,737	2,065	$108,702	2,280	$120,000
Clays	do.	[2]842	[2]3,016	[2]600	[2]2,540	700	2,520
Gemstones		NA	720	NA	47	NA	W
Peat	thousand metric tons	24	512	24	W	22	472
Sand and gravel:							
Construction	do.	26,183	95,889	[e]27,000	[e]102,600	28,600	112,000
Industrial	do.	107	1,278	W	W	W	W
Stone:							
Crushed	do.	[e]39,009	[e]178,000	36,862	165,861	[e]41,000	[e]193,000
Dimension	metric tons	[e]172,739	[e]26,767	[3]155,616	[3]22,876	[e]126,000	[e]18,100
Combined value of clays (ball), gypsum (crude), lime, stone [dimension sandstone (1993)], and values indicated by symbol W		XX	35,145	XX	70,368	XX	71,700
Total		XX	476,886	XX	472,994	XX	[4]517,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" figure.

[3]Excludes certain stones; kind and value included with "Combined value" figure.

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

for road improvement work and residential housing. Numerous road projects were announced during the year. In the planning stages were a new bridge across the Ohio River, upgrading the connection between Indiana and Louisville, KY, and an extension of Interstate 69 to improve travel between the State Capital, Indianapolis, in the mid-State area, and the southwestern corner of Indiana near Evansville. Concerns expressed by potentially affected farmers and mining interests and by some environmental groups were slowing the choice of the exact route to be taken. In other developments, the Hillside Stone Co. prepared for the opening of its new underground crushed limestone mine near Bloomington, Monroe County. While the production of natural dimension stone has slowed since 1989, a year of relatively high output, demand was growing during the latter half of the year because of the economy's generally improving conditions coupled with the substitution of Indiana limestone in the marketplace for stone no longer available from other sources. Plans were being developed by the new Steel Dynamics Co. for a steel minimill in De Kalb County; construction of the mill was to commence in 1995 and be completed by 1998. Amcast Industrial Corp. was in the planning and permitting stages for the construction of its new aluminum casting plant to be built in Franklin, Johnson County, in 1995. Minerals research projects being conducted during 1994 by the Indiana Geological Survey included studies of the crushed stone resources of Putnam County, scrubber limestone resources near a number of the State's powerplants, and characterization studies of Indiana's shale beds and heavy mineral sand deposits, as well as studies of carbonate rocks for nontraditional uses.

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[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

INDIANA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	218	$1,053	$4.83
Riprap and jetty stone	1,025	4,219	4.12
Filter stone	200	1,006	5.03
Other coarse aggregate	231	1,018	4.41
Coarse aggregate, graded:			
Concrete aggregate, coarse	4,887	20,093	4.11
Bituminous aggregate, coarse	3,878	18,902	4.87
Bituminous surface-treatment aggregate	1,469	5,825	3.97
Railroad ballast	331	1,352	4.08
Other graded coarse aggregate	242	1,210	5.00
Fine aggregate (-3/8 inch):			
Stone sand, concrete	159	326	2.05
Stone sand, bituminous mix or seal	121	396	3.27
Screening, undesignated	165	533	3.23
Other fine aggregate	W	W	4.36
Coarse and fine aggregates:			
Graded road base or subbase	4,652	21,495	4.62
Unpaved road surfacing	3,352	13,399	4.00
Terrazzo and exposed aggregates	W	W	22.08
Crusher run or fill or waste	488	1,978	4.05
Other coarse and fine aggregates	177	905	5.11
Other construction materials	683	2,846	4.17
Agricultural: Agricultural limestone[2]	1,415	7,497	5.30
Chemical and metallurgical:			
Cement manufacture	3,230	8,348	2.58
Flux stone	(3)	(3)	10.32
Sulfur oxide removal	438	1,741	3.97
Special:			
Whiting or whiting substitute	14	150	10.71
Other fillers or extenders	(3)	(3)	12.13
Other specified uses not listed	225	2,187	9.72
Unspecified:[4]			
Actual	8,630	46,284	5.36
Estimated	633	3,098	4.89
Total[5]	36,862	165,861	4.50
Total[6 7]	40,633	165,861	4.08

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

[1]Includes dolomite, limestone, and limestone-dolomite.

[2]Includes poultry grit and mineral food, and other agricultural uses.

[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

[4]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[7]Total shown in thousand short tons and thousand dollars.

TABLE 3
INDIANA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991r [1]				1993[2]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value thousands)	Unit value
Limestone	76	30,348	$131,579	$4.34	72	34,144	$151,578	$4.44
Dolomite	9	2,405	12,719	5.29	9	2,718	14,283	5.25
Total	XX	[3]32,752	144,298	4.41	XX	36,862	165,861	4.50
Total[4] [5]	XX	36,103	144,298	4.00	XX	40,633	165,861	4.08

rRevised. XX Not applicable.
[1]Excludes limestone-dolomite from State total to avoid disclosing company proprietary data.
[2]Includes "Limestone-dolomite," reported with no distinction between the two.
[3]Data do not add to total shown because of independent rounding.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

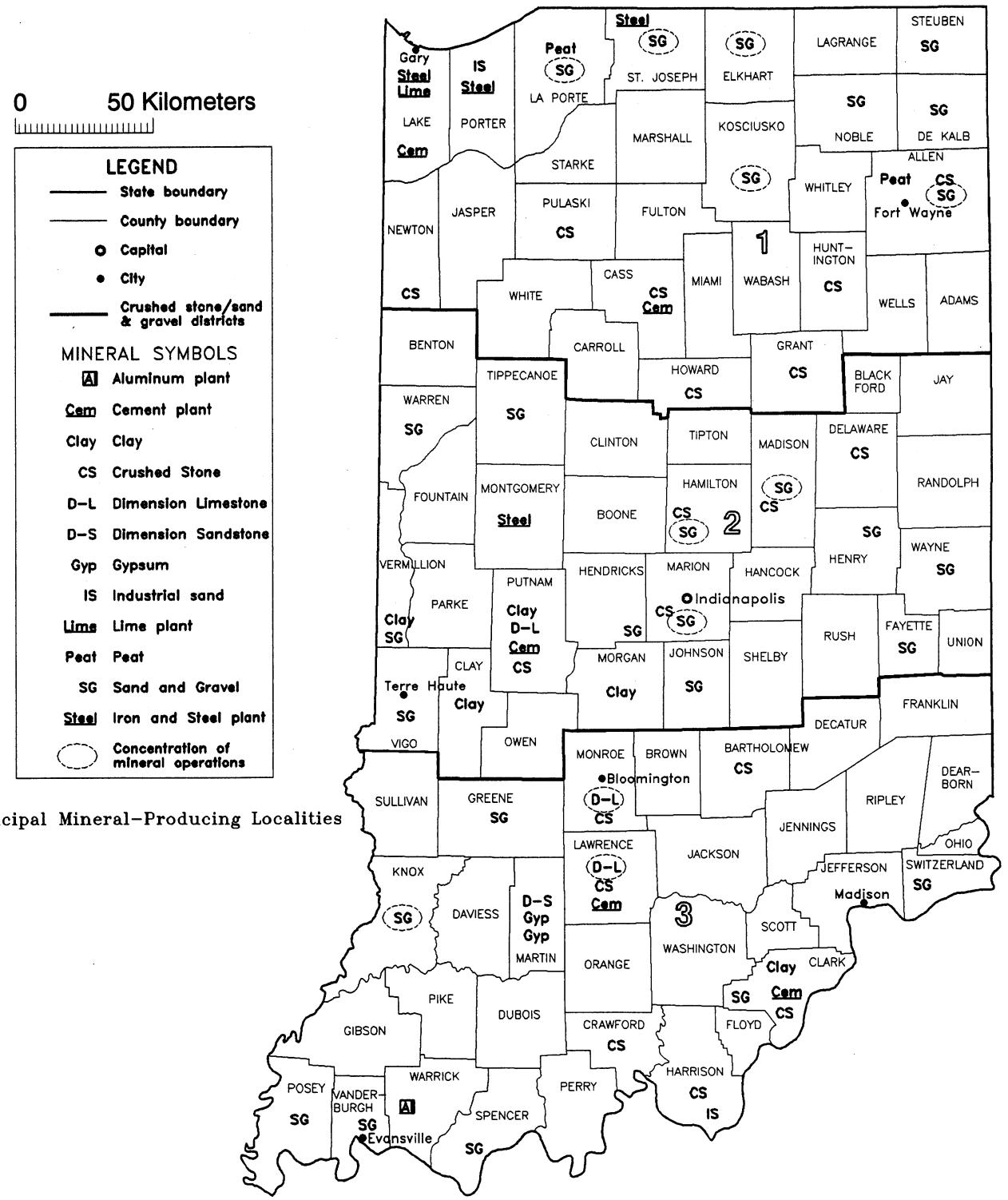
TABLE 4
INDIANA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	547	2,614	338	2,002	761	2,681
Coarse aggregate, graded[2]	1,999	9,094	2,363	16,502	6,444	21,785
Fine aggregate (-3/8 inch)[3]	W	W	13	58	W	W
Coarse and fine aggregate[4]	4,363	17,018	2,245	11,477	2,063	9,289
Other construction materials	811	3,212	—	—	304	825
Agricultural[5]	(6)	(6)	(6)	(6)	(6)	(6)
Chemical and metallurgical[7]	(6)	(6)	(6)	(6)	2,373	7,690
Special[8]	(6)	(6)	—	—	(6)	(6)
Other miscellaneous use	1,280	6,987	947	2,485	721	2,760
Unspecified:[9]						
Actual	1,998	10,709	2,596	15,557	4,036	20,018
Estimated	355	1,738	233	1,139	45	222
Total	11,380	51,372	8,735	49,220	16,747	65,269
Total[11] [12]	12,544	51,372	9,629	49,220	18,460	65,269

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes filter stone, macadam, and riprap and jetty stone.
[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[4]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregate.
[5]Includes agricultural limestone, poultry grit and mineral food, and other argicultural uses.
[6]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[7]Includes cement manufacture, flux stone, and sulfur oxide removal.
[8]Includes whiting or whiting substitutes, other fillers or extenders, and other specified uses not listed.
[9]Includes production reported without a breakdown by use and estimates for nonrespondents.
[10]Data do not add to total shown because of independent rounding.
[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[12]Total shown in thousand short tons and thousand dollars.

INDIANA


0 50 Kilometers
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
A Aluminum plant
Cem Cement plant
Clay Clay
CS Crushed Stone
D–L Dimension Limestone
D–S Dimension Sandstone
Gyp Gypsum
IS Industrial sand
Lime Lime plant
Peat Peat
SG Sand and Gravel
Steel Iron and Steel plant
Concentration of mineral operations
Principal Mineral–Producing Localities
Gary
Steel
Lime
Peat
SG
IS
Steel
ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
LA PORTE
LAKE
Cem
PORTER
MARSHALL
KOSCIUSKO
NOBLE
DE KALB
STARKE
ALLEN
Peat
CS
SG
Fort Wayne
NEWTON
JASPER
PULASKI
CS
FULTON
WHITLEY
1
HUNT–INGTON
CS
WHITE
CASS
CS
Cem
MIAMI
WABASH
WELLS
ADAMS
BENTON
CARROLL
GRANT
CS
HOWARD
CS
BLACK FORD
JAY
WARREN
SG
TIPPECANOE
SG
CLINTON
TIPTON
MADISON
CS
DELAWARE
CS
RANDOLPH
FOUNTAIN
MONTGOMERY
Steel
BOONE
HAMILTON
CS
SG
2
SG
CS
HENRY
WAYNE
SG
VERMILLION
PARKE
Clay
SG
PUTNAM
Clay
D–L
Cem
CS
HENDRICKS
SG
MARION
CS
SG
Indianapolis
HANCOCK
RUSH
FAYETTE
SG
UNION
CLAY
Terre Haute
SG
Clay
MORGAN
Clay
JOHNSON
SG
SHELBY
FRANKLIN
DECATUR
VIGO
OWEN
MONROE
Bloomington
D–L
CS
BROWN
BARTHOLOMEW
CS
DEAR–BORN
SULLIVAN
GREENE
SG
JENNINGS
RIPLEY
LAWRENCE
D–L
CS
Cem
JACKSON
OHIO
JEFFERSON
Madison
SWITZERLAND
SG
KNOX
SG
DAVIESS
D–S
Gyp
Gyp
MARTIN
3
WASHINGTON
SCOTT
ORANGE
Clay
CLARK
SG
Cem
CS
PIKE
DUBOIS
GIBSON
CRAWFORD
CS
FLOYD
WARRICK
HARRISON
CS
IS
POSEY
SG
VANDER–BURGH
SG
Evansville
A
SPENCER
SG
PERRY

THE MINERAL INDUSTRY OF IOWA

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 Geological Survey Bureau, Division of Energy and Geological Resources, Iowa Department of Natural Resources, for collecting information on all nonfuel minerals.

Iowa ranked 28th among the 50 States in total nonfuel mineral value[1] in 1994, moving down from its 1993 standing of 26th, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was more than $426 million, a 7% increase from $398 million in 1993. This increase followed a 1.6% increase from 1992 to 1993. The State accounted for more than 1% of the U.S. total value. Based on value, crushed stone remained the State's leading mineral commodity, accounting for more than 40% of the State's total nonfuel mineral value, followed by portland cement with nearly 35% and construction sand and gravel with about 17%. Compared with 1993, the mineral commodity values for the following increased: crushed stone, portland cement, construction sand and gravel, gypsum, lime, masonry cement, common clays, and peat. Decreases occurred in gemstones.

Based on a comparison of USBM—estimated quantities of minerals produced in the United States during 1994, Iowa remained 3d among all States in the production of gypsum; rose from 10th to 9th in portland cement; and ranked 15th in the production of both crushed stone and construction sand and gravel. Iowa mines produced significant quantities of dimension stone and common clays, while similar production of masonry cement was achieved at manufacturing plants within the State. Nonfuel mineral production in Iowa consisted entirely of industrial minerals; no metals were mined in the State. Metal production in the State was the result of materials received from other domestic and foreign sources.

[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN IOWA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	45	$4,120	W	W	W	W
Portland	do.	2,562	116,477	2,302	$136,316	2,500	$148,000
Clays	do.	389	1,612	358	1,667	371	2,030
Gemstones		NA	1,606	NA	46	NA	W
Gypsum (crude)	thousand metric tons	1,989	11,626	1,988	12,280	2,180	13,600
Sand and gravel (construction)	do.	15,263	58,382	e16,600	e64,700	18,500	74,000
Stone (crushed)	do.	e[2]34,473	e[2]186,200	30,500	168,597	e31,000	e174,000
Combined value of lime, peat, sand and gravel (industrial), stone [crushed dolomite and limestone (1992), dimension], and values indicated by symbol W		XX	11,140	XX	13,920	XX	15,000
Total		XX	391,163	XX	397,526	XX	[3]426,000

eEstimated. pPreliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; values included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain stones; value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

IOWA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	339	$1,856	$5.47
Riprap and jetty stone	335	2,341	6.99
Filter stone	294	1,697	5.77
Other coarse aggregate	64	415	6.48
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,634	11,227	6.87
Bituminous aggregate, coarse	803	5,239	6.52
Bituminous surface-treatment aggregate	1,236	7,847	6.35
Railroad ballast	48	240	5.00
Other graded coarse aggregate	W	W	5.88
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	6.16
Stone sand, bituminous mix or seal	72	388	5.39
Screening, undesignated	224	965	4.31
Other fine aggregate	W	W	3.96
Coarse and fine aggregates:			
Graded road base or subbase	2,701	14,762	5.47
Unpaved road surfacing	2,682	13,849	5.16
Crusher run or fill or waste	259	990	3.82
Other coarse and fine aggregates	W	W	5.42
Other construction materials	213	1,159	5.44
Roofing granules	5	43	8.60
Agricultural:			
Agricultural limestone	820	4,379	5.34
Poultry grit and mineral food	(2)	(2)	20.85
Other agricultural uses	(2)	(2)	11.02
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	6.61
Lime manufacture	(2)	(2)	4.30
Flux stone	(2)	(2)	6.15
Glass manufacture	(2)	(2)	10.99
Special:			
Asphalt fillers or extenders	(2)	(2)	13.83
Other fillers or extenders	(2)	(2)	8.92
Other specified uses not listed	2,004	17,403	8.68
Unspecified:[3]			
Actual	13,792	70,554	5.12
Estimated	2,975	13,245	4.45
Total	30,500	[4]168,597	5.53
Total[5 6]	33,620	168,597	5.01

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, limestone-dolomite, and miscellaneous stone.
[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data do not add to total shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

IOWA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[r 1]				1993[2]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	258	28,802	$151,238	$5.25	215	30,300	$167,888	$5.54
Dolomite	(3)	(3)	(3)	(3)	1	W	W	4.65
Miscellaneous stone	2	100	304	3.04	5	W	W	3.09
Total[4]	XX	28,903	151,690	5.25	XX	30,500	168,597	5.53
Total[5 6]	XX	31,860	151,690	4.76	XX	33,620	168,597	5.01

[r]Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.
[1]Excludes limestone-dolomite from State total to avoid disclosing company proprietary data.
[2]Includes "Limestone-dolomite," reported with no distinction between the two.
[3]Excludes dolomite from State total to avoid disclosing company proprietary data.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 4

IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	—	—	316	1,607	W	W
Coarse aggregate, graded[2]	—	—	340	1,745	W	W
Fine aggregate (-3/8 inch)[3]	(4)	(4)	129	620	—	—
Coarse and fine aggregates[5]	(4)	(4)	1,503	7,476	W	W
Other construction materials[6]	—	—	—	—	334	1,399
Agricultural[7]	(4)	(4)	(4)	(4)	(4)	(4)
Chemical and metallurgical[8]	—	—	(4)	(4)	—	—
Special[9]	—	—	—	—	—	—
Unspecified:[10]	—	—	—	—	—	—
Actual	(4)	(4)	2,677	15,300	(4)	(4)
Estimated	(4)	(4)	323	1,088	—	—
Total[11]	1,208	7,713	6,416	34,964	5,717	37,698
Total[12 13]	1,332	7,713	7,072	34,964	6,302	37,698

See footnotes at end of table.

TABLE 4—Continued

IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	434	2,607	W	W	W	W
Coarse aggregate, graded[2]	1,065	6,937	W	W	230	1,663
Fine aggregate (-3/8 inch)[3]	67	277	W	W	W	W
Coarse and fine aggregates[5]	2,047	9,384	W	W	1,419	8,892
Other construction materials[6]	—	—	2,901	19,663	121	736
Agricultural[7]	(4)	(4)	(4)	(4)	90	402
Chemical and metallurgical[8]	(4)	(4)	—	—	—	—
Special[9]	(4)	(4)	—	—	—	—
Unspecified:[10]	—	—	—	—	(4)	(4)
Actual	2,186	5,057	(4)	(4)	2,340	10,809
Estimated	1,978	8,726	—	—	(4)	(4)
Total[11]	8,753	38,663	3,932	26,431	4,474	23,128
Total[12 13]	9,649	38,663	4,334	26,431	4,932	23,128

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

[1]Includes filter stone, macadam, and riprap and jetty stone.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[4]Withheld to avoid disclosing company proprietary data; included with "Total."

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

[6]Includes roofing granules.

[7]Includes agricultural limestone, poultry grit and mineral food, and other argicultural uses.

[8]Includes cement manufacture, flux stone, glass manufacture, and lime manufacture.

[9]Includes asphalt fillers or extenders, other fillers or extenders, and other specified uses not listed.

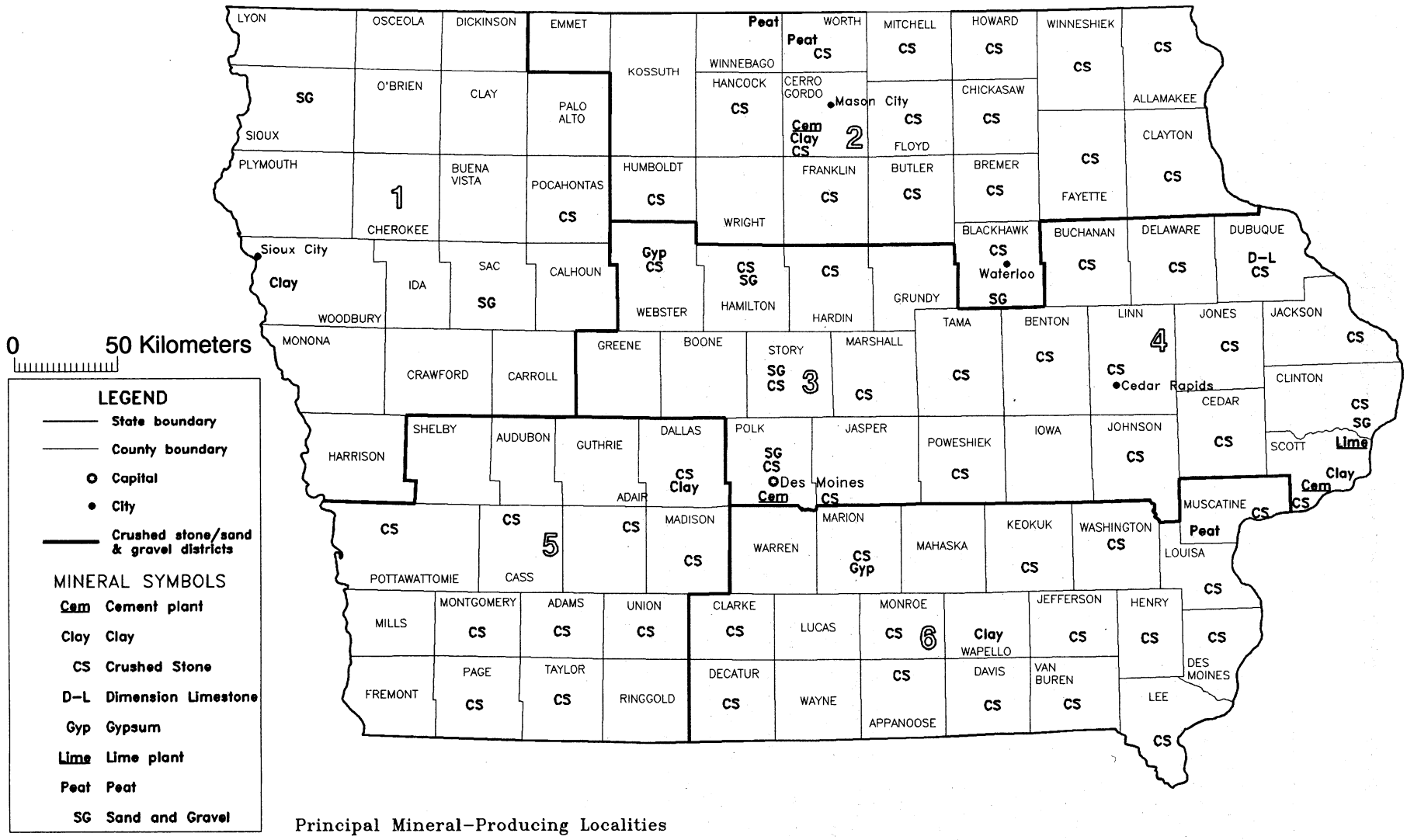
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[13]Total shown in thousand short tons and thousand dollars.

IOWA



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF KANSAS

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 Kansas Geological Survey for collecting information on all nonfuel minerals.

Kansas ranked 23d among the 50 States in total nonfuel mineral value[1] in 1994, one step up from its ranking of 24th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $495 million, a 12% increase compared with that of 1993. This followed a 9% increase in 1993 compared with that of 1992. The State accounted for more than 1% of the U.S. total. Based on value, salt, grade-A helium, and crushed stone were virtually tied as Kansas' leading nonfuel mineral commodities, each accounting for approximately 21% of the State's total nonfuel mineral value. Compared with 1993, the value of the following increased: salt, grade-A helium, crushed stone, portland cement, construction sand and gravel, crude helium, gypsum, common clays, industrial sand and gravel, masonry cement, and pumice. Decreases occurred in the value of dimension stone.

Production of nonfuel minerals in Kansas consisted entirely of industrial minerals; no metals were mined in the State. In estimated mineral production for 1994, Kansas continued as the Nation's leading producer of crude and grade-A helium. The State also remained fifth in salt production, sixth of the six U.S. pumice producing States, and eighth in gypsum. While not ranking among the top 10 States, Kansas mines and manufacturing plants, nonetheless, produced significant quantities of portland cement, common clays, construction sand and gravel, crushed stone, and dimension stone.

According to the Kansas Geological Survey (KGS), the major development in 1994 in the mineral industry was the passage by the State Legislature of a new law regulating the permitting, mining, and reclamation of nonfuel industrial minerals. Prior regulation of industrial minerals mining had been under the jurisdiction of the respective county governments, culminating in the creation of 105 sets of rules. Before 1994, only fuel minerals were regulated by the State. KGS reported that the new rules were similar to those proposed a few years ago by the aggregate industry, spearheaded by the Kansas Aggregate Producers

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN KANSAS[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Cement:							
Masonry	thousand metric tons	31	$1,914	35	$2,408	43	$2,880
Portland	do.	1,551	79,464	1,383	73,914	1,810	97,000
Clays	do.	544	3,921	[2]513	[2]1,965	561	3,370
Helium:							
Crude	million cubic meters	W	W	23	20,378	28	27,300
Grade-A	do.	W	W	52	103,949	53	105,000
Salt[3]	thousand metric tons	1,852	98,620	2,316	103,019	2,590	105,000
Sand and gravel (construction)	do.	10,867	27,289	e11,900	e30,700	13,500	37,100
Stone:							
Crushed[4]	do.	e15,331	e69,600	18,847	90,663	e21,000	e104,000
Dimension	metric tons	W	W	24,728	2,539	e19,100	e2,330
Combined value of clays [fuller's earth (1993)], gemstones, gypsum (crude), pumice, salt (brine), sand and gravel (industrial), stone [crushed quartzite (1992), crushed sandstone (1993-94), dimension (1992), dimension sandstone (1993)], and values indicated by symbol W		XX	124,274	XX	12,577	XX	11,900
Total		XX	405,082	XX	442,112	XX	[5]495,000

eEstimated. pPreliminary. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes certain clays; kind and value included with "Combined value" figure.
[3]Excludes salts in brines; value included with "Combined value" figure.
[4]Excludes certain stones; kind and value included with "Combined value" figure.
[5]Data do not add to total shown because of independent rounding.

Association and the Kansas Ready Mix Producers Association. Previous attempts to introduce new laws by the legislature had never moved beyond the committee process. Although details were still being worked out, the new law would be administered by the State Conservation Commission. In other developments, the crushed stone industry experienced a good year in 1994 due to expanded road construction stemming from increased funding support at both the State and Federal levels. Cullor Limestone Co. a longtime crushed stone producer in eastern Kansas, was acquired by Ash Grove Aggregates, Inc.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
KANSAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	45	$193	$4.29
Riprap and jetty stone	118	755	6.40
Filter stone	364	1,886	5.18
Other coarse aggregate	69	405	5.87
Coarse aggregate, graded:			
Concrete aggregate, coarse	866	5,221	6.03
Bituminous aggregate, coarse	585	3,717	6.35
Bituminous surface-treatment aggregate	81	484	5.98
Railroad ballast	25	145	5.80
Fine aggregate (-3/8 inch):			
Stone sand, concrete	80	367	4.59
Stone sand, bituminous mix or seal	54	161	2.98
Screening, undesignated	250	755	3.02
Coarse and fine aggregate:			
Graded road base or subbase	1,076	4,904	4.56
Unpaved road surfacing	1,315	5,693	4.33
Crusher run or fill or waste	1,011	5,374	5.32
Other coarse and fine aggregate	W	W	3.16
Other construction materials	1,623	5,954	3.67
Roofing granules	W	W	6.84
Agricultural:			
Agricultural limestone	139	443	3.19
Other agricultural uses	(2)	(2)	6.53
Chemical and metallurgical:			
Cement manufacture	1,816	6,710	3.69
Chemical stone	(2)	(2)	7.72
Special:			
Mine dusting or acid water treatment	(2)	(2)	5.64
Unspecified:[3]			
Actual	5,990	31,154	5.20
Estimated	3,325	16,246	4.89
Total	18,847	90,663	4.81
Total[4 5]	20,775	90,663	4.36

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes limestone; excludes sandstone from State total to avoid disclosing company proprietary data.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 3
KANSAS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993[1]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r116	r14,981	r$66,645	r$4.4	127	18,84	$90,663	$4.81
Sandstone and quartzite	r4	r261	[2] r603	[2] r2.31	—	—	—	—
Total	XX	15,242	[3]67,249	4.41	XX	18,847	90,663	4.81
Total[4] [5]	XX	r16,801	67,249	4.00	XX	20,775	90,663	4.36

rRevised. XX Not applicable.
[1]Excludes sandstone from State total to avoid disclosing company proprietary data.
[2]Excludes quartzite value from State total to avoid disclosing company proprietary data.
[3]Data do not add to total shown because of independent rounding.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 4
KANSAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	180	1,086	W	W	—	—
Coarse aggregate, graded[3]		W	W	W	—	—
Fine aggregate (-3/8 inch)[4]	W	W	W	W	—	—
Coarse and fine aggregate[5]	1,434	8,028	W	W	48	64
Other construction materials[6]	841	5,241	1,315	6,925	—	—
Agricultural[7]	(8)	(8)	(8)	(8)		—
Chemical and metallurgical[10]	—	—	—	—	—	—
Special[11]	(8)	(8)	—	—	—	—
Other miscellaneous uses	73	247	—	—	—	—
Unspecified: [12]						
Actual	3,537	19,396	(8)	(8)	—	—
Estimated	2,249	12,061	—	—	—	—
Total[13]	8,314	46,060	2,630	12,739	48	64
Total[14] [15]	9,165	46,060	2,899	12,739	53	64

See footnotes at end of table.

TABLE 4—Continued

KANSAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 5		District 6	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[2]	(8)	(8)	W	W
Coarse aggregate, graded[3]	—	—	W	W
Fine aggregate (-3/8 inch)[4]	(8)	(8)	W	W
Coarse and fine aggregate[5]	(8)	(8)	1,504	5,231
Other construction materials[6]	—	—	1,186	5,587
Agricultural[7]	(8)	(8)	(8)	(8)
Chemical and metallurgical[10]	—	—	1,865	6,953
Special[11]	—	—	—	—
Other miscellaneous uses	—	—	—	—
Unspecified:[12]				
Actual	(9)	(8)	1,090	5,602
Estimated	(8)	(8)	(8)	(8)
Total[13]	1,135	4,275	6,720	27,525
Total[14 15]	1,251	4,275	7,408	27,525

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Excludes sandstone from State total to avoid disclosing company proprietary data.
[2]Includes filter stone, macadam, and riprap and jetty stone.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and railroad ballast.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[5]Includes graded road base or subbase, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.
[6]Includes roofing granules.
[7]Includes agricultural limestone and other agricultural uses.
[8]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[9]Withheld to avoid disclosing company proprietary data; included with "Total."
[10]Includes cement manufacture and chemical stone for alkali works.
[11]Includes mine dusting or acid water treatment, asphalt fillers or extenders, other fillers or extenders, and other specified uses not listed.
[12]Includes production reported without a breakdown by use and estimates for nonrespondents.
[13]Data may not add to totals shown because of independent rounding.
[14]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metrictons by 0.907185.
[15]Total shown in thousand short tons and thousand dollars.

KANSAS

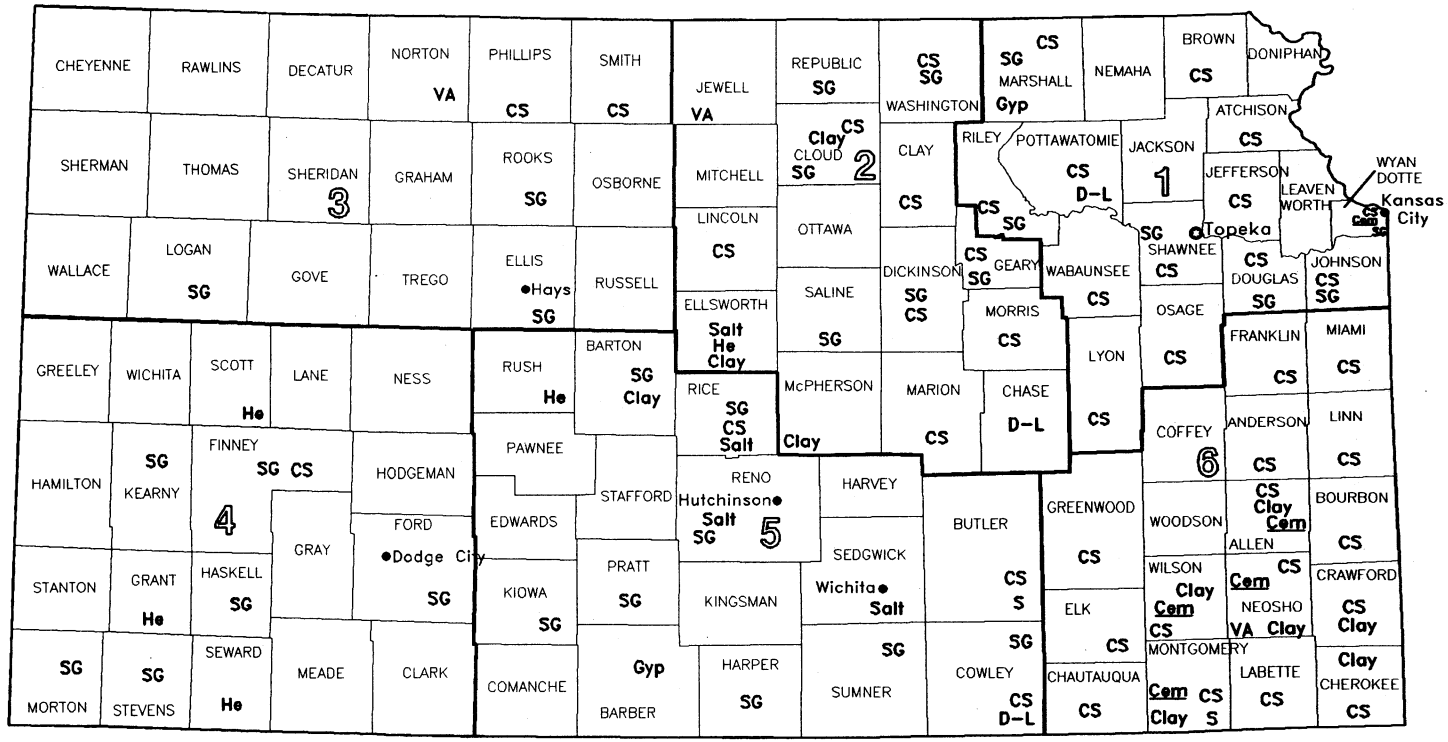
0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Cem	Cement plant
Clay	Clay
CS	Crushed Stone
D–L	Dimension Limestone
Gyp	Gypsum
He	Helium
VA	Volcanic Ash
S	Sulfur
Salt	Salt
SG	Sand and Gravel



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF KENTUCKY

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 Kentucky Geological Survey for collecting information on all nonfuel minerals.

Kentucky ranked 26th among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 28th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 exceeded $431 million, an 11% increase compared with that of 1993. This followed a 3.3% decrease in 1993 from that of 1992. In 1994, the value attributed to nonfuel minerals was the highest reported in State history, having surpassed $400 million for the second time in the last 3 years. Demand for industrial minerals used in construction remained strong, as evidenced by the increased output of nearly every commodity produced in the State. In recent years, Kentucky has entirely been an industrial mineral-producing State. The year 1990 marked the last year in which any metal was mined in the State; small quantities of zinc were mined that year. Crushed stone was the State's leading commodity, accounting for an estimated 60% of nonfuel mineral value. Compared with 1993, the value of crushed stone, lime, portland cement, construction sand and gravel, and crushed sandstone increased. Decreases occurred in masonry cement, gemstones, and common clays.

Compared to USBM estimates of the quantities of minerals produced in the other 49 States during 1994, Kentucky climbed from ninth to eighth in crushed stone. The State remained 1 of the top 6 lime-producing States and 12th in the production of common clays. While dropping from second to third in ball clays, Kentucky was 1 of only 4 States to mine the mineral product in 1994, down from 6 States that produced it in 1993. While Kentucky mines produced no metals, the State's metal industry produced significant quantities of primary aluminum and raw steel originating from materials received from other domestic and foreign sources. Kentucky remained the Nation's second leading producer of primary aluminum, although production dropped an estimated 17% from that of 1993.

According to the Kentucky Geological Survey, fluorspar mineralization and a geophysical anomaly were targets for exploratory drilling in western Kentucky's fluorspar district in 1994. Mineral exploration in the State, especially the search for metals, was reported as being rather limited, with none occurring in the State's south-central and central mining districts. In other developments, two electric utility companies awarded contracts to several Kentucky quarries to supply limestone for their flue-gas desulfurization systems. Their increased requirement for limestone resulted from the companies' need to comply with the Clean Air Act Amendments of 1990, in particular for the reduction of sulfur dioxide (SO_2) emissions at coal-burning plants. The Kentucky Stone Co.'s Irvington Quarry in Breckinridge County received a 5-year contract to provide more than 90,000 metric tons (100,000 short tons) of limestone yearly for a scrubber at the Owensboro Municipal Utilities' Smith plant in Daviess County. The Tennessee Valley Authority (TVA) awarded a 5-year contract to Dravo Basic Materials Co.'s (DBM) Three Rivers Quarry in Livingston County to furnish more than 675,000 metric tons (750,000 short tons) of stone annually for

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN KENTUCKY[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2]	thousand metric tons	760	$3,777	768	$3,057	762	$2,960
Sand and gravel (construction)	do.	6,710	24,412	e7,700	e29,900	8,900	35,600
Stone (crushed)	do.	e53,342	e251,100	[3]49,028	[3]226,058	e [3]53,500	e [3]257,000
Combined value of cement, clays (ball), gemstones, lime, and stone [crushed sandstone (1993-94)]		XX	121,285	XX	128,488	XX	136,000
Total		XX	400,574	XX	387,503	XX	[4]431,000

eEstimated. pPreliminary. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes certain clays; kind and value included with "Combined value" data.
[3]Excludes certain stones; kind and value included with "Combined value" data.
[4]Data do not add to total shown because of independent rounding.

TABLE 2

KENTUCKY: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	118	$557	$4.72
Riprap and jetty stone	3,856	14,725	3.82
Filter stone	1,186	5,094	4.30
Other coarse aggregate	336	1,615	4.81
Coarse aggregate, graded:			
Concrete aggregate, coarse	4,450	19,240	4.32
Bituminous aggregate, coarse	4,680	21,426	4.58
Bituminous surface-treatment aggregate	1,375	6,823	4.96
Railroad ballast	432	2,084	4.82
Other graded coarse aggregate	1,872	6,950	3.71
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	5.31
Stone sand, bituminous mix or seal	2,059	8,586	4.17
Screening, undesignated	1,222	5,603	4.59
Other fine aggregate	W	W	3.30
Coarse and fine aggregate:			
Graded road base or subbase	8,690	38,214	4.40
Unpaved road surfacing	2,226	8,904	4.00
Crusher run or fill or waste	702	2,369	3.37
Other coarse and fine aggregate	W	W	5.51
Other construction materials	385	1,810	4.70
Agricultural:			
Agricultural limestone	1,535	6,889	4.49
Poultry grit and mineral food	(2)	(2)	15.42
Other agricultural uses	(2)	(2)	10.80
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	2.90
Lime manufacture	(2)	(2)	7.87
Flux stone	(2)	(2)	5.73
Sulfur oxide removal	(2)	(2)	4.71
Special:			
Mine dusting or acid water treatment	(2)	(2)	11.63
Other fillers or extenders	(2)	(2)	9.82
Other specified uses not listed	5,369	33,763	6.29
Unspecified:[3]			
Actual	6,291	30,438	4.84
Estimated	2,245	10,971	4.89
Total[4]	49,028	226,058	4.61
Total[5 6]	54,044	226,058	4.18

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite and limestone; excludes sandstone from State total to avoid disclosing company proprietary data.
[2]Withheld to avoid disclosing company proprietary data; include with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

scrubbers at the TVA's Cumberland plant in west-central Tennessee. In late 1994, Martin Marietta Aggregates announced plans to purchase DBM, including the Three Rivers Quarry. The Black River Division of Dravo Lime Co. was expanding its Carntown facility in Pendleton County in response to an increased demand for scrubber lime. The 633,000-metric-ton-per-year (700,000 short tons per year) expansion will more than double the existing production capacity. The Hitchins brick plant in Carter County was closed by A.P. Green Industries, which had previously obtained the plant through its purchase of General Refractories.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
KENTUCKY: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993[1]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r87	41,972	$191,893	$4.5	86	49,020	$226,048	$4.61
Granite	—	—	—	—	1	8	11	1.37
Total	XX	41,972	191,893	4.57	XX	49,028	[2]226,058	4.61
Total[3 4]	XX	46,266	191,893	4.15	XX	54,044	226,058	4.18

rRevised. XX Not applicable.
[1]Excludes sandstone from State total to avoid disclosing company proprietary data.
[2]Data do not add to total shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

KENTUCKY: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	W	W	291	1,455	W	W	887	4,322
Coarse aggregate, graded[3]	W	W	2,491	10,799	W	W	3,172	13,255
Fine aggregate (-3/8 inch)[4]	W	4,577	444	2,216	W	5,893	670	3,171
Coarse and fine aggregate[5]	3,522	13,705	2,914	12,527	3,454	15,592	1,753	7,797
Other construction materials	8,880	28,314	—	—	5,110	20,375	—	—
Agricultural[6]	(7)	(7)	(7)	(7)	(7)	(7)	75	276
Chemical and metallurgical[8]	(7)	(7)	(7)	(7)	(7)	(7)	—	—
Special[9]	(7)	(7)	—	—	(7)	(7)	—	—
Other miscellaneous uses	1,297	6,034	1,595	5,854	3,936	28,488	—	—
Unspecified: [10]								
Actual	951	4,903	473	2,419	4,012	19,457	854	3,658
Estimated	—	—	408	1,534	124	666	1,713	8,770
Total[11]	14,651	57,533	8,616	36,805	16,636	90,471	9,125	41,249
Total[12 13]	16,150	57,533	9,498	36,805	18,338	90,471	10,057	41,249

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

[1]Excludes sandstone from State total to avoid disclosing company proprietary data.

[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

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

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

[7]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[8]Includes cement manufacture, flux stone, lime manufacture, and sulfur oxide removal.

[9]Includes mine dusting or acid water treatment, other fillers or extenders, and other specified uses not listed.

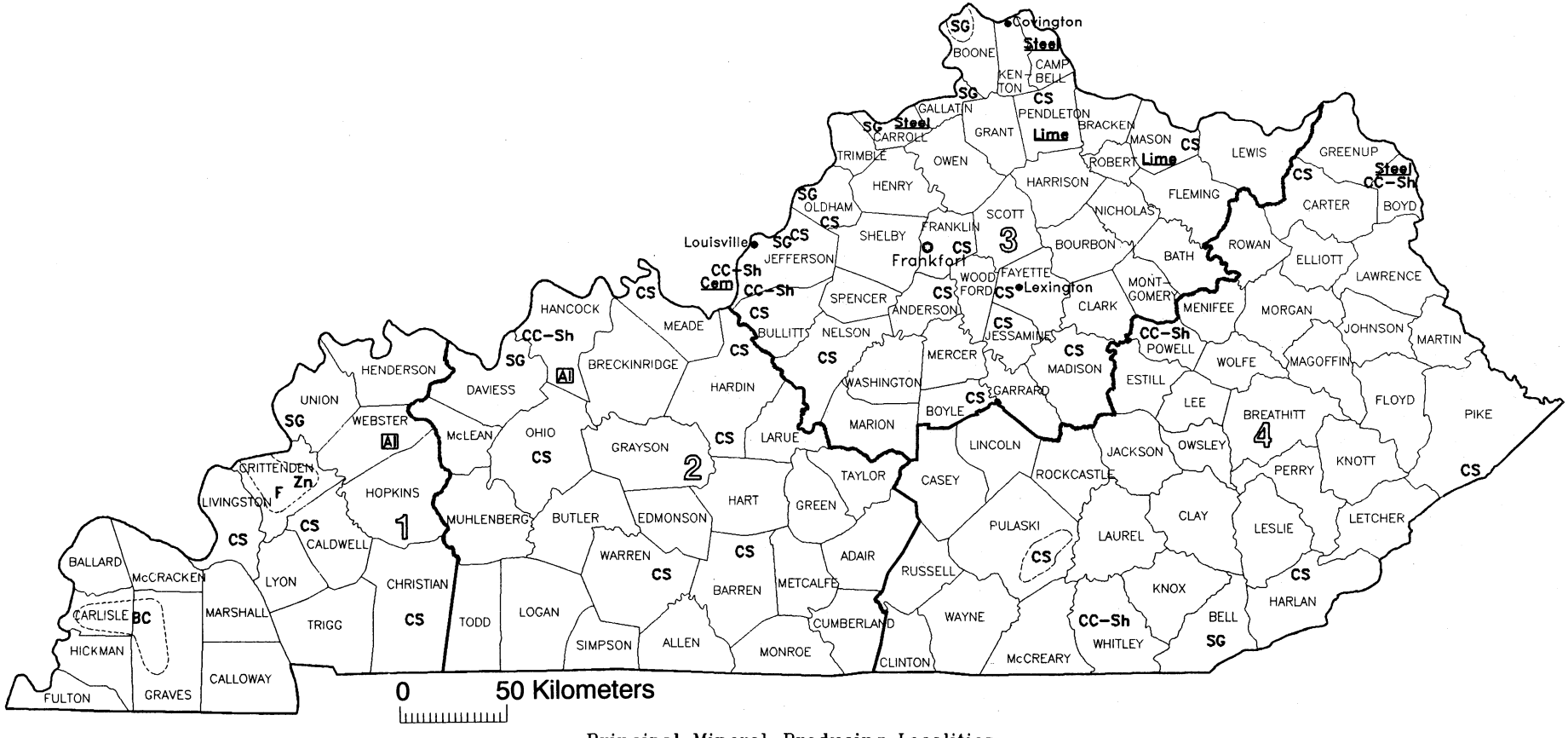
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[13]Total shown in thousand short tons and thousand dollars.

KENTUCKY



Principal Mineral–Producing Localities

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Al	Aluminum plant	Lime	Lime plant
BC	Ball clay	SG	Sand and Gravel
CC–Sh	Common Clay & Shale	Steel	Iron and Steel plant
Cem	Cement plant	Zn	Zinc
CS	Crushed Stone		Concentration of mineral operations
F	Fluorspar		

THE MINERAL INDUSTRY OF LOUISIANA

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 Louisiana Geological Survey for collecting information on all nonfuel minerals.

Louisiana ranked 34th Nationally in total nonfuel mineral value[1] in 1994, climbing from 37th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $328 million, a 41% increase from that of 1993. This followed a 25% decrease in value in 1993 from that of 1992. The State accounted for about 1% of the U.S. total value. The widely fluctuating values occurring during the past 2 years are due, in large part, to changing values for Frasch-process sulfur. All current sulfur production comes from a sulfur mine 27 kilometers (17 miles) off the Louisiana coast. Due to this offshore location, the State does not directly receive tax income or mineral production royalties from the mining operation; instead they are collected by the Federal Government. As a result, according to the Louisiana Geological Survey, sulfur has not been produced in Louisiana since 1991; the State does not identify the sulfur production cited in table 1 of this report as part of the State's nonfuel mineral production. The USBM attributes this offshore sulfur production to Louisiana because it is the State nearest to the sulfur mine. Additionally, the company operating the mine is based in New Orleans, LA. In addition to reported sulfur production, salt, by value the State's leading nonfuel mineral commodity, and construction sand and gravel accounted for most of the State's increasing value in 1994. During 1993, a significant decrease in sulfur was, in small part, offset by gains in crushed stone, salt, and construction sand and gravel. Compared with that of 1993, the mineral commodity values increased for salt, sulfur, construction sand and gravel, crushed stone, and gypsum. A decrease occurred in gemstones.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Louisiana remained the leading State in the Nation in the production of salt, and climbed from second to first in sulfur. Louisiana mines produced significant quantities of common clays and both construction and industrial sand and gravel.

[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN LOUISIANA[1]

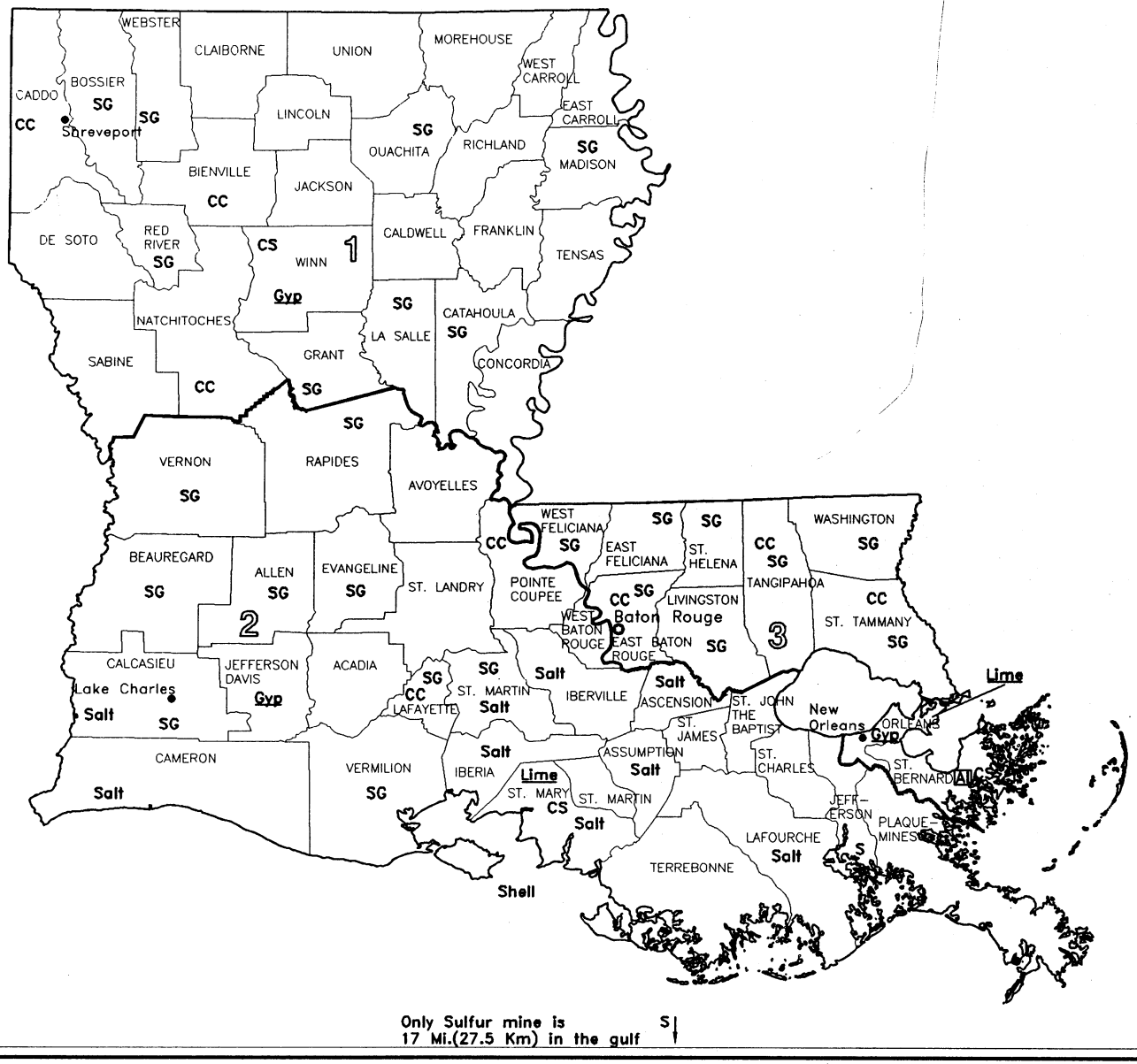
Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	384	$3,589	375	$496	375	$496
Gemstones		NA	3,960	NA	141	NA	W
Salt	thousand metric tons	12,054	112,334	12,374	115,464	14,403	134,881
Sand and gravel:							
Construction	do.	11,489	48,698	e11,900	e51,500	12,600	56,000
Industrial	do.	471	9,267	465	9,359	W	W
Sulfur (Frasch)	do.	1,105	W	740	W	W	W
Combined value of gypsum (crude), lime, stone [crushed limestone, shell, and miscellaneous (1993-94), crushed shell and miscellaneous (1992)], and values indicated by symbol W		XX	131,432	XX	54,649	XX	136,193
Total		XX	309,280	XX	231,609	XX	[2]327,570

eEstimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Data do not add to total shown because of independent rounding.

LOUISIANA



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

- Al Aluminum plant
- CC Common Clay
- CS Crushed Stone
- Gyp Gypsum plant
- Lime Lime plant
- S Sulfur
- Salt Salt
- SG Sand and Gravel
- Shell Shell

Principal Mineral-Producing Localities

Only Sulfur mine is 17 Mi.(27.5 Km) in the gulf S

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.

In 1994, Maine ranked 45th in the Nation in total nonfuel mineral value[1] for the second year in a row, following 15 consecutive years as 46th, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $58 million, a 4% decrease from that of 1993. This followed a 7.5% increase in 1993 from that of 1992. The State accounted for somewhat less than 0.5% of the U.S. total value. During 1994, increases in the value of construction sand and gravel and crushed stone moderated decreases in gemstones, dimension stone, and portland cement, all of which resulted in a net decrease in mineral value for the State. In 1993, increases in gemstones, portland cement, and dimension stone were responsible for the notable increase in value, in addition to offsetting a significant drop in value for construction sand and gravel. Compared with 1993, mineral commodity values in 1994 increased for construction sand and gravel and crushed stone. Decreases occurred for portland cement, peat, dimension stone, and gemstones.

Based on a comparison of USBM estimated quantities of minerals produced in the United States during 1994, Maine remained third among the 50 States in the production of peat; the State's mines also produced significant quantities of construction sand and gravel. Because of the difficulty in establishing a common physical unit that properly measures the quantity of gemstones produced, gemstone production is measured in dollars. While gemstone production in 1994 slowed down significantly to more typically average values for the State, this followed an exceptional prior year's production. During 1993, newly discovered tourmaline, as well as other one-time beryl and amethyst discoveries, were mined, thereby elevating Maine from a mineral value ranking of lower than 20th to 2d in the Nation in gemstone production. The combination of the nature of gemstone deposits in Maine, primarily pegmatites, and the high unit value of the materials mined, mostly beryls and tourmalines, result in wide swings in the value of production. (Pegmatites are exceptionally coarse-grained and interlocking, crystalline igneous rocks found grouped together in veins or other irregular geologic structures or "pockets.") The discovery of a single pegmatite pocket of high quality beryl or tourmaline can result in a 100% to 500% increase in the value of production.

The Maine Geological Survey reported that mineral exploration, principally for base metals, continued throughout the year. During the year, however, the number of projects, both to evaluate known deposits and to prospect for new ones, decreased, primarily due to the economics of the various projects. Several mining companies continued baseline studies to monitor the potential effects on surface and underground water and air from possible future mining of several known mineral deposits. BHP Minerals International, Inc., after suspending its copper and zinc ore sampling project at Alder Pond in northern Somerset County, was negotiating the sale of the property to Rio Algom Ltd.; completion of the transaction was scheduled for early 1995. Rio Algom

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MAINE[1]

Mineral	1992		1993		1994[p]	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones	NA	$108	NA	$9,685	NA	W
Sand and gravel (construction) thousand metric tons	6,081	26,932	e4,400	e18,900	5,800	$25,800
Stone (crushed) do.	e1,724	e11,400	1,832	10,359	e2,100	e12,300
Combined value of cement, clays (common), peat, stone (dimension), and value indicated by symbol W	XX	17,479	XX	21,184	XX	19,400
Total	XX	55,919	XX	60,128	XX	[2]57,500

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

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

[2]Data do not add to total shown because of independent rounding.

planned to begin an extensive sampling program on the Alder Pond property during the summer of 1995. Aur Resources, Inc., which had conducted mapping exercises, geophysical and geochemical surveys, and drilling in search of base metals in northern Maine during the last several years, decided to discontinue all of its exploration efforts in the State. Black Hawk Resources, Inc. purchased the mid-State Bald Mountain property, a copper and zinc sulfide ore body topped by a small cap of oxide rock bearing relatively high gold values. Rangeley Minerals Resources Co., a subsidiary of The Pittston Co., released its lease on a garnet deposit in Franklin County, to the property's owners, Rangeley Mining Co., Inc., for economic reasons. Discoveries of exceptional quality gem minerals in the past several years have sparked a renewed interest in gem prospecting and collecting, especially in pegmatite rocks in western Maine. However, no major discoveries were reported during 1994. The recent finds were expected to have the continuing effect of increasing the number of rock enthusiasts, mineral collectors, and tourists entering the State and thus beneficially affect Maine's economy.

[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

MAINE: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	15	$36	$2.40
Filter stone	W	W	2.25
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	4.49
Bituminous aggregate, coarse	W	W	4.96
Railroad ballast	27	169	6.26
Other graded coarse aggregate	163	1,080	6.63
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	4.90
Stone sand, bituminous mix or seal	W	W	4.67
Coarse and fine aggregate:			
Graded road base or subbase	75	102	1.36
Other construction materials	449	2,034	4.53
Agricultural: Other agricultural uses	(2)	(2)	11.02
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	4.80
Lime manufacture	(2)	(2)	4.79
Special: Other fillers or extenders	(2)	(2)	6.61
Unspecified:[3]			
Actual	277	1,962	7.08
Estimated	290	2,315	7.98
Total[4]	1,832	10,359	5.65
Total[5 6]	2,019	10,359	5.13

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes calcareous marl, granite, limestone, miscellaneous stone, quartzite, and traprock.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

MAINE: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	4	760	$4,348	$5.72	6	1,425	$8,577	$6.02
Calcareous marl	—	—	—	—	1	W	W	10.50
Granite	3	W	W	6.58	2	W	W	3.95
Traprock	1	W	W	2.87	1	W	W	1.30
Quartzite	1	W	W	10.10	—	—	—	—
Miscellaneous stone	1	W	W	6.72	1	W	W	6.54
Total[1]	XX	1,548	9,899	6.39	XX	1,832	10,359	5.65
Total[2 3]	XX	1,706	9,899	5.80	XX	2,019	10,359	5.13

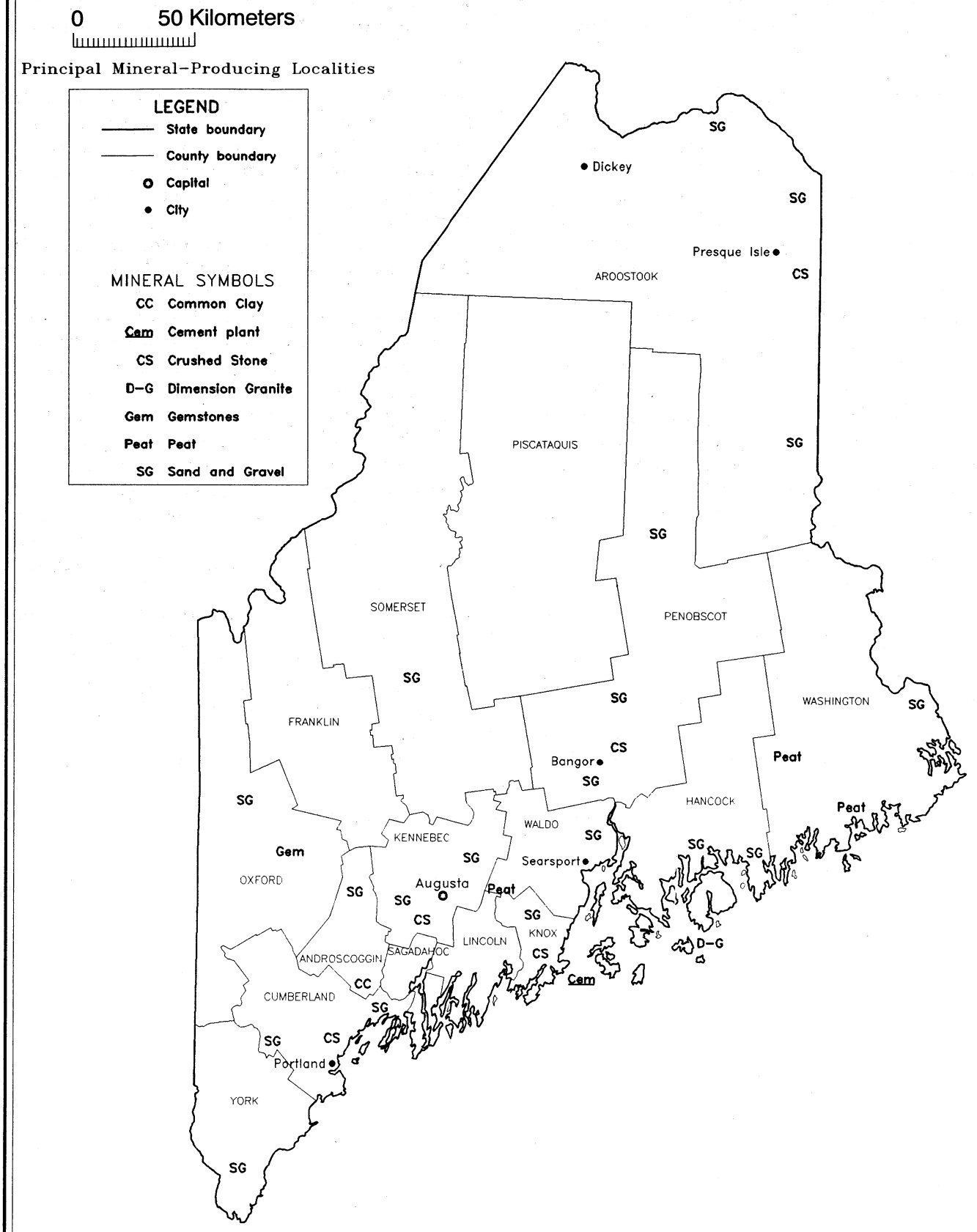
W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

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

[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[3]Total shown in thousand short tons and thousand dollars.

MAINE


0 50 Kilometers
Principal Mineral-Producing Localities
LEGEND
State boundary
County boundary
Capital
City
MINERAL SYMBOLS
CC Common Clay
Cem Cement plant
CS Crushed Stone
D-G Dimension Granite
Gem Gemstones
Peat Peat
SG Sand and Gravel
Dickey
Presque Isle
AROOSTOOK
PISCATAQUIS
SOMERSET
PENOBSCOT
FRANKLIN
WASHINGTON
Bangor
HANCOCK
WALDO
KENNEBEC
Searsport
OXFORD
Augusta
LINCOLN
KNOX
ANDROSCOGGIN
SAGADAHOC
CUMBERLAND
Portland
YORK

THE MINERAL INDUSTRY OF MARYLAND

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 Maryland Geological Survey for collecting information on all nonfuel minerals. Maryland 1994 annual estimate

Maryland ranked 35th among the 50 States in total nonfuel mineral value,[1] down from 32d in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $325 million, a 4% increase over that of 1993. This followed a 7.5% decrease from that of 1992. The State accounted for 1% of the U.S. total value. Crushed stone remained Maryland's leading nonfuel mineral commodity, accounting for more than 52% of the State's nonfuel mineral value, followed by portland cement, 24%; and construction sand and gravel, 22%. Changes in the State's total mineral value during the past 2 years mainly resulted from changes in the crushed stone marketplace, while several other mineral commodities had similar changes but with less overall impact. Compared with 1993, the mineral commodity values for crushed stone, masonry cement, and common clays increased. Decreases occurred for portland cement, construction sand and gravel, and dimension stone.

In a comparison of USBM estimates of the quantities of minerals produced in the United States during 1994, Maryland ranked 16th in the production of both portland and masonry cements. In addition, the State's mines produced significant quantities of crushed stone, dimension stone, construction sand and gravel, and common clays. All nonfuel minerals mined in the State of Maryland were industrial minerals. All metals produced in the State, mostly primary aluminum and raw steel, were processed from materials received from both foreign and domestic ources. Based on preliminary figures for both metals, Maryland was seventh in the Nation in the production of primary aluminum and eighth in raw steel production.

According to the Maryland Geological Survey, in 1994, there was no significant legislation related to nonfuel mining and mineral production. However, a court challenge to a 1991 mining law was brought before the Maryland Court of Appeals (*Maryland Aggregates Association, Inc., et al. v. State of Maryland, et al.*). The plaintiff association had obtained a restraining order halting execution of the law until the case was settled, so the law had not yet become effective. This law authorized the Maryland Department of Natural Resources to delineate a zone of dewatering influence around quarries in karst (cavernous or potentially collapsible limestone) terranes. The law assigned liability to the permittee for water wells within the zone of dewatering where land surface failures occurred because of declining water levels, and for property damage within the zone that resulted from the sudden subsidence of the land surface, unless "...the permittee demonstrates...by clear and convincing evidence that the proximate cause of the loss of water supply or property damage is not the result of pit dewatering." Although challenged on

TABLE 1
NONFUEL MINERAL PRODUCTION IN MARYLAND[1]

Mineral		1992		1993		1994[P]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland)	thousand metric tons	1,514	$84,191	1,634	$81,639	1,540	$77,000
Clays	do.	227	980	294	705	254	731
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	10,875	69,297	•11,200	•72,200	10,800	70,200
Stone:							
Crushed	do.	•21,591	•180,400	23,051	152,273	•25,000	•170,000
Dimension	metric tons	•10,310	•1,024	19,345	2,024	•16,600	•1,770
Combined value of other industrial minerals		XX	3,473	XX	4,677	XX	4,860
Total		XX	339,366	XX	313,519	XX	[2]325,000

•Estimated. [P]Preliminary. NA Not available. XX Not applicable.

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

[2]Data do not add to total shown because of independent rounding.

numerous constitutional grounds, a State Circuit Court upheld the law in 1994. The decision was appealed to the State's highest court, the Court of Appeals, which upheld the ruling of the Circuit Court. The plaintiffs were expected to appeal the decision to the U.S. Supreme Court.

[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
MARYLAND: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	476	$3,307	$6.95
Filter stone	634	4,223	6.66
Other coarse aggregate	W	W	4.96
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,291	14,521	6.34
Bituminous aggregate, coarse	1,392	8,900	6.39
Bituminous surface-treatment aggregate	403	2,355	5.84
Railroad ballast	W	W	5.16
Other graded coarse aggregate	W	W	6.58
Fine aggregate (-3/8 inch):			
Stone sand, concrete	324	2,594	8.01
Stone sand, bituminous mix or seal	494	3,360	6.80
Screening, undesignated	1,156	7,038	6.09
Coarse and fine aggregate:			
Graded road base or subbase	3,106	16,908	5.44
Unpaved road surfacing	W	W	6.13
Terrazzo and exposed aggregate	W	W	7.70
Crusher run or fill or waste	1,892	12,530	6.62
Other coarse and fine aggregate	W	W	4.05
Other construction materials	2,701	16,061	5.95
Roofing granules	W	W	11.52
Agricultural:			
Agricultural limestone	(2)	(2)	7.47
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	2.89
Special:			
Asphalt fillers or extenders	13	82	6.31
Whiting or whiting substitute	(2)	(2)	89.16
Other specified uses not listed	2,723	24,791	9.10
Unspecified:[3]			
Actual	4,394	28,650	6.52
Estimated	1,051	6,950	6.61
Total[4]	23,051	152,273	6.61
Total[5 6]	25,409	152,273	5.99

W Withheld to avoid disclosing company proprietary data; included with "Othe construction materials."
[1]Includes granite, limestone, miscellaneous stone, sandstone, and traprock.
[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3
MARYLAND: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	19	r13,910	r$87,894	r$6.32	21	15,382	$101,824	$6.62
Granite	3	5,110	33,155	6.49	4	4,795	28,622	5.97
Traprock	r2	W	W	7.29	1	W	W	6.80
Sandstone	2	W	W	6.03	4	187	1,395	7.46
Miscellaneous stone	2	W	W	7.20	2	W	W	8.04
Total[1]	XX	r23,174	r150,887	r6.51	XX	23,051	152,273	6.61
Total[2 3]	XX	r25,544	r150,887	r5.91	XX	25,409	152,273	5.99

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

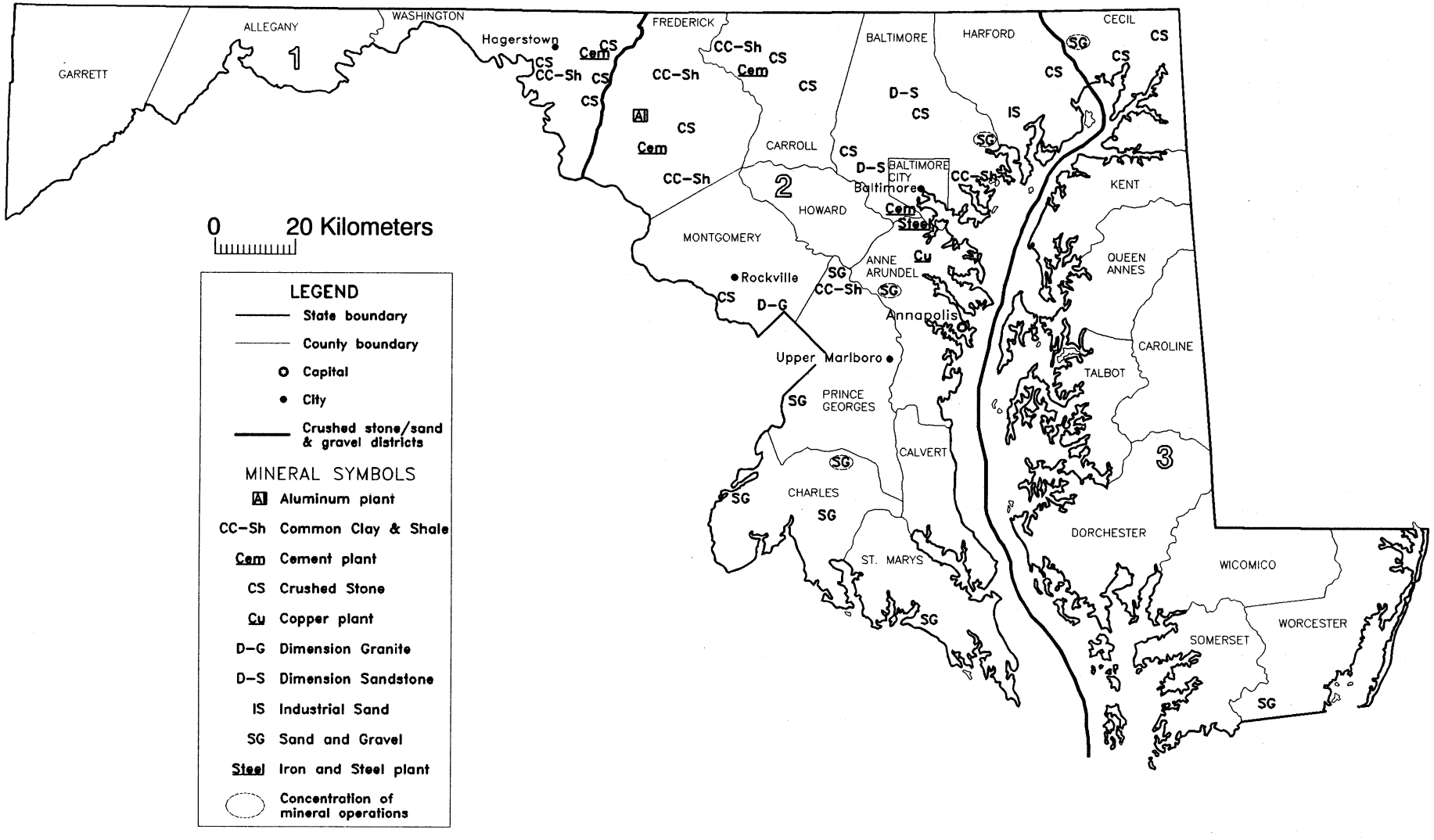
TABLE 4
MARYLAND: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[2]	25	181	1,086	7,359
Coarse aggregate, graded[3]	187	1,293	5,539	35,228
Fine aggregate (-3/8 inch)[4]	107	851	1,867	12,142
Coarse and fine aggregate[5]	1,019	4,677	5,029	29,916
Other construction materials[6]	(7)	(7)	(7)	(7)
Agricultural[8]	—	—	(7)	(7)
Chemical and metallurgical[9]	(7)	(7)	(7)	(7)
Special[10]	—	—	(7)	(7)
Unspecified:[11]			(7)	(7)
Actual	(7)	(7)	(7)	(7)
Estimated	—	—	(7)	(7)
Total[12]	3,171	14,957	19,880	137,316
Total[13 14]	3,494	14,957	21,914	137,316

[1]To avoid disclosing company proprietary data, production reported in District 3 was included with "District 2."
[2]Includes filter stone, riprap and jetty stone, and other coarse aggregate.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate railroad ballast, and other graded coarse aggregate.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregates.
[5]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.
[6]Includes roofing granules.
[7]Withheld to avoid disclosing company proprietary data; included with "Total."
[8]Includes agricultural limestone.
[9]Includes cement manufacture.
[10]Includes asphalt fillers or extenders, whiting or whiting substitute, and other specified uses not listed.
[11]Includes production reported without a breakdown by use and estimates for nonrespondents.
[12]Data may not add to totals shown because of independent rounding.
[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[14]Total shown in thousand short tons and thousand dollars.

MARYLAND



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF MASSACHUSETTS

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 Commonwealth of Massachusetts, Executive Office of Environmental Affairs, for collecting information on all nonfuel minerals.

Massachusetts ranked 40th in the Nation in total nonfuel mineral value[1] in 1994, down from 39th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $157 million, about a 2% decrease from that of 1993. This followed a nearly 9% increase in 1993 compared with that of 1992. The State accounted for about 0.5% of the U.S. total value. The leading and second-leading mineral commodities in the State, based both on quantities produced and value, were crushed stone and construction sand and gravel, respectively. In 1994, increased values for construction sand and gravel and lime did not quite compensate for decreases in the values of crushed stone and dimension stone, resulting in a net decrease for the year. The increase in the value of dimension stone in 1993 was mostly responsible for the notable increase in value as measured against that of 1992, while a smaller increase in construction sand and gravel contributed to the State's rising mineral value that year.

Based on USBM estimates of the quantities produced in the United States during 1994, Massachusetts dropped from third to fourth in the production of dimension stone. While not ranking among the top 10 States, Massachusetts' quarries produced significant quantities of crushed stone and construction sand and gravel, while similar production of lime was achieved in manufacturing plants within the State. No metal mining occurred in the State of Massachusetts.

[1]The term value in this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MASSACHUSETTS[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$1	NA	W	NA	W
Sand and gravel:							
Construction	thousand metric tons	10,916	48,671	e10,800	e51,300	11,600	$56,000
Industrial	do.	8	151	2	42	W	W
Stone:							
Crushed	do.	e9,435	e77,200	[2]9,455	[2]76,267	e [2]8,500	e [2]69,000
Dimension	metric tons	e59,725	e9,292	152,536	21,323	W	W
Combined value of clays (common), lime, peat, stone [crushed dolomite and miscellaneous (1993-94)], and values indicated by symbol W		XX	12,086	XX	11,280	XX	32,000
Total		XX	147,401	XX	160,212	XX	[3]157,000

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

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

[2]Excludes certain stones; kind and value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

MASSACHUSETTS[1]: CRUSHED STONE[2] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Riprap and jetty stone[3]	915	$8,720	$9.53
Coarse aggregate, graded:			
Bituminous aggregate, coarse	1,716	12,107	7.06
Other graded coarse aggregate[4]	3,790	28,572	7.54
Fine aggregate (-3/8 inch): Stone sand, concrete[5]	802	6,597	8.23
Coarse and fine aggregates:			
Crusher run or fill or waste	207	1,777	8.58
Other construction materials[6]	711	4,648	6.54
Agricultural:			
Agricultural limestone	W	W	17.56
Poultry grit and mineral food	W	W	17.56
Chemical and metallurgical:			
Lime manufacture	W	W	7.15
Special:			
Other fillers or extenders	W	W	55.22
Other specified uses not listed	W	W	7.64
Unspecified:[7]			
Actual	W	W	10.20
Estimated	W	W	7.04
Total[8]	9,455	76,267	8.07
Total[9] [10]	10,422	76,267	7.32

W Withheld to avoid disclosing company proprietary data; included with "Total."
[1]To avoid disclosing company proprietary data; "District tables were not produced for 1993."
[2]Includes granite, limestone, and traprock; excludes dolomite and miscellaneous stone from State total to avoid disclosing company proprietary data.
[3]Includes macadam, filter stone, and other coarse aggregate.
[4]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and railroad ballast.
[5]Includes stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregates.
[6]Includes graded road base or subbase, terrazzo and exposed aggregates and other coarse and fine aggregates.
[7]Includes production reported without a breakdown by use and estimates for nonrespondents.
[8]Data may not add to totals shown because of independent rounding.
[9]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[10]Total shown in thousand short tons and thousand dollars.

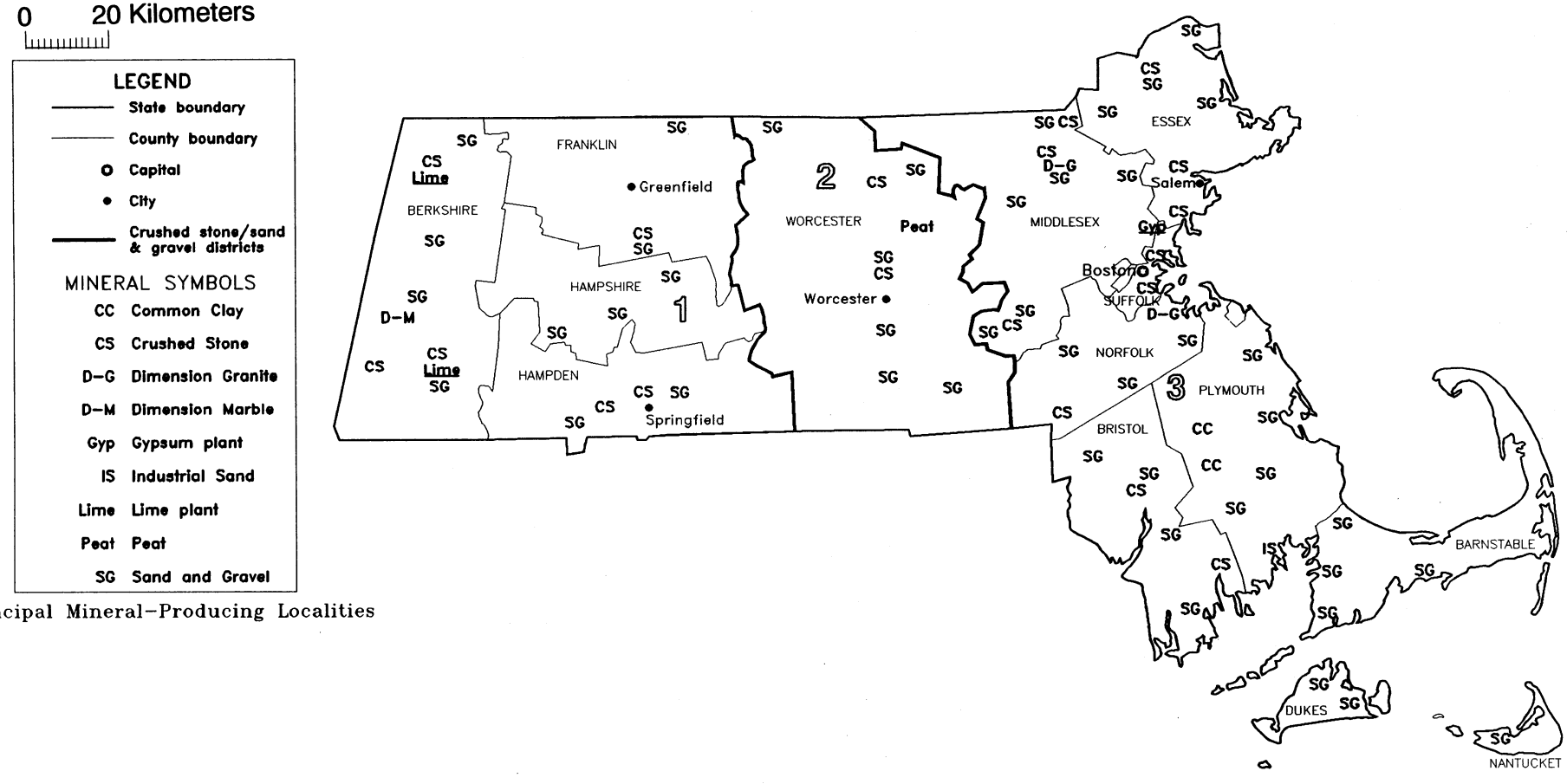
TABLE 3

MASSACHUSETTS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	2	W	W	$13.23	4	795	$10,479	$13.18
Dolomite	1	W	W	13.41	(1)	(1)	(1)	(1)
Granite	r4	r1,614	r$14,245	r8.83	3	940	9,887	10.52
Traprock	r18	r3,622	r20,881	r5.77	20	7,719	55,902	7.24
Miscellaneous stone	1	W	W	5.39	(1)	(1)	(1)	(1)
Total[2]	XX	6,469	51,362	7.94	XX	9,455	76,267	8.07
Total[3] [4]	XX	7,131	51,362	7.20	XX	10,422	76,267	7.32

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes dolomite and miscellaneous stone from State total to avoid disclosing company proprietary data.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

MASSACHUSETTS



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF MICHIGAN

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 Geological Survey Division, Michigan Department of Natural Resources, for collecting information on all nonfuel minerals.

For the fourth year in a row and the fifth in the last 7 years, Michigan was fourth in the Nation in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines. The estimated value for 1994 was $1.6 billion, an 8% increase that of 1993. This followed an 5% decrease in 1993 from that of 1992. The State accounted for nearly 5% of the U.S. total. Michigan continued to be a major iron ore producing State, second only to the Nation's leader, Minnesota. In estimated mineral production for 1994, Michigan rose from fourth to second in construction sand and gravel and remained first in magnesium compounds and iron oxide pigments; second in iron ore, industrial sand and gravel, and peat; and fourth in portland cement, copper, gypsum, and potash. Among a diverse selection of minerals produced in Michigan, industrial minerals represented about 61% of the State's nonfuel mineral value, portland cement representing one-third of the overall total; and iron ore, copper, and silver the remaining 39%. Compared with 1993, the value of iron ore, portland cement, construction sand and gravel, magnesium compounds, copper, salt, lime, industrial sand and gravel, masonry cement, gypsum, common clays, peat, potash, bromine, and dimension stone increased. The value of crushed stone, silver, and iron oxide pigments decreased.

According to the Michigan Department of Natural Resources, a minimum of 37 exploration holes were drilled in 1994. Targeted commodities included diamonds, base metals, and stone; some interest in precious metals also was shown. Four companies leased nearly 1,480 hectares (about 3,700 acres) of State-owned land during the 1994 Metallics Minerals Lease Sale. The Copper Range Company began

TABLE
NONFUEL RAW MINERAL PRODUCTION IN MICHIGAN[1]

Mineral		1992		1993		1994[p 2]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	212	$20,381	216	$17,376	238	$19,200
Portland	do.	4,998	262,063	5,116	313,246	5,700	349,000
Clays	do.	1,265	4,345	1,234	4,848	1,140	11,700
Gemstones		NA	1	NA	1	NA	W
Gypsum (crude)	thousand metric tons	1,606	13,889	1,687	14,230	1,850	15,700
Iron ore (usable)	do.	12,881	W	12,940	W	13,100	W
Lime	do.	577	31,253	596	30,926	598	31,000
Peat	do.	181	5,894	186	6,114	188	6,190
Salt	do.	W	W	W	W	1,010	112,000
Sand and gravel:							
Construction	do.	43,539	143,107	e45,000	e157,500	49,800	182,000
Industrial	do.	r1,954	r22,585	2,567	25,129	W	W
Stone (crushed)	do.	e35,017	e125,500	31,019	111,763	e30,500	e111,000
Combined value of bromine,[e] calcium chloride [natural[2] (1992)], copper, iron oxide pigments (crude), magnesium compounds, potash, silver, stone (dimension), and values indicated by symbol W		XX	961,038	XX	823,112	XX	784,000
Total		XX	r1,590,056	XX	1,504,245	XX	[3]1,620,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Calcium chloride (natural) canvassing discontinued beginning 1993.

[3]Data do not add to total shown because of independent rounding.

experimental solution mining at its White Pine Mine to recover copper from abandoned parts of the mine. Because of difficulties in meeting air quality standards, the company announced plans to close the smelter in early 1995, after which copper concentrates would be shipped to Canada for smelting and copper anodes returned to White Pine for electrolytic refining. Construction of a new White Pine smelter capable of meeting air quality standards was to be evaluated. Great Lakes Minerals Inc. announced a partnership with Brookline Minerals, Inc. for the anticipated opening of their Keweenaw Copper Company mine in Keweenaw County in early 1995. The copper sulfide ore will be processed at Copper Range's White Pine Mine. Lafarge Corp. began shipping iron tailings from Cleveland Cliffs Iron Company's idle Republic Mine to its Alpena, MI, cement plant. The taconite iron tailings and fly ash were being used in place of shale in cement manufacturing. The company closed one of four iron ore pellet processing lines at its Empire Mine in late 1994. Six geologists from China met with industry, State, Federal, and university personnel during a tour of Michigan and Wisconsin; they visited Michigan's "Copper Country" to learn about U.S. copper deposits and mineral leasing methods. The year 1994 marked the 150th anniversary of the discovery by surveyors in 1844 of iron ore in the Great Lakes area, near what is now Ishpeming, MI.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

MICHIGAN: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	83	$472	$5.69
Filter stone[2]	84	413	4.92
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,072	8,364	4.04
Bituminous aggregate, coarse	183	875	4.78
Other graded coarse aggregate[3]	71	409	5.76
Fine aggregate (-3/8 inch): Other fine aggregate[4]	395	1,465	3.71
Coarse and fine aggregates:			
Graded road base or subbase	3,024	10,134	3.35
Unpaved road surfacing	725	3,457	4.77
Crusher run or fill or waste	844	3,685	5.72
Other construction materials[5]	88	373	4.24
Agricultural:			
Agricultural limestone[6]	217	1,233	5.68
Chemical and metallurgical:			
Cement manufacture[7]	9,912	30,950	3.12
Unspecified:[8]			
Actual	11,095	41,315	3.72
Estimated	2,226	8,619	3.87
Total	31,019	[9]111,763	3.60
Total[10 11]	34,193	111,763	3.27

[1]Includes calcareous marl, dolomite, limestone, miscellaneous stone, sandstone, and traprock.
[2]Includes other coarse aggregate.
[3]Includes bituminous surface-treatment aggregate and railroad ballast.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[5]Includes other coarse and fine aggregates.
[6]Includes other agricultural uses.
[7]Includes flux stone and lime manufacture.
[8]Includes production reported without a breakdown by use and estimates for nonrespondents.
[9]Data do not add to total shown because of independent rounding.
[10]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[11]Total shown in thousand short tons and thousand dollars.

TABLE 3

MICHIGAN: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r24	r26,395	$90,078	r$3.41	25	26,722	$96,241	$3.60
Dolomite	3	4,085	14,743	3.61	3	3,638	14,097	3.87
Marble	1	W	r(1)	r(1)	—	—	—	—
Calcareous marl	3	14	52	3.71	1	W	W	1.40
Traprock	4	13	36	2.76	3	W	W	1.52
Sandstone	1	W	346	W	3	W	W	2.53
Miscellaneous stone	1	W	r(1)	r(1)	1	W	W	1.33
Total[2]	XX	r30,737	r105,254	r3.42	XX	31,019	111,763	3.60
Total[3 4]	XX	r33,882	r105,254	r3.11	XX	34,193	111,763	3.27

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

[1]Excludes marble and miscellaneous stone values from State total to avoid disclosing company proprietary data.

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

[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

MICHIGAN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	W	W	W	W	W	W
Coarse aggregate, graded[2]	W	W	W	W	998	5,153
Fine aggregate (-3/8 inch)[3]	W	W	W	W	W	W
Coarse and fine aggregate[4]	W	W	W	W	2,096	9,820
Other construction materials	863	2,935	3,421	10,698	189	1,041
Agricultural[5]	(6)	(6)	—	—	(6)	(6)
Chemical and metallurgical[7]	(6)	(6)	8,328	24,887	(6)	(6)
Unspecified:[8]						
Actual	2,316	9,496	6,591	22,886	2,189	8,933
Estimated	1,550	5,501	62	323	614	2,795
Total[9]	5,215	19,694	18,404	58,793	7,400	33,276
Total[10 11]	5,749	19,694	20,287	58,793	8,157	33,276

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

[1]Includes filter stone, riprap and jetty stone, and other coarse aggregate.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

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

[5]Includes agricultural limestone and other agricultural uses.

[6]Withheld to avoid disclosing company proprietary data; included with "Total."

[7]Includes cement manufacture, flux stone, and lime manufacture.

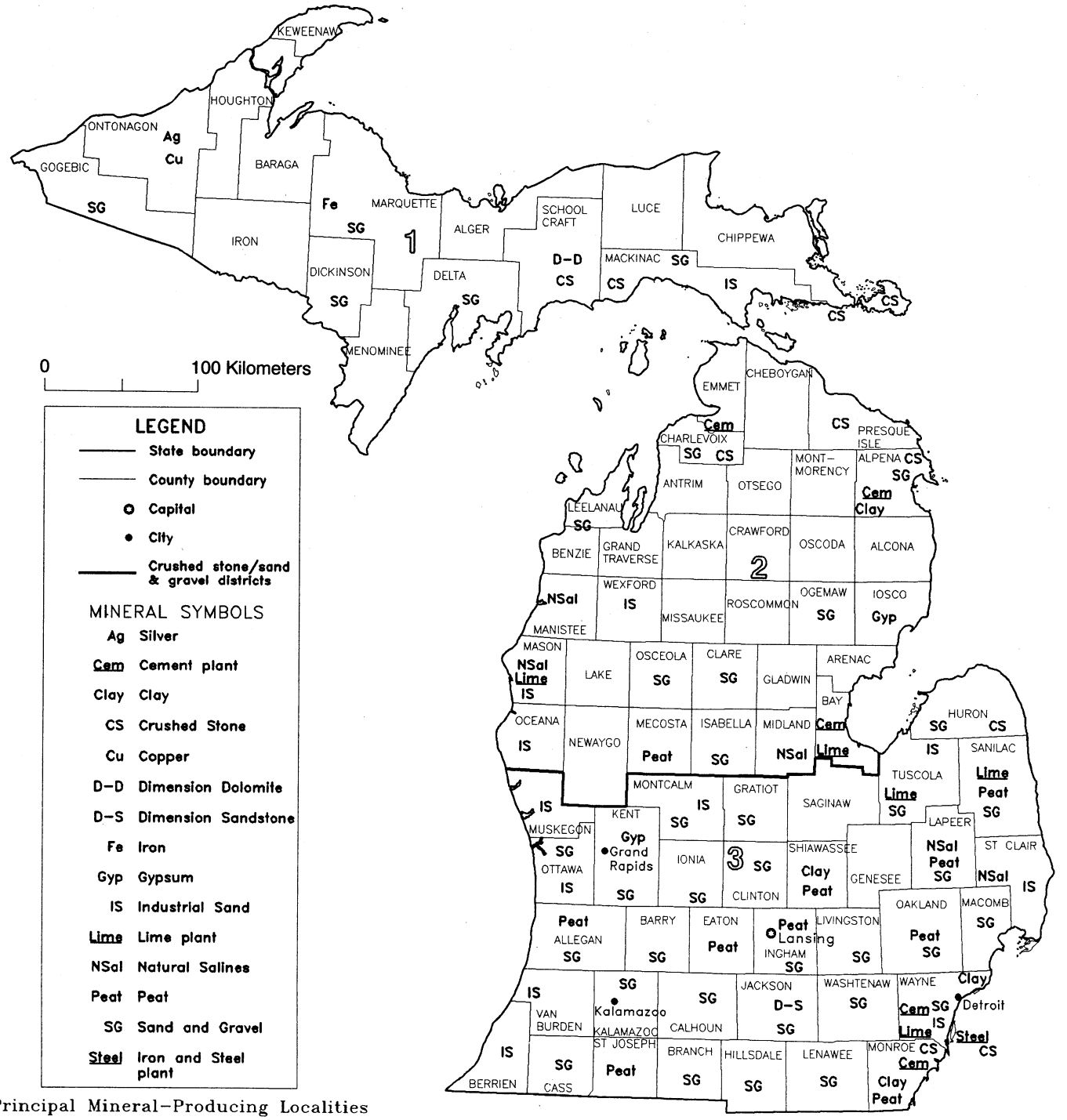
[8]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[10]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[11]Total shown in thousand short tons and thousand dollars.

MICHIGAN



LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Ag	Silver
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
Cu	Copper
D-D	Dimension Dolomite
D-S	Dimension Sandstone
Fe	Iron
Gyp	Gypsum
IS	Industrial Sand
Lime	Lime plant
NSal	Natural Salines
Peat	Peat
SG	Sand and Gravel
Steel	Iron and Steel plant

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF MINNESOTA

Minnesota remained ninth in the ranking of all 50 States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $1.35 billion, a 4% increase from that of 1993. This followed a 5% decrease in 1993 from that of 1992. The State accounted for nearly 4% of the U.S. total. Changes occurring between 1992-94 resulted mostly from the combined effects of shipments of iron ore, and less so, construction sand and gravel, and crushed stone. In 1994, iron ore accounted for more than 86% of the State's nonfuel mineral value, while construction sand and gravel accounted for nearly 7% and crushed stone more than 3% of the total. Throughout most of the years 1980-90, Minnesota ranked between second and sixth nationally when iron ore prices and related sales were relatively stronger than the recent 1990's. In estimated mineral production for 1994, Minnesota remained first in the Nation in iron ore, fourth in peat, and sixth in kaolin clays. While significant quantities of construction and industrial sand and gravel, crushed stone, and dimension stone were produced in Minnesota, the State ranked no higher than ninth among the 50 States in the quantity of each mineral produced. Compared with 1993, the value of iron ore, construction sand and gravel, crushed stone, industrial sand and gravel, lime, kaolin clays, and peat increased. Decreases occurred in the value of dimension stone and gemstones.

According to the Minnesota Geological Survey and the USBM, the Cliffs Minnesota Minerals Co., a subsidiary of Cleveland-Cliffs Inc., acquired Cyprus North Shore Mining Corp. and renamed it the Northshore Mining Co. Included in the deal were the Peter Mitchell Mine, near Babbitt, MN, and the Silver Bay iron ore processing plant and power subsidiary located about 50 miles east of the mine. The principal assets acquired were 4 million metric- tons-per-year (mt/yr) of active iron ore pellet capacity supported by 6 mt/yr of concentrate capacity, a 115-megawatt power generation plant, and access to an estimated 1.2 billion tons of reserves, leased mainly from the Mesabi Trust at Babbitt, MN, on the eastern Mesabi Iron Range. As a result of the acquisition, according to Skillings' Mining Review, Cleveland-Cliffs' subsidiaries manage 20 million tons of annual iron ore pelletizing capacity in Minnesota, principally for steel company owners. This represents 43% of the total iron ore pelletizing capacity in Minnesota and nearly 25% of all pelletizing capacity in North America. The National Steel Pellet Co.'s production facility (mine and ore processing plant) at Keewatin, MN, was reopened after a prolonged shutdown. The Dunka River Pit was closed by LTV Corp. after 36 years of continuous production. Two government reports containing numerous suggestions for legislative initiatives and changes to existing mining, minerals processing and recycling, and related environmental laws were released in 1994. The first report, entitled Mining, Society and the Environment: Report by the Minerals Team of the Minnesota Sustainable Development Initiative, was published in January. The second report, Recommendations for Strengthening Minnesota's Mining and Minerals Industry: A Report to the

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MINNESOTA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$686	NA	$65	NA	W
Iron ore (usable)	thousand metric tons	42,348	1,180,563	42,459	1,126,576	43,000	$1,170,000
Peat	do.	36	2,764	33	1,931	29	2,260
Sand and gravel (construction)	do.	34,114	98,673	e30,500	e85,400	31,800	92,200
Stone:							
Crushed	do.	e9,525	e39,500	9,423	37,736	e10,200	e44,400
Dimension	metric tons	e32,833	e11,436	33,466	11,766	W	W
Combined value of clays (common, kaolin), lime, and sand and gravel (industrial), and values indicated by symbol W		XX	r30,364	XX	35,250	XX	47,000
Total		XX	r1,363,986	XX	1,298,724	XX	[2]1,350,000

eEstimated. pPreliminary. rRevised. NA Not available. XX Not applicable.

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

[2]Data do not add to total shown because of independent rounding.

Governor from the Governor's Task Force on Mining and Minerals, was printed in May. The industry expressed renewed interest in developing processing technology for the disseminated copper/nickel deposits associated with the basal zone of the Duluth Complex in northeastern Minnesota.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
MINNESOTA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$3.31
Riprap and jetty stone	163	$823	5.05
Filter stone	158	818	5.18
Other coarse aggregate	459	2,523	5.50
Coarse aggregate, graded:			
Concrete aggregate, coarse	401	1,978	4.93
Bituminous aggregate, coarse	310	975	3.15
Bituminous surface-treatment aggregate	286	1,228	4.29
Railroad ballast	129	705	5.47
Other graded coarse aggregate	W	W	8.27
Fine aggregate (-3/8 inch): Screening, undesignated[2]	219	873	3.99
Coarse and fine aggregates:			
Graded road base or subbase	2,424	8,614	3.55
Unpaved road surfacing	342	1,148	3.36
Terrazzo and exposed aggregate	W	W	6.85
Crusher run or fill or waste	33	175	5.30
Other construction materials	183	1,311	7.16
Roofing granules	W	W	5.51
Agricultural:			
Agricultural limestone[3]	251	1,024	4.08
Chemical and metallurgical:			
Cement manufacture	(4)	(4)	16.53
Lime manufacture	(4)	(4)	6.68
Special:			
Asphalt fillers or extenders	(4)	(4)	2.48
Other specified uses not listed	431	1,970	4.57
Unspecified:[5]			
Actual	2,095	7,938	3.79
Estimated	1,540	5,631	3.66
Total[6]	9,423	37,736	4.00
Total[7 8]	10,387	37,736	3.63

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, quartzite, sandstone, and traprock.
[2]Includes stone sand (concrete), and stone sand (bituminous mix or seal).
[3]Includes poultry grit and mineral food.
[4]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[5]Includes production reported without a breakdown by use and estimates for nonrespondents.
[6]Data may not add to totals shown because of independent rounding.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

TABLE 3

MINNESOTA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	45	6,174	$24,005	$3.88	37	7,209	$27,134	$3.76
Dolomite	1	W	W	3.00	3	W	W	3.50
Granite	3	W	W	5.00	3	W	W	4.00
Traprock	1	W	W	10.09	2	W	W	4.29
Sandstone	—	—	—	—	1	W	W	14.50
Quartzite	1	W	W	6.57	1	W	W	7.31
Total[1]	XX	7,601	30,624	4.03	XX	9,423	37,736	4.00
Total[2 3]	XX	8,378	30,624	3.66	XX	10,387	37,736	3.63

W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

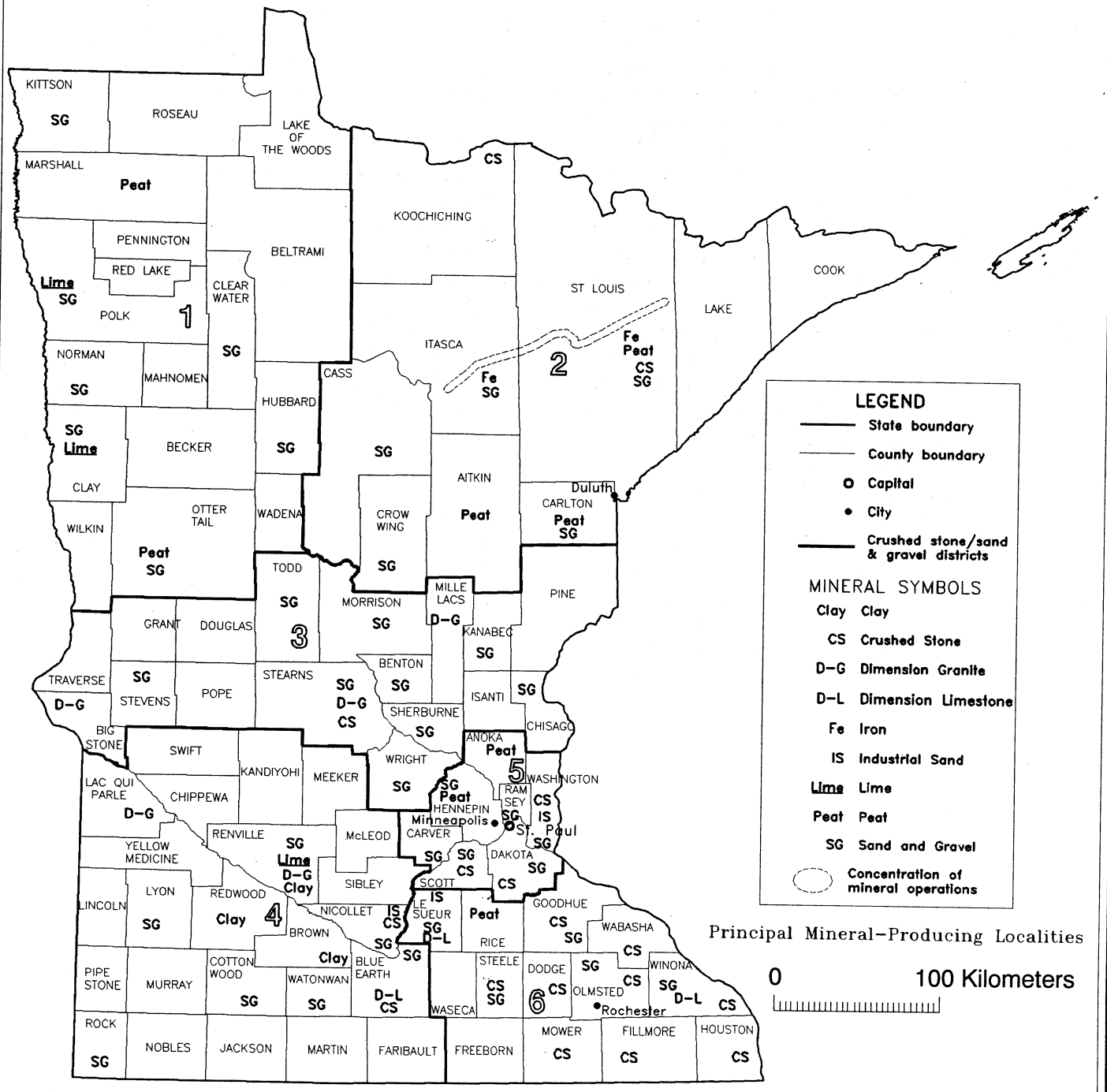
MINNESOTA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	W	W	W	W	25	59
Coarse aggregate, graded[3]	W	W	W	W	W	W
Fine aggregate (-3/8 inch)[4]	W	W	W	W	W	W
Coarse and fine aggregate[5]	443	1,944	W	W	W	W
Other construction materials[6]	1,321	7,034	2,797	10,434	520	1,703
Agricultural[7]	(8)	(8)	(8)	(8)	120	445
Chemical and metallurgical[9]	—	—	(8)	(8)	(8)	(8)
Special[10]	—	—	(8)	(8)	—	—
Other miscellaneous uses[11]	(8)	(8)	—	—	(8)	(8)
Unspecified:[12]						
Actual	253	1,166	392	624	1,450	6,148
Estimated	148	736	446	1,878	653	2,429
Total[13]	2,661	12,663	3,917	13,924	2,845	11,149
Total[14 15]	2,933	12,663	4,318	13,924	3,136	11,149

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]To avoid disclosing company proprietary data, production reported in District 2 and 3 was included with "District 4;" no Crushed Stone was produced in District 1.
[2]Includes filter stone, macadam, riprap and jetty stone, and othercoarse aggregate.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[5]Includes graded road baseor subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.
[6]Includes roofing granules.
[7]Includes agricultural limestone, and poultry grit and mineral food.
[8]Withheld to avoid disclosing company proprietary data; included with "Total."
[9]Includes cement manufacture and lime manufacture.
[10]Includes asphalt fillers or extenders.
[11]Includes specified uses not listed.
[12]Includes production reported without a breakdown by end use and estimates for nonrespondents.
[13]Data may not add to totals shown because of independent rounding.
[14]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[15]Total shown in thousand short tons and thousand dollars.

MINNESOTA


KITTSON
SG
ROSEAU
LAKE OF THE WOODS
MARSHALL
Peat
PENNINGTON
RED LAKE
Lime
SG
POLK
1
BELTRAMI
CLEAR WATER
SG
NORMAN
SG
MAHNOMEN
HUBBARD
SG
CASS
SG
SG
Lime
BECKER
SG
CLAY
OTTER TAIL
WADENA
WILKIN
Peat
SG
TODD
SG
3
CROW WING
SG
MORRISON
SG
GRANT
DOUGLAS
TRAVERSE
SG
D-G
STEVENS
POPE
STEARNS
SG
D-G
CS
BENTON
SG
BIG STONE
SWIFT
KANDIYOHI
MEEKER
WRIGHT
SG
LAC QUI PARLE
D-G
CHIPPEWA
YELLOW MEDICINE
RENVILLE
SG
Lime
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Clay
4
McLEOD
SIBLEY
LINCOLN
LYON
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REDWOOD
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SHERBURNE
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MILLE LACS
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PINE
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KOOCHICHING
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LAKE
COOK
Duluth
CARLTON
Peat
SG
PIPE STONE
MURRAY
COTTON WOOD
SG
WATONWAN
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BLUE EARTH
Clay
D-L
CS
WASECA
STEELE
CS
SG
DODGE
CS
6
OLMSTED
Rochester
SG
CS
WINONA
SG
D-L
CS
GOODHUE
CS
SG
WABASHA
CS
RICE
Peat
ROCK
SG
NOBLES
JACKSON
MARTIN
FARIBAULT
FREEBORN
MOWER
CS
FILLMORE
CS
HOUSTON
CS
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Clay Clay
CS Crushed Stone
D-G Dimension Granite
D-L Dimension Limestone
Fe Iron
IS Industrial Sand
Lime Lime
Peat Peat
SG Sand and Gravel
Concentration of mineral operations
Principal Mineral-Producing Localities
0
100 Kilometers

THE MINERAL INDUSTRY OF MISSISSIPPI

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 Office of Geology, Mississippi Department of Environmental Quality, for collecting information on all nonfuel minerals.

Mississippi remained 43d among the 50 States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $112 million, nearly an 8% increase compared with that of 1993. An accurate and fair comparison of 1992 and 1993 by the degree (percent) of change, as has been described in the Mineral Industry Surveys for most of the other States, is not possible for Mississippi because some data were withheld to protect company proprietary information. The same sets of data were withheld in 1994 as in 1993, allowing a comparison of similar data. Although the withheld data did not affect the State's overall ranking in 1994, it had an affect when first withheld in 1993, dropping the State two places from its 1992 ranking of 41st in the Nation. In 1994, the State accounted for less than 0.5% of the total U.S. nonfuel mineral value. Construction sand and gravel, by value the State's leading nonfuel mineral commodity, had the most significant impact on Mississippi's changing mineral value. The value of the commodity increased by a significant 30% in 1993 compared with that of 1992, followed by an estimated 15% rise from 1993 to 1994. In 1994, construction sand and gravel accounted for almost 59% of the total reportable mineral value. Clays, when grouped together as one, were the State's second leading mineral commodity, followed by portland cement. Compared with those of 1993, the values of construction sand and gravel and fuller's earth clays increased. Decreases occurred in the values of portland cement and crushed stone.

Based on USBM estimates comparing quantities of minerals produced in the United States during 1994, Mississippi remained second in the production of bentonite clays, fourth in fuller's earth, and fourth of four States producing ball clay. While not ranking among the top 10 States, the State's mines produced significant quantities of construction sand and gravel and common clays. Metals produced in Mississippi, mostly that of raw steel, were processed from materials received from other domestic and foreign sources.

According to the Mississippi Office of Geology, Department of Environmental Quality (DEQ), the Mississippi mining industry experienced significant growth in 1994, as the State had one of the stronger economies in the Nation. Several major road construction projects helped increase permit numbers to record-high levels, while casinos also played a large part in permits issued with increased demand for construction and road-building material needed on the Gulf Coast and in certain counties along the Mississippi River. Bond release applications and, thus, the amount of reclaimed land, also were on the rise. In industry news, Phillips Coal Co. continued to show an interest in lignite mining; plans called for building a lignite-fired generating plant at a mine site in Choctaw County, possibly by the end of the decade. While the Mississippi Legislature took no actions directly

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MISSISSIPPI[1]

Mineral	1992		1993		1994[p]	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays thousand metric tons	[2]1,120	[2]$38,090	1,100	$38,228	1,100	$39,400
Gemstones	NA	1	NA	1	—	—
Sand and gravel (construction) thousand metric tons	10,403	44,124	[e]14,500	[e]57,300	16,000	65,600
Stone (crushed) do.	[e]2,268	[e]10,400	2,102	8,122	[e]1,700	[e]6,600
Combined value of other industrial minerals	XX	[r]28,780	XX	[3]	XX	[3]
Total	XX	[r]121,395	XX	[4]103,651	XX	[4 5]112,600

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Value excluded to avoid disclosing company proprietary data.

[4]Partial total, excludes values which must be concealed to avoid disclosing company proprietary data.

[5]Data do not to total shown because of independent rounding.

affecting mining enterprises in 1994, mining activities along rivers and streams continued to be a contentious issue. Several meetings were held during the year involving the DEQ and mining industry officials over promulgation of new rules governing mining in waterways; the issuance of new rules was anticipated during 1995.

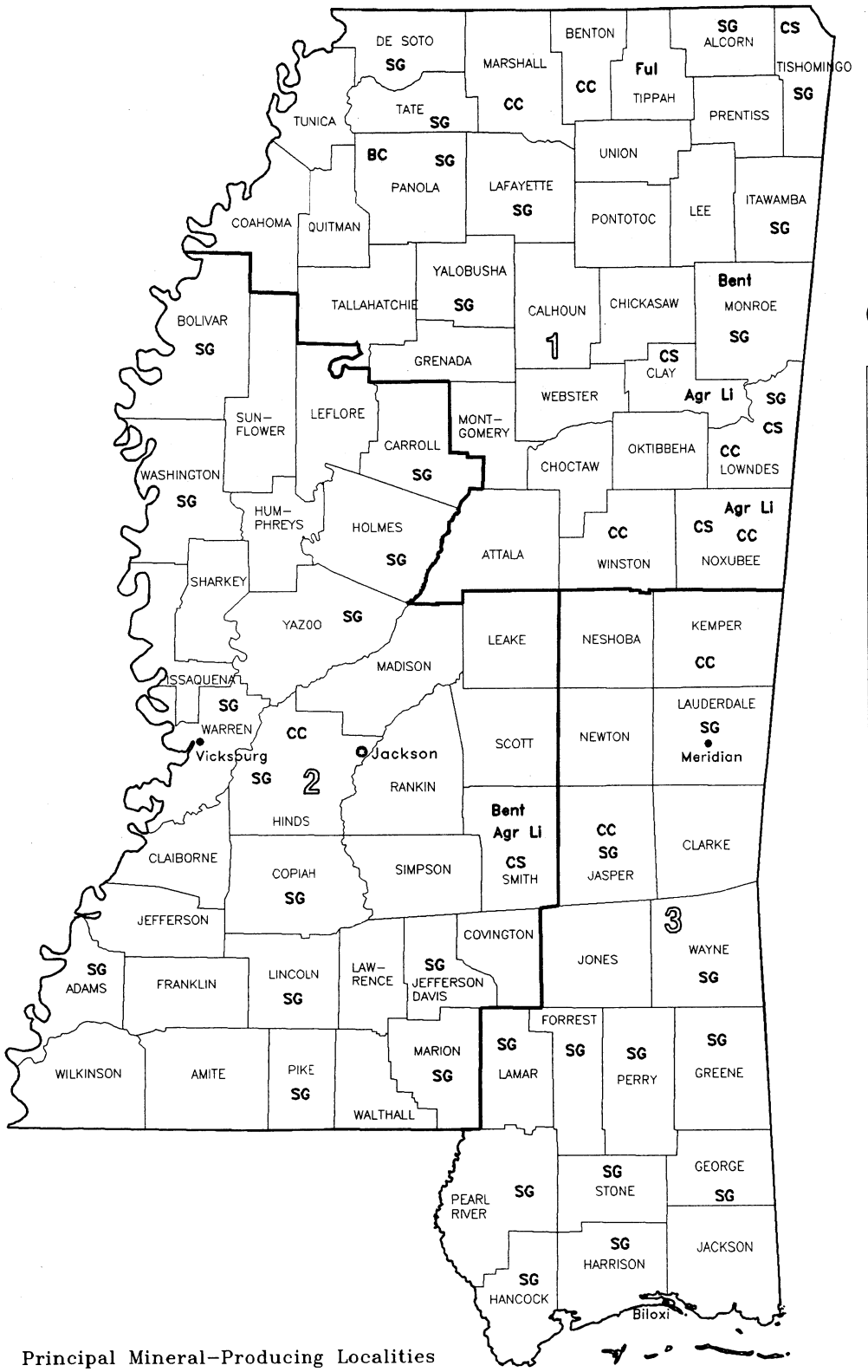
[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
MISSISSIPPI[1]: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	5	1,481	$6,603	$4.46	5	2,102	$8,122	$3.86
Total	XX	1,481	6,603	4.46	XX	2,102	8,122	3.86
Total[2 3]	XX	1,633	6,603	4.04	XX	2,317	8,122	3.51

XX Not applicable.
[1]To avoid disclosing company proprietary data; "Use and District tables were not produced for 1993."
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

MISSISSIPPI



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF MISSOURI

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 Missouri Department of Natural Resources, Division of Geology and Land Survey, for collecting information on all nonfuel minerals.

Missouri ranked 10th among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 12th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was more than $1 billion, a 17% increase compared with that of 1993. This followed a less than 5% decrease in 1993 from that of 1992. The State accounted for almost 3% of the U.S. total. Beginning in 1993, crushed stone took over as the State's leading commodity and portland cement became second, dropping lead to the third position. This ranking continued in 1994, while industrial minerals accounted for almost 70% of the total nonfuel mineral value. Missouri's jump in State ranking was due mainly to increases in the value of crushed stone and portland cement, each rising by about 21% above their respective 1993 levels, and lead, which gained about 29%. Increases in construction sand and gravel, lime, and zinc also contributed to the State's overall growth. While Missouri was still the top lead producing State in the Nation, lead production has dropped notably since the high production of the 1970's and early 1980's. The year 1984 marked a low year for the State's lead industry, which produced a little more than 278,000 metric tons (mt) (recoverable content of ores). Following a modest, while fluctuating, recovery from 1985-90 (381,000 mt was produced in 90), lead output has since declined. By 1993, it had decreased to just below the low 1984 level; in 1994, it rose again an estimated 3%. In estimated mineral production for 1994, Missouri remained first nationally in lead and fire clays, second in iron oxide pigments, one of the top three in lime, third of four barite producing States, fourth in zinc and iron ore, and fifth in crushed stone and fuller's earth clays; the State rose from sixth to fifth in the production of portland cement, and remained seventh in copper and silver. Compared with 1993, the value of the following increased: crushed stone, portland cement, lead, lime, zinc, construction sand and gravel, copper, iron ore, masonry cement, and common clays.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MISSOURI[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland)	thousand metric tons	4,286	$196,073	4,057	$201,016	4,920	$244,000
Clays[2]	do.	1,195	8,327	1,184	7,737	1,290	8,040
Copper[3]	metric tons	10,766	25,497	6,982	14,094	7,130	17,000
Gemstones		NA	862	NA	46	NA	W
Iron ore (usable)	thousand metric tons	19	W	287	W	291	W
Lead[3]	metric tons	[r]299,741	[r]231,946	277,427	194,129	285,000	224,000
Sand and gravel:							
Construction	thousand metric tons	8,186	26,457	[e]6,400	[e]19,800	9,500	30,800
Industrial	do.	644	10,931	520	9,389	W	W
Silver[3]	metric tons	32	4,084	40	5,578	. 34	4,700
Stone (crushed)	thousand metric tons	[e]47,355	[e]187,400	53,368	239,297	[e]61,000	[e]290,000
Zinc[3]	metric tons	44,031	56,670	40,171	40,872	44,500	45,200
Combined value of barite, cement (masonry), clays (fuller's earth), iron oxide pigments (crude), lime, stone (dimension), and values indicated by symbol W		XX	148,286	XX	123,466	XX	140,000
Total		XX	[r]896,533	XX	855,424	XX	[4]1,000,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

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

TABLE 2

MISSOURI: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	391	$1,629	$4.17
Riprap and jetty stone	3,693	12,632	3.42
Filter stone	631	2,736	4.34
Other coarse aggregate	1,020	13,456	13.19
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,697	8,573	5.05
Bituminous aggregate, coarse	1,734	7,668	4.42
Bituminous surface-treatment aggregate	563	2,403	4.27
Railroad ballast	682	3,274	4.80
Other graded coarse aggregate	1,611	7,521	4.67
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	5.12
Stone sand, bituminous mix or seal	241	1,159	4.81
Screening, undesignated	897	3,500	3.90
Other fine aggregate	W	W	2.78
Coarse and fine aggregates:			
Graded road base or subbase	8,564	32,626	3.81
Unpaved road surfacing	2,469	11,188	4.53
Terrazzo and exposed aggregate	W	W	9.88
Crusher run or fill or waste	929	3,175	3.42
Other coarse and fine aggregates	1,606	8,127	5.06
Other construction materials	141	522	3.70
Agricultural:			
Agricultural limestone[2]	1,419	5,781	4.07
Chemical and metallurgical:			
Cement manufacture	4,295	15,445	3.60
Lime manufacture	362	1,671	4.62
Dead-burned dolomite manufacture	(3)	(3)	4.82
Flux stone	(3)	(3)	4.77
Chemical stone	(3)	(3)	4.13
Special:			
Asphalt fillers or extenders	(3)	(3)	4.50
Other fillers or extenders	(3)	(3)	5.51
Other specified uses not listed	317	1,882	5.94
Unspecified:[4]			
Actual	10,895	57,362	5.26
Estimated	9,213	36,967	4.01
Total[5]	53,368	239,297	4.48
Total[6 7]	58,828	239,297	4.07

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, sandstone, and traprock.
[2]Includes poultry grit and mineral food, and other agricultural uses.
[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[4]Includes production reported without a breakdown of use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

Decreases occurred in industrial sand and gravel, silver, fire clays, and gemstones.

According to the Missouri Department of Natural Resources, Chemical Lime Co. of Fort Worth, TX, received State air-quality permits to build a lime plant in Ste. Genevieve County. The new plant is scheduled to be on-line by the end of 1995 and will employ about 40 people, the company reported. The plant will have two rotary kilns and an annual capacity of about 633,000 mt or 700,000 short tons (st), of which 363,000 mt (400,000 st) annually is scheduled for use in gas desulfurization by the Monongahela Power Co. at its Harrison, WV, powerplant. Cominco Inc. closed its Magmont Mine and mill in Iron County at the end of May 1994, due to depletion of reserves. The mine and mill complex had a rated capacity of more 900,000 mt (in excess of 1 million st) of ore per year. During its 26-year life, the mine produced more than 1.7 million mt (about 1.9 million st) of lead, 227,000 mt (about 250,000 st) of zinc, almost 61,700 mt (about 68,000 st) of copper, and in excess of 8 million troy ounces (249,000 kilograms) of silver with a combined value of about $1.5 billion. Exploration continued at a slightly increased rate from that of the previous few years, although some opposition to potential mining activities was occurring, especially on National Forest land. Activities included aeromagnetic surveying, leasing, and drilling.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
MISSOURI: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	163	r41,189	r$157,221	r$3.82	168	49,921	$223,022	$4.47
Dolomite	15	r1,461	r6,817	r4.67	16	2,198	9,069	4.13
Granite	2	W	W	3.73	2	W	W	6.08
Traprock	1	91	373	4.10	—	—	—	—
Sandstone	2	W	W	3.68	2	W	W	3.37
Miscellaneous stone	1	16	43	2.69	—	—	—	—
Total[2]	XX	r44,091	r169,419	3.84	XX	53,368	239,297	4.48
Total[3 4]	XX	r48,602	r169,419	r3.49	XX	58,828	239,297	4.07

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

MISSOURI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	170	$930	W	W	W	W
Coarse aggregate, graded[2]	(3)	(3)	W	W	589	$3,076
Fine aggregate (-3/8 inch)[4]	(3)	(3)	W	W	W	W
Coarse and fine aggregate[5]	(3)	(3)	W	W	883	4,154
Other construction materials	—	—	963	$4,016	1,447	14,669
Agricultural[6]	(3)	(3)	(3)	(3)	(7)	(7)
Chemical and metallurgical[8]	—	—	(3)	(3)	(7)	(7)
Special[9]	—	—	—	—	—	—
Other miscellaneous use[10]	—	—	—	—	27,397	6,466
Unspecified:[11]						
Actual	(3)	(3)	300	1,045	3,122	15,671
Estimated	602	3,187	1,095	5,025	638	3,079
Total[12]	3,956	24,286	3,239	13,707	7,782	47,115
Total[13 14]	4,361	24,286	3,570	13,707	8,578	47,115

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	275	1,091	1,041	4,471	W	W
Coarse aggregate, graded[2]	962	4,812	2,243	10,566	W	W
Fine aggregate (-3/8 inch)[4]	222	858	758	3,063	W	W
Coarse and fine aggregate[5]	2,245	9,472	3,291	11,814	663	2,903
Other construction materials	—	—	—	—	595	2,734
Agricultural[6]	(7)	(7)	42	136	(7)	(7)
Chemical and metallurgical[8]	(7)	(7)	(3)	(3)	(7)	(7)
Special[9]	—	—	—	—	(7)	(7)
Other miscellaneous use[10]	70	261	—	—	480	2,186
Unspecified:[11]						
Actual	—	—	(3)	(3)	2,815	13,524
Estimated	233	958	4,702	16,319	1,480	6,627
Total[12]	4,008	17,452	16,002	61,519	6,034	27,974
Total[13 14]	4,418	17,452	17,639	61,519	6,651	27,974

See footnotes at end of table.

TABLE 4—Continued

MISSOURI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

	District 7		District 8		Unspecified within all districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	55	203	W	W	(3)	(3)
Coarse aggregate, graded[2]	389	1,633	W	W	—	—
Fine aggregate (-3/8 inch)[4]	22	141	W	W	—	—
Coarse and fine aggregate[5]	310	1,327	4,130	14,961	(3)	(3)
Other construction materials	—	—	4,012	14,529	—	—
Agricultural[6]	(7)	(7)	(7)	(7)	—	—
Chemical and metallurgical[8]	(7)	(7)	(7)	(7)	—	—
Special[9]	—	—	—	—	—	—
Other miscellaneous use[10]	69	277	2,197	7,344	—	—
Unspecified:[11]						
Actual	—	—	297	3,270	—	—
Estimated	303	1,394	159	378	—	—
Total[12]	1,147	4,975	10,794	40,482	405	1,787
Total[13 14]	1,264	4,975	11,898	40,482	446	1,787

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

[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[2]Inlcudes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Withheld to avoid disclosing company proprietary data; included with "Total."

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[5]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.

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

[7]Withheld to avoid disclosing company proprietary data, included with "Other miscellaneous uses."

[8]Includes cement manufacture, chemical stone for alkali works, dead-burned dolomite, flux stone, and lime manufacture.

[9]Includes asphalt fillers or extenders and other fillers or extenders.

[10]Includes other specified uses not listed.

[11]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[14]Total shown in thousand short tons and thousand dollars.

MISSOURI

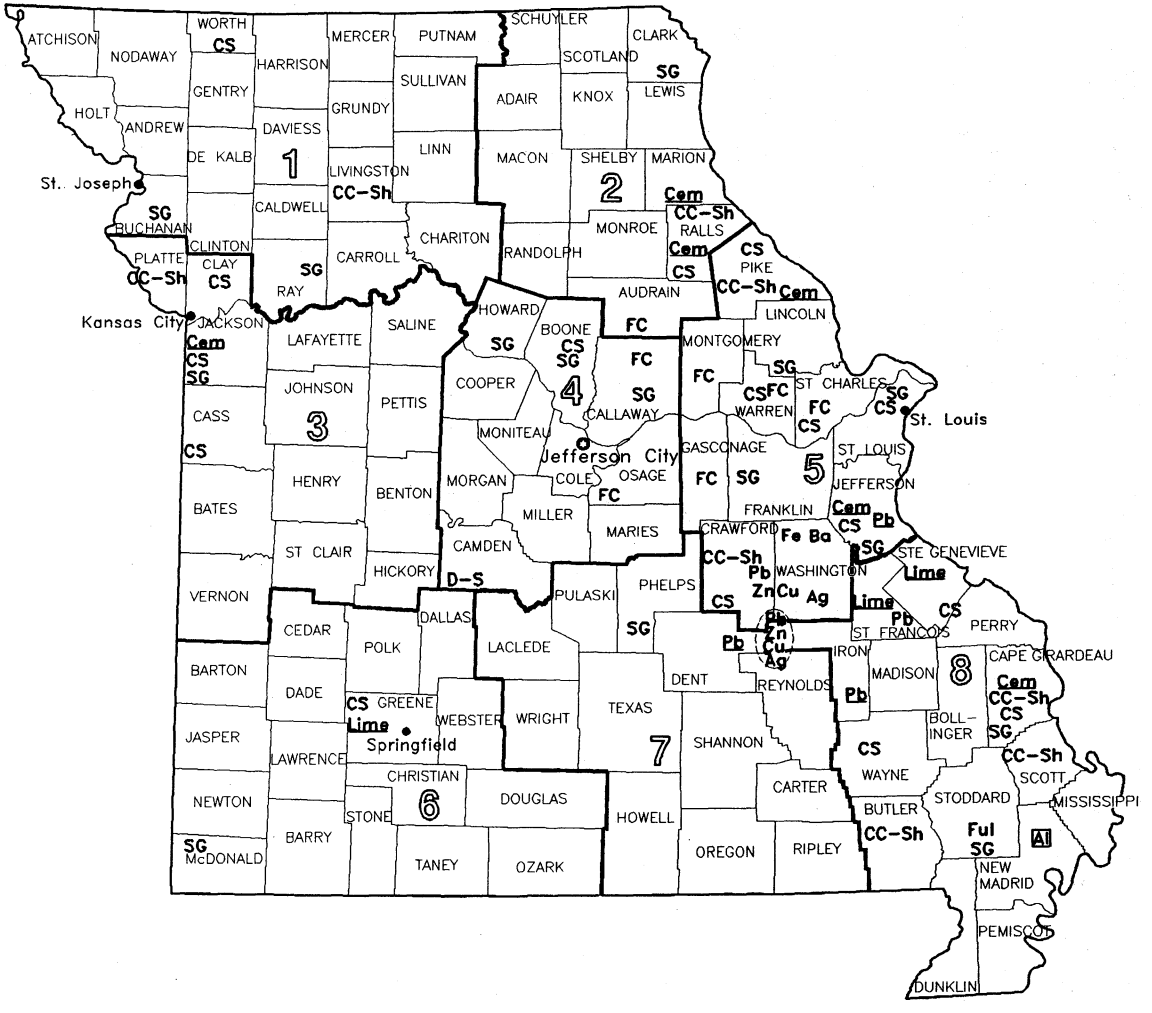
0 100 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

- Ag Silver
- Al Aluminum plant
- Ba Barite
- CC–Sh Common Clay & Shale
- Cem Cement plant
- CS Crushed Stone
- Cu Copper
- D–G Dimension Granite
- D–S Dimension Sandstone
- FC Fire Clay
- Fe Iron
- Ful Fuller's earth
- Lime Lime plant
- Pb Lead
- Pb Lead smelter
- SG Sand and Gravel
- Zn Zinc
- Concentration of mineral operations



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF MONTANA

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 Montana Bureau of Mines and Geology for collecting information on all nonfuel minerals.

Montana ranked 24th in the Nation in nonfuel mineral value[1] in 1994, down from 21st in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $491 million, a 2% increase from that of 1993. This small increase followed a 10% decrease in 1993 from that of 1992. The State accounted for 2% of the U.S. total. The above changes in value between 1992 and 1994 generally were due to an increase in the production of metallic minerals, except for gold, which was relatively stable. Overall, metallic minerals accounted for 77% of the State's total nonfuel mineral value. Portland cement represented nearly 40% of the State's industrial minerals value. In mineral production, Montana continued as the only U.S. producer of primary platinum and palladium. The State remained first in the production of talc and pyrophyllite, and fifth in copper, gold, zinc, and phosphate rock. The State's molybdenum production marginally decreased, dropping from fourth to fifth owing to significantly increased production in Idaho. The value of natural gemstones climbed significantly, making Montana one of the top seven U.S. producing States. Compared with 1993, the value of copper, palladium, platinum, zinc, molybdenum, talc and pyrophyllite, lead, gemstones, phosphate rock, dimension stone, barite, and iron ore increased. Decreases occurred in the value of gold, portland cement, construction sand and gravel, silver, lime, and crushed stone.

According to the Montana Bureau of Mines and Geology (MBMG), 1994 was a transition year for mineral production in the State. MBMG reported that while numerous mines closed, exploration activity doubled, and a significant number of mines prepared for new production. Some of the most encouraging exploration projects—all gold—were Basin Gulch, operated by Cable Mountain Mining Co.; Alder Gulch, owned by Kennecott Corp.; Grady Ranch, operated by Newmont Exploration Co.; the former Highlands Mine, an ASARCO Incorporated and Orvana Minerals

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MONTANA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	[2]35	[2]$101	W	W	W	W
Gemstones		NA	674	NA	$281	NA	$3,400
Gold[3]	kilograms	13,994	155,210	14,325	166,219	[4]13,600	[4]158,000
Palladium	do.	6,470	18,097	6,500	25,287	6,500	25,100
Platinum	do.	1,840	21,060	1,800	21,412	1,800	21,400
Sand and gravel (construction)	thousand metric tons	10,078	31,375	[e]10,000	[e]32,000	7,500	24,000
Silver[3]	metric tons	197	24,990	127	17,566	108	14,900
Stone (crushed)	thousand metric tons	[e]1,996	[e]6,200	2,816	10,375	[e]2,100	[e]8,000
Talc and pyrophyllite	metric tons	407,657	16,162	349,559	11,892	W	W
Zinc[3]	do.	20,588	26,498	W	W	W	W
Combined value of barite, cement [masonry (1992), portland], clays [bentonite, common (1993-94), fire (1993-94)], copper, iron ore (usable), lead, lime, molybdenum, peat, phosphate rock, sand and gravel (industrial), stone (dimension), vermiculite (1992), and values indicated by symbol W		XX	238,787	XX	198,998	XX	237,000
Total		XX	539,154	XX	484,030	XX	[5]492,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Data do not add to total shown because of independent rounding.

TABLE 2

MONTANA: CRUSHED STONE [1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	22	$62	$2.82
Coarse aggregate, graded:			
Concrete aggregate, coarse	14	46	3.29
Bituminous aggregate, coarse	W	W	4.08
Fine aggregate (-3/8 inch):			
Stone sand, concrete	9	29	3.22
Screening, undesignated	W	W	2.65
Coarse and fine aggregate:			
Graded road base or subbase	388	1,004	2.59
Unpaved road surfacing	W	W	3.53
Crusher run or fill or waste	(2)	(2)	1.33
Agricultural: Poultry grit and mineral food	(3)	(3)	16.30
Chemical and metallurgical:			
Cement manufacture	1,364	4,772	3.50
Lime manufacture	(3)	(3)	4.19
Flux stone	24	(3)	(3)
Chemical stone	(3)	(3)	5.10
Sulfur oxide removal	(3)	(3)	3.44
Special:			
Mine dusting or acid water treatment	3	9	3.00
Other specified uses not listed	262	1,322	5.05
Unspecified:[4]			
Actual	439	1,692	3.85
Estimated	197	956	4.85
Total[5]	2,816	10,375	3.68
Total[6 7]	3,104	10,375	3.34

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

[1]Includes granite, limestone, miscellaneous stone, quartzite, sandstone, traprock, and volcanic cinder and scoria.

[2]Less than 1/2 unit.

[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

[4]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[7]Total shown in thousand short tons and thousand dollars.

Corp. joint venture; and the Diamond Hill property, owned by Pegasus Gold, Inc. Numerous companies showed significant interest in searching Statewide for sapphire-bearing material. Permits were issued for the Stillwater Platinum Mine expansion, where construction of a 550-meter shaft was in progress; the East Boulder platinum and palladium project (both platinum-group metal operations owned and operated by Stillwater Mining Co.), and the Montanore copper and silver project, owned and operated by Noranda Minerals Corp. Permitting procedures continued for the New World Project involving copper, gold, and silver, for Noranda Exploration Co. Ltd.; the Rock Creek Project, a silver and copper project under development by Asarco; and the Seven-Up Pete Project, a gold joint venture between Phelps Dodge Corp. and Canyon Resources Corp. A 15,000-meter drilling program was completed on the Crevice gold ore body at the Mineral Hill Mine, owned by TVX Gold Inc. Cominco American Resources, Inc. proceeded with remining dredge tailings for garnet and gold at its Alder Gulch property. The Golden Sunlight Mine, producing gold for Placer Dome, Inc., temporarily suspended operations to stabilize the ground under its mill and waste-rock dumps and anticipated resuming operations by early 1995. Luzenac America Corp. purchased Montana Talc Co.'s mine to stabilize the ground adjacent to its ore-sorting facility. Pegasus Gold Inc. announced an expected closure during 1995 of its Beal Mountain Mine, a heap-leach gold and silver operation. Reclamation began both at Canyon Resources Corp. Kendall Mine heap-leach gold and silver operation, after the mining of remaining reserves was complete, and at Pegasus Gold Inc.'s Basin Creek Mine heap-leach gold operation; reserves at Basin Creek were determined to be uneconomic.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
MONTANA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	5	948	$2,875	$3.03	11	1,816	$7,066	$3.89
Granite	2	482	864	1.79	2	W	W	2.52
Traprock	1	W	W	5.00	3	W	W	2.94
Sandstone	2r	W	W	3.97	2	W	W	4.21
Volcanic cinder and scoria	1	14	32	2.29	3	3	7	2.33
Miscellaneous stone	—	—	—	—	1	17	51	3.00
Total[1]	XX	1,912	5,725	2.99	XX	2,816	10,375	3.68
Total[2 3]	XX	r2,108	5,725	2.72	XX	3,104	10,375	3.34

[r]Revised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

MONTANA

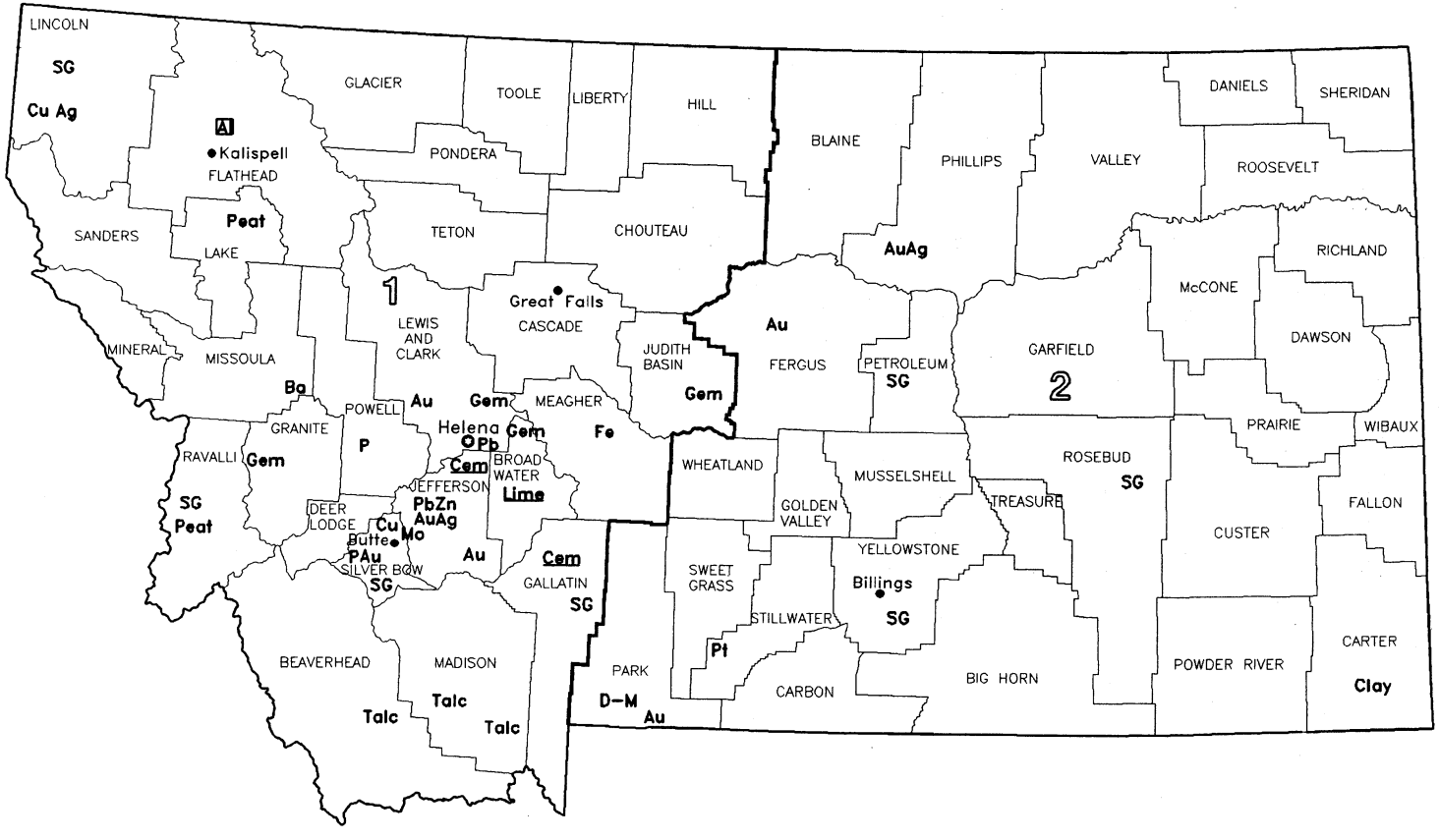
0 100 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Ag	Silver
A	Aluminum plant
Au	Gold
Ba	Barite
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
Cu	Copper
D–M	Dimension Marble
Fe	Iron
Gem	Gemstones
Gyp	Gypsum
Lime	Lime plant
Mo	Molybdenum
P	Phosphate rock plant
Peat	Peat
Pb	Lead Smelter
Pt	Platinum group metals
SG	Stone and Gravel
Talc	Talc minerals
Zn	Zinc



Principal Mineral–Producing Localities

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 University of Nebraska-Lincoln, Nebraska Geological Survey, for collecting information on all nonfuel minerals.

In 1994, for the 3d consecutive year, Nebraska ranked 42d among the 50 States in nonfuel mineral value,[1] according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $129 million, a more than 2% increase compared with that of 1993. This followed a 10% gain in value from 1992 to 1993. The State accounted for a little less than 0.5% of the U.S. total value. Based on estimated values, crushed stone overtook construction sand and gravel in 1994 as Nebraska's leading nonfuel mineral produced from the State's mines. These two mineral commodities accounted, respectively, for 33% and nearly 32% of the State's total nonfuel mineral value. The increased value of crushed stone the past 2 years, as well as a modest increase in construction sand and gravel in 1993, accounted for most of the State's rising percentages. Compared with that of 1993, the values of portland cement, crushed stone, masonry cement, and industrial sand and gravel increased. Decreases occurred in construction sand and gravel, common clays, lime, and gemstones.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Nebraska mines were significant producers of construction sand and gravel and crushed stone, while similar production of portland cement was achieved at the State's only cement manufacturing plant in Louisville in eastern Nebraska. Most nonfuel minerals produced in Nebraska were basic construction materials, and production continued to reflect construction trends in the State. Industrial sand was used for glass production and other miscellaneous applications. Uranium production in Nebraska is not included in USBM statistics because it is a fuel mineral. Metal production in the State, mostly raw steel, was not processed from ores mined in the State but from materials received from other domestic and foreign sources.

According to the Nebraska Geological Survey (NGS), the Nebraska's Conservation and Survey Division (CSD), of which NGS is a part, has been very active for the past several years, conducting studies of the State's geology and mineral resources. In 1994, CSD published the results of many of these studies and a variety of mining- and mineral-related publications, including directories of Nebraska mines and mineral operations. Some pertinent examples of these are as follows: *Mineral Facts for Nebraska*; *Nebraska Mineral Operations Review, 1993*; *GIS Data Base and Assessment of the Physical Natural Resources of the Cedar River Basin, Nebraska;* and, *Directory of Quarries, Pits and Mines in Nebraska.* Information concerning these and other similar geologic publications are available from the office of the State geologist, cited above.

[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEBRASKA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	183	$879	192	$932	202	$843
Gemstones		NA	645	NA	W	NA	W
Lime	thousand metric tons	26	1,741	24	1,233	12	617
Sand and gravel (construction)	do.	11,980	38,108	e12,900	e41,900	12,400	40,900
Stone (crushed)	do.	e5,352	e29,100	6,763	38,871	e7,200	e42,500
Combined value of cement, sand and gravel (industrial), and values indicated by symbol W		XX	44,317	XX	43,240	XX	44,000
Total		XX	114,790	XX	126,176	XX	[2]129,000

eEstimated. pPreliminary. NA Not available. W Withheld to avoid disclosing company proprietary data, value included with "Combined value" data. XX Not applicable.

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

[2]Data do not add to total shown because of independent rounding.

TABLE 2

NEBRASKA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	162	$1,397	$8.62
Coarse and fine aggregate:			
Unpaved road surfacing	692	4,772	6.90
Crusher run or fill or waste	311	1,797	5.78
Other construction materials[2]	1,394	9,155	6.57
Other specified uses not listed[3]	610	2,333	3.82
Unspecified:[4]			
Actual	3,593	19,416	5.40
Total[5]	6,763	38,871	5.75
Total[6 7]	7,455	38,871	5.21

[1]Includes limestone.
[2]Includes other coarse aggregate, concrete aggregates (coarse), bituminous aggregate (coarse), other graded coarse aggregate, screening (undesignated), other fine aggregate, graded road base or subbase, and other coarse or fine aggregates.
[3]Includes agricultural limestone, other agricultural uses, cement manufacture, and asphalt fillers or extenders.
[4]Includes production reported without a breakdown by use.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

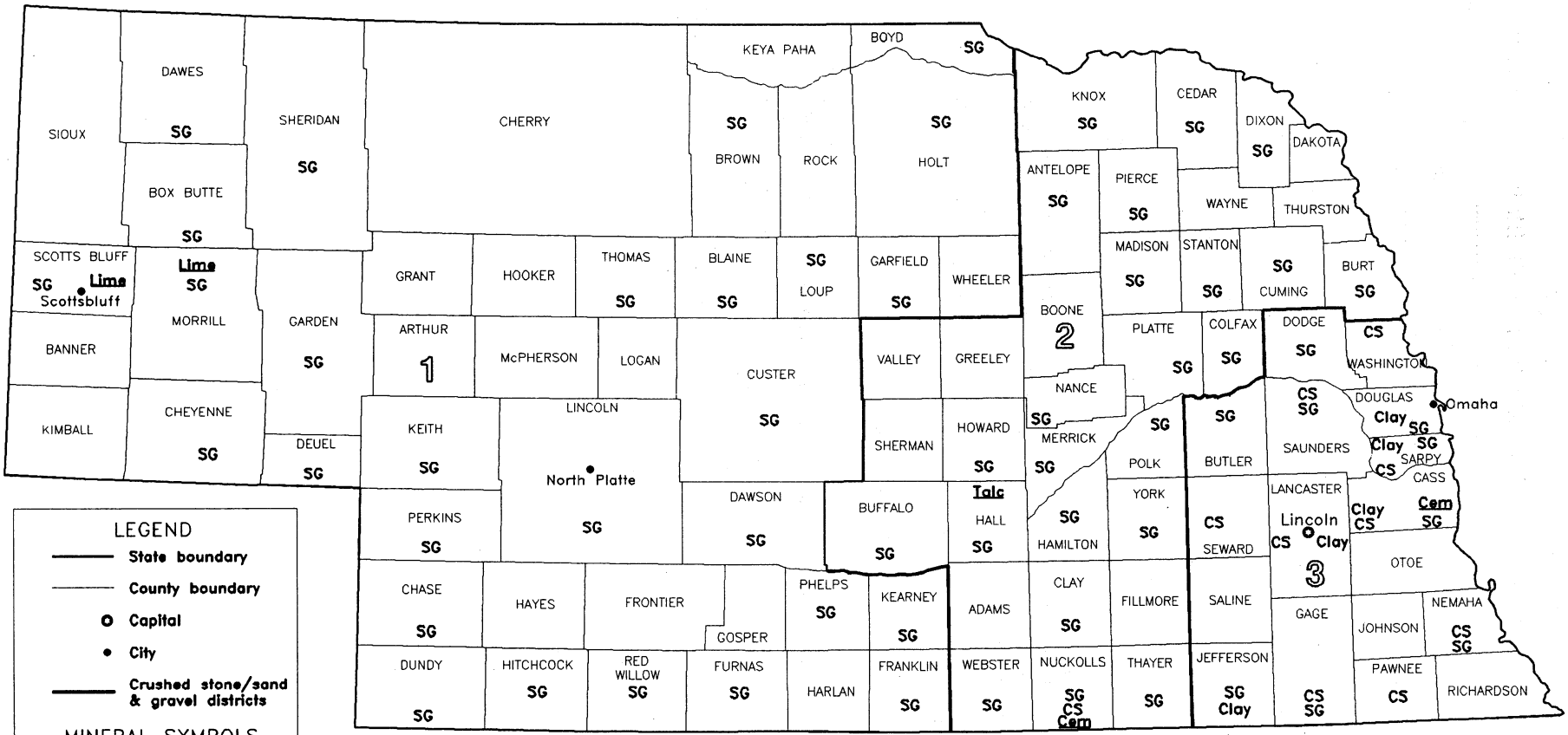
TABLE 3

NEBRASKA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	13	4,410	$23,328	$5.29	14	6,763	$38,871	$5.75
Total	XX	4,410	23,328	5.29	XX	6,763	38,871	5.75
Total[1 2]	XX	4,861	23,328	4.80	XX	7,455	38,871	5.21

XX Not applicable.
[1]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[2]Total shown in thousand short tons and thousand dollars.

NEBRASKA



LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Cem	Cement plant
Clay	Clay
CS	Crushed Stone
Lime	Lime plant
SG	Sand and Gravel
Talc	Talc plant

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF NEVADA

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 Nevada Bureau of Mines and Geology for collecting information on all nonfuel minerals.

Nevada, the Nation's leading gold and silver producer, ranked second in the Nation in nonfuel mineral value,[1] down from first in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 exceeded $2.8 billion, accounting for less than 1% increase over that of 1993. This followed a substantial 9% increase in 1993 over that of 1992. The State accounted for more than 8% of the U.S. total. While increases in the year's dollar value for gold, silver, and, less so, construction sand and gravel, were the main causes for the increase in nonfuel mineral value in 1993, a 16% decrease in silver in 1994 moderated the year's respectable economic gains in most other mineral commodities. Nevada continued as the top U.S. gold-producing State, representing 64% of total U.S. gold production and value. Gold represented almost 87% of Nevada's nonfuel mineral value; industrial minerals, 10%; and the remaining 3% was divided between silver, copper, and mercury. In estimated quantities of mineral produced in 1993, Nevada remained first in gold and silver, first of four barite producing States, the only State producing brucite and magnesite, the top State of three that produced mercury, second of four States producing diatomite, third of three States in fluorspar, fourth of four States in perlite, fifth in gypsum, and seventh in kaolin clays. Compared with 1993, the value of the following increased: gold, construction sand and gravel, portland cement, lime, crushed stone, lithium, copper, industrial sand and gravel, gypsum, and perlite. Decreases occurred in silver, diatomite, magnesite, barite, gemstones, salt, fluorspar, and brucite.

According to the Nevada Division of Minerals, the Nevada mineral industry continued to make contributions to the State and national economies with record breaking production of gold. Other mineral commodities mined and produced from the State's mines in relatively significant amounts included construction sand and gravel, silver, diatomite, lithium

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEVADA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Barite	thousand metric tons	W	W	242	$9,100	W	W
Clays[2]	do.	51	$7,722	16	3,434	16	$3,430
Gemstones		NA	661	NA	660	NA	300
Gold[3]	kilograms	r203,393	r2,255,837	210,763	2,445,590	e212,000	e2,460,000
Mercury	metric tons	64	373	W	W	W	W
Sand and gravel:							
Construction	thousand metric tons	22,020	93,585	e24,900	e107,600	26,400	116,200
Industrial	do.	482	W	480	W	W	W
Silver[3]	metric tons	614	77,724	713	98,546	607	82,900
Stone (crushed)	thousand metric tons	e1,089	e6,700	1,067	12,529	e1,750	e13,800
Combined value of brucite, cement (portland), clays [fuller's earth (1993-94), kaolin], copper, diatomite, fluorspar (1993-94), gypsum (crude), lime, lithium minerals, magnesite, perlite, salt, and values indicated by symbol W		XX	148,181	XX	143,798	XX	158,000
Total		XX	r2,590,783	XX	2,821,257	XX	[5]2,840,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content from ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Data do not add to total shown because of independent rounding.

carbonate, copper, gypsum, magnesite, and barite. In spite of uncertainty over possible mining law reform and establishment of Federal claim maintenance fees, mine expansions and exploration for new deposits, particularly precious metals, remained strong. New discoveries or projects engaged in the permitting process included Cortez Gold Mines Ltd.'s Pipeline deposit and Homestake Mining Co.'s Archimedes deposit. New mine openings included Alta Gold Co.'s Kinsley Mine and Battle Mountain Gold Co.'s Reona Mine. Although most of Nevada's precious metals were mined by open-pit methods, the trend toward underground mining continued to accelerate. Barrick Gold Inc. began construction of its underground Meikle Mine while others, including First/Miss Gold Inc., Hecla Mining Co., Independence Mining Company Inc., and Newmont Gold Co. were in various phases of underground work. Magma Copper Co.'s Nevada division received permits and began construction of new facilities in the Robinson district in preparation for large-scale copper production in 1996. According to Magma Copper, its Robinson property has reserves of over 230 million tons grading 0.55% copper and 0.38-gram-per-metric-ton (0.011-troy-ounce-per-ton) of gold. Annual production was expected to exceed 60,000 tons of copper, placing the property among the top 12 producing mines in the United States. Development costs were projected at about $300 million. Industry research conducted by various mining companies either operating or owning properties within the State continued on more efficient recovery techniques and featured advances in bio-leaching, autoclaving, roasting, and solvent extraction. Research also continued on reclamation techniques, including vegetative test plots.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
NEVADA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate, graded:			
Concrete aggregate, coarse	437	$4,791	$10.96
Bituminous surface-treatment aggregate	1	4	4.00
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	5.57
Coarse and fine aggregate:			
Graded road base or subbase	157	442	2.82
Unpaved road surfacing	50	200	4.00
Terrazzo and exposed aggregate	W	W	4.66
Other construction materials	127	682	5.37
Agricultural:			
Poultry grit and mineral food	(2)	(2)	33.07
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	3.91
Lime manufacture	(2)	(2)	16.50
Total[2]	1,607	12,529	7.80
Total[3 4]	1,771	12,529	7.07

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, miscellaneous stone, traprock, and volcanic cinder and scoria.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 3

NEVADA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r4	565	$3,563	$6.31	5	635	$2,602	$4.10
Dolomite	r1	W	W	4.92	4	379	4,396	11.60
Granite	r2	W	W	5.12	2	W	W	11.05
Traprock	2	W	W	3.61	1	W	W	3.98
Volcanic cinder and scoria	1	19	535	28.15	1	W	W	16.55
Miscellaneous stone	r2	W	W	4.50	2	W	W	4.69
Total	XX	1,087	6,527	6.00	XX	1,607	12,529	7.80
Total[1 2]	XX	r1,198	6,527	r5.45	XX	1,771	12,529	7.07

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

[1]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[2]Total shown in thousand short tons and thousand dollars.

TABLE 4

NEVADA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate, graded[1]	W	W	(2)	(2)
Fine aggregate (-3/8 inch)[3]	W	W	W	W
Coarse and fine aggregate[4]	W	W	W	W
Other construction materials	378	1,318	42	344
Agricultural[5]	(2)	(2)	—	—
Chemical and metallurgical[6]	(2)	(2)	(2)	(2)
Total[7]	975	3,801	632	8,728
Total[8 9]	1,074	3,801	697	8,728

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

[1]Includes concrete aggregate (coarse), and bituminous surface-treatment aggregate.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

[3]Includes stone sand (concrete).

[4]Includes graded road base or subbase, terrazzo and exposed aggregate and unpaved road surfacing.

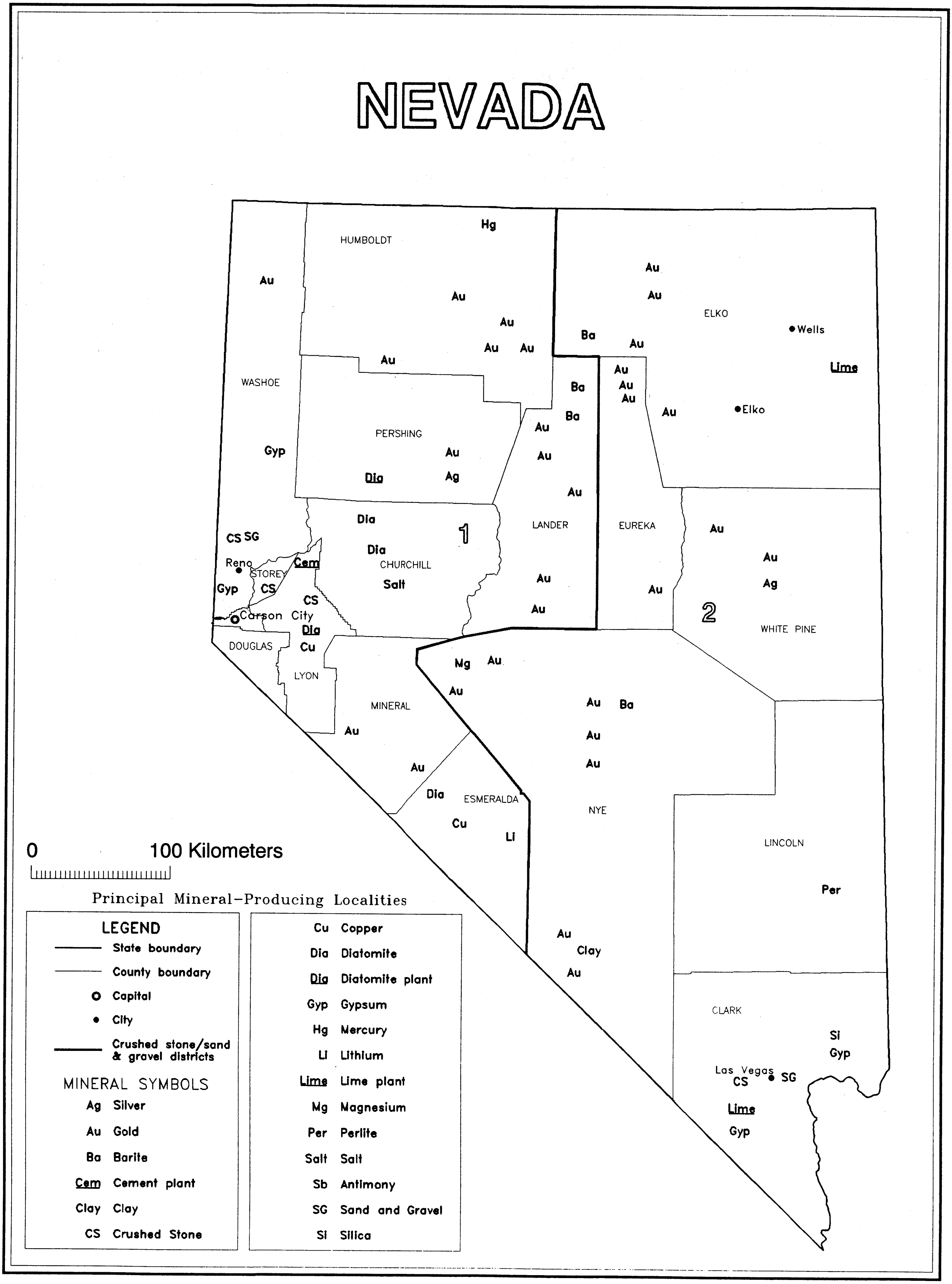
[5]Includes poultry grit and mineral food.

[6]Includes cement manufacture and lime manufacture.

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

[8]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[9]Total shown in thousand short tons and thousand dollars.


NEVADA
HUMBOLDT
ELKO
WASHOE
PERSHING
LANDER
EUREKA
CHURCHILL
STOREY
WHITE PINE
DOUGLAS
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MINERAL
ESMERALDA
NYE
LINCOLN
CLARK
Hg
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Ba
Lime
Gyp
Dia
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CS SG
Cem
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Salt
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Mg
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Gyp
SG
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2
Reno
Carson City
Wells
Elko
Las Vegas
0 100 Kilometers
Principal Mineral-Producing Localities
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Ag Silver
Au Gold
Ba Barite
Cem Cement plant
Clay Clay
CS Crushed Stone
Cu Copper
Dia Diatomite
Dia Diatomite plant
Gyp Gypsum
Hg Mercury
Li Lithium
Lime Lime plant
Mg Magnesium
Per Perlite
Salt Salt
Sb Antimony
SG Sand and Gravel
Si Silica

THE MINERAL INDUSTRY OF NEW HAMPSHIRE

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 New Hampshire Department of Environmental Services for collecting information on all nonfuel minerals.

In 1994, for the 11th consecutive year and the 14th in the past 15 years, New Hampshire ranked 47th in the Nation in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $37 million. The State accounted for about 0.10% of the U.S. total value. The value in 1994, as represented in table 1, is artificially low because data has been withheld to avoid disclosing company proprietary data. The withholding of data, however, did not affect the State's ranking. The State's mineral value actually increased in 1994, mostly resulting from increases in construction sand and gravel and crushed stone. Decreases in value for both commodities in 1993, compared with that of 1992, were moderated somewhat by a 59% increase in the value of dimension stone, resulting in a net 11.5% decrease for the year. Compared with those of 1993, the 1994 values of dimension stone and gemstones decreased.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, New Hampshire dropped from sixth to seventh in the production of dimension stone. The State's mines produced significant quantities of construction sand and gravel; while being a high-volume, low-value mineral commodity, it contributed the greatest amount to the State's nonfuel mineral value, as surveyed by the USBM, accounting for about two-thirds of the total. Crushed stone was the second leading nonfuel mineral commodity produced in the State.

[1]The term value in this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW HAMPSHIRE[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	W	W	3	$16	3	$16
Gemstones		NA	$4	NA	9	NA	W
Sand and gravel (construction)	thousand metric tons	5,839	25,570	e4,800	e20,700	6,000	26,400
Stone:							
Crushed	do.	e1,542	e11,000	1,390	7,794	e1,800	e10,500
Dimension	metric tons	e34,153	e5,460	53,106	8,674	W	W
Combined value of other industrial minerals and values indicated by symbol W		XX	(2)	XX	—	XX	(2)
Total		XX	[3]42,034	XX	37,193	XX	[3,4]36,900

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

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

[2]Value excluded to avoid disclosing company proprietary data.

[3]Partial total, excludes values which must be concealed to avoid disclosing company proprietary data.

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

TABLE 2

NEW HAMPSHIRE: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$7.14
Riprap and jetty stone	9	$27	3.00
Filter stone	27	85	3.15
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	6.85
Bituminous aggregate, coarse	W	W	5.55
Other graded coarse aggregate	W	W	7.14
Fine aggregate (3/8 inch):			
Stone sand, concrete	W	W	7.14
Stone sand, bituminous mix or seal	69	216	3.13
Coarse and fine aggregate:			
Graded road base or subbase	78	122	1.56
Other construction materials	702	4,303	6.13
Special:			
Asphalt fillers or extenders	(2)	(2)	7.20
Other fillers or extenders	(2)	(2)	2.20
Unspecified:[3]			
Actual	(2)	(2)	6.96
Estimated	381	2,416	6.34
Total[4]	1,390	7,794	5.61
Total[5 6]	1,532	7,794	5.09

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, miscellaneous stone, and traprock.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

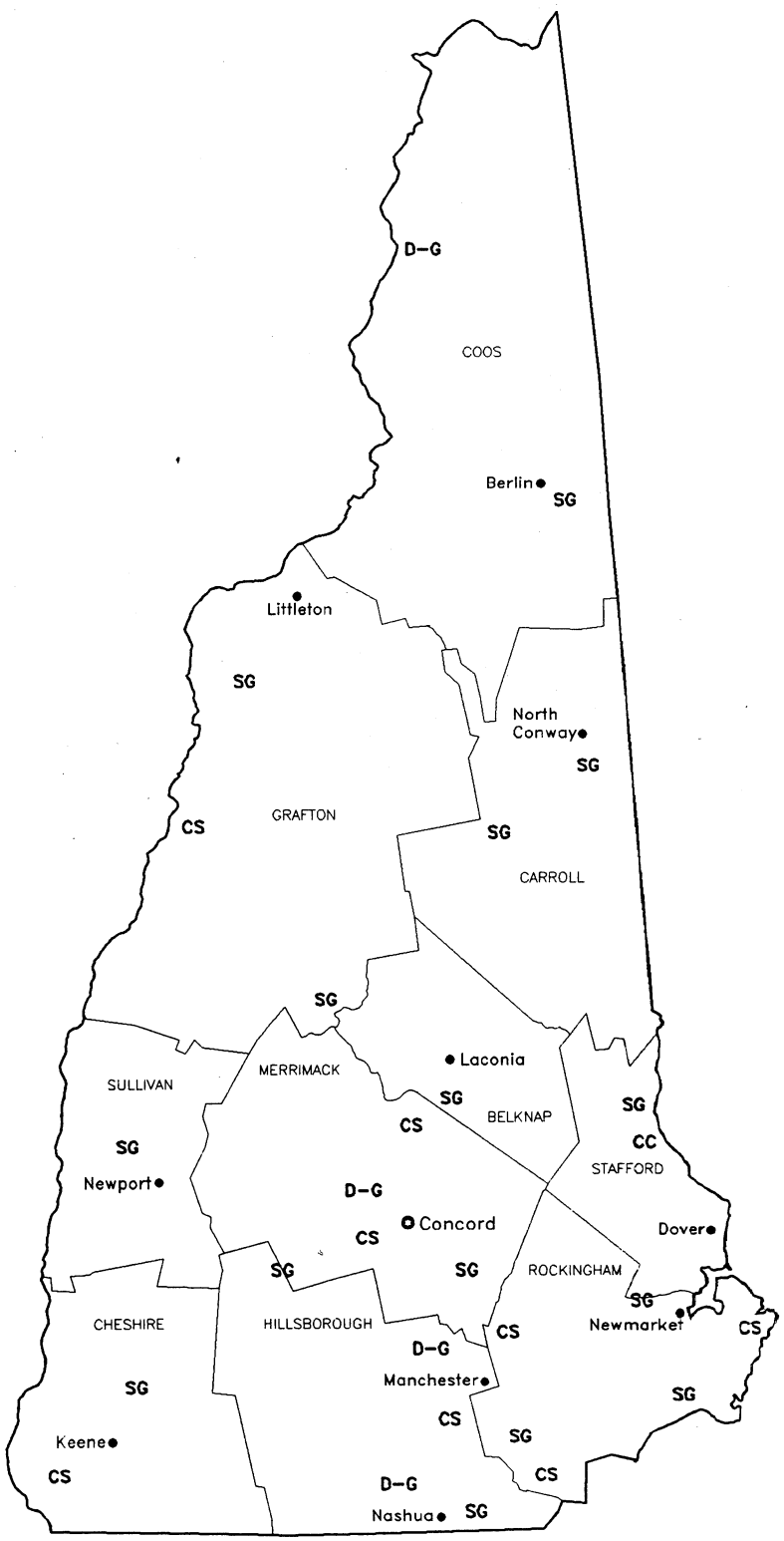
TABLE 3

NEW HAMPSHIRE: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	(1)	(1)	(1)	(1)	1	W	W	$7.06
Granite	r5	r467	r$3,006	$6.44	2	W	W	6.90
Traprock	r3	664	3,813	5.74	7	937	$4,665	4.98
Miscellaneous stone	(1)	(1)	(1)	(1)	1	W	W	6.98
Total[2]	XX	1,131	r6,818	6.03	XX	1,390	7,794	5.61
Total[3 4]	XX	r1,247	r6,818	5.47	XX	1,532	7,794	5.09

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes limestone and miscellaneous stone from State total to avoid disclosing company proprietary data.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

NEW HAMPSHIRE



0 20 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City

MINERAL SYMBOLS

- CC Common Clay
- CS Crushed Stone
- D–G Dimension Granite
- SG Sand and Gravel

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF NEW JERSEY

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 New Jersey Geological Survey, New Jersey Department of Environmental Protection & Energy, Division of Science and Research, for collecting information on all nonfuel minerals.

In 1994, for the third time in the past 5 years, New Jersey ranked 37th in the Nation in total nonfuel mineral value,[1] moving down from 36th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $274 million, a more than 4% increase compared with that of 1993. This followed a 9% increase from 1992 to 1993. The State accounted for almost 1% of the U.S. total value. Both in 1993 and 1994, the increases were largely attributable to crushed stone, the State's leading mineral commodity in terms of value. Increases in the value of industrial sand and gravel in 1993 and construction sand and gravel in 1994 contributed to the respective years' increases. Compared with those of 1993, the mineral commodity values in 1994 increased for crushed stone and construction sand and gravel. Decreases occurred for industrial sand and gravel, greensand, and common clays.

Taking into account USBM estimates of the quantities of minerals produced in the other 49 States during 1994, New Jersey remained the only State to produce greensand. Greensand is used as a water softening, filtration medium to remove soluble iron and manganese from well water and as an organic conditioner for soils. The State remained third in the production of industrial sand and gravel. While not being one of the top 10 producing States, New Jersey's mines produced significant quantities of crushed stone and construction sand and gravel.

According to the New Jersey Geological Survey, no heavy mineral mining activities took place in the State during 1994. Nord Industries, heavy mineral recovery operation, formerly the Glidden (ilmenite) Mine, in Jackson Township, Ocean County, continued in a standby mode, as reported by the current operator, Clayton Sand and Gravel Co. The property remained on standby following completion of cleanup activities involving low-level radioactive monazite at the site in early 1993. The cleanup had been ordered by the State Department of Environmental Protection (DEP) and the U.S. Nuclear Regulatory Commission (NRC). Yet to be completed was the removal of certain equipment; Clayton reportedly was offering for sale various equipment, such as spirals, magnetic separators, and conveyors, from plant buildings, after which it planned to install sand bagging equipment. During 1994, the company was dredging sand and trucking it onto the site and was reportedly considering construction of a cinder block manufacturing plant. Meanwhile, another former heavy minerals operation, the Heritage Minerals, Inc., property near Lakehurst in Manchester Township, Ocean County, was also in a standby status. The company kept current with all applicable permits to mine, pending changes in the economic situation. A

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW JERSEY[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$1	NA	$1	—	—
Sand and gravel:							
Construction	thousand metric tons	14,892	79,993	r14,700	r80,100	15,300	$84,900
Industrial	do.	1,377	24,727	1,826	28,640	W	W
Stone (crushed)[2]	do.	r15,513	r126,000	16,702	137,872	r17,500	r148,000
Combined value of clays [common, fire (1992-93)], greensand marl, peat, stone [crushed sandstone and miscellaneous (1992-93), crushed limestone and sandstone (1994)], titanium concentrates [ilmenite and rutile (1992)], zircon concentrates (1992), and value indicated by symbol W		XX	9,718	XX	15,734	XX	41,000
Total		XX	240,439	XX	262,347	XX	[3]274,000

r Estimated. p Preliminary. r Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2] Excludes certain stones; value included with "Combined value" data.

[3] Data do not add to total shown because of independent rounding.

portion of the plant remained involved in active DEP- and NRC-mandated cleanups of fuel oil and monazite, respectively. Heritage previously had recovered zircon and other materials from tailings piles at the former ASARCO, Inc., titanium plant operations. Radioactive elements of concern in the site's monazite- and zircon-rich sands included thorium and uranium, respectively.

In other developments, the New Jersey Concrete and Aggregate Association reported that the aggregate sector showed no growth in both the commercial and residential building sectors in 1994. The public works sector, however, experienced modest growth, in part due to an increase in highway projects and construction of a new Atlantic City Convention Center. Recent State requirements to add recycled material to newly manufactured asphalt and concrete has resulted in a nearly sixfold increase in the number of companies involved in recycling at the processing plants—from 2 or 3 companies 3 years ago, to as many as 18 currently. No new aggregate mines have been developed Statewide in the last 20 years. A map showing, by municipality, the names and locations of all known mines and prospects was released to the public during 1994. More detailed information related to those locations was being gathered in conjunction with the completion of county environmental information maps.

[1]The term value, referring throughout this document to that of nonfuel minerals, hear addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
NEW JERSEY: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$7.16
Riprap and jetty stone	140	$1,043	7.45
Filter stone	662	6,042	9.13
Other coarse aggregate	154	1,097	7.12
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,212	18,079	8.17
Bituminous aggregate, coarse	528	4,650	8.81
Bituminous surface-treatment aggregate	858	8,673	10.11
Railroad ballast	W	W	6.75
Other graded coarse aggregate	W	W	8.74
Fine aggregate (-3/8 inch):			
Screening, undesignated[2]	1,831	15,266	8.34
Coarse and fine aggregate:			
Graded road base or subbase	1,165	8,196	7.04
Crusher run or fill or waste	60	253	4.22
Other coarse and fine aggregate	W	W	7.00
Other construction materials	3,524	25,675	7.29
Roofing granules	(3)	(3)	22.04
Special: Asphalt fillers or extenders	(3)	(3)	7.53
Unspecified:[4]			
Actual	(3)	(3)	7.73
Estimated	910	10,030	11.02
Total[5]	16,702	137,872	8.25
Total[6 7]	18,411	137,872	7.49

W Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[1]Includes granite and traprock; excludes limestone and sandstone from State total to avoid disclosing company proprietary data.
[2]Includes stone sand (concrete), stone sand (bituminous mix or seal), and other fine aggregate.
[3]Withheld to avoid disclosing company proprietary data; included with "Total."
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

NEW JERSEY: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	2	417	$4,416	$10.59	(1)	(1)	(1)	(1)
Granite	r10	r6,833	r55,598	r8.14	10	7,966	$66,943	$8.40
Traprock	r10	r7,882	r59,272	r7.52	9	8,737	70,929	8.12
Sandstone	(2)	(2)	(2)	(2)	(1)	(1)	(1)	(1)
Miscellaneous stone	(2)	(2)	(2)	(2)	—	—	—	—
Total[3]	XX	15,132	r119,286	r7.88	XX	16,702	137,872	8.25
Total[4 5]	XX	16,680	r119,286	7.15	XX	18,411	137,872	7.49

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

[1]Excludes limestone and sandstone from State total to avoid disclosing company proprietary data.

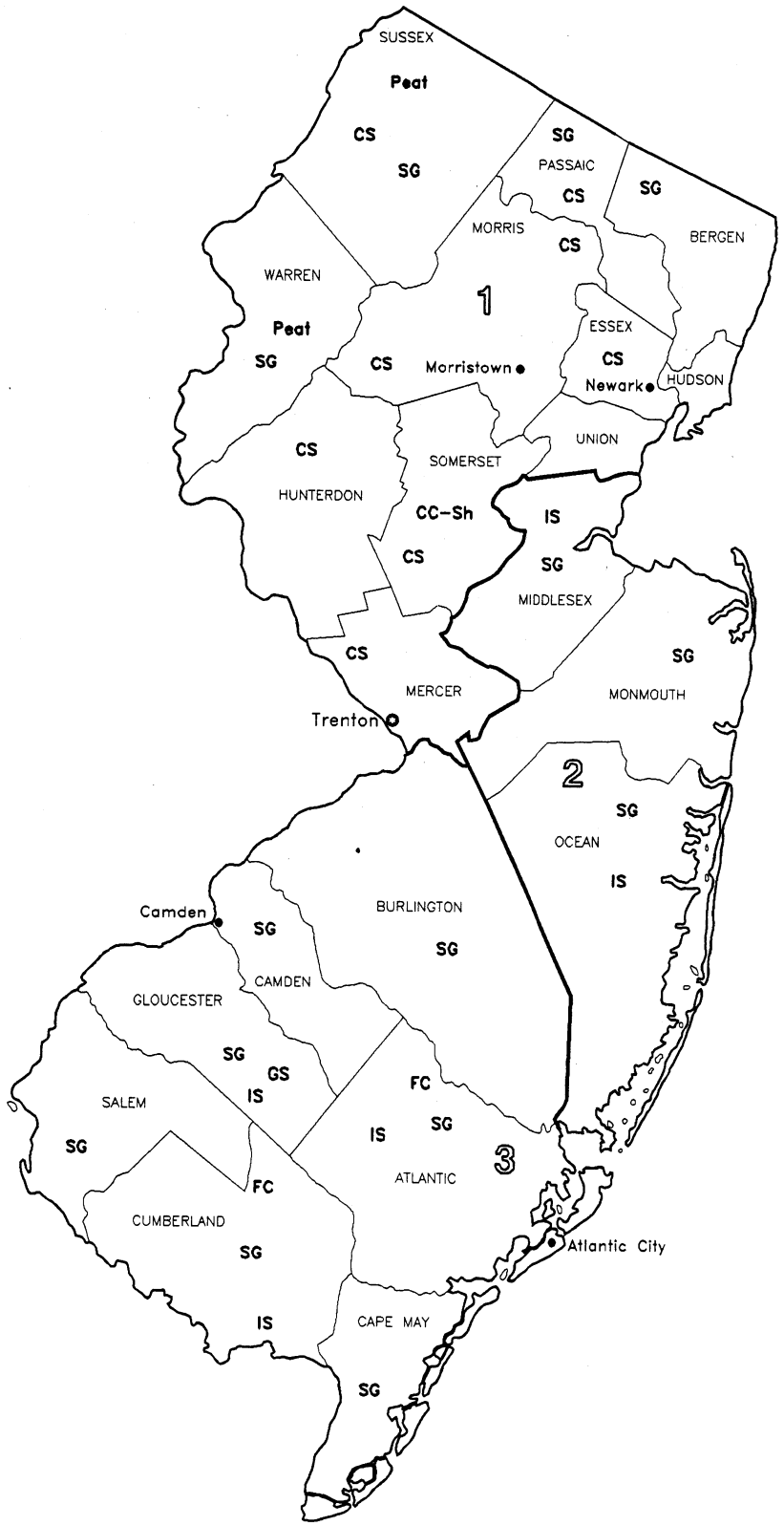
[2]Excludes sandstone and miscellaneous stone from State total to avoid disclosing company proprietary data.

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

NEW JERSEY



0 20 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

CC-Sh	Common Clay & Shale
CS	Crushed Stone
FC	Fire Clay
GS	Greensand
IS	Industrial Sand
Peat	Peat
SG	Sand and Gravel

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF NEW MEXICO

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 New Mexico Bureau of Mines and Mineral Resources for collecting information on all nonfuel minerals.

New Mexico ranked 12th nationally in total nonfuel mineral value[1] in 1994, climbing from 15th in 1993. The estimated value for 1994 was $914 million, a nearly 14% increase compared with that of 1993. This increase followed an 8% decrease that occurred from 1992 to 1993. The State accounted for about 3% of the U.S. total mineral value. The increased value of copper accounted for the largest portion of the substantial 1994 rise. Following a declining trend begun in 1990, copper's production value significantly rebounded in 1994 to above its 1992 value, while production also increased a small amount. Based on value, copper and potash are the top two nonfuel minerals, respectively, that are mined in the State. The value for the two combined amounted to 10 times the value of any other single mineral commodity produced in the State. While having much less impact than that of copper, construction sand and gravel, and portland cement values significantly increased in 1994 compared with those of 1993 and together provided most of the remainder of New Mexico's nonfuel mineral value increase for the year. In contrast, 1993 increases in portland cement, construction sand and gravel, and crushed stone values compared with those of 1992 only moderately offset fairly steep declines in copper and potash. Relative to 1993 State performance, mineral values during 1994 increased for the following: copper, construction sand and gravel, portland cement, crushed stone, perlite, salt, pumice, gypsum, masonry cement, iron ore, and common clays. Decreases occurred in potash, gold, silver, dimension stone, molybdenum, and gemstones.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, New Mexico continued to lead the Nation both in potash and perlite. The State also retained its 1993 rank in a number of other mineral commodities—it was second in pumice production, third in copper, and ninth in silver. In gypsum and gold production, New Mexico continued as 10th and 13th, respectively. The State climbed in rank from seventh to sixth in the production of iron ore, while dropping from second to

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW MEXICO[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2]	thousand metric tons	33	$79	33	$101	56	$129
Copper[3]	metric tons	211,337	500,504	224,305	452,771	229,000	545,000
Gemstones		NA	34	NA	10	NA	W
Gold[3]	kilograms	W	W	995	11,550	[4]933	[4]10,800
Potash	thousand metric tons	1,436	256,620	1,311	215,858	1,150	212,000
Sand and gravel (construction)	do.	10,170	46,176	[e]11,100	[e]51,100	13,500	63,400
Silver[3]	metric tons	W	W	22	3,089	19	2,630
Stone (crushed)	thousand metric tons	[e]2,722	[e]14,400	[5]3,503	[5]18,411	[e][5]3,800	[e][5]20,700
Combined value of cement, clays (fire), gypsum (crude), iron ore [usable (1993-94)], lead (1992), mica (scrap), molybdenum, perlite, pumice, salt, stone [crushed quartzite (1993-94), dimension], and values indicated by symbol W		XX	53,466	XX	51,159	XX	58,300
Total		XX	871,279	XX	804,049	XX	[6]914,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; value included with "Combined value" data.

[3]Recoverable content of ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Excludes certain stones; value included with "Combined value" data.

[6]Data does not add to total shown because of independent rounding.

third in mica and from fifth to sixth in molybdenum. In addition, New Mexico's mines produced significant quantities of construction sand and gravel and dimension stone, while similar production of portland cement was achieved at manufacturing plants within the State.

According to the New Mexico Bureau of Mines and Mineral Resources, promulgation of rules to implement the New Mexico Mining Act of 1993 dominated State mining news in 1994. Under the Act, which took effect on July 12, a "New Mexico Mining Commission" was established to oversee and enforce regulations covering most sectors of the hardrock mining industry Statewide. Excluded were operations involving the exploration for or extraction of potash, sand and gravel, caliche, borrow materials and quarry rock, petroleum products, coal, and geothermal resources, as well as smelting, refining, and other offsite activities. The new regulations required a permit for all other mining operations, such as gold, copper, and molybdenum, that produced "marketable" minerals for a total of at least 2 years after January 1, 1970. Permits were required under the new law for all similar new operations, applications for those currently in the planning stage being due by December 31, 1995. The regulations created a system of permit fees based upon the type and extent of operations. Permit applications for exploration programs were required to be filed no less than 120 days prior to commencement of exploration. A provision was included in the Act in which some very small operations might qualify for less stringent requirements under what would be categorized as "minimal impact status." State Bureau officials reported, "First indications are that the Act has had a decidedly negative impact on mining in general, and most specifically upon the smaller operations and exploration activity." The Mining Act met with some opposition, particularly from the small mining sector, and the constitutionality of the Act was being challenged in at least one lawsuit.

Phelps Dodge Corp. was the State's largest mining company, mining or producing copper at the Chino Mine, the Hurley smelter, and the Tyrone Mine, all in Grant County, and at the Playas smelter in Hidalgo County. Each company division achieved new production records or production milestones during the year. A major milestone at Chino at midyear was the production of the 2-billionth-short-ton (st), or more than 1.8 billion metric tons (mt) of ore, along with a record annual production of nearly 160,000 st, or 145,000 mt, of copper. The Hurley smelter established a record, casting 180,000 st (163,000 mt) of copper anode. Tyrone produced its 1-billionth-pound (more than 450,000 mt) of cathode copper in its solvent extraction-electrowinning plant, which began operations a decade ago. According to Phelps Dodge's annual report, nearly 250,000 st (almost 228,000 mt) of copper anode—another record—were cast at the Hidalgo smelter. Also, as a result of one of the few exploration programs in New Mexico in 1994 (especially for those at operating properties), Phelps Dodge substantially increased its ore reserves at both Chino and Tyrone.

Elsewhere, Royalstar Resources Ltd.'s garnet mining operation at its San Pedro Mine in Santa Fe County ended the year on standby status, owing to legal difficulties. State mining officials reported that the Santa Fe County Planning Commission insisted that the company obtain a new mining operation permit under the county's recently adopted mining regulations. However, Royalstar countered that San Pedro was an "active" operation under the county's regulations and that a new permit should not be required.

Alta Gold Corp. completed its purchase of the Copper Flat property, near Hillsboro in Sierra County, from Gold Express Corp. Alta was required to complete an environmental impact statement (EIS) before the U.S. Bureau of Land Management could grant approval to the company to resume mining operations. Alta reportedly planned to complete the EIS during 1995 in an effort to begin production the following year.

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[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

NEW MEXICO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	34	$280	$8.24
Filter stone	W	W	1.53
Other coarse aggregate	3	3	1.00
Coarse aggregate, graded:			
Concrete aggregate, coarse	269	957	3.56
Bituminous aggregate, coarse	172	1,102	6.41
Bituminous surface-treatment aggregate	250	1,752	7.01
Railroad ballast	W	W	7.16
Fine aggregate (-3/8 inch):			
Stone sand, concrete	93	653	7.02
Stone sand, bituminous mix or seal	7	32	4.57
Screening, undesignated	W	W	1.94
Other fine aggregate	W	W	10.48
Coarse and fine aggregates:			
Graded road base or subbase	547	1,957	3.58
Unpaved road surfacing	129	187	1.45
Terrazzo and exposed aggregate	147	1,626	11.06
Crusher run or fill or waste	33	113	3.42
Other construction materials	767	4,929	6.43
Roofing granules	W	W	13.40
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	4.32
Other specified uses not listed:	(2)	(2)	1.21
Unspecified:[3]			
Actual	(2)	(2)	4.21
Estimated	285	1,558	5.47
Total[4]	3,503	18,411	5.26
Total[5 6]	3,861	18,411	4.77

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

[1]Includes granite, limestone, sandstone, traprock, volcanic cinder and scoria, and miscellaneous stone; excludes quartzite from State total to avoid disclosing company proprietary data.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

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

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

[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[6]Total shown in thousand short tons and thousand dollars.

TABLE 3
NEW MEXICO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r22	r1,169	r$4,285	r$3.67	24	1,238	$5,234	$4.23
Granite	7	818	5,286	6.46	13	1,511	9,865	6.53
Traprock	2	113	267	2.36	1	168	371	2.21
Sandstone	r1	1	3	3.00	1	101	112	1.11
Quartzite	1	W	W	7.75	(1)	(1)	(1)	(1)
Volcanic cinder and scoria	9	241	2,142	8.89	9	277	1,852	6.69
Miscellaneous stone	2	W	W	4.34	3	207	977	4.72
Total[2]	XX	2,541	13,089	5.15	XX	3,503	18,411	5.26
Total[3 4]	XX	2,801	13,089	4.67	XX	3,861	18,411	4.77

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes quartzite from State total to avoid disclosing company proprietary data.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4
NEW MEXICO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[2]	32	W	8	W
Coarse aggregate, graded[3]	W	W	W	W
Fine aggregate (-3/8 inch)[4]	W	W	W	W
Coarse and fine aggregate[5]	657	3,158	203	764
Other construction materials[6]	1,379	8,476	173	1,192
Chemical and metallurgical[7]	(8)	(8)	—	—
Other miscellaneous uses[9]	(8)	(8)	(8)	(8)
Unspecified:[10]				
Actual	(8)	(8)	(8)	(8)
Estimated	22	106	263	1,452
Total[11]	2,838	14,983	665	3,428
Total[12 13]	3,128	14,983	733	3,428

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Excludes quartzite from State total to avoid disclosing company proprietary data.
[2]Include filter stone, riprap and jetty stone, and other coarse aggregate.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and railroad ballast.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[5]Includes graded road base or subbase, terrazzo and exposed aggregate, and crusher run (select material or fill).
[6]Includes roofing granules.
[7]Includes cement manufacture.
[8]Withheld to avoid disclosing company proprietary data; included with "Total."
[9]Includes other special uses not listed.
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.
[11]Data may not add to totals shown because of independent rounding.
[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[13]Total shown in thousand short tons and thousand dollars.

NEW MEXICO

0 100 Kilometers

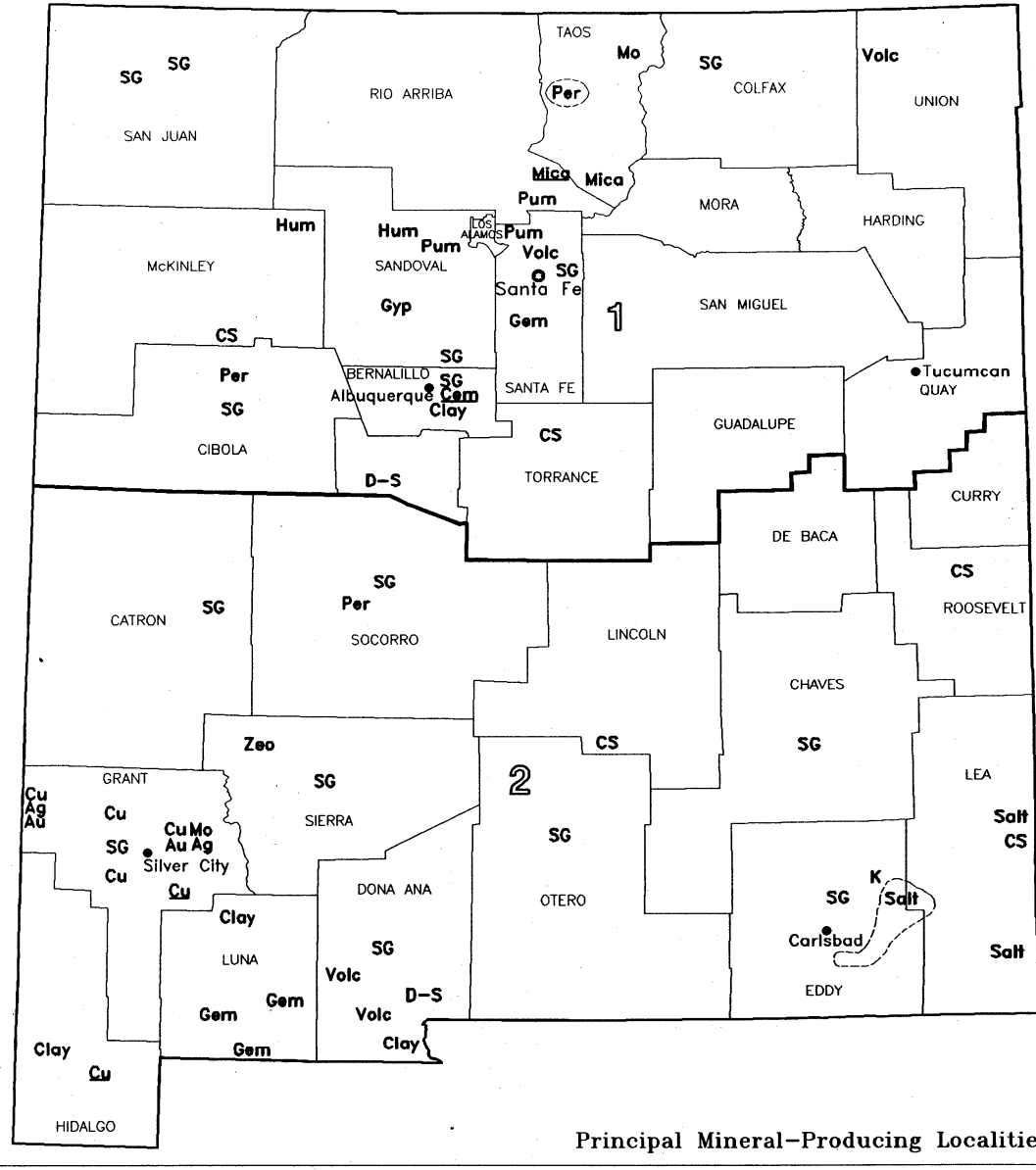
LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Ag	Silver
Au	Gold
Cem	Cement plant
Clay	Clay
CS	Crushed Stone
Cu	Copper
Cu	Copper plant
D–S	Dimension Stone
Gem	Gemstones
Gyp	Gypsum
Hum	Humate
K	Potash
Mica	Mica
Mica	Mica plant
Mo	Molybdenum
Per	Perlite
Pum	Pumice
Salt	Salt
SG	Sand and Gravel
Volc	Volcanic cinder
Zeo	Zeolites

Concentration of mineral operations



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF NEW YORK

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 New York Education Department, New York Geological Survey, for collecting information on all nonfuel minerals.

For the 6th time in the last 8 years, New York ranked 14th in the Nation in nonfuel mineral value,[1] down from 13th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $869 million, 2% increase over that of 1993. This increase followed the previous year's increase of 11% over that of 1992. The State accounted for a little less than 3% of the U.S. total. More than 90% of the State's nonfuel mineral value was derived from industrial minerals and mineral products, primarily salt, construction sand and gravel, crushed stone, portland cement, and less so, wollastonite. Most of the metal production and value was from zinc. While the estimated mineral production and value rose for most mineral commodities, the State's drop in rank resulted from slower overall mineral industry growth in the State as compared with more rapid growth in the State of Ohio. Decreases in portland cement and crushed stone affected growth most, both in terms of production and value; crushed stone alone dropped by about 12%. In estimated mineral production for 1994, New York remained the only major producer of wollastonite in the United States, second of two garnet producing States, third in salt and zinc, fourth in talc and pyrophyllite, and sixth in lead. The State dropped from sixth to seventh in the production of construction sand and gravel. Compared with 1993, the value of the following increased: salt, construction sand and gravel, zinc, wollastonite, crushed stone (traprock), talc and pyrophyllite, gypsum, dimension stone, garnet, peat, and lead. Decreases occurred in crushed stone, portland cement, common clays, industrial sand and gravel, silver, and gemstones.

According to the New York State Geological Survey, a 40,000-square-meter (422,500-square-foot) panel at the Akzo-Nobel Salt Co.'s Retsof salt mine, the largest underground salt mine in the world, collapsed underground at the 335-meter-level (1,100 feet) in March 1994. A seismic event measuring 3.6 on the Richter Scale was generated by the failure at the Livingston County mine. Two mammoth sink holes, measuring 185 meters (600-feet) in diameter, formed at the surface above the mine catastrophe and water from an adjacent aquifer began flooding the mine at a

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW YORK[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	W	W	75	$5,422	75	$5,420
Portland	do.	W	W	2,966	149,491	2,850	144,000
Clays	do.	415	$2,412	508	9,250	454	8,440
Gemstones		NA	170	NA	W	NA	W
Salt	thousand metric tons	4,703	164,729	5,619	191,491	6,050	200,000
Sand and gravel (construction)	do.	28,538	130,379	e34,900	e161,500	41,000	197,000
Stone:							
Crushed	do.	e33,384	e212,700	38,448	223,293	e33,500	e196,000
Dimension	metric tons	e16,526	e2,779	19,275	3,436	e21,400	e3,590
Combined value of emery (1993), garnet (abrasive), gypsum (crude), lead, peat, sand and gravel (industrial), silver, stone [crushed traprock (1993-94)], talc and pyrophyllite, wollastonite, zinc, and values indicated by symbol W		XX	252,578	XX	107,624	XX	115,000
Total		XX	765,747	XX	851,507	XX	[2]869,000

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

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

[2]Data do not add to total shown because of independent rounding.

rate of 75 million to 115 million liters (20 million to 30 million gallons) per day. Mining continued at a record pace in the unflooded portions of the mine. However, the mine, which has annually employed about 360 people, was expected to become completely flooded by late 1995. Increased output from Akzo-Nobel mines in Louisiana and Ohio and imports by Akzo-Nobel mitigated a potential shortage of road salt in the 14 northeastern States served by the company. Akzo-Nobel submitted an application to the New York State Department of Environmental Conservation (NYSDEC) for a new mine at Hamptons Corners in Groveland. The mine will require a $140 million investment and will employ 250 people when in full production. The State provided an incentive package to Akzo-Nobel worth $53 million to assist in the establishment of the new mine. A temporary task force was formed by the State of New York to investigate underground mineral mining regulations and address broad policy questions raised by the events surrounding the Retsof Mine collapse. New York's emery-producing mine, one of only two emery mines in the United States, remained closed after the Supreme Court of Westchester County granted a cross claim filed by NYSDEC concerning alleged violations of the existing mining permit and a 1991 Order of Consent. The Court revoked the permit and enjoined the present and any future owners from conducting mining activities at the site pending a decision by NYSDEC to issue a new mining permit. Emery, an extremely hard mineral, is used as an abrasive aggregate for nonskid, wear-resistant floors, pavements, and stair treads, and as a fine-grained abrasive in grinding and polishing. Already the world's leading supplier of wollastonite, NYCO, a division of NYCO Minerals Inc., made application to construct a new open pit mine at Oak Hill in Essex County. The Oak Hill deposit was discovered in 1988 and, when in full production, is expected to double the company' reserves, NYCO reported. Wollastonite is used as a high-performance mineral filler in paint, plastics, and ceramic wall tile, and as an asbestos replacement in thermal insulating board, brake shoes, etc. According to NYSDEC, 2,529 mines, 1,810 industry-owned and 719 government-owned, were active in the State at yearend 1994. The mines encompassed 16,840 hectares (41,609 acres), of which about 10% has been reclaimed.

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[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

NEW YORK: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	56	$518	$9.25
Riprap and jetty stone	524	3,851	7.35
Filter stone	130	945	7.27
Other coarse aggregate	22	140	6.36
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,660	17,854	6.71
Bituminous aggregate, coarse	7,989	51,303	6.42
Bituminous surface-treatment aggregate	804	4,519	5.62
Railroad ballast	174	1,075	6.18
Other graded coarse aggregate	W	W	6.56
Fine aggregate (-3/8 inch):			
Stone sand, concrete	51	375	7.35
Stone sand, bituminous mix or seal	1,514	8,824	5.83
Screening, undesignated	915	4,956	5.42
Other fine aggregate	50	323	6.46
Coarse and fine aggregates:			
Graded road base or subbase	3,677	18,347	4.99
Unpaved road surfacing	108	480	4.44
Terrazzo and exposed aggregate	47	1,948	41.45
Crusher run or fill or waste	7,315	41,094	5.62
Other coarse and fine aggregates	W	W	5.49
Other construction materials	1,534	9,459	6.17
Roofing granules	W	W	8.19
Agricultural:			
Agricultural limestone	(2)	(2)	8.66
Poultry grit and mineral food	5	140	28.00
Other agricultural uses	2	21	10.50
Chemical and metalurgical:			
Cement manufacture	3,722	12,863	3.46
Flux stone	(2)	(2)	6.07
Special:			
Other fillers or extenders	3	175	58.33
Unspecified:[3]			
Actual	4,217	26,868	6.37
Estimated	2,834	16,401	5.79
Total[4]	38,448	223,293	5.81
Total[5 6]	42,382	223,293	5.27

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

[1]Includes dolomite, granite, limestone, limestone-dolomite, marble, miscellaneous stone, sandstone, and traprock; excludes traprock from State total to avoid disclosing company proprietary data.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

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

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

[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

NEW YORK: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	68	22,285	$116,359	$5.22	69	27,784		$5.41
Dolomite	10	7,123	58,695	8.24	13	7,489	56,069	7.49
Marble	1	77	3,354	43.56	1	75	2,423	32.31
Granite	6	913	5,697	6.24	9	1,435	9,102	6.34
Traprock	2	W	W	10.60	2	W	(2)	(2)
Sandstone	4	W	W	6.71	5	623	4,518	7.25
Miscellaneous stone	1	15	43	2.87	2	W	W	W
Total[3]	XX	31,634	195,639	6.18	XX	38,448	223,293	5.81
Total[4 5]	XX	34,871	195,639	5.61	XX	42,382	223,293	5.27

XX Not applicable. W Withheld to avoid disclosing company proprietary data included with "Total."

[1]Includes "Limestone - dolomite," reported with no distinction between the two.

[2]Excludes traprock value from State total to avoid disclosing company proprietary data.

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

TABLE 4

NEW YORK: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	—	—	184	1,653	W	W	W	W
Coarse aggregate, graded[3]	—	—	W	W	1,078	6,928	1,476	7,132
Fine aggregate (-3/8 inch)[4]	—	—	W	W	W	W	W	W
Coarse and fine aggregate[5]	—	—	642	4,743	1,356	6,476	W	W
Other construction materials[6]	—	—	5,512	40,768	605	4,069	1,126	5,161
Agricultural[7]	—	—	(8)	(8)	(8)	(8)	(8)	(8)
Chemical and metallurgical[9]	—	—	—	—	(8)	(8)	(8)	(8)
Special[10]	—	—	—	—	—	—	—	—
Unspecified:[11]								
Actual	—	—	(8)	(8)	2,595	16,235	—	—
Estimated	—	—	190	1,888	—	—	8	88
Total[12]	—	—	7,158	53,254	8,733	44,964	3,276	14,163
Total[13 14]	—	—	7,890	53,254	9,626	44,964	3,611	14,163

	District 5		District 6		District 7		District 8	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	W	W	131	781	214	1,663	—	—
Coarse aggregate, graded[3]	W	W	1,111	6,416	1,256	7,480	(8)	(8)
Fine aggregate (-3/8 inch)[4]	W	W	643	3,472	W	W	(8)	(8)
Coarse and fine aggregate[5]	1,843	10,533	W	W	W	W	(8)	(8)
Other construction materials[6]	2,521	14,474	2,194	12,081	3,723	20,832	—	—
Agricultural[7]	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)
Chemical and metallurgical[9]	(8)	(8)	—	—	—	—	—	—
Special[10]	3	175	—	—	—	—	—	—
Unspecified:[11]								
Actual	55	247	(8)	(8)	(8)	(8)	—	—
Estimated	133	748	—	—	908	5,572	1,594	8,714
Total[12]	4,579	26,558	4,346	24,474	6,787	39,707	3,569	20,173
Total[13 14]	5,047	26,558	4,791	24,474	7,481	39,707	3,934	20,173

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

[1]Excludes traprock value from State total to avoid disclosing company proprietary data.

[2]Include filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[5]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.

[6]Includes roofing granules.

[7]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

[8]Withheld to avoid disclosing company proprietary data; included with "Total."

[9]Includes cement manufacture and flux stone.

[10]Includes other fillers or extenders.

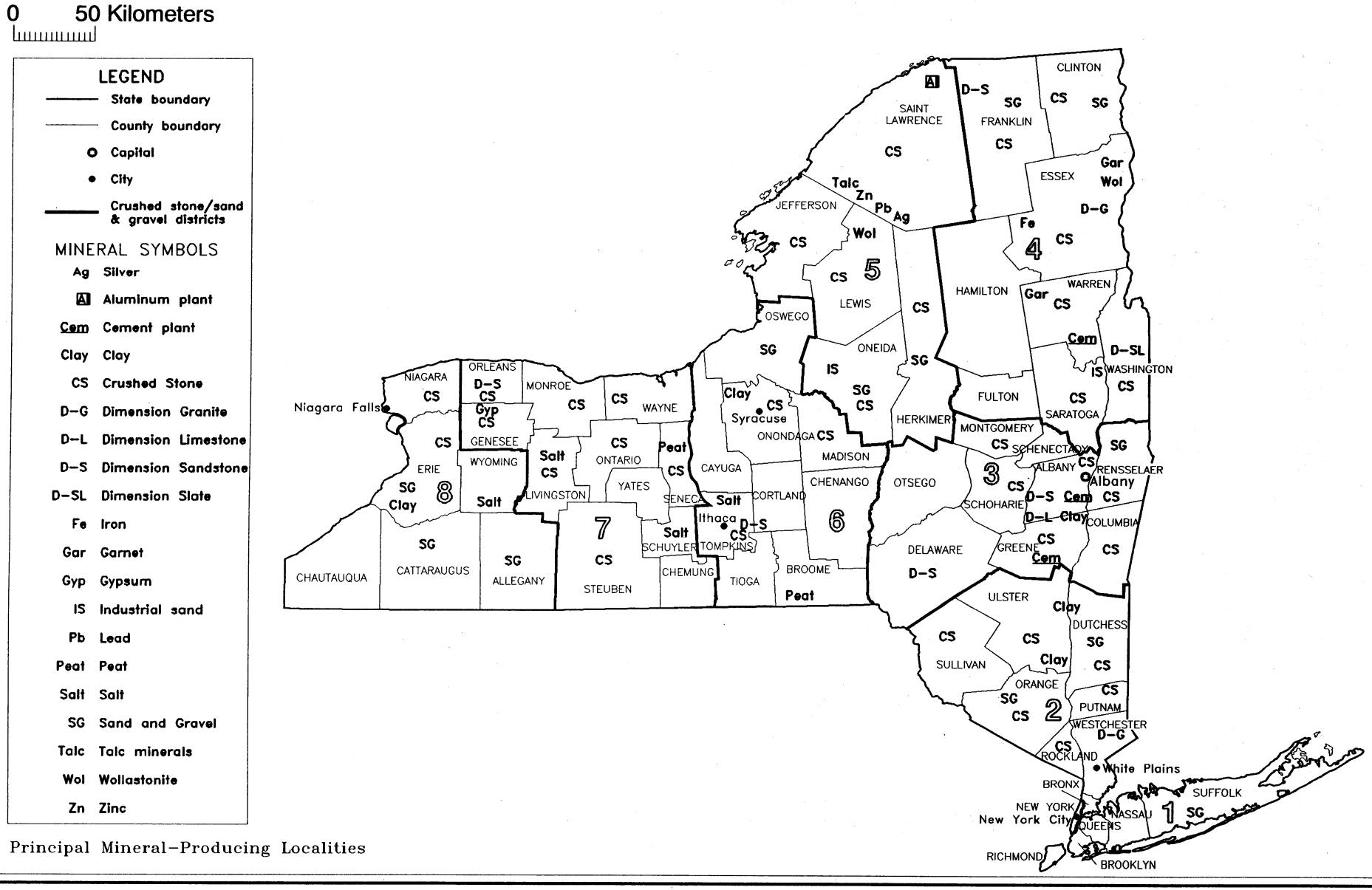
[11]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[14]Total shown in thousand short tons and thousand dollars.

NEW YORK


0 50 Kilometers
LEGEND
State boundary
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Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Ag Silver
Al Aluminum plant
Cem Cement plant
Clay Clay
CS Crushed Stone
D–G Dimension Granite
D–L Dimension Limestone
D–S Dimension Sandstone
D–SL Dimension Slate
Fe Iron
Gar Garnet
Gyp Gypsum
IS Industrial sand
Pb Lead
Peat Peat
Salt Salt
SG Sand and Gravel
Talc Talc minerals
Wol Wollastonite
Zn Zinc
Principal Mineral–Producing Localities
Niagara Falls
NIAGARA
ORLEANS
MONROE
WAYNE
GENESEE
WYOMING
LIVINGSTON
ONTARIO
YATES
SENECA
ERIE
CHAUTAUQUA
CATTARAUGUS
ALLEGANY
STEUBEN
SCHUYLER
CHEMUNG
TOMPKINS
Ithaca
TIOGA
BROOME
CORTLAND
CAYUGA
Syracuse
ONONDAGA
OSWEGO
MADISON
CHENANGO
OTSEGO
DELAWARE
SULLIVAN
ULSTER
GREENE
SCHOHARIE
ALBANY
Albany
RENSSELAER
SCHENECTADY
MONTGOMERY
FULTON
HERKIMER
ONEIDA
LEWIS
JEFFERSON
SAINT LAWRENCE
FRANKLIN
CLINTON
ESSEX
HAMILTON
WARREN
SARATOGA
WASHINGTON
COLUMBIA
DUTCHESS
ORANGE
PUTNAM
WESTCHESTER
ROCKLAND
White Plains
BRONX
NEW YORK
New York City
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THE MINERAL INDUSTRY OF NORTH CAROLINA

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 Division of Land Resources, North Carolina Department of Environment, Health, and Natural Resources, for collecting information all nonfuel minerals.

In 1994, for the third year in a row, North Carolina ranked 17th nationally in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines. The estimated value for 1994 exceeded $700 million, an increase of more than 14% above that of 1993. This followed a gain of about 4% in 1993 over that of 1992. The State accounted for 2% of the U.S. total. The commodities crushed stone, construction sand and gravel, dimension stone, phosphate rock, and lithium compounds had the most impact on the changing values of the last 2 years. The first three had significant increases between 1992-94. The State's overall mineral value gain in 1993 was moderated by more than a 15% decrease for phosphate rock and nearly a 17% drop for lithium compounds. Based on preliminary 1994 values, both mineral commodities rebounded: phosphate rock value was up almost 19% above that of 1993 to little more than the value in 1992, and lithium compound values were up by 6%. Compared with that of 1993, increases occurred in the value of the following mineral commodities in 1994: crushed stone, phosphate rock, construction sand and gravel, lithium, industrial sand and gravel, dimension stone, crushed quartzite and slate, mica, olivine, talc and pyrophyllite, and peat. Decreases occurred in feldspar, common clays, and gemstones.

The mines of North Carolina exclusively have been producers of industrial minerals since the early 1970's, in particular with the 1971 closing of the Tungsten Queen Mine, an underground mine located in Vance County. Conversely, significant exploration for gold has occurred during the last several years. Although no metals are currently mined in North Carolina, metals refined from ore shipped into the State or from recycled materials have played an important role in the State's mineral industry. Included in this group are aluminum, chromium, cobalt, copper, ferroalloys, steel, titanium, and tungsten. In estimated mineral production for 1994, North Carolina remained first in feldspar, first of two States that produced lithium and olivine, first of five mica-producing States, second in phosphate rock, and fifth in talc and pyrophyllite. While the State climbed from 8th to 5th in the production of industrial sand and gravel and from 10th

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NORTH CAROLINA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2]	thousand metric tons	2,120	$9,775	2,381	$11,165	2,200	$11,100
Feldspar	metric tons	438,624	15,498	471,879	16,687	448,000	16,400
Gemstones		NA	1,219	NA	546	NA	W
Mica (scrap)	thousand metric tons	51	2,967	51	2,696	56	2,950
Peat	do.	W	108	W	162	W	W
Sand and gravel:							
Construction	do.	9,283	42,717	e11,100	e53,800	12,000	59,400
Industrial	do.	1,088	17,533	1,344	18,597	W	W
Stone:							
Crushed[3]	do.	e44,089	e262,400	47,787	297,657	e52,000	e338,000
Dimension	metric tons	e23,014	e7,469	31,733	12,268	e51,700	e21,700
Combined value of clays (kaolin), lithium minerals, olivine, phosphate rock, stone [crushed quartzite, slate and volcanic cinder (1993-94), volcanic cinder (1992)], talc and pyrophyllite, and values indicated by symbol W		XX	235,962	XX	203,812	XX	255,000
Total		XX	595,648	XX	617,390	XX	e705,000

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

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

[2]Excludes certain clays; value included with "Combined value" data.

[3]Excludes certain stones; value included with "Combined value" data.

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

to 6th in that of dimension stone, it dropped from 1st to 3d in common clays.

According to the Division of Land Resources (DLR), North Carolina Department of Environment, Health and Natural Resources, a Nashville, TN, firm, Franklin Industrial Minerals Co., acquired 100% ownership of KMG Minerals Inc., the largest domestic producer of ground mica. Franklin reported that the KMG operations at Kings Mountain, NC, have a capacity of up to 27,000 metric tons per year of gravity-separated, surface-treated and untreated mica, in addition to secondary production of both floated silica and potassium feldspar for glass applications and ball clays for ceramic brick and refractory applications.

In other developments, Unimin Corp. bought Applied Industrial Minerals Corp.'s olivine mine, the Daybrook Mine. State and USDA Forest Service officials reported that a number of efforts to develop gold properties were underway at several locations on the State's national forest lands. Three prospecting permits were issued to a joint venture involving Battle Mountain Gold Co. and Cominco American Resources, Inc., by the U.S. Bureau of Land Management in the Uwharrie National Forest in Montgomery and Randolph Counties. Meanwhile, ASARCO Incorporated drilled six holes and applied for a permit to drill another in search for gold in the same south-central counties, while J. B. Morris also was prospecting for gold by dewatering and taking samples from the historical Tebe Saunders Mine, where mining originally began in the latter 1800's, in Montgomery County. Elsewhere, BHP was conducting a copper-zinc exploration program under a special use prospecting permit in the Nantahala National Forest near the Tennessee border. The North Carolina Geological Survey (NCGS), in cooperation with DLR, published its annual report *Permitted Active and Inactive Mining Operations in North Carolina*, to include mining activity as of June 1994. It provided a comprehensive listing of permitted mines by county and commodity and included historical data on permitting and reclamation statistics, mineral exploration and production news (including activity on Forest Service lands as well as non-Federal lands), changes in regulations, legislation, and sources of geological and mineral processing information and topographic maps in the State. The 1994 report was particularly significant because it was written at the conclusion of a very active permitting cycle, both for new permits and the withdrawal of permits. Future editions will be published at the end of the calendar year, rather than June, and all are available for purchase from the NCGS.

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[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

NORTH CAROLINA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	481	$1,932	$4.02
Riprap and jetty stone	523	4,150	7.93
Filter stone	179	1,194	6.67
Other coarse aggregate	W	W	3.28
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,064	20,612	6.73
Bituminous aggregate, coarse	1,953	14,622	7.49
Bituminous surface-treatment aggregate	211	1,393	6.60
Railroad ballast	1,404	6,480	4.62
Other graded coarse aggregate	W	W	6.26
Fine aggregate (-3/8 inch):			
Stone sand, concrete	269	1,056	3.93
Stone sand, bituminous mix or seal	320	1,670	5.22
Screening, undesignated	1,839	8,798	4.78
Coarse and fine aggregates:			
Graded road base or subbase	6,640	33,130	4.99
Unpaved road surfacing	521	3,187	6.12
Terrazzo and exposed aggregate	W	W	11.02
Crusher run or fill or waste	1,050	6,108	5.82
Other coarse and fine aggregates	W	W	5.87
Other construction materials	810	6,176	7.62
Agricultural:			
Agricultural limestone	(2)	(2)	5.51
Poultry grit and mineral food	(2)	(2)	8.41
Special:			
Mine dusting or acid water treament	(2)	(2)	15.00
Other fillers or extenders	2	14	7.00
Unspecified:[3]			
Actual	27,339	180,408	6.60
Estimated	1,151	6,522	5.67
Total[4]	47,787	297,657	6.23
Total[5 6]	52,676	297,657	5.65

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

[1]Includes dolomite, granite, limestone, marl, miscellaneous stone, and traprock; excludes quartzite, slate, and volcanic cinder from State total to avoid disclosing company proprietary data.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

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

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

[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

NORTH CAROLINA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993[1]			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	8	3,472	$20,941	$6.03	9	3,454	$23,626	$6.84
Dolomite	1	160	1,075	6.72	1	179	1,254	7.01
Calcareous marl	4	267	331	1.24	3	60	257	4.28
Granite	69	34,559	198,834	5.75	70	40,090	246,229	6.14
Traprock	4	2,303	14,374	6.24	4	2,212	14,921	6.75
Miscellaneous stone	3	1,436	8,365	5.83	3	1,792	11,371	6.35
Total[2]	XX	r42,196	r243,919	r5.78	XX	47,787	297,657	6.23
Total[3 4]	XX	r46,513	r243,919	r5.24	XX	52,676	297,657	5.65

rRevised. XX Not applicable.

[1]Excludes quartzite, slate, and volcanic cinder and scoria from State total to avoid disclosing company proprietary data.

[2]Data may add to totals shown because of independent rounding.

[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

NORTH CAROLINA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	340	2,363	W	W	(3)	(3)
Coarse aggregate, graded[4]	2,393	14,305	W	W	W	W
Fine aggregate (-3/8 inch)[5]	716	4,150	W	W	W	W
Coarse and fine aggregate[6]	3,520	19,547	W	W	W	W
Other construction materials	153	1,130	10,272	58,721	1,353	8,253
Agricultural[7]	(3)	(3)	—	—	(3)	(3)
Special[8]	(3)	(3)	—	—	—	—
Unspecified:[9]						
Actual	447	2,683	14,632	95,464	12,260	82,262
Estimated	82	157	678	3,615	392	3,750
Total[10]	7,668	44,428	25,581	157,798	14,538	95,431
Total[11 12]	8,453	44,428	28,198	157,798	16,025	95,431

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

[1]Excludes quartzite, slate, and volcanic cinder and scoria from State total to avoid disclosing company proprietary data.

[2]Include filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[3]Withheld to avoid disclosing company proprietary data; included with "Total."

[4]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[5]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).

[6]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.

[7]Includes agricultural limestone and poultry grit and mineral food.

[8]Includes mine dusting or acid water treatment, and other fillers or extender.

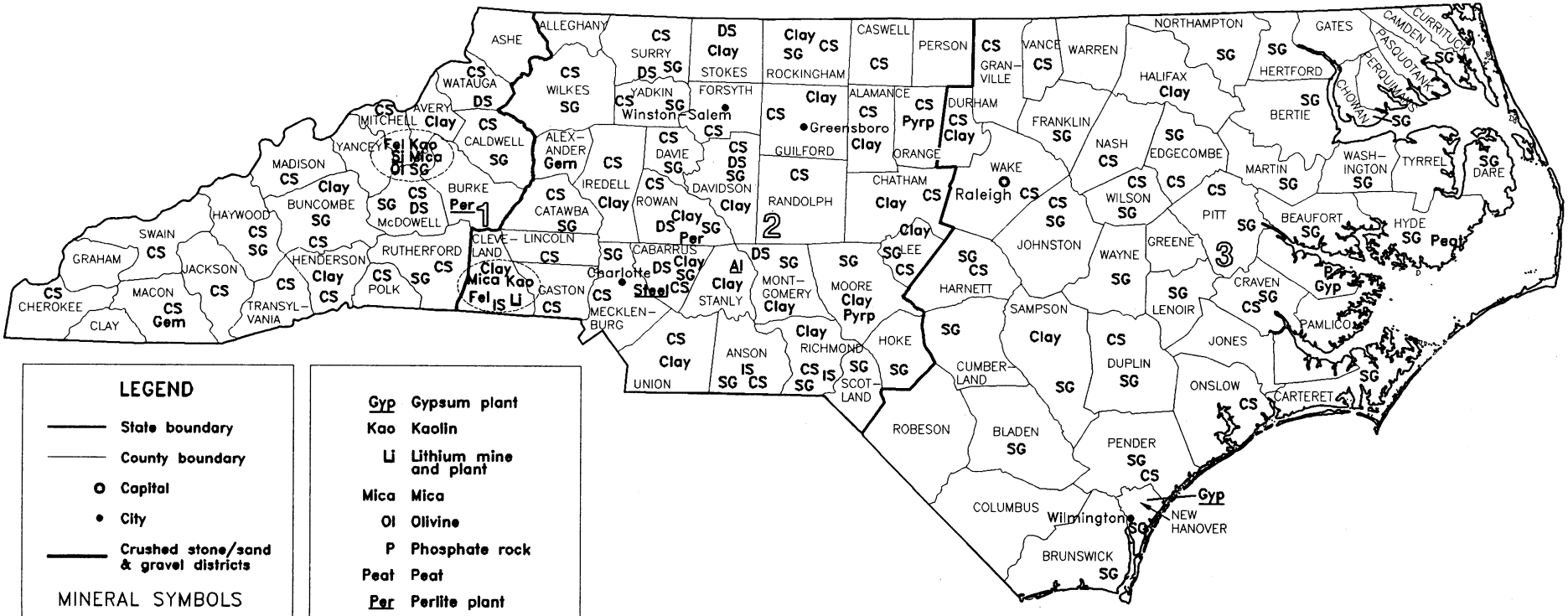
[9]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[12]Total shown in thousand short tons and thousand dollars.

NORTH CAROLINA



LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

- Al — Aluminum plant
- Clay — Clay
- Co — Cobalt plant
- CS — Crushed Stone
- DS — Dimension Stone
- Fel — Feldspar
- Gem — Gemstones
- Gyp — Byproduct Gypsum
- Gyp — Gypsum plant
- Kao — Kaolin
- Li — Lithium mine and plant
- Mica — Mica
- Ol — Olivine
- P — Phosphate rock
- Peat — Peat
- Per — Perlite plant
- Pyrp — Pyrophyllite
- SG — Sand and Gravel
- IS — Industrial S & G
- Si — Silica plant
- Steel — Iron and Steel plant
- Concentration of mineral operations

0 50 Kilometers

Principal Mineral-Producing Localities

THE MINERAL INDUSTRY OF NORTH DAKOTA

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 North Dakota Geological Survey for collecting information on all nonfuel minerals.

In 1994, North Dakota ranked 49th in the Nation in total nonfuel mineral value,[1] down from 48th, the position the State had held for 15 of the previous 16 years, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $26 million, a 5% increase compared with that of 1993. This followed a less than 3% decrease in 1993 from that of 1992. The State accounted for about 0.1% of the U.S. total value. The increased value of construction sand and gravel accounted for most of the State's rise in value in 1994, while the drop in value in 1993 from that of 1992 mainly resulted from the decreased value of gemstones. The State's mines produced significant quantities of construction sand and gravel; while being a high-volume, low-value mineral commodity, it accounted for nearly 84% of the State's nonfuel mineral value, as surveyed by the USBM. Lime was the second principal nonfuel mineral commodity produced in the State. Although not included in USBM statistics, recovered elemental sulfur was an important mineral commodity produced in the State, in terms of value. Elemental sulfur and other by-products (krypton, xenon, anhydrous ammonia, and liquid nitrogen) were recovered at fuel mineral operations, including facilities for the processing of natural gas and the gasification of coal. Compared with 1993, the mineral commodity values for both construction and industrial sand and gravel, common clays, and crushed stone increased. Decreases occurred for lime and gemstones.

According to the North Dakota Geological Survey (NDGS), the State Soil Conservation Committee, which is responsible for, among other things, preparation of the annual *Surface Mining Report for Minerals Other than Coal*, was scheduled for elimination during the next biennium. Because of a shrinking budget, the NDGS faced further anticipated staff cutbacks. In other developments, the NDGS recently published *North Dakota Clays—A Historical Review of Clay Utilization in North Dakota*. While North Dakota clays are now used only for the production of brick, they have in the past been used for a much wider variety of products.

The NDGS and Saskatchewan (Canada) Energy and Mines agency cosponsored the Second International Williston Basin Horizontal-Drilling Workshop in April 1994. The workshop was designed to facilitate communication and cooperation between companies and individuals interested in horizontal drilling and mineral production in the Williston Basin. Interest in the Basin, which includes part of west-central North Dakota, was primarily for that of gas and oil, with some secondary interest in potash and salt. Potash, solution-mined in the Province of Saskatchewan, is present in North Dakota in extensions of some of the same Canadian deposits, but lack of minimum thickness and grade in North Dakota, in addition to competition from the established Canadian industry and

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NORTH DAKOTA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$643	NA	W	NA	W
Lime	thousand metric tons	101	4,288	W	$4,512	W	W
Peat	do.	W	W	(2)	W	W	W
Sand and gravel (construction)	do.	7,929	20,609	7,700[e]	20,400[e]	8,000	$22,000
Stone (crushed)	do.	10	W	W	W	W	W
Combined value of clays (common), sand and gravel (industrial), stone (crushed volcanic cinder), and values indicated by symbol W		XX	210	XX	131	XX	4,290
Total		XX	25,750	XX	25,043	XX	26,300[4]

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Less than 1/2 unit.

[3]Value excluded to avoid disclosing company proprietary data.

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

limited nearby markets, have made the development of the State's potash resources difficult. The State of North Dakota and the Province of Manitoba reached an agreement in November that called for cooperative studies and sharing information on mineral resource development in the Williston Basin. Earlier in the year, North Dakota and Saskatchewan signed a similar accord.

[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

NORTH DAKOTA

0 50 Kilometers

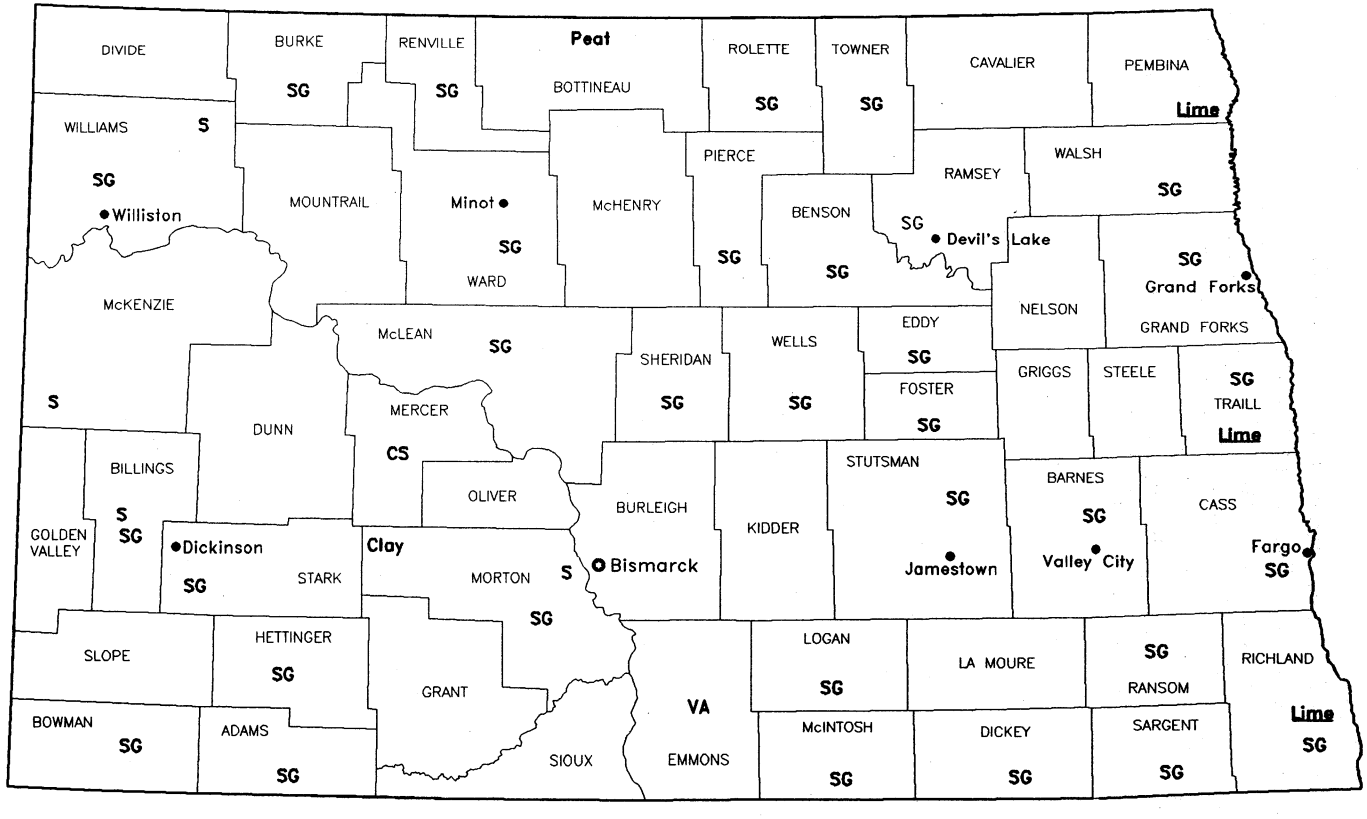
LEGEND

- State boundary
- County boundary
- Capital
- City

MINERAL SYMBOLS

Clay	Clay
CS	Crushed Stone
Lime	Lime plant
Peat	Peat
S	Sulfur
SG	Sand and Gravel
VA	Volcanic Ash

Principal Mineral-Producing Localities



THE MINERAL INDUSTRY OF OHIO

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 Ohio Department of Natural Resources, Division of Geological Survey, for collecting information all nonfuel minerals.

Ohio ranked 13th among the Nation in nonfuel mineral value[1] in 1994, climbing from 14th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $893 million, a 5% increase compared with that of 1993. This followed a significant 15% increase in 1993 as measured against that of 1992. The State accounted for about 3% of the U.S. total. The increased percentages of the past 2 years were most affected by increased values for crushed stone, lime, construction sand and gravel, and salt. Other mineral commodities having similar increasing value, but with less impact on the total value, were masonry cement and industrial sand and gravel. In 1994, Ohio's increased nonfuel mineral value was moderated by an estimated 17% decrease for portland cement, which, by contrast, had increased between 1992 and 1993 by about the same percent. Compared with 1993, the value of the following commodities increased: crushed stone, construction sand and gravel, salt, lime, industrial sand and gravel, masonry cement, gypsum, dimension stone, peat, and gemstones. Decreases occurred in portland cement, common clays, and fire clays.

In estimated mineral production in 1994, Ohio led the Nation in lime production, climbing from the rank of second in 1993. Also moving up in rank were the production of masonry cement from 11th to 10th and that of peat from 12th to 8th. The State remained second in the production of fire clays, third in construction sand and gravel, fourth in salt and common clays, sixth in crushed stone, and seventh in industrial sand and gravel. Ohio mines produced significant quantities of dimension stone and gypsum, while similar production of portland cement was achieved at manufacturing plants within the State. Production of ball clays for 1994 was not reported to the USBM. The State's mines exclusively produce industrial minerals and coal; any metals, especially

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN OHIO[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Cement:							
Masonry	thousand metric tons	103	$10,260	93	$11,305	104	$12,800
Portland	do.	1,320	77,053	1,494	90,305	1,240	75,100
Clays	do.	2,288	12,062	[2]2,161	[2]12,023	2,120	12,000
Gemstones		NA	5	NA	5	NA	W
Lime	thousand metric tons	1,670	96,739	1,699	100,721	1,900	113,000
Peat	do.	W	W	W	W	19	158
Salt	do.	W	W	W	W	4,180	179,000
Sand and gravel:							
Construction	do.	42,874	177,508	[e]46,400	[e]202,900	47,000	209,000
Industrial	do.	1,276	26,445	1,360	27,533	W	W
Stone:							
Crushed	do.	[e][3]43,998	[e][3]194,500	52,167	228,364	[e]56,000	[e]260,000
Dimension	metric tons	[e]31,805	[e]2,244	[3]25,738	[3]1,207	[e]28,200	[e]1,450
Other[4]		XX	145,092	XX	176,276	XX	30,400
Total		XX	741,908	XX	850,639	XX	[5]893,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Excludes certain stones; kind and value included with "Combined value" data.

[4]Combined value of abrasives (1992-93), clays [ball (1993)], gypsum (crude), stone [crushed limestone and dolomite (1992), dimension limestone (1993)], and values indicated by symbol W

[5]Data do not add to total shown because of independent rounding.

TABLE 2

OHIO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	28	$123	$4.39
Riprap and jetty stone	711	4,263	6.00
Filter stone	44	226	5.14
Other coarse aggregate	725	3,334	4.60
Coarse aggregate, graded:			
Concrete aggregate, coarse	4,278	17,012	3.98
Bituminous aggregate, coarse	2,857	11,506	4.03
Bituminous surface-treatment aggregate	431	2,450	5.68
Railroad ballast	216	653	3.02
Other graded coarse aggregate	709	4,633	6.53
Fine aggregate (-3/8 inch):			
Stone sand, concrete	381	1,415	3.71
Stone sand, bituminous mix or seal	913	3,293	3.61
Screening, undesignated	734	2,863	3.90
Other fine aggregate	W	W	4.41
Coarse and fine aggregates:			
Graded road base or subbase	6,207	24,159	3.89
Unpaved road surfacing	5,118	22,318	4.36
Terrazzo and exposed aggregate	31	177	5.71
Crusher run or fill or waste	2,668	10,730	4.02
Other coarse and fine aggregates	987	3,672	3.72
Other construction materials	1,198	5,372	4.48
Roofing granules	W	W	5.51
Agricultural:			
Agricultural limestone[2]	748	4,860	6.50
Chemical and metallurgical:			
Flux stone[3]	1,952	7,140	3.66
Special:			
Asphalt fillers or extenders	(4)	(4)	12.13
Whiting or whiting substitute	(4)	(4)	27.39
Other fillers or extenders	(4)	(4)	6.16
Other specified uses not listed	113	1,831	16.20
Unspecified:[5]			
Actual	20,012	90,847	4.54
Estimated	1,106	5,486	4.96
Total	52,167	[6]228,364	4.38
Total[7 8]	57,504	228,364	3.97

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, limestone-dolomite, quartzite, sandstone, and sandstone-quartzite.
[2]Includes other agricultural uses.
[3]Includes cement manufacture and lime manufacture.
[4]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[5]Includes production reported without a breakdown by use and estimates for nonrespondents.
[6]Data do not add to total shown because of independent rounding.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

steel and aluminum, produced in the State are processed from materials received from other domestic and foreign sources. Ohio continued to be the Nation's second leading raw steel-manufacturing State with an estimated output of more than 15 million metric tons (16.7 million short tons) of raw steel, as reported by the American Iron and Steel Institute. The State climbed from fifth to fourth in the production of primary aluminum.

According to the Ohio Division of Geological Survey, for the second consecutive year, the combined output of construction aggregates—crushed limestone and sandstone and sand and gravel—was expected to exceed 90 million metric tons (100 million short tons). Salt production also increased in 1994 due to severe winter weather in the eastern one-half of the Nation in the first 3 months of the year. Akzo Nobel Salt, Inc.'s Cleveland Mine—one of the most productive salt mines in the Nation in 1994—increased its production to fill a gap in demand following the March 1994, collapse of Akzo's large Retsof Mine in Upstate New York. Milder weather in the last quarter of 1994, appeared to lessen the degree of demand for Cleveland's salt. Despite the moderating winter weather, the company estimated that production for 1995 would increase by more than 900,000 metric tons (1 million short tons) to make up for the lost New York output. In May, Akzo suspended plans to locate a salt-brining operation in Mahoning County, reportedly because negotiations over water and electricity at the site were taking too long.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
OHIO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[2]	r98	r39,512	r$170,620	r$4.32	101	47,705	$210,707	$4.42
Dolomite	r7	r3,431	r13,450	r3.92	1	3,906	15,208	3.89
Sandstone and quartzite[3]	5	279	1,089	3.90	7	555	2,449	4.41
Total[4]	XX	r43,221	r185,159	r4.28	XX	52,167	228,364	4.38
Total[5 6]	XX	47,643	r185,159	r3.89	XX	57,504	228,364	3.97

rRevised. XX Not applicable.
[1]Excludes limestone-dolomite from state total to avoid disclosing company proprietary data.
[2]Includes "Limestone-dolomite," reported with no distinction between the two.
[3]Includes "Sandstone-quartzite," reported with no distinction between the two.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 4

OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	459	2,860	W	W	W	W
Coarse aggregate, graded[2]	2,830	12,063	2,976	12,172	1,316	5,857
Fine aggregate (-3/8 inch)[3]	1,020	3,754	W	W	W	W
Coarse and fine aggregate[4]	7,563	29,066	2,302	8,117	2,057	9,019
Other construction materials[5]	403	1,892	702	2,625	500	2,294
Agricultural[6]	387	2,644	(7)	(7)	(8)	(8)
Chemical and metallurgical[9]	(8)	(8)	—	—	(8)	(8)
Special[10]	(8)	(8)	—	—	(8)	(8)
Other miscellaneous uses[11]	1,023	4,061	—	—	1,088	5,465
Unspecified:[12]						
Actual	8,712	36,706	(7)	(7)	2,359	11,015
Estimated	41	205	507	2,271	—	—
Total[13]	22,440	93,248	8,076	30,997	7,320	33,651
Total[14 15]	24,736	93,248	8,902	30,997	8,069	33,651

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	W	W	W	W	W	W
Coarse aggregate, graded[2]	W	W	W	W	356	1,350
Fine aggregate (-3/8 inch)[3]	64	299	W	W	277	1,078
Coarse and fine aggregate[4]	723	2,857	1,153	6,490	1,245	5,681
Other construction materials[5]	1,301	5,477	849	4,706	134	543
Agricultural[6]	77	470	(7)	(7)	(7)	(7)
Chemical and metallurgical[9]	—	—	—	—	—	—
Special[10]	—	—	(7)	(7)	—	—
Other miscellaneous uses[11]	—	—	—	—	—	—
Unspecified:[12]						
Actual	6,377	31,461	—	—	(7)	(7)
Estimated	104	371	226	1,572	227	1,067
Total[13]	8,646	40,935	2,301	13,148	3,384	16,385
Total[14 15]	9,531	40,935	2,536	13,148	3,730	16,385

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

[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[4]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregate.

[5]Includes roofing granules.

[6]Includes agricultural limestone and other agricultural uses.

[7]Withheld to avoid disclosing company proprietary data; included with "Total."

[8]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[9]Includes cement manufacture, flux stone, and lime manufacture.

[10]Includes asphalt fillers or extenders, whiting or whiting substitute, and other fillers or extenders.

[11]Includes other specified uses not listed.

[12]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[14]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[15]Total shown in thousand short tons and thousand dollars.

OHIO

Principal Mineral-Producing Localities

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Al	Aluminum plant	D-S	Dimension Sandstone	Lime	Lime plant
CC-Sh	Common Clay & Shale	FC	Fire Clay	Peat	Peat
Cem	Cement plant	Gyp	Gypsum	Salt	Salt
CS	Crushed Stone	Gyp	Gypsum plant	SG	Sand and Gravel
D-L	Dimension Limestone	IS	Industrial Sand	Steel	Iron and Steel plant

Concentration of mineral operations

THE MINERAL INDUSTRY OF OKLAHOMA

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 Oklahoma Geological Survey for collecting information on all nonfuel minerals.

Oklahoma ranked 33d in the Nation in total nonfuel mineral value[1] in 1994, climbing from 34th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $338 million, a 13% increase over the more than $298 million achieved in 1993. This increase followed an 18% increase in 1993 as measured against that of 1992. The State accounted for 1% of the U.S. total. In 1994, crushed stone continued as Oklahoma's leading nonfuel mineral commodity, accounting for more than 40% of the total value, while the combined values for crushed stone, portland cement, construction sand and gravel, and gypsum accounted for 80% of the same total. The significantly increased mineral values of the past 2 years mainly resulted from increases in crushed stone and portland cement; during the same time construction sand and gravel, gypsum, and industrial sand and gravel also contributed to the State's rising mineral economy. Compared with 1993, the mineral commodity values increased for the following: crushed stone, portland cement, construction sand and gravel, gypsum, lime, masonry cement, salt, and common clays. Decreases occurred for iodine, feldspar, dimension stone, and gemstones.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Oklahoma remained the only domestic source of iodine, first in the production of gypsum, third in feldspar, and ninth in industrial sand and gravel. Oklahoma mines produced significant quantities of crushed stone, construction sand and gravel, and common clays, while similar production of portland and masonry cement was achieved at manufacturing plants within the State. Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State.

According to the Oklahoma Geological Survey, industrial mineral activity Statewide improved moderately during 1994. Production increased for most construction materials including crushed stone,

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN OKLAHOMA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	W	W	85	$6,719	99	$7,760
Portland	do.	931	$39,280	1,696	77,624	1,910	87,500
Clays	do.	622	3,296	613	2,938	662	2,950
Gemstones		NA	1,863	NA	W	NA	W
Gypsum (crude)	thousand metric tons	2,361	14,915	2,651	15,434	2,900	17,000
Iodine (crude)	metric tons	1,995	20,877	1,935	15,443	2,030	15,300
Sand and gravel:							
Construction	thousand metric tons	8,985	24,204	[r]9,700	[r]27,300	10,500	31,000
Industrial	do.	972	19,011	1,208	23,155	W	W
Stone:							
Crushed	do.	[e][2]24,948	[e][2]105,300	27,055	113,958	[r]30,500	[r]136,000
Dimension	metric tons	[r]4,701	[r]706	[2]2,350	[2]838	[r]9,110	[r]472
Combined value of feldspar, lime, salt, stone [crushed granite (1992), dimension limestone and sandstone (1993)], tripoli (1992-93), and values indicated by symbol W		XX	23,144	XX	14,930	XX	40,500
Total		XX	252,596	XX	298,339	XX	[3]338,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain stones; kind and value included with "Combined value" figure.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

OKLAHOMA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$3.72
Riprap and jetty stone	126	$695	5.52
Filter stone	279	1,228	4.40
Other coarse aggregate	W	W	4.30
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,928	9,204	4.77
Bituminous aggregate, coarse	839	4,186	4.99
Bituminous surface-treatment aggregate	199	1,177	5.91
Railroad ballast	1,373	7,643	5.57
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	2.84
Stone sand, bituminous mix or seal	283	530	1.87
Screening, undesignated	1,168	2,806	2.40
Coarse and fine aggregates:			
Graded road base or subbase	1,208	3,610	2.99
Unpaved road surfacing	121	415	3.43
Terrazzo and exposed aggregate	W	W	5.81
Crusher run or fill or waste	1,631	6,202	3.80
Other coarse and fine aggregates	W	W	5.34
Other construction materials	217	956	4.41
Agricultural: Agricultural limestone[2]	259	1,300	5.02
Chemical and metallurgical:			
Cement manufacture[3]	3,019	6,573	2.18
Unspecified:[4]			
Actual	12,286	59,308	4.83
Estimated	2,119	8,123	3.83
Total[5]	27,055	113,958	4.21
Total[6 7]	29,823	113,958	3.82

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, sandstone, and shell.
[2]Includes poultry grit and mineral food.
[3]Includes cement manufacture.
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

construction sand and gravel, gypsum, and portland and masonry cement in response to growth in homebuilding, highway construction, and commercial building. Further increases in these activities were nticipated for 1995, and additional airbase construction, such as runways, also was expected.

In other industry developments, iodine markets continued to grow somewhat in 1994, with consumption tied, in part, to increases in construction, automobile production, and population growth. A new company, Deepwater Iodides, Inc., opened a plant at Woodward in northwestern Oklahoma to manufacture a broad line of inorganic and organic iodine compounds. (All Oklahoma iodine production comes from the northwestern portion of the State.) The North American Brine Resources iodine plant north of Woodward is now idle, but the company continued production at Dover. Woodward Iodine Corp. and IoChem Corp. also continued iodine production. The number of industrial sand plants has been progressively reduced due to the increased usage of plastics packaging. At least 8 Oklahoma glass plants have closed since the early 1980's, when 13 plants were operating. However, Anchor Glass reversed the trend in 1994 by completing a $12.8-million capital investment in the upgrading and modernizing of its Henryetta plant.

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[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
OKLAHOMA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	57	r21,653	r$87,689	r$4.05	50	23,386	$97,861	$4.18
Shell	1	r4	5	r1.25	—	—	—	—
Granite	r4	r3,280	r13,269	r4.05	4	3,081	13,262	4.30
Sandstone	5	738	3,518	4.77	4	588	2,835	4.82
Total[1]	XX	r25,675	r104,481	r4.07	XX	27,055	113,958	4.21
Total[2 3]	XX	28,302	r104,481	r3.69	XX	29,823	113,958	3.82

rRevised. XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	—	—	W	W	W	W
Coarse aggregate, graded[2]	—	—	1,243	6,632	498	2,243
Fine aggregate (-3/8 inch)[3]	—	—	W	W	W	W
Coarse and fine aggregate[4]	—	—	1,244	4,718	953	3,165
Other construction materials	—	—	742	1,954	459	1,594
Agricultural[5]	—	—	(6)	(6)	(6)	(6)
Chemical and metallurgical[8]	—	—	(6)	(6)	(6)	(6)
Other miscellaneous uses	—	—	895	1,760	1,404	3,236
Unspecified:[9]						
Actual	—	—	1,499	6,689	40	221
Estimated	—	—	96	131	—	—
Total[10]	—	—	5,719	21,884	3,354	10,460
Total[11 12]	—	—	6,304	21,884	3,697	10,460

	District 4		District 5	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[1]	66	349	W	W
Coarse aggregate, graded[2]	W	W	W	W
Fine aggregate (-3/8 inch)[3]	W	W	122	388
Coarse and fine aggregate[4]	313	825	514	1,861
Other construction materials	2,274	10,401	943	4,522
Agricultural[5]	—	—	(7)	(7)
Chemical and metallurgical[8]	(7)	(7)	—	—
Other miscellaneous uses	—	—	—	—
Unspecified:[9]				
Actual	(7)	(7)	(7)	(7)
Estimated	1,681	6,429	343	1,563
Total[10]	13,510	61,240	4,472	20,374
Total[11 12]	14,892	61,240	4,930	20,374

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

[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and railroad ballast.

[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).

[4]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregate.

[5]Includes agricultural limestone and poultry grit and mineral food.

[6]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneouse uses."

[7]Withheld to avoid disclosing company proprietary data; included with "Total."

[8]Includes cement manufacture and lime manufacture.

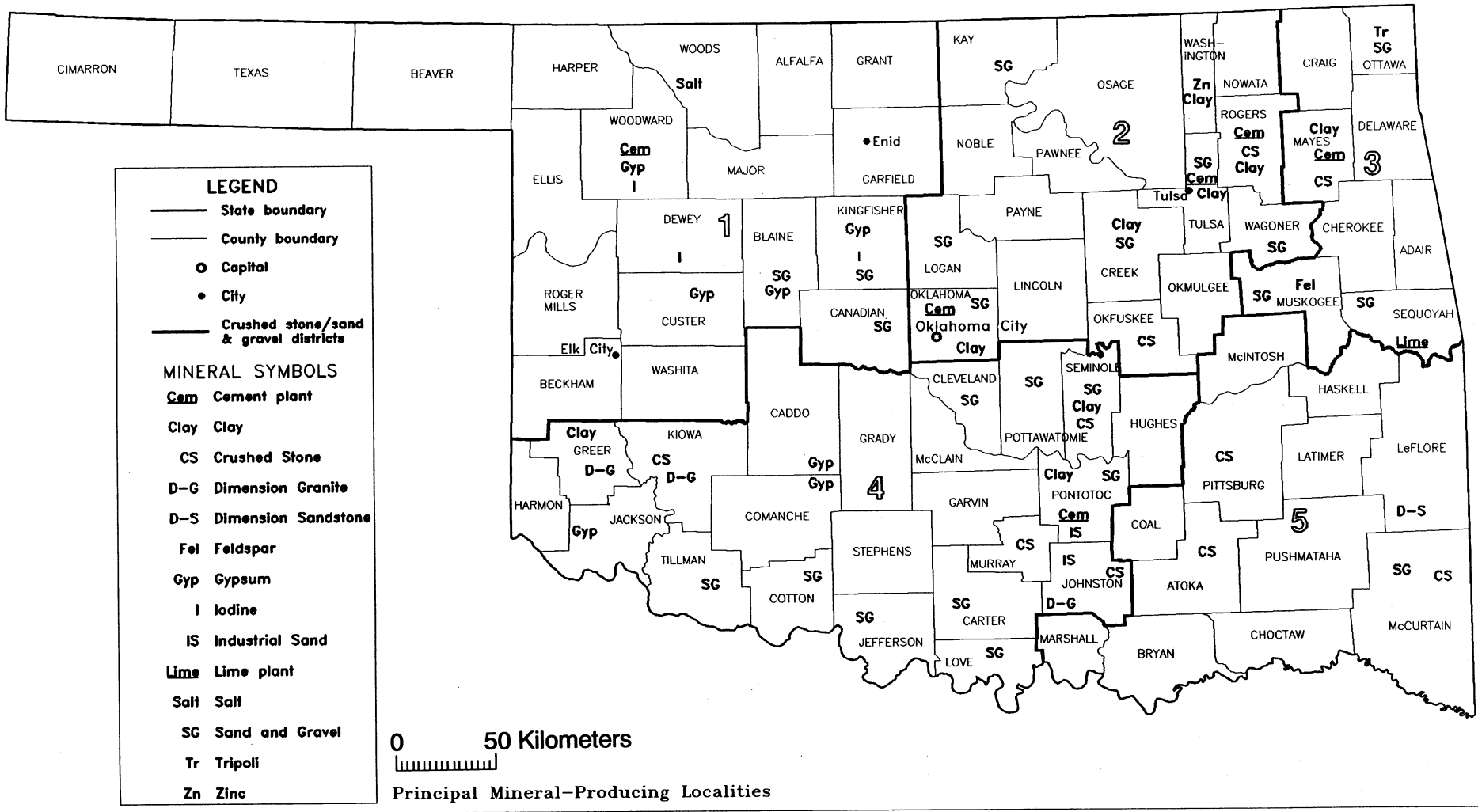
[9]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[12]Total shown in thousand short tons and thousand dollars.

OKLAHOMA



LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Cem	Cement plant
Clay	Clay
CS	Crushed Stone
D–G	Dimension Granite
D–S	Dimension Sandstone
Fel	Feldspar
Gyp	Gypsum
I	Iodine
IS	Industrial Sand
Lime	Lime plant
Salt	Salt
SG	Sand and Gravel
Tr	Tripoli
Zn	Zinc

0 50 Kilometers

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF OREGON

For the 4th year in a row and the 6th in the last 8 years, Oregon was 38th among the 50 States in total nonfuel mineral value[1] in 1994, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was more than $253 million, nearly a 12% increase compared with that of 1993. This followed a more than 5.5% increase from 1992 to 1993. The State accounted for less than 1% of the U.S. total value. Industrial minerals accounted for nearly all of the State's total nonfuel mineral value, less than 0.5% of which resulted from metal production; a minimal quantity of copper was produced as a result of cleanup at Formosa Resources Corp.'s Silver Butte copper and zinc mine, which ceased operation in 1993. Construction materials—crushed stone, construction sand and gravel, and portland cement—continued to be the State's most valuable minerals produced. These three mineral commodities each had significant increases in value, and together accounted for more than 85% of the State's total nonfuel mineral value. Compared with 1993, the mineral commodity values increased for the following: crushed stone, construction sand and gravel, portland cement, lime, copper, and gemstones. Decreases occurred in diatomite, pumice, and common clays.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Oregon remained the Nation's leading pumice-producing State out of six States that produced the mineral. The State also remained third in the production of diatomite, one of the top seven States to produce bentonite clays, and ninth in copper. Oregon dropped from 9th to 10th in the production of talc and pyrophyllite. Cominco American Inc's. Nickel Mountain Mine, of late the sole domestic producer of primary nickel, remained closed. According to the company, the mine was shut down in the latter half of 1993 due to market disruptions and low nickel prices caused, in part, by Russian nickel imports. Production of other metals, especially primary aluminum and raw steel, resulted from the processing of materials received from other domestic and foreign sources. Oregon ranked 13th in the Nation in the production of primary aluminum, moving up from 14th in 1993.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN OREGON[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	[2]203	[2]$326	221	$1,410	160	$1,320
Copper[3]	metric tons	152	361	703	1,420	106	260
Gemstones		NA	2,723	NA	2,143	NA	2,280
Nickel ore[4]	metric tons	6,671	W	2,464	W	—	—
Sand and gravel (construction)	thousand metric tons	14,958	69,536	[e]15,800	[e]74,800	18,000	86,400
Silver[3]	metric tons	([5])	1	—	—	—	—
Stone (crushed)	thousand metric tons	[e][6]15,241	[e][6]74,900	18,891	84,655	[e]20,300	[e]95,400
Talc and pyrophyllite	metric tons	64	67	64	67	W	W
Combined value of cement [masonry (1992), portland], clays [bentonite (1992)], diatomite, emery (1992-93), gold (1992), lime, pumice, stone [crushed slate (1992)], and values indicated by symbol W		XX	66,256	XX	61,613	XX	67,200
Total		XX	214,170	XX	226,108	XX	[7]253,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

[4]The Riddle nickel smelter uses lateritic ore mined on Nickel Mountain, lateritic ore imported from New Caledonia, and small tonnages of recycled Ni-bearing catalysts. In 1989, the Glenbrook Nickel Co. purchased the idled mining and smelting complex and restarted the operation. Production of ferronickel on a contained Ni basis has been as follows: 1992—8,962 metric tons (mt) valued at $62.7 million; and 1993—4,878 mt valued at $28.0 million.

[5]Less than 1/2 unit.

[6]Excludes certain stones; kind and value included with "Combined value" data.

[7]Data do not add to total shown because of independent rounding.

According to the State of Oregon's Department of Geology and Mineral Industries, Oregon experienced very strong construction markets for housing and nonresidential buildings in 1994. Demand for construction aggregates was high, resulting in supply shortages in some parts of the State. Supplies were particularly tight around the Portland metropolitan area. Gemstone production in Oregon increased in 1994 in response to greater interest in opals and sunstones.

[1]The term value, referring throughout this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
OREGON: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	39	$68	$1.74
Riprap and jetty stone	167	573	3.43
Filter stone	113	549	4.86
Other coarse aggregate	208	977	4.70
Coarse aggregate, graded:			
Concrete aggregate, coarse	92	410	4.46
Bituminous aggregate, coarse	1,003	5,017	5.00
Bituminous surface-treatment aggregate	414	2,827	6.83
Railroad ballast	480	2,595	5.41
Other graded coarse aggregate	W	W	5.51
Fine aggregate (-3/8 inch):			
Stone sand, concrete	95	423	4.45
Stone sand, bituminous mix or seal	280	1,902	6.79
Screening, undesignated	102	416	4.08
Coarse and fine aggregates:			
Graded road base or subbase	5,929	25,570	4.31
Unpaved road surfacing	2,194	10,035	4.57
Terrazzo and exposed aggregate	W	W	2.36
Crusher run or fill or waste	896	3,831	4.28
Other coarse and fine aggregates	430	1,944	4.52
Other construction materials[2]	997	5,473	5.49
Special: Asphalt fillers or extenders	22	170	7.73
Other specified uses not listed[3]	756	1,875	2.48
Unspecified:[4]			
Actual	2,194	9,137	4.16
Estimated	2,479	10,863	4.38
Total[5]	18,891	84,655	4.48
Total[6 7]	20,824	84,655	4.07

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, miscellaneous stone, sandstone, slate, traprock, and volcanic cinder and scoria.
[2]Includes drain fields.
[3]Includes cement manufacture.
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

OREGON: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r2	W	W	r$5.30	2	W	W	$3.67
Granite	r28	r78	r$376	r4.82	28	91	$482	5.30
Traprock	r224	r16,001	r76,131	r4.76	287	15,878	71,318	4.49
Sandstone	52	312	1,589	5.09	51	W	W	5.71
Slate	r1	W	W	r5.29	1	W	W	5.73
Volcanic cinder and scoria	53	270	1,316	4.87	51	116	682	5.88
Miscellaneous stone	r40	r1,048	r4,803	r4.58	14	1,546	7,213	4.67
Total[1]	XX	r18,773	r89,847	r4.79	XX	18,891	84,655	4.48
Total[2 3]	XX	20,694	r89,847	r4.34	XX	20,824	84,655	4.07

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

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

[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

OREGON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	432	1,810	71	261	20	66
Coarse aggregate, graded[2]	1,077	5,175	92	718	348	W
Fine aggregate (-3/8 inch)[3]	384	2,306	—	—	W	W
Coarse and fine aggregate[4]	6,316	28,590	1,837	7,383	W	W
Other construction materials5	69	301	—	—	793	5,936
Special[6]	—	—	—	—	22	170
Other miscellaneous uses[7]	(8)	(8)	45	87	—	—
Unspecified:[9]						
Actual	(8)	(8)	—	—	—	—
Estimated	1,259	5,942	26	797	958	4,125
Total[10]	10,947	50,206	2,307	9,245	2,141	10,297
Total[11 12]	12,067	50,206	2,543	9,245	2,360	10,297

	District 4		Within all districts	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch)[1]	5	30	—	—
Coarse aggregate, graded[2]	652	W	—	—
Fine aggregate (-3/8 inch)[3]	W	W	—	—
Coarse and fine aggregate[4]	W	W	—	—
Other construction materials[5]	677	6,095	667	3,939
Special[6]	—	—	—	—
Other miscellaneous uses[7]	(8)	(8)	—	—
Unspecified:[9]				
Actual	(8)	(8)	—	—
Estimated	—	—	—	—
Total[10]	2,829	10,968	667	3,939
Total[11 12]	3,118	10,968	735	3,939

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

[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[3]Includes tone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).

[4]Includes graded roadbase or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.

[5]Includes drain fields.

[6]Includes asphalt fillers or extenders.

[7]Includes cement manufacture and other specificed uses not listed.

[8]Withheld to avoid disclosing company proprietary data; included with "Total."

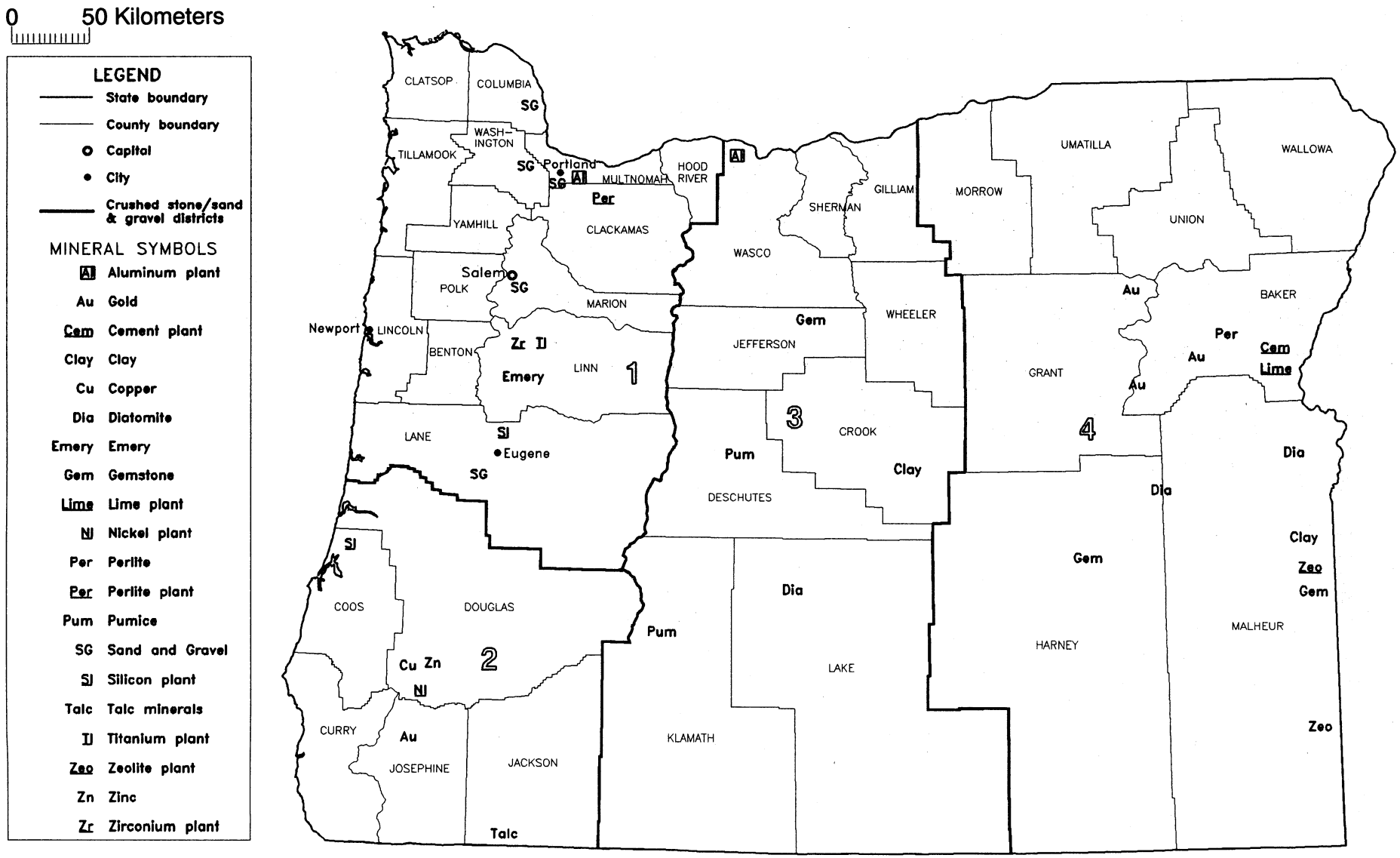
[9]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[12]Total shown in thousand short tons and thousand dollars.

OREGON



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF PENNSYLVANIA

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 Pennsylvania Bureau of Topographic and Geologic Survey, Department of Environmental Resources, for collecting information on all nonfuel minerals.

Pennsylvania ranked 11th in total nonfuel mineral value[1] in 1994, down from 10th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was $964 million, a 6% increase over that of 1993. This followed a 4% increase in 1993 from 1992. The State accounted for 3% of the U.S. total. Pennsylvania is exclusively an industrial mineral and coal producing State; any metals, especially steel, produced in the State are processed from materials received from other domestic or foreign sources. Pennsylvania continued to be among the Nation's top producers of crushed stone, cement, and lime; those three commodities represented 87% of the State's total nonfuel mineral value. The State remained second in the United States in the production of crushed stone; third in portland cement and climbed from fifth to fourth in the production of lime. Although production of masonry cement in Pennsylvania marginally increased in 1994, significant increases occurred in two other States, dropping Pennsylvania from fourth to sixth. Compared with 1993, the value of crushed stone, portland cement, construction sand and gravel, masonry cement, and peat increased in 1994. Decreases occurred in the value of lime, dimension stone, and common clays.

According to the Pennsylvania Geological Survey, a significant number of surface mine permit applications were received by the State during 1993, a trend that continued into 1994. In 1993, approximately 35 operators applied for more than 1,200 hectares (3,000 acres) of new and expansion mining permits. Most mine expansion areas were limited to carbonate rock producers in various locations throughout the State, accounting for about 20% of the total area under application. A new marble quarry in the south-central portion of the State was a notable exception. Significant exploration developments included the following: approximately one-half of the new aggregate applications were sought for sandstone production; a new, Ordovician-age, potentially high-quality, high-friction sandstone source was being developed in the central portion of the State; and two traditional high-quality, high-friction sandstone sources were under development in the State's anthracite region. Additionally, 13 producers applied for about 325 hectares (800 acres) of new sand and gravel resources,

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN PENNSYLVANIA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	296	$21,924	248	$18,741	254	$19,200
Portland	do.	5,016	258,887	5,365	282,630	5,800	305,000
Clays[2]	do.	649	3,455	765	3,777	686	2,930
Gemstones		NA	1	NA	1	—	—
Lime	thousand metric tons	1,506	94,543	1,535	95,377	1,530	94,900
Peat	do.	15	250	9	249	13	319
Sand and gravel (construction)	do.	17,540	94,643	e16,100	e83,900	16,400	86,500
Stone:							
Crushed[3]	do.	e64,954	e380,200	69,361	405,346	e73,000	e434,000
Dimension	metric tons	e37,855	e10,822	35,665	9,892	e28,300	e5,890
Combined value of sand and gravel (industrial), stone [crushed limestone, dolomite, and quartzite (1992), crushed quartzite (1993-94)], and tripoli (1992-93)		XX	r16,218	XX	13,249	XX	14,300
Total		XX	r880,943	XX	913,162	XX	[4]964,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Excludes certain stones; kind and value included with "Combined value" data.

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

TABLE 2

PENNSYLVANIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	97	$649	$6.69
Riprap and jetty stone	867	5,606	6.47
Filter stone	233	1,251	5.37
Other coarse aggregate	275	1,682	6.12
Coarse aggregate, graded:			
Concrete aggregate, coarse	5,183	28,900	5.58
Bituminous aggregate, coarse	6,205	33,824	5.45
Bituminous surface-treatment aggregate	2,734	16,295	5.96
Railroad ballast	735	4,128	5.62
Other graded coarse aggregate	2,762	16,472	5.96
Fine aggregate (-3/8 inch):			
Stone sand, concrete	937	6,454	6.89
Stone sand, bituminous mix or seal	2,988	16,318	5.46
Screening, undesignated	1,136	6,278	5.53
Other fine aggregate	265	1,714	6.47
Coarse and fine aggregates:			
Graded road base or subbase	11,995	60,437	5.04
Unpaved road surfacing	1,556	7,433	4.78
Terrazzo and exposed aggregate	30	459	15.30
Crusher run or fill or waste	1,776	7,143	4.02
Other coarse and fine aggregates	2,143	12,211	5.70
Other construction materials	4,082	24,102	5.90
Roofing granules	W	W	6.68
Agricultural:			
Agricultural limestone[2]	734	8,201	11.17
Chemical and metallurgical:			
Cement manufacture	6,462	36,028	5.58
Lime manufacture	566	4,722	8.34
Dead-burned dolomite manufacture	(3)	(3)	6.00
Flux stone	10	108	10.80
Sulfur oxide removal	298	3,440	11.54
Special:			
Mine dusting or acid water treatment	34	845	24.85
Asphalt fillers or extenders	420	4,690	11.17
Whiting or whiting substitute	(3)	(3)	36.94
Other fillers or extenders	125	961	7.69
Other specified uses not listed	244	2,617	10.73
Unspecified:[4]			
Actual	7,737	49,596	6.41
Estimated	6,731	42,765	6.35
Total[5]	69,361	405,346	5.84
Total[6 7]	76,457	405,346	5.30

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

[1]Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, sandstone, and traprock; excludes quartzite from State total to avoid disclosing company proprietary data.

[2]Includes poultry grit and mineral food, and other agricultural uses.

[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

[4]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[7]Total shown in thousand short tons and thousand dollars.

principally located in the extreme northwestern glaciated portion of the State. Because aggregate quality has, of late, become increasingly important, many producers have begun development of in-house laboratories to test for both physical and chemical characteristics. Research into the effects of material handling processes on material quality was becoming an increasingly important subject for future research. Aggregate particle shape has been a primary concern with respect to durability in pavement performance. Carbonate reagent and some aggregate producers continued to identify and market resources capable of providing sorbent material that can be used for acid emission mitigation in coal-fired electric generating stations. Part of this effort included experimentation with various forms of carbonate beneficiation, principally to increase the calcium content of less pure limestones. Demand for dimension stone products was relatively strong. The northeastern part of the State contained approximately 80 permitted flagstone producers, and a new field stone (sandstone) source was located in central Pennsylvania.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
PENNSYLVANIA: CRUSHED STONE SOLD OR USED, BY KIND[1]

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[2]	r105	r37,306	r$214,912	r$5.76	108	40,970	$238,762	$5.83
Dolomite	22	11,522	60,814	5.28	23	12,253	70,977	5.79
Granite	3	1,785	10,599	5.94	5	1,642	9,917	6.04
Traprock	10	3,727	22,609	6.07	11	3,202	19,651	6.14
Sandstone	r3	r4,613	r27,745	r6.01	34	5,443	35,742	6.57
Miscellaneous stone	15	5,655	29,680	5.25	16	5,851	30,296	5.18
Total[3]	XX	r64,608	r366,360	r5.67	XX	69,361	405,346	5.84
Total[4 5]	XX	71,218	r366,360	r5.14	XX	76,457	405,346	5.30

rRevised. XX Not applicable.
[1]Excludes Quartzite.
[2]Includes "Limestone-dolomite," reported with no distinction between the two.
[3]Data may not add to totals shown because of independent rounding.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 4

PENNSYLVANIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[2]	(3)	(3)	W	W	434	3,007	725	4,434
Coarse aggregate, graded[4]	712	(3)	1,542	W	4,478	27,456	10,885	60,553
Fine aggregate (-3/8 inch)[5]	(3)	(3)	W	W	1,409	8,854	2,964	17,115
Coarse and fine aggregate[6]	1,097	5,515	2,250	10,793	4,470	23,997	10,074	49,983
Other construction materials[7]	(3)	(3)	965	14,006	(3)	(3)	1,877	10,595
Agricultural[8]	(3)	(3)	(3)	(3)	(3)	(3)	646	6,973
Chemical and metallurgical[10]	495	3,547	(3)	(3)	(3)	(3)	5,736	32,422
Special[11]	—	—	(3)	(3)	(3)	(3)	514	5,918
Other miscellaneous uses[12]	—	—	299	2,895	1,051	7,914	105	1,143
Unspecified:[13]								
Actual	20	77	582	3,618	963	5,811	6,172	40,089
Estimated	1,161	7,851	214	1,399	1,100	7,316	4,257	26,199
Total[14]	4,064	22,530	5,851	32,713	15,491	94,677	43,955	255,426
Total[15 16]	4,480	22,530	6,450	32,713	17,076	94,677	48,452	255,426

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

[1]Excludes quartzite from State total to avoid disclosing company proprietary data.

[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[3]Withheld to avoid disclosing company proprietary data; included with "Total."

[4]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[5]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[6]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.

[7]Includes roofing granules.

[8]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

[9]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[10]Includes cement manufacture, dead-burned dolomite manufacture, flux stone, lime manufacture, and sulfur oxide removal.

[11]Includes asphalt fillers or extenders, mine dusting or acid water treatment, other fillers or extenders, and whiting or whiting substitute.

[12]Includes other specified uses not listed.

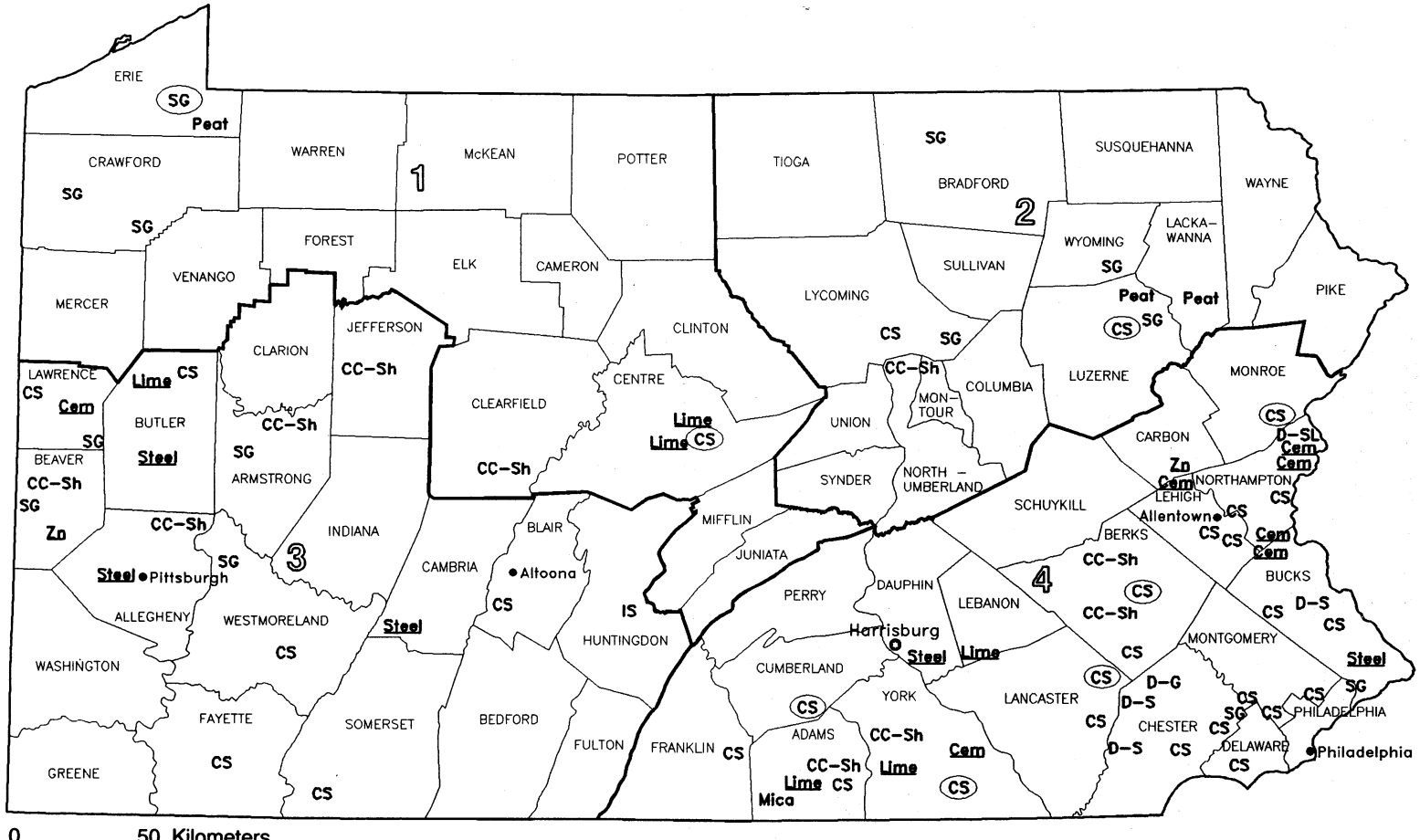
[13]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[15]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[16]Total shown in thousand short tons and thousand dollars.

PENNSYLVANIA



Principal Mineral-Producing Localities

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

CC-Sh	Common Clay & Shale	IS	Industrial Sand	Steel	Iron and Steel plant
Cem	Cement plant	Lime	Lime plant	Zn	Zinc plant
CS	Crushed Stone	Mica	Mica		Concentration of mineral operations
D-G	Dimension Granite	Peat	Peat		
D-S	Dimension Sandstone	SG	Sand and Gravel		
D-SL	Dimension Slate				

THE MINERAL INDUSTRY OF PUERTO RICO

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 Department of Natural Resources, Commonwealth of Puerto Rico, for collecting information on all nonfuel minerals.

In 1994, the estimated value[2] of nonfuel mineral commodities produced in Puerto Rico was $128 million, a 2% increase as compared with that of 1993, according to the U.S. Bureau of Mines (USBM). This followed a 1.5% increase in value from 1992 to 1993. The combined values of portland cement and crushed stone, the island's leading and second-leading mineral commodities, accounted for almost 97% of the reported total for Puerto Rico. The estimated value of construction sand and gravel, traditionally the third-leading mineral commodity on the island, was not available, also not having been included with data of either of the previous 2 years. In addition, the value of another important mineral commodity, industrial sand, was withheld and not included in the reported value to protect proprietary data of the island's only industrial sand producer. Although these two minerals were not included in the island's total, the reported value of Puerto Rico's mineral production would place it 43d if ranked in a comparison with the 50 United States. Compared with that of 1993, the mineral commodity values for crushed stone, lime, and common clays increased. Decreases occurred for industrial sand and gravel.

Based on USBM estimates of the quantities of minerals produced in the United States and its Territories during 1994, production of portland cement, crushed stone, and lime increased in Puerto Rico while common clay production slightly decreased. Increases in the estimated production of crushed stone were also reported in 1994 for the U.S.-administered islands of American Samoa and Guam.

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[1]While a Memorandum of Understanding (MOU) was officially made between the U.S. Bureau of Mines (USBM) and the Commonwealth of Puerto Rico, MOU's were not established with the Commonwealth of the Northern Mariana Islands, U.S. Caribbean and Pacific Island Possessions, nor the U.S. Trust Territory of the Pacific Islands. Nevertheless, data on nonfuel mineral production was reported to the USBM for the islands of American Samoa and Guam of the Pacific Island Possessions. These data appear in table 1.

[2]The term value in this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION[1] IN THE COMMONWEALTH OF PUERTO RICO AND ISLANDS ADMINISTERED BY THE UNITED STATES

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
PUERTO RICO							
Cement (portland)	thousand metric tons	1,298	$119,643	1,310	$72,619	1,444	$72,600
Clays	do.	W	527	155	508	149	519
Lime	do.	27	3,717	—	—	25	3,830
Sand and gravel (industrial)	do.	W	W	58	1,396	W	W
Stone (crushed)	do.	NA	NA	7,845	51,059	e8,000	e51,000
Total		XX	[2]123,887	XX	125,582	XX	[2 3]128,000
ADMINISTERED ISLANDS							
American Samoa (crushed)	thousand metric tons	—	—	83	W	e100	W
Guam: Stone (crushed)	do.	—	—	1,373	15,095	e1,400	e15,100
Total		XX	—	XX	[2]15,095	XX	[2 3]15,100

eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in "Total." XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Total does not include value of item withheld.
[3]Data do not add to total shown because of independent rounding.

TABLE 2

PUERTO RICO: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Riprap and jetty stone[2]	148	$1,162	$7.85
Coarse aggregate, graded:			
Concrete aggregate, coarse	825	5,448	6.60
Bituminous aggregate, coarse	3	21	7.00
Bituminous surface-treatment aggregate	53	312	5.89
Other graded coarse aggregate	50	355	7.10
Fine aggregate (-3/8 inch):			
Stone sand, concrete	243	1,894	7.79
Stone sand, bituminous mix or seal	372	2,325	6.25
Screening, undesignated	(3)	1	4.96
Other fine aggregate	82	547	6.67
Coarse and fine aggregates:			
Graded road base or subbase	66	364	5.52
Unpaved road surfacing	W	W	4.29
Terrazzo and exposed aggregate	31	271	8.74
Other construction materials	132	656	4.97
Roofing granules	W	W	7.02
Other miscellaneous uses:			
Other specified uses not listed[4]	1,221	6,150	5.04
Unspecified:[5]			
Actual	143	(6)	(6)
Estimated	4,476	32,730	7.31
Total[7]	7,845	51,059	6.51
Total[8 9]	8,648	51,059	5.90

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

[1]Includes granite, limestone, marble, miscellaneous stone, sandstone, and volcanic cinder and scoria; excludes sandstone value from State total to avoid disclosing company proprietary data.

[2]Includes filter stone and macadam.

[3]Less than 1/2 unit.

[4]Includes poultry grit and mineral food, cement manufacture, and other fillers or extenders.

[5]Includes production reported without a breakdown by use and estimates for nonrespondents.

[6]Excludes sandstone value from State total to avoid disclosing company proprietary data.

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

[8]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

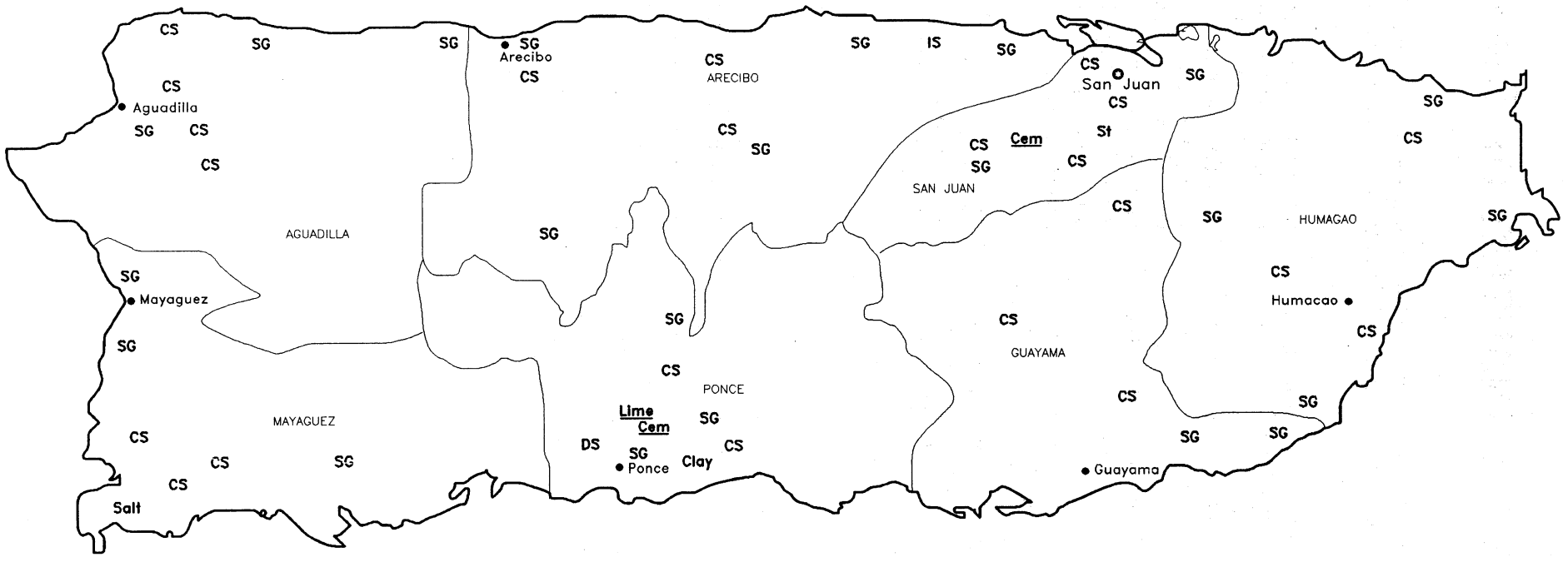
[9]Total shown in thousand short tons and thousand dollars.

TABLE 3
PUERTO RICO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	30	r5,875	r$35,740	r$6.08	29	6,161	$41,195	$6.69
Marble	r3	r503	r3,330	r6.62	3	230	1,575	6.85
Granite	1	W	W	7.39	4	495	3,865	7.81
Sandstone and quartzite	r5	r462	r2,582	r5.59	3	W	(2)	(2)
Volcanic cinder and scoria	r1	W	W	r6.51	1	W	1,180	W
Miscellaneous stone	2	W	W	10.08	3	468	3,246	6.94
Total[3]	XX	r8,008	49,839	6.22	XX	7,845	51,059	6.51
Total[4 5]	XX	r8,827	49,839	5.65	XX	8,648	51,059	5.90

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "sandstone and quartzite," reported with no distinction between the two.
[2]Excludes sandstone value from State total to avoid disclosing company proprietary data.
[3]Data may not add to totals shown because of independent rounding.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

PUERTO RICO



0 100 Kilometers

LEGEND

- State boundary
- District boundary
- Capital
- City

MINERAL SYMBOLS

Cem	Cement plant	Salt	Salt
Clay	Clay	SG	Sand & Gravel
CS	Crushed Stone	St	Stone
DS	Dimension Stone	IS	Industrial Sand
Lime	Lime plant		

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF RHODE ISLAND

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 Rhode Island Department of Environmental Management for collecting information on all nonfuel minerals.

In 1994, Rhode Island climbed to 48th among the 50 States in total nonfuel mineral value,[1] following more than 2 decades of ranking in the 49th place, according to the U.S. Bureau of Mines. The estimated value for 1994 was $27 million, a substantial 18% increase compared with that of 1993. This followed a nearly 8% increase from 1992 to 1993. The State accounted for about one-tenth of 1% of the U.S. total value. Increases in value of construction sand and gravel, the State's leading mineral commodity, and crushed stone accounted for most of Rhode Island's notably increasing mineral value in 1994. Construction sand and gravel alone was responsible for most of the increase in 1993. In 1994, production of industrial sand and gravel was reported, but has been withheld from table 1 below to protect company proprietary data; no gemstone data production was reported for the year.

According to the Office of the Rhode Island State geologist, information concerning the State's bedrock geology was gathered and a map (scale=1:100,000) was subsequently published in 1994 under the title *Bedrock Geologic Map of Rhode Island* as part of Rhode Island Map Series No. 1. All map data were compiled in digital form and may be purchased from the State geologist.

[1]The term value in this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN RHODE ISLAND[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$1	NA	$1	—	—
Sand and gravel (construction)	thousand metric tons	2,227	11,964	e2,500	e13,900	2,800	$15,800
Stone (crushed)	do.	e1,361	e9,500	1,291	9,251	e1,600	e11,600
Total[2]		XX	21,465	XX	[3]23,152	XX	27,400

eEstimated. pPreliminary. NA Not available. XX Not applicable.

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

[2]Partial total, excludes values which must be concealed to avoid disclosing company proprietary data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

RHODE ISLAND: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	1	$20	$20.00
Riprap and jetty stone	8	85	10.63
Filter stone	W	W	8.00
Coarse aggregate, graded:			
Bituminous aggregate, coarse	15	91	6.07
Railroad ballast	(2)	4	11.03
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	13	87	6.69
Screening, undesignated	1	8	8.00
Coarse and fine aggregates:			
Graded road base or subbase	18	70	3.89
Unpaved road surfacing	4	14	3.50
Terrazzo and exposed aggregate	1	14	14.00
Crusher run or fill or waste	W	W	10.82
Other construction materials	6	50	8.33
Agricultural:			
Agricultural limestone	9	(3)	(3)
Unspecified:[4]			
Actual	549	(3)	(3)
Estimated	666	4,311	6.47
Total[5]	1,291	9,251	7.17
Total[6 7]	1,423	9,251	6.50

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes granite, limestone, and traprock.
[2]Less than 1/2 unit.
[3]Withheld to avoid disclosing company proprietary data; included with "Total."
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

RHODE ISLAND: CRUSHED STONE SOLD OR USED, BY KIND

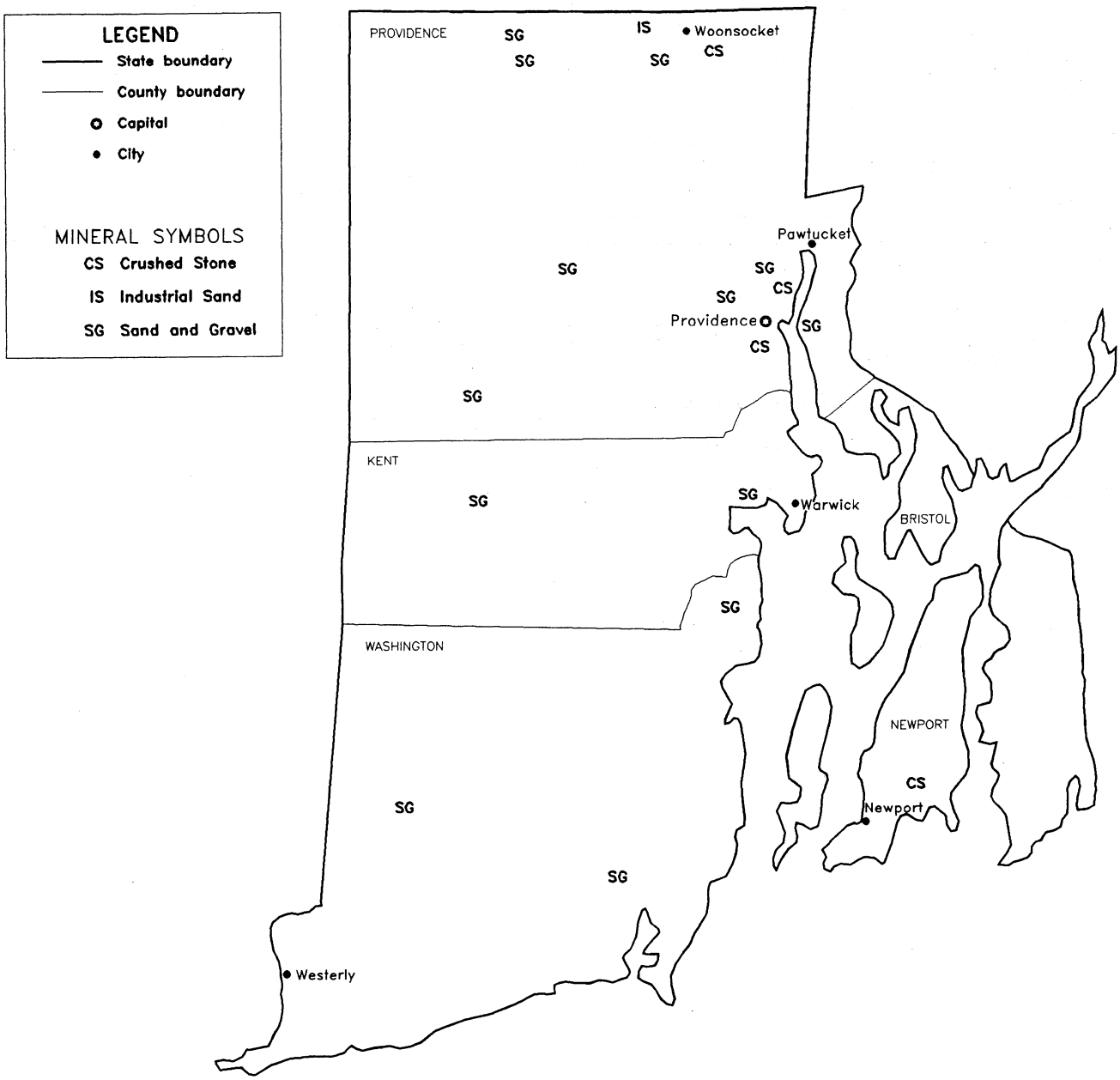
Kind	1991[r]				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	2	W	W	$6.10	3	572	$3,459	$6.05
Granite	2	W	W	7.40	2	W	W	8.06
Traprock	2	W	W	7.25	2	W	W	8.04
Total[1]	XX	1,077	$7,262	6.74	XX	1,291	9,251	7.17
Total[2 3]	XX	1,187	7,262	6.12	XX	1,423	9,251	6.50

[r]Revised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Data may not add to totals shown because of independent rounding.
[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[3]Total shown in thousand short tons and thousand dollars.

RHODE ISLAND

0 10 Kilometers

Principal Mineral–Producing Localities



THE MINERAL INDUSTRY OF SOUTH CAROLINA

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 South Carolina Geological Survey for collecting information on all nonfuel minerals.

South Carolina ranked 29th in the Nation in total nonfuel mineral value[1] in 1994, dropping from 27th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $415 million, a 6% increase compared with that of 1993. This followed a 13% increase in 1993 as measured against 1992. The State accounted for more than 1% of the U.S. total value. In both years, crushed stone and portland cement had the largest impacts on the increasing values; more moderate increases in masonry cement and construction sand and gravel also contributed to 1994's higher level of mineral value. Although the State experienced a sizable rise in nonfuel mineral value during 1994, the increases were less than those of 1993, a year in which crushed stone values rose by 37% and portland cement by 16% compared with that of 1992. The rising values in 1993 were offset by a drop in gold values for that year. Compared with 1993, mineral commodity values increased for the following: crushed stone, portland cement, construction sand and gravel, masonry cement, industrial sand and gravel, vermiculite, and gemstones. Decreases occurred in gold, dimension stone, and silver.

Based on a comparison of USBM estimated quantities of minerals produced in the United States during 1994, South Carolina remained the 1st of two States that produced vermiculite; 2d in kaolin clay-production; and 7th of the 13 U.S. gold-producing States. The State was one of the top four producers of masonry cement; moved up one place from eighth to seventh in the production of common clays, and remained fifth of five States producing mica. South Carolina also remained 11th in the production of both portland cement and industrial sand and gravel. Manganiferous ore was produced only in South Carolina; the ore, a manganiferous schist, was used as a brick colorant and not in the production of manganese metal. In addition, the State's mines produced significant quantities of construction sand and gravel and crushed stone. Nationally, South Carolina ranked 11th of 14 States in both the quantity and value of primary aluminum produced in 1994, all bauxite and alumina feedstock materials being received from foreign sources.

According to the South Carolina Geological Survey, news in the mineral industry was dominated by

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN SOUTH CAROLINA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland)	thousand metric tons	2,083	$93,385	2,132	$109,369	2,280	$117,000
Clays	do.	1,608	27,694	1,539	31,304	1,830	32,500
Gemstones		NA	641	NA	W	NA	W
Gold[2]	kilograms	6,747	74,832	W	W	W	W
Sand and gravel:							
Construction	thousand metric tons	6,256	19,923	e6,800	e21,800	7,900	26,100
Industrial	do.	770	17,316	749	18,964	W	W
Stone (crushed)	do.	e 3 15,966	e 3 83,800	19,765	120,939	e20,500	e128,000
Combined value of cement (masonry), manganiferous ore, mica (scrap), peat, silver, stone [crushed dolomite (1992), dimension], vermiculite, and values indicated by symbol W		XX	29,305	XX	88,671	XX	112,000
Total		XX	346,896	XX	391,047	XX	4 415,000

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

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

[2]Recoverable content of ores, etc.

[3]Excludes certain stones; kind and value included with "Combined value" data.

[4]Data do not add to total and shown of independent rounding.

gold companies. The proposed sale of Kennecott Minerals Co.'s Ridgeway Mine, Fairfield County, to Kinross Gold Corp. did not take place as expected. During 1994, the Ridgeway Mine shipped more than 3,700 kilograms (kg), [120,000 troy ounces (tr oz)], of gold. Production amounted to more than 5.3 million metric tons (mt), or 5.9 million short tons (st), with an average grade of 0.82 grams per mt (0.024 tr oz/st), most of which came from the mine's south pit, according to company reports. Mining operations at Nevada Goldfields Inc.'s Barite Hill Mine, a gold heap-leach operation in McCormick County, ceased in mid-October. While reclamation proceeded at a rapid pace, the company reported that residual production from the continued leaching of the mine heaps was expected to continue through 1995, resulting in an anticipated 200 kg (6,500 tr oz) of gold. Reclamation plans for Costain Minerals Inc.'s Brewer Gold Mine, Chesterfield County, were undergoing modification to include backfilling, even though only one-half of the total potential ore was believed to have been mined. Amax Gold Inc. was attempting to sell its Haile Gold Mine near Kershaw in Lancaster County. Open pit heap-leach gold operations had been suspended since late 1991. Some exploration for gold was reportedly taking place north of the Brewer Mine, as well as adjacent to the Haile Mine property. In construction aggregate news, Martin Marrietta Aggregates bought the Jamestown quarry from another of the State's major producers, Southern Aggregates Co.

[1]The term value, referring throughout this document to that of nonfuel mineral value, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
SOUTH CAROLINA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	470	$2,302	$4.90
Riprap and jetty stone	W	W	9.50
Filter stone	127	812	6.39
Coarse aggregate, graded:			
Concrete aggregate, coarse[2]	4,497	14,028	3.12
Fine aggregate (-3/8 inch):			
Screening, undesignated[3]	3,192	17,898	5.61
Coarse and fine aggregates:			
Graded road base or subbase	1,946	10,211	5.25
Unpaved road surfacing	127	812	6.39
Crusher run or fill or waste	W	W	6.71
Other construction materials	1,140	7,949	6.97
Chemical and metallurgical:			
Cement manufacture	(4)	(4)	8.26
Special:			
Other specified uses not listed	(4)	(4)	27.56
Unspecified:[5]			
Actual	(4)	(4)	5.46
Total[6]	19,765	120,939	6.12
Total[7 8]	21,787	120,939	5.55

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, calcareous marl, and shell.
[2]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, and other graded coarse aggregate.
[3]Includes sand stone (concrete), sand stone (bituminous mix or seal) and other fine aggregate.
[4]Withheld to avoid disclosing company proprietary data; included with "Total."
[5]Includes production reported without a breakdown by use and estimates for nonrespondents.
[6]Data may not add to totals shown because of independent rounding.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

TABLE 3

SOUTH CAROLINA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[1]				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	2	2,256	$10,935	$4.85	5	W	W	5.38
Dolomite	r—	r—	r—	r—	1	W	W	6.08
Calcareous marl	4	2,990	6,812	2.28	3	2,889	16,149	5.59
Shell	1	122	554	4.54	1	W	W	4.59
Granite	21	11,156	65,959	5.91	22	14,287	90,604	6.34
Total[2]	XX	16,525	r84,260	r5.10	XX	19,765	120,939	6.12
Total[3 4]	XX	18,216	84,260	4.63	XX	21,787	120,939	5.55

rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
[1]Excludes dolomite.
[2]Data do not add to total shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

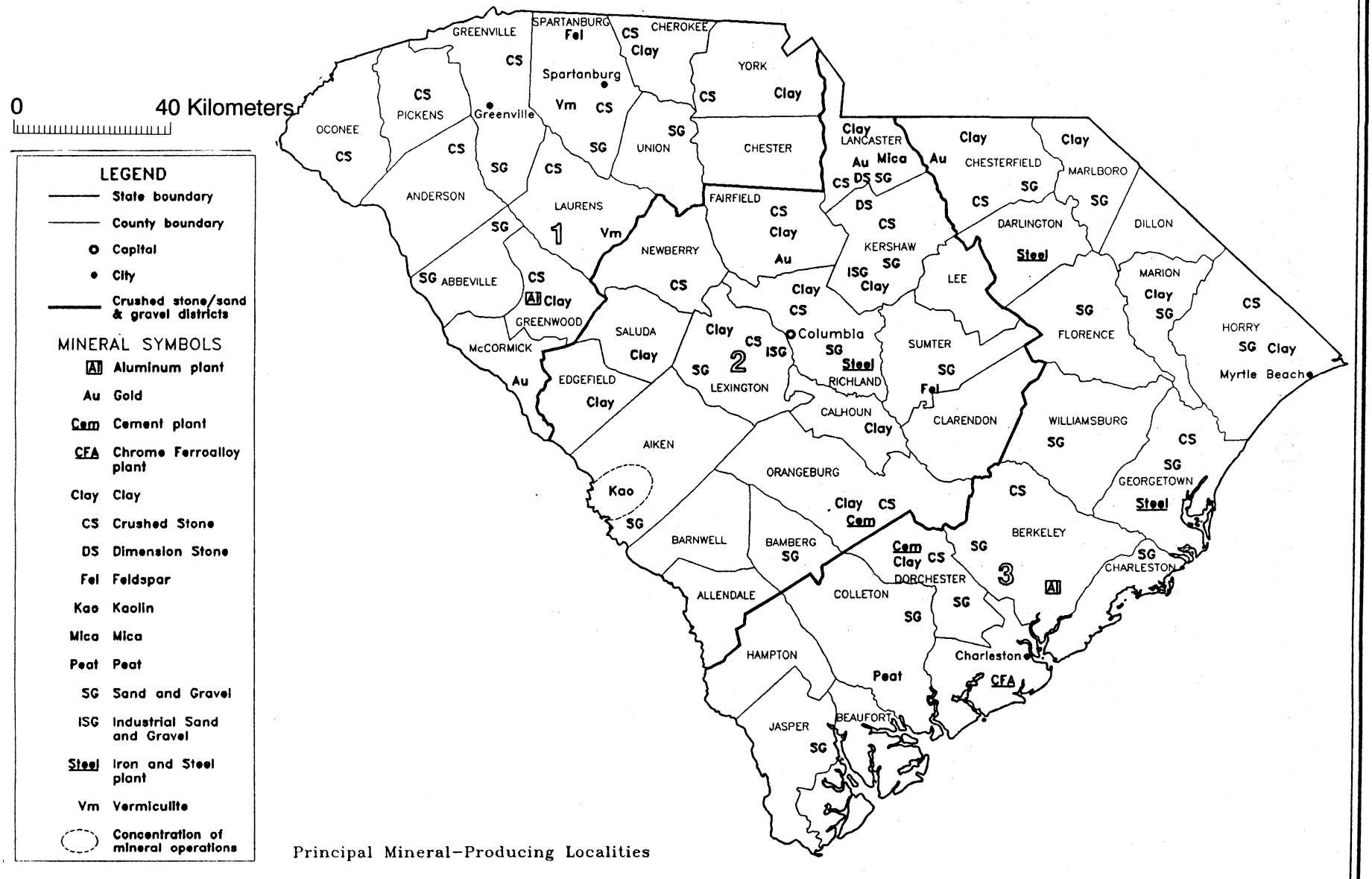
SOUTH CAROLINA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	304	2,104	(2)	(2)	(2)	(2)
Coarse aggregate, graded[3]	3,128	22,245	(2)	(2)	(2)	(2)
Fine aggregate (-3/8 inch)[4]	1,821	9,209	(2)	(2)	(2)	(2)
Coarse and fine aggregate[5]	(2)	(2)	(2)	(2)	—	—
Other construction materials	(2)	(2)	—	—	—	—
Chemical and metallurgical[6]	—	—	—	—	(2)	(2)
Other miscellaneous uses[7]	—	—	(2)	(2)	—	—
Unspecified:[8]						
Actual	(2)	(2)	(2)	(2)	(2)	(2)
Total[9]	8,226	50,442	7,491	44,476	4,048	26,021
Total[10 11]	9,068	50,442	8,257	44,476	4,462	26,021

[1]Includes filter stone, macadam, and riprap and jetty stone.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and other graded coarse aggregate.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[5]Includes graded road base or subbase, unpaved road surfacing, and crusher run (select material or fill).
[6]Includes cement manufacture.
[7]Includes other specified uses not listed.
[8]Includes production reported without a breakdown by use and estimates for nonrespondents.
[9]Data may not add to totals shown because of independent rounding.
[10]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[11]Total shown in thousand short tons and thousand dollars.

SOUTH CAROLINA



THE MINERAL INDUSTRY OF SOUTH DAKOTA

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 South Dakota Geological Survey for collecting information on all nonfuel minerals.

South Dakota ranked 36th in the Nation in nonfuel mineral value[1] in 1994, down from 31st in 1993, according to the U.S. Bureau of Mines (USBM). This was the State's lowest ranking in more than 15 years, during which time the average rank was 33d. The estimated value for 1994 was $322 million, a 5% decrease from that of 1993. This followed a more than 12% increase in 1993 compared with that of 1992. The State accounted for almost 1% of the U.S. total mineral value. In terms of value, gold remained the leading commodity, followed by portland cement, construction sand and gravel, crushed stone, and dimension stone. Gold and silver accounted for almost 62% of the total nonfuel mineral value. Iron ore was mined for use in a South Dakota cement plant as an ingredient in its cement manufacturing process and not for the production of the metal. The State's fluctuating nonfuel mineral values during the past 2 years mainly reflect similar changes in gold. In 1994, the decreased value of gold was partly offset by increases in the values of portland cement, construction sand and gravel, and crushed stone. Compared with 1993, the value of the following increased: portland cement, construction sand and gravel, crushed stone, crushed sandstone, lime, iron ore, and gypsum. Decreases occurred in gold, dimension stone, silver, feldspar, masonry cement, and gemstones.

Compared with USBM estimates of the quantities of mineral produced in the other 49 States during 1994, South Dakota remained 4th of the 13 U.S. gold-producing States; 4th of 5 States in which mica was produced; 5th in iron ore; and 7th in feldspar. The State moved up in rank from 11th to 10th in the production of dimension stone. Significant amounts of portland cement and construction sand and gravel also were produced in the State.

According to the South Dakota Geological Survey, gold dominated the State's mining news in 1994. Seven exploration permits were issued to Energy Fuels Corp., Wharf Resources, and Homestake Mining Co. Production continued at gold mines in the Black Hills operated by Homestake, Wharf Resources, Golden Reward Mining Co., Brohm Mining Corp., and Richmond Hill, Inc. In February, plans were adopted to mitigate the degree of acid-generation identified in 1992 from sulfide rock at the Lac Minerals Ltd.'s

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN SOUTH DAKOTA[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Gemstones		NA	$967	NA	$163	NA	W
Gold[2]	kilograms	18,681	207,195	19,241	223,267	[3]17,000	[3]$197,000
Sand and gravel (construction)	thousand metric tons	7,511	22,187	[e]8,300	[e]25,000	9,500	29,900
Silver[2]	metric tons	6	802	5	651	4	553
Stone (crushed)	thousand metric tons	[e]4,082	[e]18,900	[4]4,227	[4]18,684	[e,4]4,400	[e,4]20,000
Combined value of cement, clays (common), feldspar, gypsum (crude), iron ore (usable), lime, mica (scrap), stone [crushed sandstone and miscellaneous (1993-94), dimension], and value indicated by symbol W		XX	50,619	XX	69,391	XX	73,700
Total		XX	300,670	XX	337,156	XX	[5]322,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Recoverable content of ores, etc.

[3]Placer canvassing discontinued beginning 1994.

[4]Excludes certain stones; kind and value included with "Combined value" data.

[5]Data do not add to total shown because of independent rounding.

Richmond Hill Mine. Approximately 3.2 million metric tons (3.5 million short tons) of waste rock, two-thirds of which was reactive (significantly acid-producing), were removed from Richmond Hill's waste depository. The pit was backfilled and capped with a multimaterial cover. An increase in reclamation surety bonding from $1.1 million to $10.7 million was required by the State Department of Environment and Natural Resources (DENR). During the excavation of limestone for use in the mine reclamation work, a fossil assemblage of Pleistocene mammals and amphibians was unearthed. Geologists from the academic community and the State reported the discovery to be one of the most significant of its nature in the Black Hills. In July, Brohm Mining submitted to the State an acid mine drainage mitigation plan for the Gilt Edge Mine, but the company had not received a permit by yearend. Brohm also submitted plans with the USDA Forest Service and the State to expand its Anchor Hill operation. Energy Fuels continued its exploration in the Keystone district of the southern Black Hills and reported additional potential for an underground gold mine.

DENR's Office of Minerals and Mining remained involved with the Committee to Develop On-Site Innovative Technologies (DOIT) and other national partnerships to solve mine waste problems. The DOIT committee was composed of the Secretaries of the Departments of Energy, Defense, the Interior, and the U.S. Environmental Protection Agency, together with four western Governors serving rotating terms. Based on a memorandum of understanding between all members, the committee was responsible for addressing a number of environmental restoration and waste management problems at Federal facilities and on Federal lands in the West. DENR personnel participated on two of four principal committees, one of these being the Abandoned Mine Waste Working Group.

DENR's Division of Geological Survey, focusing on manganese, continued research on the mineral potential of the irregular rock contact zone where the State's Mesozoic black shales and basement rock interconnect; the resource assessments were conducted with support from the U.S. Geological Survey's Office of Mineral Resources. Also focusing on manganese, BHP Minerals International Exploration, Inc. targeted its exploration efforts on potential stratiform multicommodity black shales flanking the Proterozoic Sioux Ridge. The Company, however, later requested a release from all six of its eastern South Dakota permits for the exploration for "all minerals, excluding oil, gas, and uranium." American Colloid Co. was developing a plan to open a large-scale bentonite mine in the northern Black Hills and applied for mining permits at yearend. The banning of mineral exploration and mining on about 375 square kilometers (150 square miles) of "unique and scenic" land within Lawrence County was the subject of a ballot issue. The initiative was defeated by a margin of 58% to 42%. The South Dakota Mining Association had strongly opposed the measure.

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[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2

SOUTH DAKOTA:[1] CRUSHED STONE[2] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate: Other construction materials[3]	963	$4,585	$4.76
Other miscellaneous uses: Other specified uses not listed[4]	1,219	2,971	2.44
Unspecified:[5]			
Actual	1,326	8,073	6.09
Estimated	720	3,056	4.24
Total[6]	4,227	18,684	4.42
Total[7 8]	4,659	18,684	4.01

[1]To avoid disclosing company proprietary data; "District tables were not produced for 1993."
[2]Includes granite, limestone, and quartzite; excludes miscellaneous stone and sandstone.
[3]Includes riprap and jetty stone, filter stone, concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[4]Includes cement manufacture, lime manufacture, and other fillers or extenders.
[5]Includes production reported without a breakdown by use and estimates for nonrespondents.
[6]Data may not add to totals shown because of independent rounding.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

TABLE 3

SOUTH DAKOTA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	5	2,376	$7,667	$3.23	5	2,580	$9,017	$3.49
Granite	1	W	W	5.33	—	—	—	—
Sandstone	r1	W	W	r6.67	1	(1)	(1)	(1)
Quartzite	r3	r1,180	r6,525	r5.53	4	1,648	9,668	5.87
Miscellaneous stone	1	W	W	4.50	1	(1)	(1)	(1)
Total[2]	XX	4,376	19,657	4.49	XX	4,227	18,684	4.42
Total[3 4]	XX	4,824	19,657	4.08	XX	4,659	18,684	4.01

[r]Revised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes sandstone and miscellaneous stone.
[2]Data do not add to total shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

SOUTH DAKOTA

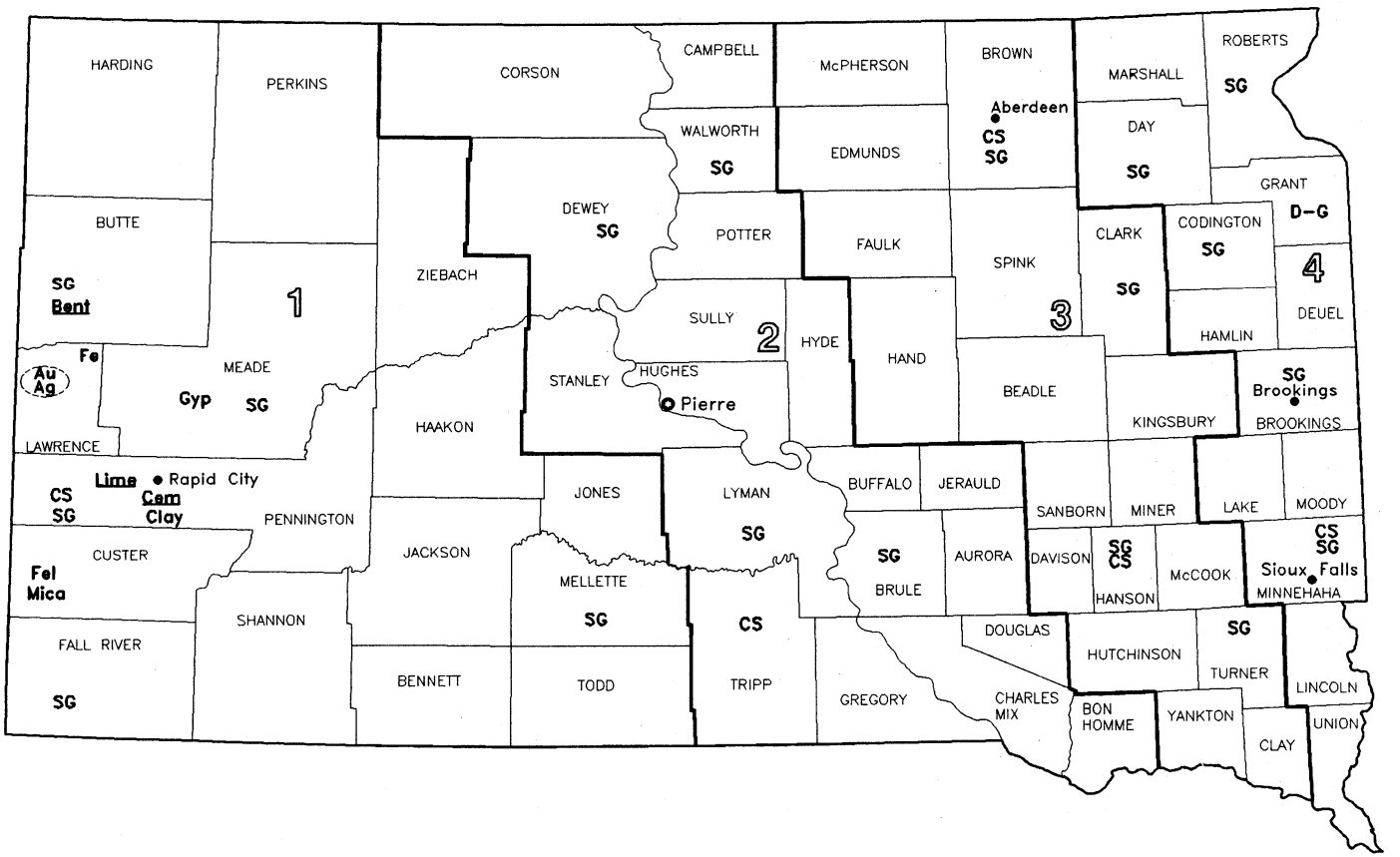
0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

- Ag Silver
- Au Gold
- Bent Bentonite mill
- Cem Cement plant
- Clay Clay
- CS Crushed Stone
- D–G Dimension Granite
- Fe Iron
- Fel Feldspar
- Gyp Gypsum
- Lime Lime plant
- Mica Mica
- SG Sand and Gravel
- Concentration of mineral operations



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF TENNESSEE

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 Tennessee Division of Geology for collecting information on all nonfuel minerals.

Tennessee ranked 18th among the 50 States in total nonfuel mineral value[1] in 1994, moving up from its 1993 standing of 19th, according to the U.S. Bureau of Mines. The estimated value for 1994 was $577 million, a 13% increase from the almost $510 million achieved in 1993. This increase followed a more than 11% decrease from 1992 to 1993. The State accounted for more than 1.5% of the U.S. total. This fluctuating pattern in values was mostly driven by similar decreases in 1993, followed by increases in 1994 for crushed stone and zinc, the State's two most valuable commodities. Other mineral commodities with similar patterns but less impact on total values were construction sand and gravel, lime, and fuller's earth. Crushed stone has been Tennessee's leading commodity for more than 25 years, except for 1981 when zinc was first. Industrial minerals accounted for 78% of Tennessee's total nonfuel mineral value, while crushed stone represented more than 47% of the total. Compared with 1993, the value of crushed stone, zinc, construction sand and gravel, ball clays, industrial sand and gravel, fuller's earth, masonry cement, dimension stone, and copper increased. Decreases occurred in portland cement, lime, and common clays.

Based on a comparison of estimated quantities of mineral produced in the 50 States, Tennessee remained the leading gemstone- and ball clay-producing State, 2d in zinc, 7th in fuller's earth, and 11th in crushed stone. The State ranked 10th in the production of primary aluminum, which was produced from materials received from foreign sources. Tennessee was one of two States that produced cadmium as a byproduct of the processing of domestically mined zinc ore. One company in each State recovered cadmium during the smelting and refining process of its zinc concentrates. Additionally, small amounts of gold from placer deposits were recovered in Monroe County in southeastern Tennessee.

According to the Tennessee Division of Geology, the State's zinc mining industry had a very active year. ASARCO Inc.'s east Tennessee zinc mining operations continued on a 7-day work week that began in 1992. Approximately 600 employees produced about 67,500 metric tons (149 million pounds) of zinc in concentrate for Asarco in 1994. Also of note was the completion of the Gann air shaft servicing the eastern down dip portion of Asarco's Immel Mine. The assets of Union Zinc Co. were purchased by Savage Resources, Ltd., of Sydney, Australia. These included Union's Jersey-Miniere Zinc, Inc. (JMZ) division, which operated the Gordonsville-Elmwood-Cumberland mining and milling complex, the Jefferson City Zinc Mine and mill, and

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN TENNESSEE[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2]	thousand metric tons	574	$24,097	607	$25,703	641	$27,500
Gemstones		NA	23,347	NA	21,795	NA	W
Sand and gravel:							
Construction	thousand metric tons	7,691	35,077	e7,200	e34,000	8,100	38,900
Industrial	do.	614	10,665	644	11,736	W	W
Stone:							
Crushed	do.	e42,366	e243,800	43,534	226,521	e50,000	e273,000
Dimension	metric tons	e3,084	e320	4,553	552	W	W
Combined value of cement, clays (bentonite, common, fuller's earth), copper, lead, lime, silver (1992-93), zinc, and values indicated by symbol W		XX	238,498	XX	189,358	XX	238,000
Total		XX	575,804	XX	509,665	XX	[3]577,000

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

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

TENNESSEE: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	137	$707	$5.16
Riprap and jetty stone	1,039	5,198	5.00
Filter stone	246	1,137	4.62
Other coarse aggregate	192	723	3.77
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,602	18,374	5.10
Bituminous aggregate, coarse	9,523	45,563	4.78
Bituminous surface-treatment aggregate	1,514	9,616	6.35
Railroad ballast	W	W	4.36
Other graded coarse aggregate	W	W	4.47
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,227	8,298	6.76
Stone sand, bituminous mix or seal	594	2,936	4.94
Screening, undesignated	2,569	13,533	5.27
Other fine aggregate	44	165	3.75
Coarse and fine aggregates:			
Graded road base or subbase	9,567	46,808	4.89
Unpaved road surfacing	317	1,664	5.25
Terrazzo and exposed aggregate	W	W	4.59
Crusher run or fill or waste	1,885	8,218	4.36
Other coarse and fine aggregates	1,153	4,902	4.25
Other construction materials[2]	2,008	9,394	4.68
Agricultural:			
Agricultural limestone[3]	545	4,092	7.51
Chemical and metallurgical:			
Cement manufacture	(4)	(4)	4.88
Lime manufacture	(4)	(4)	16.53
Sulfur oxide removal	(4)	(4)	4.07
Special:			
Mine dusting or acid water treatment	W	W	15.67
Asphalt fillers or extenders	W	W	5.51
Whiting or whiting substitute	W	W	11.03
Other fillers or extenders[5]	591	5,777	9.77
Other specified uses not listed	1,986	12,480	6.28
Unspecified:[6]			
Actual	3,002	17,240	5.74
Estimated	1,796	9,695	5.40
Total[7]	43,534	226,521	5.20
Total[8 9]	47,988	226,521	4.72

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, and sandstone.
[2]Includes building products.
[3]Includes poultry grit and mineral food.
[4]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[5]Includes mine dust or acid water treatment, asphalt filler or extenders, and whiting or whiting substitute.
[6]Includes production reported without a breakdown by use and estimates for nonrespondents.
[7]Data may not add to totals shown because of independent rounding.
[8]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[9]Total shown in thousand short tons and thousand dollars.

the Clinch Valley Zinc Mine and mill (formerly named the Idol Mine). Also included in the transaction was the JMZ electrolytic refinery at Clarksville, TN. All of the aforementioned properties are operated by Savage Zinc, Inc., the U.S. subsidiary of Savage Resources. In the Coker Creek gold district of Monroe County, the East Coast Prospectors Club, headquartered in Elijay, GA, has a lease on private land that was formerly under lease by Weekend Gold Miners, Inc. Members mine placer gold using portable dredges and pans. Coker Creek Village operates a pan-for-fee operation for naturally occurring placer gold deposits.

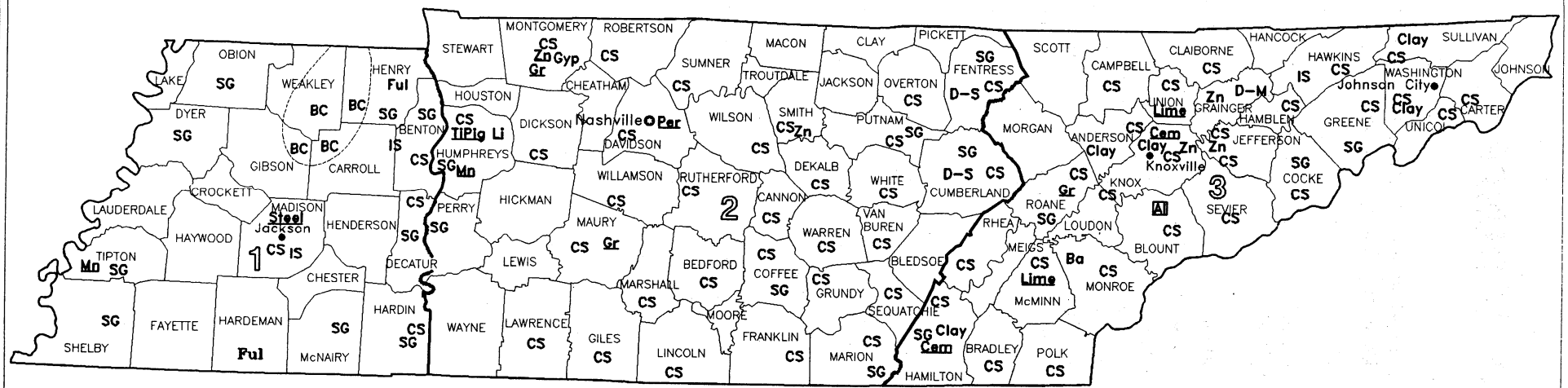
[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
TENNESSEE: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991[r]				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	108	34,948	$196,188	$5.61	[1]106	[1]38,754	[1]$203,672	[1]$5.26
Dolomite	11	W	W	4.65	9	W	W	4.71
Granite	2	W	1,927	W	1	W	W	4.96
Sandstone	3	W	W	13.27	1	W	W	5.51
Miscellaneous stone	1	W	W	5.62	1	W	W	5.26
Total[2]	XX	39,996	223,561	5.59	XX	43,534	226,521	5.20
Total[3 4]	XX	44,088	223,561	5.07	XX	47,988	226,521	4.72

[r]Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
[1]Includes "Limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TENNESSEE



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

- Al Aluminum plant
- Ba Barite
- BC Ball Clay
- Cem Cement plant
- Clay Clay
- CS Crushed Stone
- D–M Dimension Marble
- D–S Dimension Sandstone
- Ful Fuller's earth
- Gr Graphite plant
- Gyp By Product Gypsum
- IS Industrial Sand
- Li Lithium plant
- Lime Lime plant
- Mn Manganese Dioxide plant
- Per Perlite plant
- SG Sand and Gravel
- Steel Steel Plant
- TiPig Titanium Dioxide pigment plant
- Zn Zinc
- Zn Zinc smelter
- Concentration of mineral operations

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF TEXAS

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 Bureau of Economic Geology, The University of Texas at Austin, for collecting information on all nonfuel minerals.

Texas ranked eighth in the Nation in nonfuel mineral value[1] in 1994, down from fifth in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was more than $1.4 billion, almost a 3% decrease from that of 1993. This followed a more than 11% increase in 1993 compared with that of 1992. The State accounted for more than 4% of the U.S. total. More than 85% of the State's nonfuel mineral value came from industrial minerals, especially portland cement, crushed stone, construction sand and gravel, lime, and salt. These five accounted for 75% of the total. Magnesium metal, extracted from seawater, was the only metal produced from the State's own resources. Very small quantities of iron ore were mined for industrial use as a cattle feed nutrient, road aggregate, and in the manufacture of cement. Compared with 1993, the value of the following nonfuel minerals increased: crushed stone, magnesium metal, industrial sand and gravel, masonry cement, common clays, gypsum, crude helium, ball clays, fuller's earth, magnesium compounds, and iron ore. The value of the following decreased: portland cement, construction sand and gravel, lime, salt, frasch sulfur, grade-A helium, sodium sulfate,

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN TEXAS[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:							
Masonry	thousand metric tons	W	W	245	$18,365	316	$23,700
Portland	do.	6,840	$308,749	8,127	397,600	7,820	383,000
Clays[2]	do.	2,237	12,610	2,183	17,441	2,260	21,200
Gemstones		NA	3,834	NA	400	NA	W
Gypsum (crude)	thousand metric tons	1,624	9,920	1,756	10,088	1,920	11,100
Helium (crude)	million cubic meters	W	W	6	5,385	6	5,940
Lime	thousand metric tons	1,337	83,359	1,604	103,274	1,280	82,100
Salt	do.	7,985	76,125	8,253	76,054	7,960	76,000
Sand and gravel:							
Construction	do.	41,404	166,362	e47,100	e195,000	42,000	176,400
Industrial	do.	r1,392	r26,501	1,433	28,558	W	W
Stone:							
Crushed	do.	e64,682	e253,100	70,772	279,245	e75,800	e315,000
Dimension	do.	W	W	W	W	e46,500	e7,900
Sulfur (Frasch)	do.	1,495	W	1,164	W	W	W
Talc and pyrophyllite	metric tons	235,919	5,720	235,857	5,662	262,000	5,630
Combined value of clays [ball, bentonite, fuller's earth, kaolin), fluorspar (1993-94), helium (Grade-A), iron ore (usable), magnesium compounds, magnesium metal, sodium sulfate (natural), and values indicated by symbol W		XX	357,458	XX	311,041	XX	301,000
Total		XX	r1,303,738	XX	1,448,113	XX	[3]1,410,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Data do not add total shown because of independent rounding.

TABLE 2

TEXAS: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	598	$3,960	$6.62
Filter stone	102	531	5.21
Other coarse aggregate	W	W	3.93
Coarse aggregate, graded:			
Concrete aggregate, coarse	10,860	50,789	4.68
Bituminous aggregate, coarse	4,967	24,122	4.86
Bituminous surface-treatment aggregate	1,452	8,328	5.74
Railroad ballast	438	2,230	5.09
Other graded coarse aggregate	2,042	8,534	4.18
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,850	8,113	4.39
Stone sand, bituminous mix or seal	1,760	4,724	2.68
Screening, undesignated	795	1,954	2.46
Other fine aggregate	470	1,603	3.41
Coarse and fine aggregates:			
Graded road base or subbase	20,225	54,888	2.71
Unpaved road surfacing	105	385	3.67
Terrazzo and exposed aggregate	7	351	50.14
Crusher run or fill or waste	1,192	2,338	1.96
Other coarse and fine aggregates	369	913	2.47
Other construction materials	419	2,104	5.02
Roofing granules	W	W	6.06
Agricultural:			
Agricultural limestone	315	1,274	4.04
Poultry grit and mineral food	193	1,797	9.31
Chemical and metallurgical:			
Cement manufacture	10,885	30,361	2.79
Lime manufacture	1,557	7,160	4.60
Dead-burned dolomite manufacture	(2)	(2)	3.74
Flux stone	(2)	(2)	5.50
Glass manufacture	(2)	(2)	10.95
Sulfur oxide removal	(2)	(2)	4.31
Special:			
Asphalt fillers or extenders	(2)	(2)	10.79
Whiting or whiting substitute	(2)	(2)	27.48
Other fillers or extenders	384	8,344	21.73
Other specified uses not listed	1,078	11,429	10.60
Unspecified:[3]			
Actual	1,942	11,072	5.70
Estimated	6,767	31,941	4.72
Total	70,772	279,245	3.95
Total[4 5]	78,013	279,245	3.58

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

[1]Includes dolomite, granite, limestone, limstone-dolomte, and miscellaneous stone.

[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

talc and pyrophyllite, and fluorspar.

Compared to USBM estimates of the quantities of minerals produced in the other 49 States during 1994, Texas remained first in crushed stone and magnesium metal; second in portland cement, salt, sodium sulfate, common clays, talc and pyrophyllite, fluorspar, and crude helium; third in gypsum and grade-A helium; one of five States producing zeolites; sixth in magnesium compounds; seventh in dimension stone; and one of the top seven bentonite clay-producing States. The State climbed in rank from third to second in ball clays and from fifth to third in the production of masonry cement, while dropping in the following: from first to second in frasch sulfur; second to sixth in construction sand and gravel; fourth to sixth in lime; and sixth to seventh in industrial sand and gravel. In addition to the primary production of magnesium metal, Texas had a strong metals industry which produced raw steel, aluminum, copper, lead, and smaller amounts of other metals. Sources of plant feed were mostly scrap metal, with some ores coming from other domestic or foreign sources. Texas was among the top seven State's that produced raw steel with an estimated output of nearly 3.8 million metric tons (4.2 million short tons), as reported by the American Iron and Steel Institute.

According to the Texas Bureau of Economic Geology, an overall pattern of declining unemployment rates occurred in Texas, becoming especially apparent during the last half of 1994. Unemployment in December was down to 5.8%, the lowest rate since 1989; Texas employers created 246,000 jobs during the year. Despite this positive trend, the number of workers employed in Texas mining and oil and gas extraction industries decreased by about 7.6% for the year. As reported by the Texas Employment Commission, employment in the mining industry totaled 159,300 in December 1994, while jobs that were available in the oil and gas extraction industry stood at about 151,200. In other mining and mineral-related developments, Texas highway construction and business expansion and relocation of businesses from other States stimulated the production of construction materials in 1994. Aggregate production (construction sand and gravel and crushed stone) increased 7% during the year. While the Texas legislature, which normally meets only in odd-numbered years, held no special legislative sessions during 1994, the issue of registration for geologists in Texas was scheduled for presentation during the regular 1995 legislative session.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
TEXAS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r124	r54,064	r$190,883	r$3.53	125	65,265	$254,082	$3.89
Dolomite	r2	W	W	r3.47	2	W	W	3.05
Marble	24	W	W	32.73	20	W	W	37.55
Calcareous marl	2	W	W	4.35	2	W	W	3.11
Granite	2	W	W	4.68	14	25	186	7.44
Traprock	3	887	4,641	5.23	3	250	1,807	7.23
Sandstone	r9	r1,094	r7,465	r6.82	6	825	5,272	6.39
Quartzite	r1	r305	rW	rW	1	W	W	8.42
Miscellaneous stone	17	1,140	3,402	2.98	11	2,206	7,197	3.26
Total[1]	XX	r59,664	r225,664	3.78	XX	70,772	279,245	3.95
Total[2 3]	XX	65,768	225,664	3.43	XX	78,013	279,245	3.58

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

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

[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	—	—	—	—	W	W
Coarse aggregate, graded[3]	303	2,860	—	—	W	W
Fine aggregate (-3/8 inch)[4]	101	600	(5)	(5)	W	W
Coarse and fine aggregate[6]	336	1,172	(5)	(5)	W	W
Other construction materials[7]	—	—	—	—	463	2,886
Agricultural[8]	—	—	(5)	(5)	—	—
Chemical and metallurgical[9]	—	—	—	—	(5)	(5)
Special[10]	—	—	—	—	—	—
Unspecified: [11]						
Actual	—	—	(5)	(5)	—	—
Estimated	525	2,839	(5)	(5)	(5)	(5)
Total[12]	1,265	7,471	810	4,002	2,827	12,798
Total[13 14]	1,394	7,471	893	4,002	3,116	12,798

	District 4		District 5		District 6 [1]	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	(5)	(5)	220	1,280	—	—
Coarse aggregate, graded[3]	W	W	10,574	50,906	—	—
Fine aggregate (-3/8 inch)[4]	W	W	2,216	7,327	—	—
Coarse and fine aggregate[6]	W	W	6,490	22,162	—	—
Other construction materials[7]	2,098	8,191	(5)	(5)	—	—
Agricultural[8]	—	—	(5)	(5)	—	—
Chemical and metallurgical[9]	(5)	(5)	4,780	14,438	—	—
Special [10]	—	—	(5)	(5)	—	—
Unspecified: [11]						
Actual	—	—	1,551	8,869	—	—
Estimated	1,224	4,985	1,902	7,636	—	—
Total[12]	3,898	14,539	28,438	119,196	—	—
Total[13 14]	4,297	14,539	31,347	119,196	—	—

See footnotes at end of table.

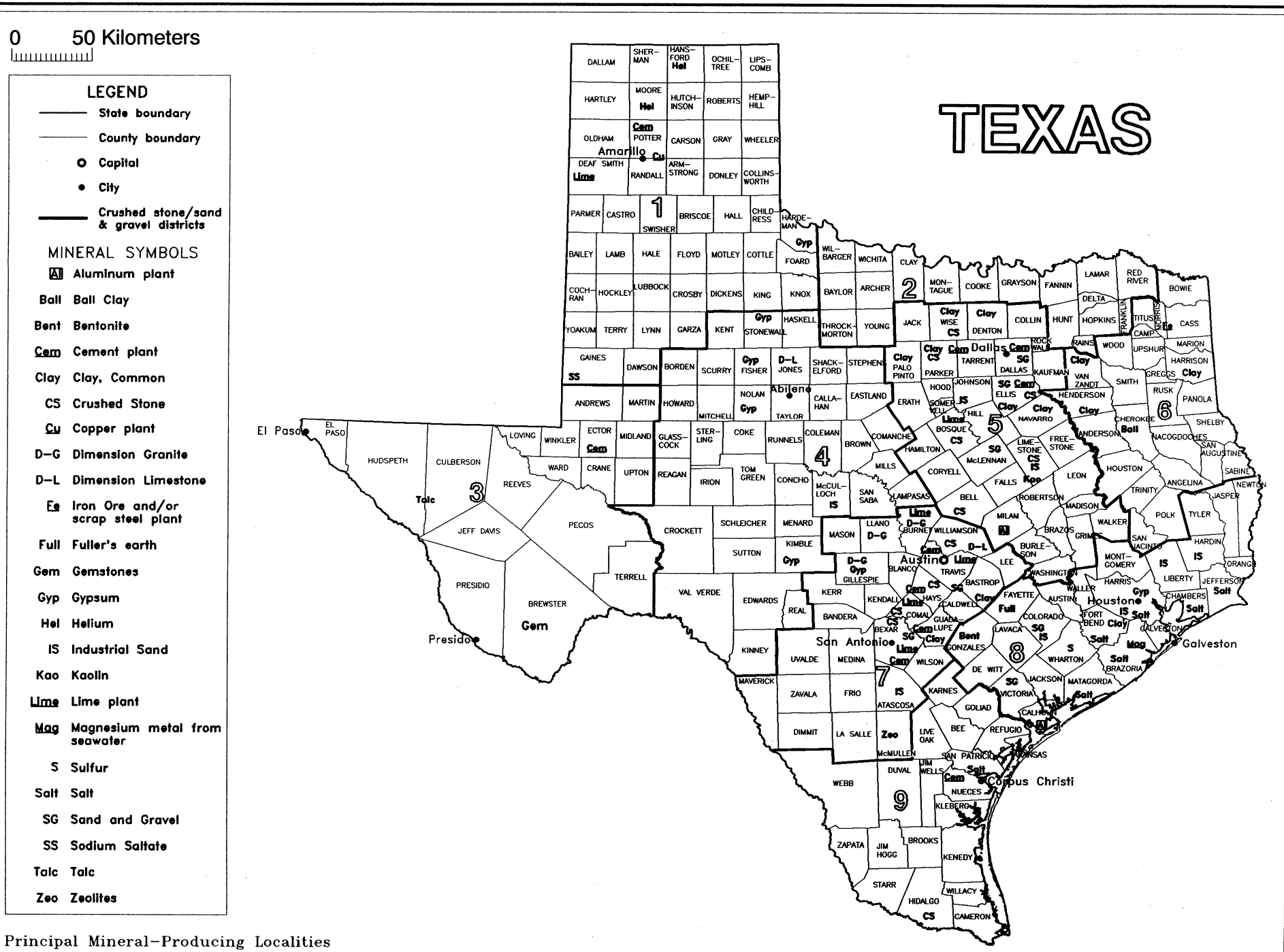
TABLE 4—Continued

TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	W	W	—	—	—	—
Coarse aggregate, graded[3]	7,749	33,038	77	319	32	272
Fine aggregate (-3/8 inch)[4]	2,353	7,494	1	6	56	210
Coarse and fine aggregate[6]	11,334	25,993	159	664	(5)	(5)
Other construction materials[7]	628	3,711	—	—	(5)	(5)
Agricultural[8]	(5)	(5)	—	—	—	—
Chemical and metallurgical[9]	6,928	22,490	—	—	—	—
Special [10]	(5)	(5)	—	—	—	—
Unspecified: [11]						
Actual	26	209	—	—	—	—
Estimated	989	5,985	109	865	65	192
Total[12]	30,804	113,111	346	1,854	2,384	6,274
Total[13 14]	33,956	113,111	381	1,854	2,628	6,274

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Withheld to avoid disclosing company proprietary data; included with "District 5."
[2]Includes filter stone, riprap and jetty stone, and other coarse aggregate.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[5]Withheld to avoid disclosing company proprietary data; included with "Total."
[6]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.
[7]Includes roofing granules.
[8]Includes agricultural limestone and poultry grit and mineral food.
[9]Includes cement manufacture, dead-burned dolomite manufacture, flux stone, glass manufacture, lime manufacture, and sulfur oxide removal.
[10]Includes asphalt fillers or extenders, other fillers or extenders, whiting or whiting substitute, and other specified uses not listed.
[11]Includes production reported without a breakdown by use and estimates for nonrespondents.
[12]Data may not add to totals shown because of independent rounding.
[13]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[14]Total shown in thousand short tons and thousand dollars.



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF UTAH

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 Utah Geological Survey for collecting information on all nonfuel minerals.

In 1994, for the third year in a row, Utah ranked seventh nationally in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines. The estimated value for 1994 exceeded $1.4 billion, an increase of about 9% compared with that of 1993. This followed a more than 2% decrease in 1993 from that of 1992. The State accounted for more than 4% of the U.S. total. Metals accounted for almost four-fifths of Utah's nonfuel mineral value, copper representing more than 60% of the total value of metals. The largest cause for the increase in mineral value in Utah in 1994 was higher prices and increased production and sales of copper. In estimated mineral production for 1994, Utah rose from fourth to second in potash, while the State remained second in copper; third in gold, molybdenum, and iron ore; fourth in magnesium compounds and phosphate rock; and sixth in salt. Utah ranked third among the three major magnesium metal producing States, was one of the top seven silver producing States, and was the only State to produce beryllium. Grade A helium was added to Utah's production in 1994. Compared with 1993, the value of copper, gold, magnesium metal, construction sand and gravel, molybdenum, crushed stone, lime, phosphate rock, magnesium compounds, iron ore, common clays, grade A helium, gemstones, gypsum, masonry cement, and beryllium increased. The value of portland cement, potash, salt, and silver decreased.

Mineral exploration in the State slowed significantly in 1994, according to the Utah Geological Survey. Only 33 notices of intent to explore had been filed by mid-November, compared with 54 for all of 1993. Exploration was predominantly for precious metals, although interest in porphyry- and skarn-type copper deposits increased. Chief Consolidated Mining Co. entered into a joint-venture agreement with Akiko Gold Resources Ltd. to explore Chief's properties in the Tintic mining district. Underground drilling and drifting (small-diameter tunneling) was scheduled for the Burgin lead-zinc-silver mine to confirm existing reserves of about 935,000 metric tons, according to the company, and to explore for additional reserves.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN UTAH[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Beryllium concentrates	metric tons	4,826	$5	4,939	$5	5,000	$6
Clays[2]	thousand metric tons	243	2,714	216	3,129	300	3,270
Gemstones		NA	634	NA	1,156	NA	1,920
Potash	thousand metric tons	W	W	210	49,690	W	W
Salt	do.	1,367	44,498	2,251	46,759	2,630	35,000
Sand and gravel (construction)	do.	16,037	54,819	e16,000	e56,000	18,000	65,700
Silver[3]	metric tons	W	W	135	18,703	W	W
Stone (crushed)	thousand metric tons	e4,808	e22,400	4,555	29,400	e5,400	e36,200
Combined value of cement, clays [bentonite, fuller's earth (1992-93)], copper, gold,[4] gypsum (crude), helium [Grade-A, (1994)], iron ore (usable), lime, magnesium compounds, magnesium metal, mercury, molybdenum, phosphate rock, sodium sulfate [natural (1992-93)], stone [dimension (1993-94)], and values indicated by symbol W		XX	r1,221,160	XX	1,108,695	XX	1,290,000
Total		XX	r1,346,230	XX	1,313,537	XX	e1,430,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

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

Summo Minerals Corp. was evaluating its Lisbon Valley copper property in San Juan County. The company obtained permits for 120 drill holes and was expected to complete a feasibility study in 1995 for an open-pit, heap-leach operation. Kennecott Utah Copper Corp. awarded a contract to Morrison Knudsen Corp. for engineering and management services for a tailings-impoundment project. Tailings storage will be increased by nearly 70% when the $500 million project is completed in 1998. Energy Fuels Nuclear Inc. (EFN) acquired the uranium-vanadium mining and milling properties of Umetco Minerals Corp. in southwestern Colorado and in southeastern Utah, including the White Mesa mill near Blanding. EFN also announced plans to reactivate the White Mesa mill in 1995. USMX Inc., citing both environmental and financial considerations as reasons, announced the closure of its Goldstrike gold mine in Washington County. Mining ceased in 1994, although leaching of the dumps was expected to continue into 1995.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
UTAH: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	21	$175	$8.33
Fine aggregate (-3/8 inch):			
Coarse and fine aggregates:			
Graded road base or subbase	223	689	3.09
Unpaved road surfacing	W	W	4.61
Crusher run or fill or waste	W	W	1.65
Other construction materials[2]	1,018	3,252	3.19
Agricultural:			
Agricultural limestone	(3)	(3)	22.04
Poultry grit and mineral food	3	78	26.00
Chemical and metallurgical:			
Cement manufacture	(3)	(3)	4.95
Lime manufacture	(3)	(3)	14.81
Flux stone	133	739	5.56
Special:			
Mine dusting or acid water treatment	(3)	(3)	4.31
Other specified uses not listed	2,959	23,400	7.91
Unspecified:[4]			
Actual	198	1,066	5.38
Total[5]	4,555	29,400	6.45
Total[6 7]	5,021	29,400	5.86

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, sandstone, and volcanic cinder and scoria.
[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, stone sand (bituminous mix or seal), and screening (undesignated).
[3]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[4]Includes production reported without a breakdown by use and estimates for nonrespondents.
[5]Data may not add to totals shown because of independent rounding.
[6]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[7]Total shown in thousand short tons and thousand dollars.

TABLE 3

UTAH: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	28	r2,712	$12,590	$4.64	17	3,187	24,103	7.56
Dolomite	2	W	W	3.88	2	W	W	3.65
Sandstone	4	W	W	4.65	4	W	W	5.15
Volcanic cinder and scoria	6	r29	385	13.27	4	13	105	8.07
Total[1]	XX	4,037	18,259	4.52	XX	4,555	29,400	6.45
Total[2 3]	XX	4,450	18,259	4.10	XX	5,021	29,400	5.86

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

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

[2]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[3]Total shown in thousand short tons and thousand dollars.

TABLE 4

UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	—	—	W	W	(2)	(2)
Coarse aggregate, graded[3]	—	—	W	W	—	—
Fine aggregate (-3/8 inch)[4]	—	—	W	W	—	—
Coarse and fine aggregate[5]	(2)	(2)	W	W	—	
Other construction materials	—	—	1,242	3,998	—	—
Agricultural[6]	—	—	(2)	(2)	—	—
Chemical and metallurgical[7]	1,721	(2)	632	(2)	—	—
Special[8]	(2)	(2)	(2)	(2)	—	—
Unspecified:[9]						
Actual	180	972	(2)	(2)	(2)	(2)
Estimated	—	—	—	—	—	—
Total[10]	2,622	22,067	1,915	7,215	18	118
Total[11 12]	2,890	22,067	2,111	7,215	20	118

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

[1]Includes riprap and jetty stone.

[2]Withheld to avoid disclosing company proprietary data; included with "Total."

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), and bituminous surface-treatment aggregate.

[4]Includes stone sand (bituminous mix or seal) and screening (undesignated).

[5]Includes graded road base or subbase, unpaved road surfacing, and crusher run (select material or fill).

[6]Includes agricultural limestone and poultry grit and mineral food.

[7]Includes cement manufacture, flux stone, and lime manufacture.

[8]Includes mine dusting or acid water treatment.

[9]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

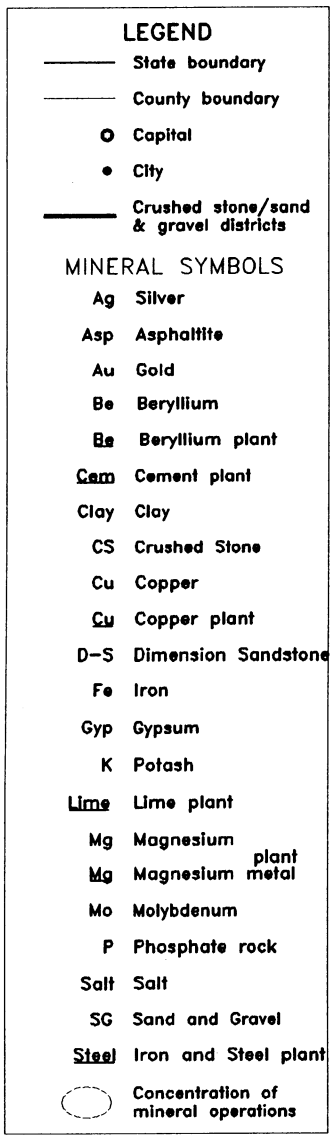
[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

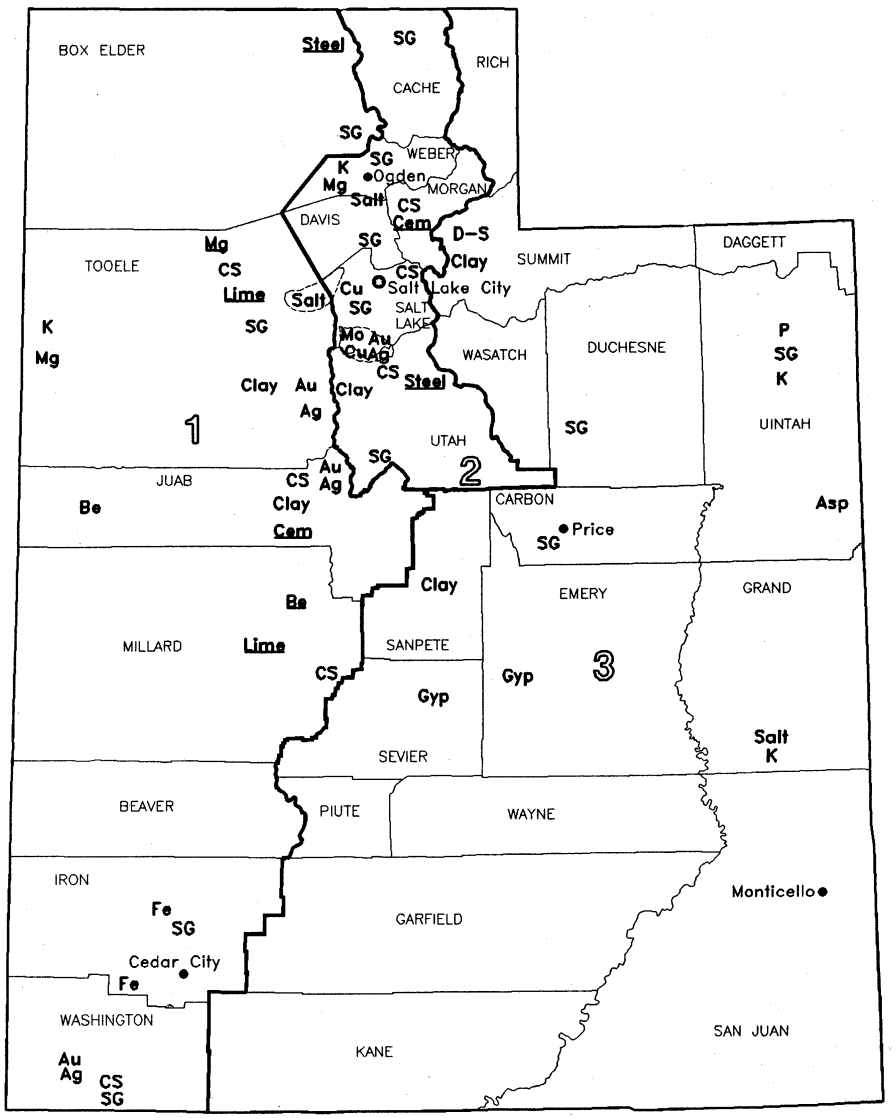
[12]Total shown in thousand short tons and thousand dollars.

UTAH

0 100 Kilometers

Principal Mineral–Producing Localities





THE MINERAL INDUSTRY OF VERMONT

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 Agency of Natural Resources, Division of Geology and Mineral Resources, for collecting information on all nonfuel minerals.

In 1994, for the second consecutive year, Vermont ranked 46th among the 50 States in total nonfuel mineral value,[1] after placing 45th in 13 of the previous 15 years, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $48 million, a 12% decrease compared with that of 1993. This followed a nearly 9% decrease in 1993 from that of 1992. The State accounted for less than 0.5% of the U.S. total value. Decreases in dimension stone value in 1993 and 1994 accounted for most of the State's decreasing mineral value for the 2 years. Compared with that of 1993, the value for crushed stone increased in 1994. Decreases occurred for dimension stone, talc and pyrophyllite, construction sand and gravel, and asbestos.

Based on USBM estimates comparing quantities of minerals produced in the United States during 1994, Vermont remained second of two States still producing asbestos, third in the production of talc and pyrophyllite, and fifth in dimension stone.

According to the Vermont Geological Survey, the Vermont Legislature in 1994 passed a moratorium (until April 1, 1995) on a provision of the State's landmark use and development law, known as Act 250, calling for a review and evaluation of a mine site when a slate quarry is reopened. A legislative committee met late in 1994 to investigate the issue with representatives of the industry, communities in which the industry exists, neighbors of the slate quarries, State agencies, and other interested persons. The committee considered the unique nature of the slate industry and appropriate definitions pertaining to "abandonment" of slate quarries; "substantial change" in quarry-related activities; and the definition of "slate quarries." Final action was not taken by yearend, but because of the progress made thus far, legislation addressing the definitions concerning the grandfathering of slate quarries and manufacturing was anticipated for early 1995. Because of the Act 250 review moratorium, several inactive slate quarries reopened with accompanying structures built at quarry locations to mill extracted material. U.S. Quarried Slate Products, Inc. purchased specialized sawing equipment to embark on the largest slate panel job in the world—the Toyota Art Museum in Japan. OMYA, Inc. received an Act 250 State permit to expand four small marble quarries into a larger crushed product operation, the Hogback Quarry, near its manufacturing plant in Florence. The marble will be finely ground and dried at the plant to produce calcium carbonate, which is used primarily as an extender and filler in the paper, paint, and plastics industries.

In other government news affecting the State minerals industry, The New England Governor's Conference recently completed the *Construction Aggregate Resources of New England, an Analysis of Supply and Demand.* This document, the third phase of a study, integrates information from published demand and resource documents and analyzes the capability of Vermont to help meet the region's sand and gravel needs. Also, in April 1994, the Governor signed into law Act 137, the "Texas Low-Level

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN VERMONT[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Asbestos	metric tons	4,575	$1,686	3,661	$1,531	1,130	$1,130
Gemstones		NA	1	NA	1	—	—
Sand and gravel (construction)	thousand metric tons	3,152	11,291	e3,000	e10,400	2,500	8,800
Stone:							
Crushed	do.	e2,268	e12,200	2,520	12,899	e2,600	e13,900
Dimension	metric tons	e113,398	e34,639	97,352	27,875	e80,300	e24,200
Total[2]		XX	59,817	XX	52,706	XX	[3]48,000

[e]Estimated. [p]Preliminary. NA Not available. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data.
[3]Data do not add to total shown because of independent reounding.

Radioactive Waste Disposal Compact." The States of Maine, Texas, and Vermont passed the compact, which was then submitted for Federal Congressional approval in 1994. A hearing was held in the U.S. House of Representatives, but no action was taken prior to the close of the 103d Congress. The consent bill was then resubmitted to the 104th Congress without final action by yearend.

In the talc industry, Luzenac America Inc., owner of all talc operations in Vermont, closed its Johnson mill in Lamoille County in northern Vermont, and site reclamation was underway. The Troy open pit mine, northeast of Johnson, remained idle at yearend, while the owners awaited greater demand for the ore in the marketplace. Regarding talc operations in southern Vermont, the Argonaut Mine in Ludlow was undergoing an accelerated development program to allow for more complete use of the ore body. The Hamm Mine in Windham continued to supply industrial and cosmetic-grade ore. All talc mines in Vermont are open pit mines; the last underground talc mine to operate in the State was the Hammondsville Mine, which closed permanently in 1990 after 40 years of operation. The granite industry continued to quarry and manufacture a high-quality product from quarries primarily located in Barre in Washington County. The Secretary of Veterans Affairs recommended that upright granite monuments again be an option (last offered in 1947) for veterans buried in State and private cemeteries, with the possible later extension to national cemeteries. In an effort to expand the marketability of granitic materials, Rock of Ages Corp. received a permit from local authorities to crush rock at its Bethel quarry in Windsor County.

[1]The term value, referring in this document to that of nonfuel minerals, here addresses the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
VERMONT: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Riprap and jetty stone[2]	72	$307	$4.26
Coarse aggregate, graded:			
Concrete aggregate, coarse	29	111	3.83
Bituminous aggregate, coarse	164	529	3.23
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	136	413	3.04
Coarse and fine aggregates: Graded road base or subbase[3]	239	1,204	5.04
Special:			
Other fillers or extenders	(4)	3	6.61
Other specified uses not listed	131	866	6.61
Unspecified:[5]			
Actual	541	2,884	5.33
Estimated	1,208	6,583	5.45
Total	2,520	[6]12,899	5.12
Total[7 8]	2,778	12,899	4.64

[1]Includes dolomite, granite, limestone, marble, miscellaneous stone, quartzite, and traprock.
[2]Includes filter stone.
[3]Includes unpaved road surfacing and crusher run or fill or waste.
[4]Less than 1/2 unit.
[5]Includes production reported without a breakdown by use and estimates for nonrespondents.
[6]Data do not add to total shown because of independent rounding.
[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[8]Total shown in thousand short tons and thousand dollars.

TABLE 3

VERMONT: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	6	1,218	$6,177	$5.07	7	1,726	9,349	5.41
Dolomite	r1	r3	r8	r2.66	—	—	—	—
Marble	r3	248	1,079	r4.35	2	W	W	6.38
Granite	r6	r433	r3,153	r7.2	6	495	1,507	3.04
Traprock	1	(1)	1	5.23	—	—	—	—
Quartzite	2	W	W	6.60	1	W	W	5.21
Miscellaneous stone	r3	r389	r1,197	r3.07	1	W	W	8.93
Total[3]	XX	r2,291	r11,616	r5.07	XX	2,520	12,899	5.12
Total[4 5]	XX	r2,525	r11,616	r4.60	XX	2,778	12,899	4.64

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

[1]Less than 1/2 unit.

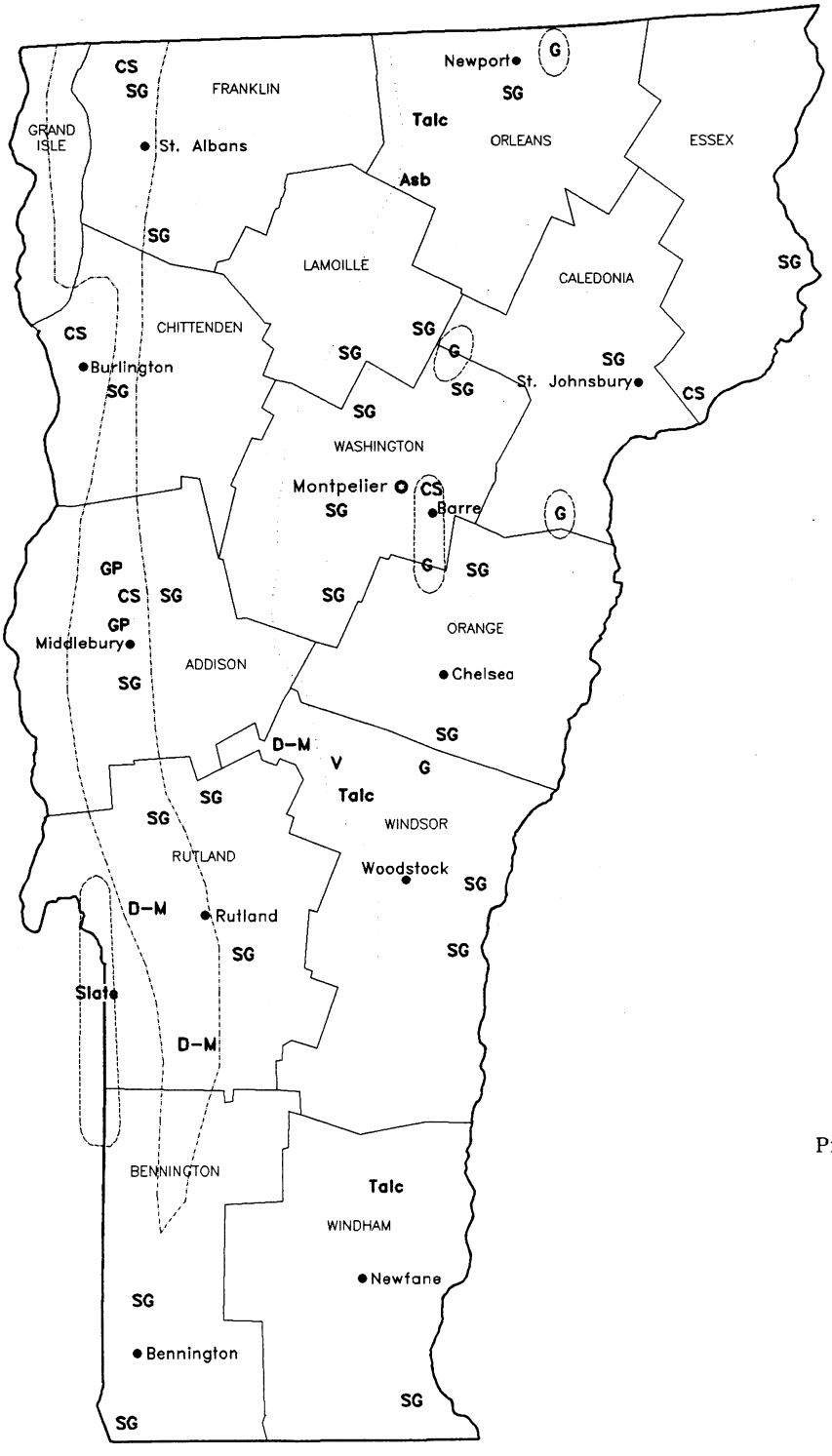
[2]Excludes quartzite.

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

VERMONT



0 50 Kilometers

LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Asb	Asbestos
CS	Crushed Stone
D-M	Dimension Marble
G	Dimension Granite
GP	Finely Ground Products
SG	Sand and Gravel
Slate	VT/NY Slate District
Talc	Talc minerals
V	Verde Antique

- Concentration of mineral operations
- VT Limestone – Marble Belt
- Ultramafic Trend – includes Asbestos, Talc and Verde Antique operations

Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF VIRGINIA

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 Virginia Division of Mineral Resources for collecting information on all nonfuel minerals.

Virginia ranked 22d among the 50 States in total nonfuel mineral value[1] in 1994, moving up from of 23rd in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was almost $513 million, a more than 10% increase compared with that of 1993. This followed a less than 1% increase in 1993 over that of 1992. In 1994, the State accounted for approximately 1.5% of the U.S. total mineral value. Virginia mines are exclusively producers of industrial minerals and coal; the last significant metal production occurred in 1981 when the State's last remaining active metal mine, an underground zinc operation, closed down due to the recession and a depressed market. While producing a diverse selection of minerals, crushed stone accounted for 65% of the State's nonfuel mineral value. During the past 5 years, 1990-94, the State has produced about 250 million metric tons of crushed stone or an average of 50 million tons per year. Compared with 1993, the value of the following commodities increased: crushed stone, portland cement, lime, construction and industrial sand and gravel, vermiculite, gypsum, and common clays. The values of the following decreased: masonry cement, fuller's earth clays, feldspar, dimension stone, iron oxide pigments, and gemstones.

Based on a comparison of estimated quantities of mineral produced in the 50 States during 1994, Virginia remained second in feldspar, second of two States that produce vermiculite, and fourth in iron oxide pigments. The State moved up from seventh to sixth in the production of crushed stone. While the only producing kyanite mine in the United States was located in Virginia mullite, a calcined kyanite, was synthetically produced in three other States. Ninety percent of U.S. kyanite and mullite output is used in refractories for the smelting and processing of a variety of metals and in glass and high-temperature ceramics manufacturing.

According to the Virginia Division of Mineral Resources (DMR), the stone industry was especially active in relation to both new and existing operations. Vulcan Minerals Co. was in the process of planning the opening of a quarry in southern Stafford County. Vulcan also acquired a former quarry near Pilot Mountain in western Bedford County for nonpolishing aggregates. In addition, the company proposed a quarry north of Boydton in Mecklenburg County to produce nonpolishing crushed stone. Two proposed mining operations were being planned at yearend in southern Culpeper County to quarry diabase rock, which is commonly used as crushed stone or in the making of monuments. In June, Martin Marietta Aggregates purchased Solite Corp.'s Caroline Stone Co., north of Richmond. Culpeper Stone Co. sold its Fredericksburg Sand and Gravel operation, near Fredericksburg, and its Haymarket quarry in Prince

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN VIRGINIA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays[2]	thousand metric tons	754	$3,367	775	$2,950	846	$3,000
Lime	do.	764	40,271	756	40,039	785	41,600
Sand and gravel (construction)	do.	8,659	37,336	e9,000	e40,500	8,900	40,900
Stone (crushed)	do.	e43,091	e261,300	50,998	292,345	e56,000	e333,000
Combined value of cement, clays (bentonite, fuller's earth), feldspar, gemstones, gypsum (crude), iron oxide (crude), kyanite, sand and gravel (industrial), stone (dimension), talc and pyrophyllite, and vermiculite		XX	119,589	XX	88,913	XX	94,900
Total		XX	461,863	XX	464,747	XX	[3]513,000

[e]Estimated. [p]Preliminary. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

VIRGINIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$4.16
Riprap and jetty stone	1,087	$7,057	6.49
Filter stone	742	4,312	5.81
Other coarse aggregate	268	1,323	4.94
Coarse aggregate, graded:			
Concrete aggregate, coarse	7,108	43,532	6.12
Bituminous aggregate, coarse	3,666	22,819	6.22
Bituminous surface-treatment aggregate	1,368	8,499	6.21
Railroad ballast	1,147	5,425	4.73
Other graded coarse aggregate	542	2,876	5.31
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,331	8,046	6.05
Stone sand, bituminous mix or seal	938	5,648	6.02
Screening, undesignated	2,881	14,879	5.16
Other fine aggregate	125	827	6.62
Coarse and fine aggregates:			
Graded road base or subbase	11,249	53,357	4.74
Unpaved road surfacing	1,135	6,748	5.95
Terrazzo and exposed aggregate	W	W	33.09
Crusher run or fill or waste	3,453	16,052	4.65
Other coarse and fine aggregates	528	2,833	5.37
Other construction materials[2]	1,035	5,389	5.21
Agricultural:			
Agricultural limestone	817	10,727	13.13
Poultry grit and mineral food	105	1,091	10.39
Other agricultural uses	69	762	11.04
Chemical and metallurgical:			
Lime manufacture[3]	3,057	17,249	5.64
Special:			
Mine dusting or acid water treatment	338	4,688	13.87
Asphalt fillers or extenders	305	2,767	9.07
Whiting or whiting substitute	(4)	(4)	28.43
Other fillers or extenders	166	1,533	9.23
Abrasives	13	78	6.00
Other specified uses not listed	(4)	(4)	8.34
Unspecified:[5]			
Actual	6,443	38,549	5.98
Estimated	1,031	4,168	4.04
Total[6]	50,998	292,345	5.73
Total[7 8]	56,216	292,345	5.20

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

[1]Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, quartzite, sandstone, slate, and traprock.

[2]Includes drain fields and waste materials.

[3]Includes cement manufacture, flux stone, chemical stone, glass manufacture, and sulfur oxide removal.

[4]Withheld to avoid disclosing company proprietary data; included with "Total."

[5]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[7]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[8]Total shown in thousand short tons and thousand dollars.

William County to Atlantic States Materials Corp. Luck Stone Co. acquired Virginia Trap Rock, Inc.'s diabase quarry in Loudoun County, near Leesburg, and began operating under the name Goose Creek plant.

Significant activity also was occurring in the exploration for new mineral resources. Several companies conducted precious metals investigations in Virginia's Piedmont province in 1994, primarily in Buckingham and Goochland Counties. Southern Piedmont Mining Corp. conducted some core drilling at the former Moss Mine in Goochland County, while Minerals and Chemicals Corp. reportedly produced a few ounces of gold in Goochland County. Interest in heavy metals continued in southern Virginia. Two companies were holding leases on large tracts in Dinwiddie, Greensville, and Sussex Counties, where large tonnages of heavy mineral sands have been discovered. Ilmenite, leucoxene, rutile, and zircon comprised nearly 80% of the heavy-mineral concentrate. South East TiSand Co. held a permit to operate a pilot test plant in the Brink area of Greensville County to evaluate the content of various soil profiles and test the growth of several crops, such as corn and peanuts, in a post-mining situation. RGC (USA Minerals) was preparing for a similar pilot operation to evaluate the ore in its Old Hickory deposit in Dinwiddie County, near Stony Creek. The value of the material in this deposit was estimated during 1993 to be $200 million to $300 million.

The DMR conducted a host of activities, including geological mapping for individual counties as well as detailed 7.5-minute quadrangles and a compilation of mineral sources on 1:24,000 scale maps. Other mineral resource studies included carbonate occurrences being investigated statewide; barite in southwest Virginia; precious metals, epithermal hot springs, cadmium, gallium, and germanium resources in various locations; and oil and gas in Lee, Wise, and Dickenson Counties. In 1994, brochures were published on DMR products and services, the State's mineral resource statistics, diamonds, and currently available fieldtrip guides and geologic road logs. Also published by DMR were the results of numerous geologic, nonfuel and energy mineral resource, and environmental studies, and information about the mineral resources produced in Virginia.

[1]The term value, throughout this document refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
VIRGINIA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	46	r13,832	r$73,387	r$5.30	r43	14,807	$85,876	$5.79
Dolomite	r10	r2,639	r25,217	r9.55	11	3,428	27,081	7.89
Granite	29	17,404	101,034	5.80	33	20,690	115,536	5.58
Traprock	10	8,319	51,105	6.14	10	10,554	55,477	5.25
Sandstone	r6	r1,439	r8,173	r5.67	4	695	3,861	5.55
Quartzite	r2	W	W	4.77	3	524	2,769	5.28
Slate	1	W	W	2.41	1	W	W	2.65
Miscellaneous stone	1	W	W	5.86	1	W	W	5.32
Total[2]	XX	r44,378	r262,577	r5.92	XX	50,998	292,345	5.73
Total[3 4]	XX	r48,918	r262,577	r5.37	XX	56,216	292,345	5.20

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "Limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

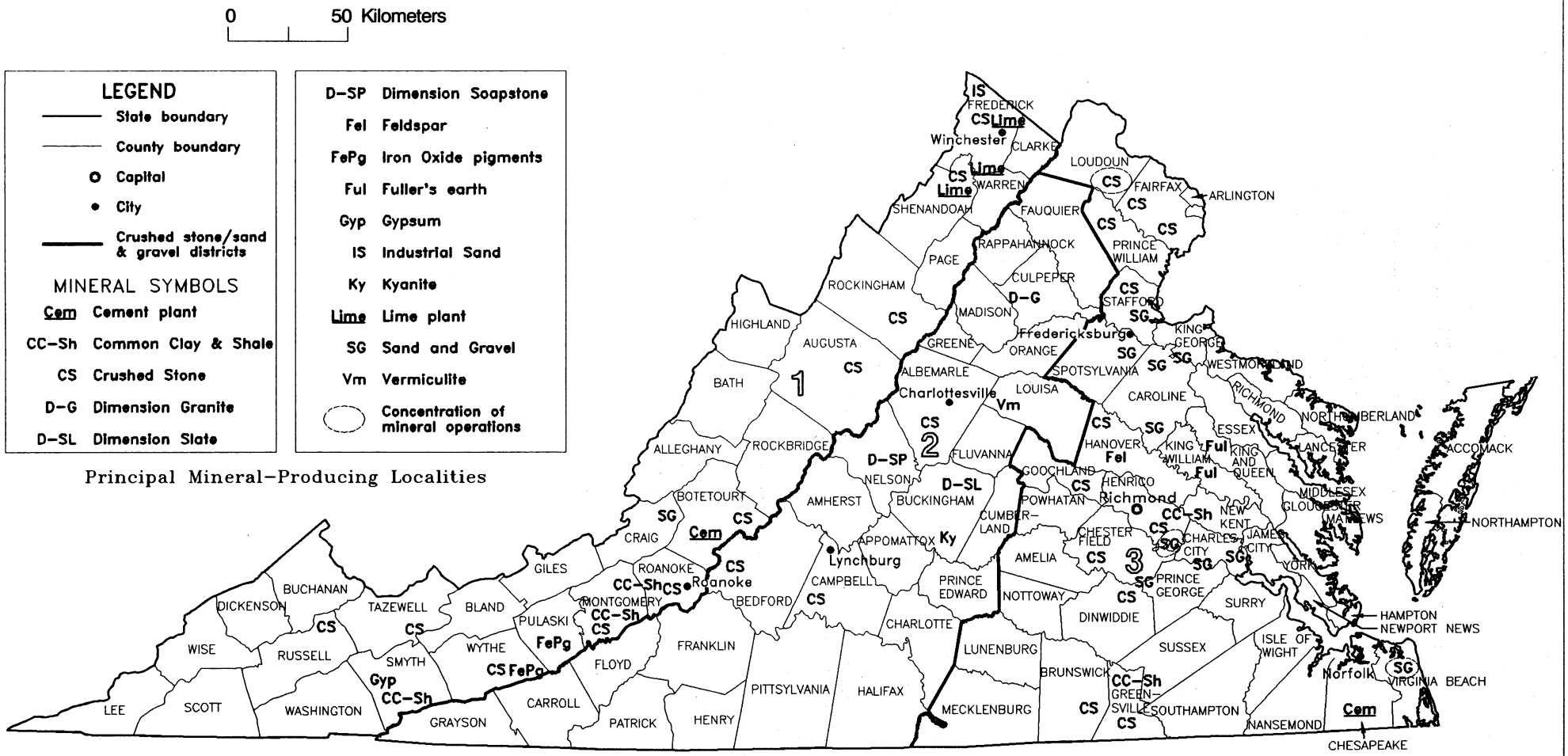
VIRGINIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[1]	841	4,315	433	2,882	983	6,158
Coarse aggregate, graded[2]	2,293	12,857	2,421	15,793	9,118	54,501
Fine aggregate (-3/8 inch)[3]	1,363	8,339	764	4,622	3,148	16,438
Coarse and fine aggregate[4]	3,699	18,477	3,002	14,786	9,663	45,741
Other construction materials[5]	(6)	(6)	(6)	(6)	(6)	(6)
Agricultural[7]	853	(6)	129	(6)	(6)	(6)
Chemical and metallurgical[8]	3,057	17,249	—	—	—	—
Special[9]	840	(6)	17	(6)	—	—
Other miscellaneous uses	(6)	(6)	(6)	(6)	—	—
Unspecified:[10]						
Actual	2,576	15,992	982	5,954	2,885	16,603
Estimated	924	3,569	108	599	—	—
Total[11]	16,496	101,976	8,039	46,631	26,463	143,738
Total[12 13]	18,184	101,976	8,861	46,631	29,170	143,738

[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.
[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[4]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.
[5]Includes drain fields and waste materials.
[6]Withheld to avoid disclosing company proprietary data; included with "Total."
[7]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[8]Includes cement manufacture, chemical stone for alkali works, flux stone, glass manufacture, lime manufacture, and sulfur oxide removal.
[9]Includes abrasives, asphalt fillers or extenders, mine dusting or acid water treatment, other fillers or extenders, whiting or whiting substitute, and other specified uses not listed.
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.
[11]Data may not add to totals shown because of independent rounding.
[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[13]Total shown in thousand short tons and thousand dollars.

VIRGINIA


0
50 Kilometers
LEGEND
State boundary
County boundary
Capital
City
Crushed stone/sand & gravel districts
MINERAL SYMBOLS
Cem Cement plant
CC–Sh Common Clay & Shale
CS Crushed Stone
D–G Dimension Granite
D–SL Dimension Slate
D–SP Dimension Soapstone
Fel Feldspar
FePg Iron Oxide pigments
Ful Fuller's earth
Gyp Gypsum
IS Industrial Sand
Ky Kyanite
Lime Lime plant
SG Sand and Gravel
Vm Vermiculite
Concentration of mineral operations
Principal Mineral–Producing Localities
1
2
3
Richmond
Charlottesville
Lynchburg
Roanoke
Winchester
Fredericksburg
Norfolk
VIRGINIA BEACH
CHESAPEAKE
HAMPTON
NEWPORT NEWS
NORTHAMPTON
ACCOMACK
ARLINGTON
LEE
SCOTT
WASHINGTON
WISE
DICKENSON
BUCHANAN
RUSSELL
TAZEWELL
SMYTH
WYTHE
BLAND
GRAYSON
CARROLL
GILES
PULASKI
FLOYD
PATRICK
MONTGOMERY
ROANOKE
CRAIG
BOTETOURT
ALLEGHANY
BATH
HIGHLAND
AUGUSTA
ROCKINGHAM
SHENANDOAH
PAGE
WARREN
CLARKE
FREDERICK
LOUDOUN
FAIRFAX
FAUQUIER
RAPPAHANNOCK
CULPEPER
MADISON
GREENE
ORANGE
ALBEMARLE
LOUISA
FLUVANNA
GOOCHLAND
POWHATAN
AMELIA
NELSON
AMHERST
BUCKINGHAM
APPOMATTOX
CAMPBELL
BEDFORD
FRANKLIN
PITTSYLVANIA
HENRY
CHARLOTTE
LUNENBURG
MECKLENBURG
HALIFAX
PRINCE EDWARD
CUMBER-LAND
NOTTOWAY
DINWIDDIE
PRINCE GEORGE
CHESTER-FIELD
HENRICO
CHARLES CITY
JAMES CITY
NEW KENT
KING WILLIAM
KING AND QUEEN
ESSEX
KING GEORGE
STAFFORD
PRINCE WILLIAM
SPOTSYLVANIA
HANOVER
CAROLINE
RICHMOND
WESTMORELAND
NORTHUMBERLAND
LANCASTER
MIDDLESEX
GLOUCESTER
MATHEWS
YORK
SURRY
SUSSEX
ISLE OF WIGHT
SOUTHAMPTON
GREEN-SVILLE
BRUNSWICK
NANSEMOND

THE MINERAL INDUSTRY OF WASHINGTON

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 Washington Division of Geology and Earth Resources for collecting information on all nonfuel minerals.

In 1994, for the 2d consecutive year, the State of Washington ranked 20th in the Nation in total nonfuel mineral value,[1] according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $556 million, a 10% increase compared with that of 1993. This followed a 7.5% increase between 1992 and 1993. The State accounted for more than 1.5% of the U.S. total. The increases in mineral value the past 2 years resulted mainly from the rising values of magnesium metal, crushed stone, portland cement, and construction sand and gravel. The increases in these commodities offset a 15% decrease in gold in 1993 and small decreases in several other mineral commodities in 1994. While metals, especially gold and magnesium metal, represented more than one-third of the nonfuel mineral value, construction sand and gravel, portland cement, crushed stone, and lime together accounted for more than 60% of the total value. Compared with 1993, the mineral commodity values for the following increased: construction sand and gravel, magnesium metal, crushed stone, gold, portland cement, diatomite, industrial sand and gravel, gemstones, silver, zinc, masonry cement, and lead. Decreases occurred in lime, olivine, common clays, peat, and dimension stone.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Washington climbed from third to second of the 3 magnesium metal-producing States; produced approximately the same quantity of olivine as North Carolina, the only other State that produced the mineral; and had a significant increase in the production of gemstones. The State remained 4th of the 4 States producing diatomite; 5th in the production of construction sand and gravel; 6th of the 13 U.S. gold-producing States; and 8th of 9 States that produced lead. Washington remained tied with California for 10th in silver production, while dropping from 8th to 9th in the production of zinc. Washington mines produced significant quantities of crushed stone and lime, while similar production of portland cement was achieved at manufacturing plants within the State. While the estimated production of primary aluminum dropped by an estimated 8%, Washington continued to lead the Nation. The State accounted for nearly 30% of the U.S. total primary aluminum production, all of the metal being processed from materials received from foreign sources.

According to the Washington State Department of Natural Resources, significant changes occurred in or were reported by Washington's gold mining industry in late 1994. The Cannon Mine in Wenatchee, operated by Asamara Minerals (U.S.) Inc., ceased operation in mid-December because reserves at the mine were depleted. Since 1986, when it opened, the Cannon Mine reportedly produced more than 37,320 kilograms (1.2 million troy ounces) of gold. Hecla Mining Co. announced its Republic Unit, which had operated

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WASHINGTON[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Clays[2]	thousand metric tons	306	$1,889	238	$1,373	153	$1,080
Gemstones		NA	379	NA	24	NA	2,000
Gold[3]	kilograms	8,802	97,619	7,108	82,469	[4]7,280	[4]84,500
Lime	thousand metric tons	W	W	213	W	W	W
Sand and gravel (construction)	do.	37,134	140,994	[e]40,200	[e]158,000	43,500	174,000
Silver[3]	metric tons	W	W	14	1,939	12	1,660
Stone (crushed)	thousand metric tons	[e]12,247	[e]63,200	13,204	68,648	[e]15,500	[e]84,500
Combined value of cement, fire clay, diatomite, lead, magnesium metal, olivine, peat, sand and gravel (industrial), stone (dimension), zinc, and values indicated by symbol W		XX	164,958	XX	192,740	XX	209,000
Total		XX	469,039	XX	505,193	XX	[5]556,000

[e]Estimated. [p]Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Recoverable content of ores, etc.

[4]Placer canvassing discontinued beginning 1994.

[5]Data do not add to total shown because of independent rounding.

continuously since 1938, would close in early 1995 following the depletion of reserves in the Golden Promise deposit. Hecla was expected to continue exploring its extensive holdings in the Republic district. Echo Bay Minerals Co. began mining at its Lamefoot deposit, northeast of Republic, following receipt of mining permits in late November. Echo Bay also initiated an exploratory underground access into its K-2 deposit, near Curlew. Battle Mountain Gold Co. continued working on a draft environmental impact statement, expected to be ready by mid-1995, for its Crown Jewel deposit, near Chesaw. In other major metals mining activity, Resource Finance Corp. conducted additional underground and developmental drifting for potential zinc, lead, silver, and cadmium ore bodies, especially in the Yellowhead horizon at the Pend Oreille Mine, but the company had not yet announced any plans to mine the deposit.

[1]The term value means the total monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 2
WASHINGTON: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	84	$562	$6.69
Riprap and jetty stone	332	2,714	8.17
Filter stone	32	135	4.22
Other coarse aggregate	W	W	3.53
Coarse aggregate, graded:			
Concrete aggregate, coarse	395	2,112	5.35
Bituminous aggregate, coarse	937	7,800	8.32
Bituminous surface-treatment aggregate	348	1,370	3.94
Railroad ballast	176	1,132	6.43
Other graded coarse aggregate	W	W	6.14
Fine aggregate (-3/8 inch):			
Stone sand, concrete	25	141	5.64
Stone sand, bituminous mix or seal	6	31	5.17
Screening, undesignated	55	270	4.91
Other fine aggregate	W	W	1.57
Coarse and fine aggregates:			
Graded road base or subbase	2,695	11,653	4.32
Unpaved road surfacing	1,377	5,516	4.01
Terrazzo and exposed aggregate	283	1,424	5.03
Crusher run or fill or waste	690	1,705	2.47
Other coarse and fine aggregates	50	186	3.72
Other construction materials	432	2,233	5.17
Agricultural:			
Agricultural limestone	(2)	(2)	27.56
Poultry grit and mineral food	(2)	(2)	20.26
Chemical and metallurgical: Flux stone	(2)	(2)	14.64
Special:			
Asphalt fillers or extenders	(2)	(2)	2.20
Other fillers or extenders	(2)	(2)	98.99
Paper manufacture	(2)	(2)	103.40
Unspecified:[3]			
Actual	2,211	8,803	3.98
Estimated	2,940	12,751	4.34
Total[4]	13,204	68,648	5.20
Total[5 6]	14,555	68,648	4.72

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, sandstone, traprock, and volcanic cinder and scoria.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3
WASHINGTON: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	10	1,380	$10,767	$7.80	6	530	$9,631	$18.17
Dolomite	5	8		W	3	W	W	29.80
Granite	22	724	3,125	4.31	11	631	3,397	5.38
Traprock	r187	r8,870	r41,168	r4.64	116	9,589	44,925	4.69
Sandstone	r20	r112	r568	r5.07	4	1,480	6,223	4.20
Volcanic cinder and scoria	8	137	W	W	3	W	W	5.15
Miscellaneous stone	28	714	2,848	3.98	8	609	2,342	3.84
Total[2]	XX	r11,945	r59,751	r5.00	XX	13,204	68,648	5.20
Total[3 4]	XX	r13,167	r59,751	4.54	XX	14,555	68,648	4.72

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

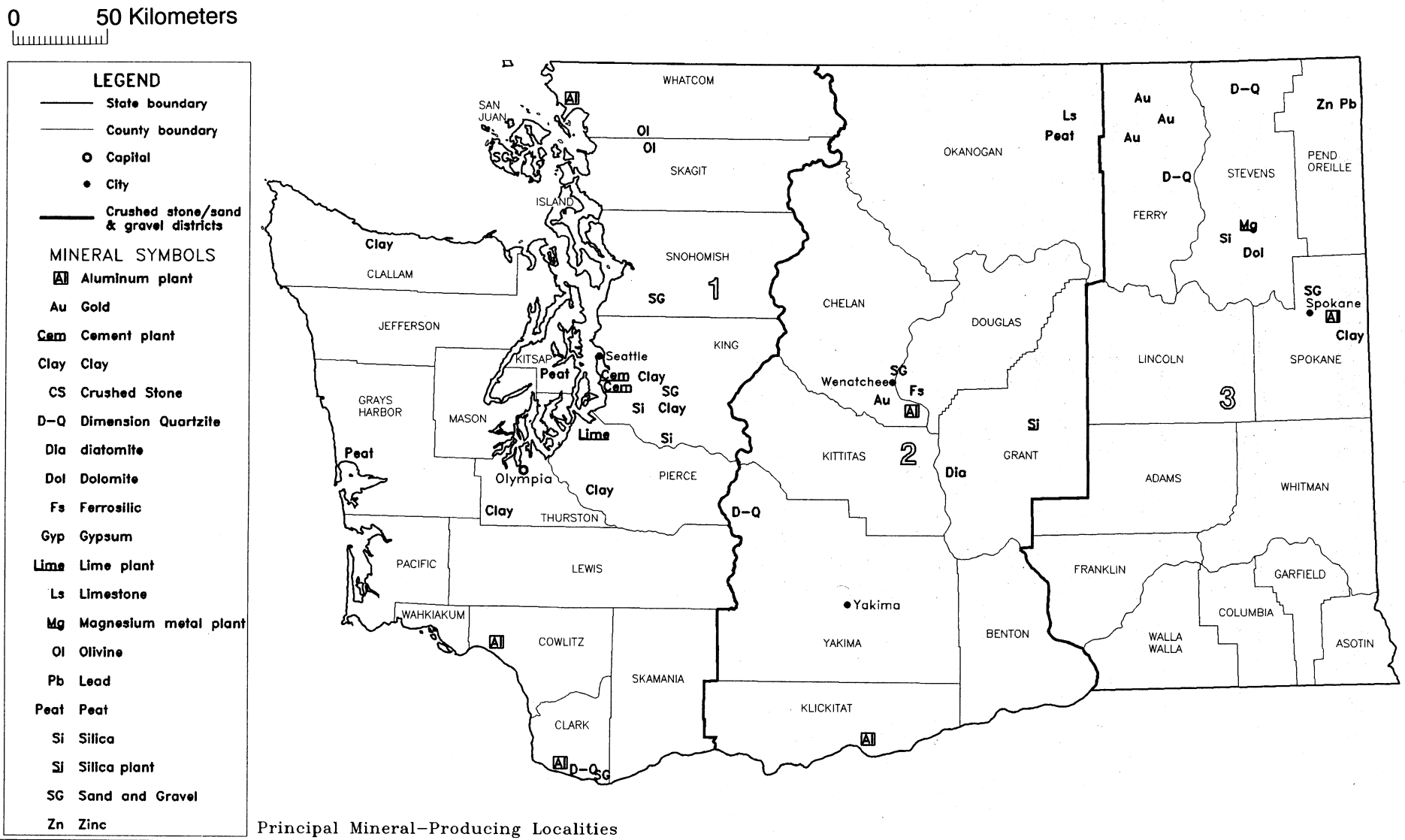
TABLE 4
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified within all districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:								
Coarse aggregate (+1 1/2 inch)[1]	443	3,436	21	55	11	16	—	—
Coarse aggregate, graded[2]	1,061	9,141	W	W	W	W	—	—
Fine aggregate (-3/8 inch)[3]	W	W	—	—	W	W	—	—
Coarse and fine aggregate[4]	3,219	12,657	524	2,045	1,352	5,783	—	—
Other construction materials	165	807	266	1,337	625	2,422	230	1,288
Agricultural[5]	—	—	(6)	(6)	(6)	(6)	—	—
Chemical and metallurgical[7]	—	—	—	—	(6)	(6)	—	—
Special[8]	—	—	(6)	(6)	(6)	(6)	—	—
Unspecified:[9]								
Actual	1,496	6,268	456	1,946	258	589	—	—
Estimated	2,458	10,400	175	1,279	308	1,072	—	—
Total[10]	8,843	42,709	1,527	14,083	2,604	10,568	230	1,288
Total[11 12]	9,748	42,709	1,683	14,083	2,870	10,568	254	1,288

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.
[2]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.
[3]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[4]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregates.
[5]Includes agricultural limestone and poultry grit and mineral food.
[6]Withheld to avoid disclosing company proprietary data; included with "Total."
[7]Includes flux stone.
[8]Includes asphalt fillers or extenders, other fillers or extenders,and paper manufacture.
[9]Includes production reported without a breakdown by use and estimates for nonrespondents.
[10]Data may not add to totals shown because of independent rounding.
[11]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[12]Total shown in thousand short tons and thousand dollars.

WASHINGTON



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF WEST VIRGINIA

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 West Virginia Geological and Economic Survey for collecting information on all nonfuel minerals.

West Virginia ranked 39th among the 50 States in total nonfuel mineral value[1] in 1994, moving up 1 place from its 1993 standing of 40th, according to the U.S. Bureau of Mines. The estimated value for 1994 was more than $176 million, a significant 18% increase compared with that of 1993. This increase followed an even more notable 34% increase from 1992 to 1993. The State accounted for about 0.5% of the U.S. total. The increased percentages of the past 2 years were mostly the result of the increased value of crushed stone, further supported by a substantial rise in crushed stone production in 1994. Other mineral commodities with increasing values were salt and portland cement, both of which had a particularly strong impact in 1993, but were more moderate in growth in 1994. In contrast, the value of construction sand and gravel, masonry cement, and common clays decreased in 1994.

In estimated mineral production in 1994, West Virginia was among the top 10 States in salt; the State's mines also produced significant quantities of crushed stone, its leading nonfuel mineral commodity. Additionally, mines and manufacturers in the State provided notable quantities of both construction and industrial sand and gravel and portland cement. The State's mines exclusively produced industrial minerals and coal; no metals were mined in the State. Primary aluminum and raw steel were made in West Virginia, but both were processed from materials received from foreign and other domestic sources. Based on preliminary figures for primary aluminum production, the State rose in rank to 8th in the Nation in 1994 from 10th in 1993.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WEST VIRGINIA[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	80	$221	115	$334	126	$326
Gemstones		NA	1	NA	1	NA	—
Sand and gravel (construction)	thousand metric tons	1,256	5,730	e1,400	e6,700	1,300	6,200
Stone (crushed)	do.	e10,342	e57,800	[2]10,313	79,661	e16,400	e103,000
Combined value of cement, lime, peat, salt, and sand and gravel (industrial)		XX	47,846	XX	62,756	XX	66,300
Total		XX	111,598	XX	149,452	XX	[3]176,000

eEstimated. pPreliminary. NA Not available. XX Not applicable.
[1]Production as measured by mine shipments, or marketable production (including comsumption by producers).
[2]Excludes certain stones; kind and value included with "Combined value" data.
[3]Data do not add to total shown because of independent rounding.

TABLE 2

WEST VIRGINIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$5.62
Riprap and jetty stone	205	$1,175	5.73
Filter stone	107	557	5.21
Other coarse aggregate	240	1,403	5.85
Coarse aggregate, graded:			
Concrete aggregate, coarse	548	3,135	5.72
Bituminous aggregate, coarse	523	2,608	4.99
Bituminous surface-treatment aggregate	162	794	4.90
Railroad ballast	84	2,409	28.68
Other graded coarse aggregate	1,788	5,523	3.09
Fine aggregate (-3/8 inch):			
Stone sand, concrete	191	1,324	6.93
Stone sand, bituminous mix or seal	405	1,915	4.73
Screening, undesignated	26	150	5.77
Other fine aggregate	81	2,114	26.10
Coarse and fine aggregates:			
Graded road base or subbase	901	4,814	5.34
Unpaved road surfacing	172	918	5.34
Terrazzo and exposed aggregate	11	348	31.64
Crusher run or fill or waste	729	3,403	4.67
Other coarse and fine aggregates	W	W	4.90
Other construction materials	406	10,164	25.03
Agricultural:			
Agricultural limestone	(2)	(2)	8.89
Poultry grit and mineral food	(2)	(2)	28.80
Other agricultural uses	(2)	(2)	11.02
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	5.47
Sulfur oxide removal	(2)	(2)	5.35
Special:			
Mine dusting or acid water treatment	59	(2)	W
Other fillers or extenders	7	(2)	W
Unspecified:[3]			
Actual	3,510	25,612	7.30
Estimated	275	1,647	5.99
Total[4]	10,313	79,661	7.72
Total[5 6]	11,368	79,661	7.01

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials," where applicable.
[1]Includes dolomite, granite, limestone, and sand stone; excludes dolomite quantity from State total to avoid disclosing company proprietary data.
[2]Withheld to avoid disclosing company proprietary data; included with "Total."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

TABLE 3

WEST VIRGINIA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r30	r6,699	r$37,511	r$5.59	29	9,352	$57,567	$6.15
Dolomite	2	W	W	4.57	1	(1)	16,745	(1)
Granite	1	W	W	6.00	—	—	—	—
Sandstone	13	886	5,163	5.82	11	960	5,349	5.57
Total[2]	XX	r9,354	r50,768	r5.43	XX	10,313	79,661	7.72
Total[3 4]	XX	r10,311	r50,768	4.92	XX	11,368	79,661	7.01

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Excludes dolomite quantity only.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

TABLE 4

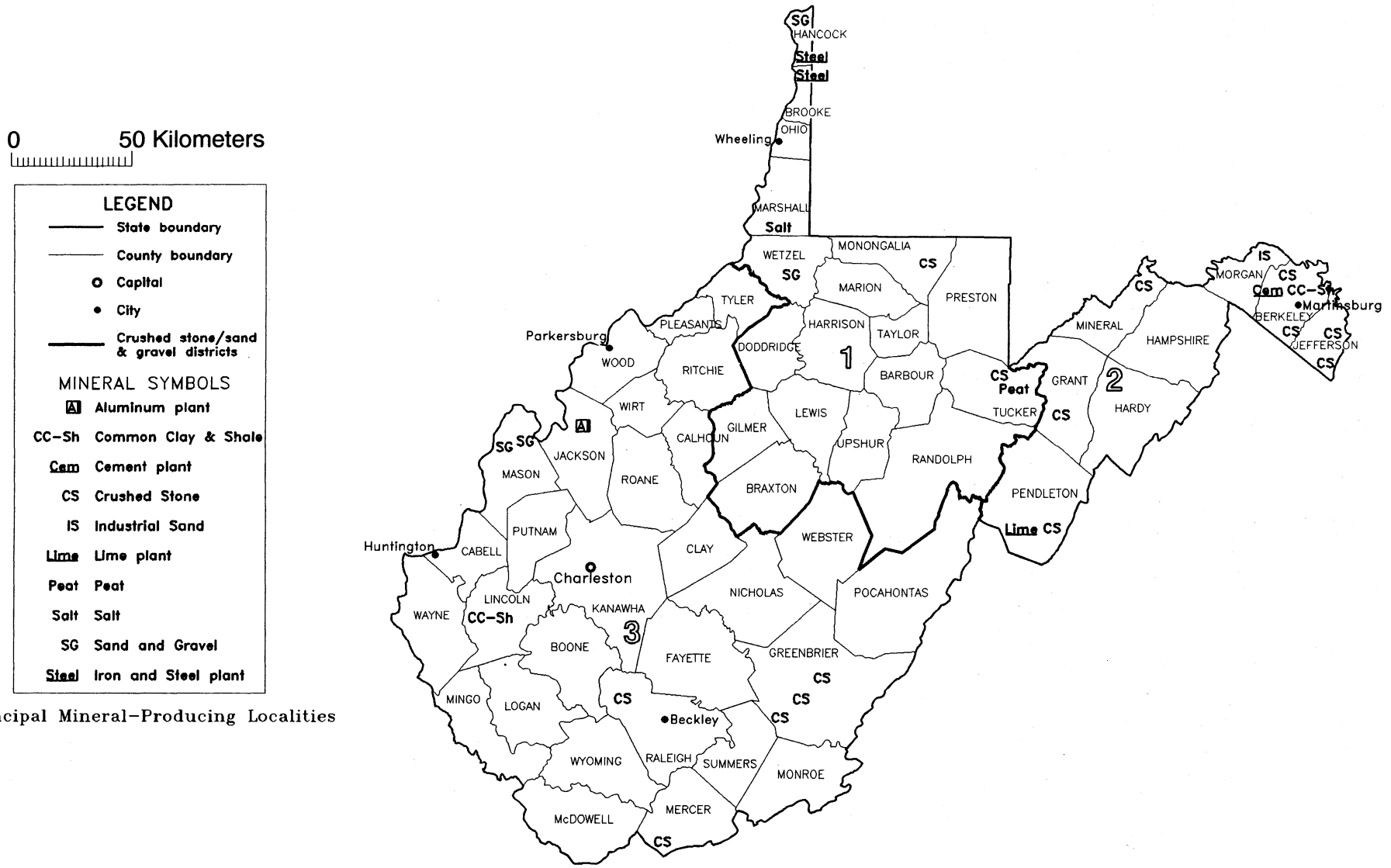
WEST VIRGINIA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	86	464	60	400	408	2,282
Coarse aggregate, graded[3]	(4)	2,121	(4)	8,463	824	3,884
Fine aggregate (-3/8 inch)[5]	(4)	1,261	(4)	2,352	386	1,890
Coarse and fine aggregate[6]	(4)	2,778	(4)	10,890	1,208	5,682
Other construction materials	19	103	6	31	43	151
Agricultural[7]	(4)	(4)	(4)	(4)	—	—
Chemical and metallurgical[8]	(4)	(4)	(4)	(4)	—	—
Special[9]	66	(4)	—	—	—	—
Unspecified:[10]						
Actual	2,817	20,294	692	5,318	—	—
Estimated	107	708	30	166	138	772
Total[11]	4,623	34,016	2,683	30,984	3,007	14,661
Total[12 13]	5,096	34,016	2,958	30,984	3,315	14,661

[1]Excludes dolomite quantity from State total to avoid disclosing company proprietary data.
[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other coarse aggregate.
[4]Withheld to avoid disclosing company proprietary data; included with "Total."
[5]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[6]Includes graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, crusher run (select material or fill), and other coarse and fine aggregate.
[7]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[8]Includes cement manufacture and sulfur oxide removal.
[9]Includes mine dusting or acid water treatment and other fillers or extenders.
[10]Includes production reported without a breakdown by use and estimates for nonrespondents.
[11]Data may not add to totals shown because of independent rounding.
[12]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[13]Total shown in thousand short tons and thousand dollars.

WEST VIRGINIA



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF WISCONSIN

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 Wisconsin Geological and Natural History Survey for collecting information on all nonfuel minerals.

Wisconsin ranked 31st among the 50 States in total nonfuel mineral value[1] in 1994, climbing from 33d in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $344 million, a 10% increase compared with that of 1993. This followed a substantial 40% increase in 1993 as measured against that of 1992. The State accounted for 1% of the U.S. total. The increased values of the past 2 years have, in large part, been the result of the resumption of metal mining in the State. In 1994, 19% of the State's nonfuel mineral value was accounted for by metals. From the early 1800's through 1982, metallic mineral production had been reported in the State. The Black River Falls Mine, an open pit taconite (iron ore) mine, ceased operations in the spring of 1982 due to decreased demand for steel. Following a decade of low-to-moderate metals exploration activities in the State, the Flambeau Mine came on-line and shipped its first copper, gold, and, silver ore to a refinery in Canada in May 1993. Flambeau's production was the major factor in the substantial increase in nonfuel mineral value in 1993. In 1994, the gain in the value for crushed stone provided the major impact on the increased mineral value for the year, while increases in the copper and gold values, reflecting the first full year of production at the new Flambeau Mine, again contributed to the increase. Compared with 1993, the value of crushed stone, construction sand and gravel, copper, and gold increased in 1994. Decreases occurred in dimension stone, peat, silver, and gemstones.

Compared to USBM—estimated quantities of minerals produced in the other 49 States for 1994, Wisconsin moved up from fourth to third place in the production of dimension stone, while it remained sixth in copper. Wisconsin also remained 12th of 13 U.S. gold-producing States. The State dropped from 5th to 6th in the production of industrial sand and gravel, 11th to 12th in construction sand and gravel, 12th to 13th in lime, and 9th to 13th in its ranking for peat. Wisconsin's mines produced significant quantities of crushed stone.

According to the Wisconsin Geological and Natural History Survey, the Flambeau Mining Co. produced more than 271,000 metric tons (mt), or 300,000 short tons (st), of ore averaging more than 10% copper metal at its Flambeau Mine, a small, open pit mine, near Ladysmith, in 1994. The company also reported that gold content exceeded 3.43 grams per metric ton (g/t), equivalent to 0.1 troy ounce per short ton, and

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WISCONSIN[1]

Mineral		1992 Quantity	1992 Value (thousands)	1993 Quantity	1993 Value (thousands)	1994[p] Quantity	1994[p] Value (thousands)
Gemstones		NA	$5	NA	$45	NA	W
Lime	thousand metric tons	473	26,579	511	30,880	511	$30,900
Peat	do.	56	553	W	W	W	W
Sand and gravel:							
Construction	do.	26,415	77,066	e27,600	e82,800	28,100	87,000
Industrial	do.	r1,303	r26,026	1,479	31,399	W	W
Stone:							
Crushed	do.	e,2 23,133	e,2 89,300	26,248	98,026	e28,500	e115,400
Dimension	metric tons	e32,809	e4,227	121,573	13,098	e110,000	e12,400
Combined value of other industrial minerals and values indicated by symbol W		XX	(3)	XX	57,109	XX	97,800
Total		XX	r,4 223,756	XX	313,357	XX	5344,000

eEstimated. pPreliminary. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

[2]Excludes certain stones; value included with "Combined value" data.

[3]Value excluded to avoid disclosing company proprietary data.

[4]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data.

[5]Data do not add to total shown because of independent rounding.

TABLE 2

WISCONSIN: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$3.93
Riprap and jetty stone	224	$961	4.29
Filter stone	152	538	3.54
Other coarse aggregate	57	242	4.25
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,084	4,695	4.33
Bituminous aggregate, coarse	603	2,541	4.21
Bituminous surface-treatment aggregate	209	648	3.10
Railroad ballast	308	618	2.01
Other graded coarse aggregate	161	664	4.12
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	3.44
Stone sand, bituminous mix or seal	W	W	4.01
Screening, undesignated	532	1,556	2.92
Coarse and fine aggregates:			
Graded road base or subbase	10,315	35,183	3.41
Unpaved road surfacing	1,171	2,714	2.32
Crusher run or fill or waste	513	1,528	2.98
Other coarse and fine aggregates	67	191	2.85
Other construction materials	767	3,639	4.74
Roofing granules	(2)	(2)	7.13
Agricultural:			
Agricultural limestone	456	2,907	6.38
Poultry grit and mineral food	(2)	(2)	8.27
Chemical and metallurgical:			
Lime manufacture	(2)	(2)	3.97
Other specified uses not listed	498	3,005	6.03
Unspecified:[3]			
Actual	6,322	26,602	4.21
Estimated	2,811	9,793	3.48
Total[4]	26,248	98,026	3.73
Total[5 6]	28,933	98,026	3.39

W Withheld to avoid disclosing company proprietary data; included with "Total."
[1]Includes dolomite, granite, limestone, limestone-dolomite, sandstone, and traprock.
[2]Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."
[3]Includes production reported without a breakdown by use and estimates for nonrespondents.
[4]Data may not add to totals shown because of independent rounding.
[5]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[6]Total shown in thousand short tons and thousand dollars.

silver content averaged about 68.6 g/t (2 troy ounces per short ton). Flambeau received permission to increase annual production rates from almost 320,000 mt (352,000 st) to more than 360,000 mt (400,000 st), decreasing its expected operating life by 11 months. Environmental compliance monitoring of the operation by the Wisconsin Department of Natural Resources (DNR) indicated no problems during the year. In other developments, Crandon Mining Co. continued its permitting activities near Crandon in northeastern Wisconsin—focusing on ground water modeling, surface-water impact assessment, and waste disposal management—for a large zinc-copper massive-sulfide ore body. Metallic mineral leasing activity and exploration continued, but at a reduced pace, throughout the year. In nonmetallic resources, the State Legislature mandated a statewide regulatory program for all nonmetallic mineral operations. A comprehensive program of reclamation and operational requirements was to be implemented at the county level, based on administrative rules adopted by the Wisconsin DNR; rule development was initiated during the year. Administrative rule development mandated by the Legislature in 1992 covering oil and gas exploration and production was completed after public hearings were held; final promulgation of rules was expected in 1995.

[1]The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
WISCONSIN: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	220	18,576	$71,179	$3.83	[1]216	[1]19,756	[1]73,019	[1]3.69
Dolomite	3	172	813	4.72	7	3,325	14,005	4.21
Granite	12	1,330	3,239	2.43	10	1,346	2,529	1.88
Traprock	(2)	(2)	(2)	(2)	2	W	W	5.35
Sandstone	3	1,401	5,244	3.74	3	W	W	4.20
Total[3]	XX	r21,478	r80,476	r3.75	XX	26,248	98,026	3.73
Total[4 5]	XX	r23,675	r80,476	3.40	XX	28,933	98,026	3.39

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "limestone-dolomite," reported with no distinction between the two.
[2]Excludes traprock.
[3]Data may not add to totals shown because of independent rounding.
[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[5]Total shown in thousand short tons and thousand dollars.

TABLE 4

WISCONSIN[1]: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	140	527	W	W	175	567
Coarse aggregate, graded[3]	347	1,342	W	W	715	2,424
Fine aggregate (-3/8 inch)[4]	87	182	W	W	W	W
Coarse and fine aggregate[5]	3,776	14,433	W	W	W	W
Other construction materials[6]	—	—	4,492	17,746	4,122	13,742
Agricultural[7]	(8)	(8)	(8)	(8)	(8)	(8)
Chemical and metallurgical[10]	—	—	—	—	(8)	(8)
Other miscellaneous uses[11]	157	799	—	—	285	1,099
Unspecified:[12]						
Actual	954	4,132	(8)	(8)	59	208
Estimated	713	2,988	1,495	3,974	122	534
Total[13]	6,175	24,403	7,227	27,779	5,477	18,471
Total[14 15]	6,807	24,403	7,966	27,779	6,037	18,471

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	W	W	59	324	W	W
Coarse aggregate, graded[3]	—	—	W	W	W	W
Fine aggregate (-3/8 inch)[4]	W	W	W	W	—	—
Coarse and fine aggregate[5]	1,347	2,240	570	2,045	135	369
Other construction materials[6]	44	164	11	56	447	1,822
Agricultural[7]	—	—	(8)	(8)	50	273
Chemical and metallurgical[10]	—	—	—	—	—	—
Other miscellaneous uses[11]	—	—	—	—	—	—
Unspecified:[12]						
Actual	2,939	12,271	(8)	(8)	—	—
Estimated	72	597	54	241	355	1,459
Total[13]	4,402	15,272	1,982	8,178	985	3,923
Total[14 15]	4,852	15,272	2,185	8,178	1,085	3,923

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

[1]To avoid disclosing company proprietary data, production reported in District 8 was included with "District 6;" no Crushed Stone was produced in District 7.

[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).

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

[6]Includes roofing granules.

[7]Includes agricultural limestone and poultry grit and mineral food.

[8]Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."

[9]Withheld to avoid disclosing company proprietary data; included with "Total."

[10]Includes lime manufacture.

[11]Includes other specified uses not listed.

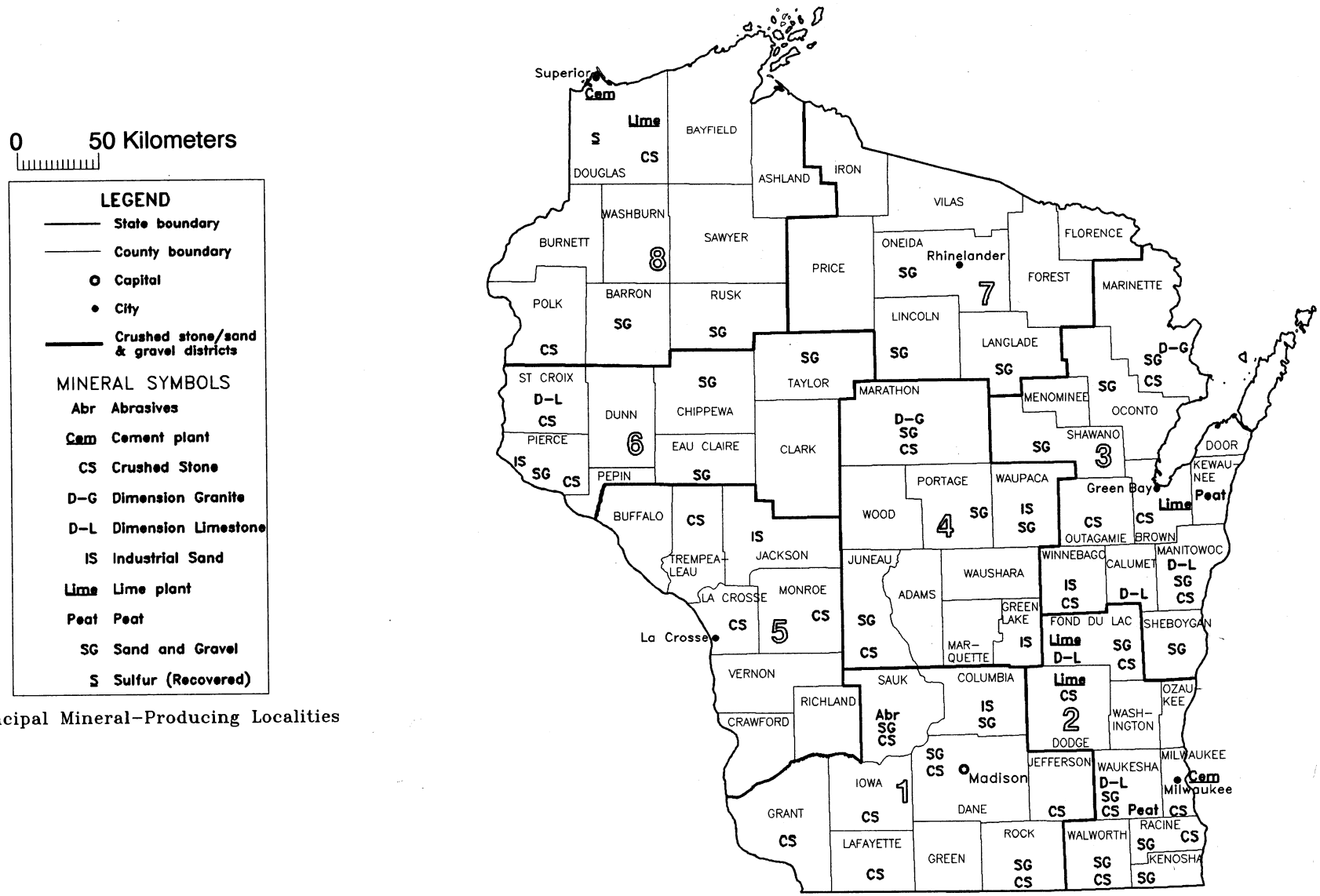
[12]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[14]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[15]Total shown in thousand short tons and thousand dollars.

WISCONSIN



Principal Mineral–Producing Localities

THE MINERAL INDUSTRY OF WYOMING

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 Geological Survey of Wyoming for collecting information on all nonfuel minerals.

During 1994, Wyoming ranked 15th in the Nation in total nonfuel mineral value,[1] down from 11th in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was $781 million, a 9% decrease from that of 1993. This followed a 10% decrease in 1993 compared with that of 1992. The State accounted for more than 2% of the U.S. total value. The decreasing values of the past 2 years mostly resulted from decreases occurring in soda ash, although the value of bentonite clay also significantly dropped in 1993. During that year, increases in the values of lime and construction sand and gravel reduced the amount of the State's total decrease in nonfuel mineral value. Compared with that of 1993, the mineral commodity values for grade-A helium, portland cement, crushed stone, and gypsum increased. Decreases were reported for soda ash, construction sand and gravel, and gemstones.

Based on USBM estimates of the quantities of minerals produced in the United States during 1994, Wyoming remained first in the production of soda ash and bentonite clay and second in grade-A helium. Additionally, the State remained 12th in gypsum production. Soda ash, or sodium carbonate, is an inorganic chemical extensively used in the manufacture of glass, soap and detergents, paper, textiles, and foods. The United States is the world's largest soda ash-producing nation, and Wyoming, one of only two producing States, is home to the world's largest known natural deposit of trona, the principal ore from which soda ash is refined. California produces a significantly smaller quantity of natural soda ash. No metal production has been reported to the USBM for Wyoming since 1986. In recent years, however, a modest amount of exploration for gold has occurred in the State.

According to the Wyoming State Geological Survey, FMC Corp. evaluated a planned $45 million expansion of its trona mining and refining facilities in southwestern Wyoming. The expansion was likely to begin during 1995 and was only one phase of a larger proposed expansion effort; the decision to proceed with this project was related both to a contract involving a new use for soda ash (the conversion of titanium dioxide waste into salable iron compounds) and expected growth in export markets. The majority of foreign soda ash production is synthetic soda ash and is not processed from natural deposits. Because soda ash is more economically produced from mined trona, many countries have established trade barriers to protect their domestic soda ash industries from competition with U.S. soda ash. With the passage of the General Agreement on Tariffs and Trade (GATT), U.S. soda ash companies anticipated the reduction of some of these trade barriers, which could result in significantly increased sales of Wyoming soda ash,

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WYOMING[1]

Mineral		1992		1993		1994[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland)	thousand metric tons	438	$30,182	W	W	W	W
Clays[2]	do.	2,535	83,094	2,407	$73,399	2,407	$73,400
Gemstones		NA	12	NA	13	NA	W
Sand and gravel (construction)	do.	2,855	11,438	e3,400	e15,000	3,300	14,700
Stone (crushed)	do.	e4,082	e19,900	3,456	19,837	e3,700	e22,000
Combined value of cement (masonry), clays (common), gypsum [crude 1994)], helium (Grade-A), lime, soda ash, and values indicated by symbol W		XX	803,888	XX	745,608	XX	671,000
Total		XX	948,514	XX	853,857	XX	[3]781,000

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

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

[2]Excludes certain clays; kind and value included with "Combined value" data.

[3]Data do not add to total shown because of independent rounding.

TABLE 2

WYOMING: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	110	$1,063	$9.66
Coarse aggregate, graded:			
Concrete aggregate, coarse	284	1,598	5.63
Bituminous aggregate, coarse	361	1,598	4.43
Bituminous surface-treatment aggregate	W	W	2.76
Railroad ballast	1,440	9,172	6.37
Other graded coarse aggregate	2	20	10.00
Fine aggregate (-3/8 inch):			
Stone sand, concrete	6	54	9.00
Stone sand, bituminous mix or seal	W	W	1.95
Screening, undesignated	16	17	1.06
Coarse and fine aggregates:			
Graded road base or subbase	271	630	2.32
Terrazzo and exposed aggregates	45	1,045	23.22
Crusher run or fill or waste	W	W	2.21
Other construction materials	222	671	3.02
Roofing granules	W	W	37.05
Agricultural:			
Other agricultural uses	1	9	9.00
Special:			
Mine dusting or acid water treatment	3	77	25.67
Whiting or whiting substitute	3	99	33.00
Other fillers or extenders	36	1,254	34.83
Unspecified:[2]			
Actual	608	2,215	3.64
Estimated	50	314	6.28
Total[3]	3,456	19,837	5.74
Total[4 5]	3,810	19,837	5.21

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

[1]Includes granite, limestone, limestone-dolomite, marble, miscellaneous stone, quartzite, traprock, and volcanic cinder and scoria.

[2]Includes production reported without a breakdown by use and estimates for nonrespondents.

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

[4]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

[5]Total shown in thousand short tons and thousand dollars.

especially in the export market. Company officials, however, noted that such changes might be slow. Trona is mined and refined into soda ash and a variety of sodium-based products at five locations in the extensive Green River Basin formation, west of Green River in southwestern Wyoming. A sixth facility was in the early stages of development by Wold Trona Co., which began preparation of permit applications for its planned trona and soda ash operation in the same basin formation, southeast of the five existing Wyoming facilities. Wold projected that the plant would be operational by fall 1996.

The production of construction aggregate in Wyoming slowed toward the end of 1994, as it normally does with the decline in outdoor construction during the winter. Meanwhile, the opening of new quarries were being planned for early 1995. One limestone aggregate quarry was scheduled to open near Laramie in southeastern Wyoming to provide large amounts of rock for a major reconstruction of a portion of Interstate 80 in Laramie. Meridian Aggregates, located in Granite, west of Cheyenne in Laramie County, remained the State's largest producer of construction aggregate, mostly producing railroad ballast and a variety of sized aggregates for general construction.

Decorative stone in a wide variety of rock types and colors was mined mostly in the eastern and northcentral portions of the State. The production of cut and polished pieces of Wyoming Raven, a black granite, and Fantastico, a hard multicolored rock, continued at Sunrise Stone's quarry in northern Albany County and at its fabricating plant in Platte County. Sunrise anticipated operating at full capacity throughout most of 1995. Canyon Creek Stone, while still planning the construction of a processing plant at its quarry site, continued development of its flagstone and brown marble quarry southeast of Tensleep, in Washakie County. Because pink is a popular color in Florida for houses and other decorations, Guernsey Stone Co., primarily a construction aggregate producer in Platte County, shipped pink marble aggregate to Florida for use in landscaping, roofing granules, driveways, and other uses. Abbott Construction began shipment of more than 100 truckloads of previously stockpiled, pink granite boulders, some more than 3.5 meters (12 feet) long, to a buyer in Aspen, CO. Reclamation of the quarry site was complete.

In the fourth quarter of 1994, diamond testing was reported at the Chicken Park (Wyoming), Kelsey Lake (Colorado), and Sloan (Colorado) kimberlite rock formations in the Colorado-Wyoming State Line district. Diamond exploration activities also were reported at several locations in the Laramie Mountains of eastern Wyoming and in the Green River Basin.

[1]The term value, throughout this document, refers to the monetary value of nonfuel minerals as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
WYOMING: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[1]	r9	r705	r$2,404	$3.40	7	925	$3,987	$4.31
Marble	1	W	W	4.93	1	74	2,446	33.05
Granite	1	W	W	5.34	2	2,383	W	W
Traprock	1	W	W	4.00	—	—	—	—
Quartzite	1	W	W	6.28	1	W	W	6.28
Volcanic cinder and scoria	1	W	W	6.35	1	W	W	11.11
Miscellaneous stone	r1	W	W	6.40	1	W	W	15.12
Total[2]	XX	r2,626	r12,595	r4.80	XX	3,456	19,837	5.74
Total[3 4]	XX	r2,895	r12,595	r4.35	XX	3,810	19,837	5.21

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.
[1]Includes "limestone-dolomite," reported with no distinction between the two.
[2]Data may not add to totals shown because of independent rounding.
[3]One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.
[4]Total shown in thousand short tons and thousand dollars.

WYOMING

0 100 Kilometers

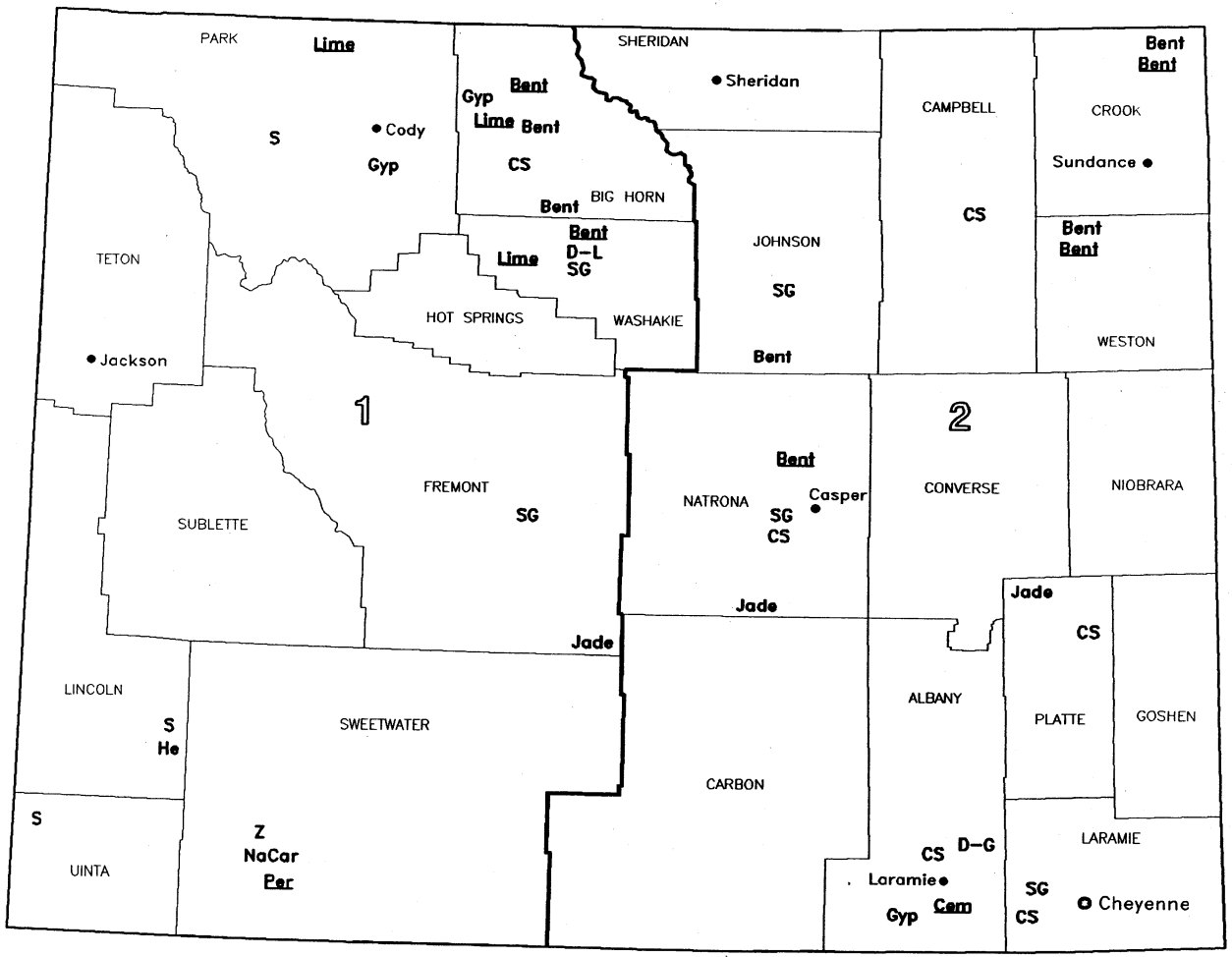
LEGEND

- State boundary
- County boundary
- Capital
- City
- Crushed stone/sand & gravel districts

MINERAL SYMBOLS

Bent	Bentonite
Bent	Bentonite mill
Cem	Cement plant
CS	Crushed stone
D–G	Dimension Granite
D–L	Dimension Limestone
Gyp	Gypsum
He	Helium
Jade	Jade
Lime	Lime plant
NaCar	Sodium Carbonate
Per	Perlite plant
SG	Sand and Gravel
S	Sulfur
Z	Zeolite

Principal Mineral–Producing Localities



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