

# SOUTH DAKOTA

By James H. Aase

1990

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

## SOUTH DAKOTA



U.S.
DEPARTMENT
OF THE
INTERIOR

Manuel Lujan, Jr. Secretary



BUREAU OF MINES

T S Ary Director

September 1992

### Contents Trends and Developments . . . . . . . 1 Regulatory Issues . . . . . . . . . . . . . 2 Exploration Activities . . . . . . . . . . 3 Legislation and Government Review by Nonfuel Mineral Gold and Silver ....... 3 Iron Ore . . . . . . . . . . . . . . 4 Industrial Minerals . . . . . . . . . 4 Cement . . . . . . . . . . . . . . . 4 Clays . . . . . . . . . . . . . . . . 4 Feldspar . . . . . . . . . . . . . . . . 4 Gemstones . . . . . . . . . . . . 4 Gypsum . . . . . . . . . . . . . . . 4 Lime . . . . . . . . . . . . . . . . 4 Mica . . . . . . . . . . . . . . . 4 Sand and Gravel . . . . . . . . 4 Stone . . . . . . . . . . . . . . . . . 4 Crushed . . . . . . . . . . . . . 4 Dimension . . . . . . . . . . . 4 **Tables** Table 1.—Nonfuel Mineral Production in South Dakota . . . . 1 Table 2.—South Dakota: Construction Sand and Gravel Sold or Used in 1990, by Major Use Category . . . . . . . . . . . . . 5 Table 3.—South Dakota: Construction Sand and Gravel Sold or Used by Producers in 1990, by Use and District ...... 5 Table 4.—Principal Producers .... 7 State Map Principal Mineral-Producing Localities in South Dakota . . . . . 6

#### COVER PHOTO:

The South Dakota Capitol Building in Pierre symbolizes the cooperative working relationship between the U.S. Bureau of Mines and the mineral agencies of the State. (Photo is courtesy of the South Dakota Department of Tourism.)

For comments or further information, please contact

Denver Regional Office of State
Activities
U.S. Bureau of Mines
Bldg. 20, Denver Federal Center
Denver, CO 80225-0086
Telephone: (612) 725-4535

### 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.

### By James H. Aase<sup>1</sup>

Nonfuel mineral production in South Dakota rose to a record high value of \$298 million in 1990, a 5% increase over that of the previous year and 33% above the average for the decade of the 1980's. Advances in both quantity and value were recorded for more than one-half of the commodities produced compared with 1989 figures.

Production came from sites in 62 of the State's 67 counties. Lawrence County was the leading county in terms of value for nonfuel mineral production, contributing more than two-thirds to the State's total.

The State ranked 34th nationwide in value of nonfuel mineral production, contributing about 1% of the U.S. total.

Gold, the principal commodity produced in the metallic sector, accounted for approximately \$7 out of every \$10 of the State's total nonfuel mineral value and is credited for 80% of the \$14 million increase over that of the previous year. Leading the nonmetallic commodities in cement, value was followed by construction sand and gravel and crushed stone. Collectively, these three commodities contributed about 23% of the State's total nonfuel mineral production value.

Among the minerals produced in South Dakota during the year, the quantity of gold produced ranked 4th among 13 States reporting production; silver, 13th of 19; portland cement, 31st of 38;

common clay and shale, 32d of 43; lime, 23d of 32; mica, 2d of 7; crushed stone, 34th of 49; dimension stone, 9th of 34; and construction sand and gravel, 31st of 50.

### TRENDS AND DEVELOPMENTS

Required environmental controls in place at the State's large-scale surface gold mines allowed mining to occur and, at the same time, maintained adequate environmental protection. No notices of violation were issued during the year for environmental problems.

TABLE 1
NONFUEL MINERAL PRODUCTION IN SOUTH DAKOTA¹

	1988		1989		1990	
Mineral	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:						
Masonry thousand short tons	4	w	w	w	w	w
Portland do.	490	w	w	w	w	w
Gemstones	NA	\$100	NA	\$150	NA	\$110
Gold <sup>2</sup> kilograms	13,981	197,026	16,123	198,318	16,860	209,732
Lead <sup>2</sup> metric tons	_	_	4	3	_	_
Sand and gravel (construction)						
thousand short tons	7,929	18,681	°6,400	20,800	9,689	23,689
Silver <sup>2</sup> metric tons	3	552	4	705	6	940
Stone:						
Crushed thousand short tons	•5,500	20,600	3,833	14,303	*4,800	•16,800
Dimension short tons	•43,297	•16,472	54,623	17,738	•50,688	•12,871
Combined value of clays (common),						
feldspar, gypsum (crude), iron ore, lime,						
mica (scrap) and values indicated by symbol W	XX	32,288	XX	32,341	XX	34,310
Total	XX	285,719	XX	284,358	XX	298,452

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

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

<sup>&</sup>lt;sup>2</sup>Recoverable content of ores, etc.

Near yearend, the Cumulative Environment Evaluation (CEE) of mining in the Black Hills was completed and taken under review by a Governorappointed task force. The CEE is part of the State's Centennial Environmental Protection Act. The CEE and the recommendation of the task force will be used as a planning tool by the South Dakota Board of Minerals Environment when considering new or expanded large-scale gold mining proposals in the Black Hills.

Brohm Mining Corp. continued to supply information to fulfill mine permit requirements for its proposed Gilt Edge Mine expansion project. The expansion includes plans to mine up to 90 million short tons of sulfide ore using conventional milling methods, a 400-acre pit, a 278-acre tailings impoundment, and several waste rock depositories.

In early 1990, Homestake Mining Co. announced that exploration conducted 3 miles north of the Homestake Mine at Lead encountered encouraging intercepts in deep drill holes. exploration drift was begun that will be driven northward 17,000 feet from the 6.800-foot level of the mine to evaluate the intercepts. During the year, the company spent \$4.4 million on the project. The underground exploration program was expected to cost a total of \$23 million and to be completed within 5 years. The drift also will provide access for underground exploration of the area between the mine and the deep intercepts north of the mine. Surface core drilling also was expected to continue in order to direct the exploration drift toward favorable structures.2

Work began during the year on an \$8.5 million mill expansion project at the Homestake Mine in order to process additional ores from its Open Cut operation. The project was scheduled for completion in late 1991 and was expected to increase mill capacity by 500 short tons per day. The expansion of the Open Cut operation progressed further as key permits were obtained and relocation plans for public roads, residences, and businesses continued. Mining in the

expansion area of the Open Cut was scheduled to begin in 1996.<sup>3</sup>

In 1990, production capacity of Wharf Resources (U.S.A.) Inc.'s mine near Lead was increased to 3 million tons of ore per annum. This was achieved by expanding the capacity of the leach pads, purchasing additional trucks, enhancing crushing capacity, and upgrading collection ponds. Capital expenditures over the 2-year construction period of this expansion project were \$10,000,000.

The Golden Reward Mining Co. completed its first full year of operation at its open pit mine and heap-leach facility near Lead. Exploration drilling in conjunction with redesigning pits with steepened slopes resulted in an increase of minable reserves.<sup>5</sup>

Bond Gold-Richmond Hill Inc. completed construction of two additional leach pads at its Richmond Hill Mine, 5 miles northwest of Lead. The additional pads will allow for more than a doubling of capacity to heap-leach gold ore. Exploration activities were concentrated around the mine site with emphasis on the development of minable ore reserves. Two areas were discovered and drilled and are undergoing engineering studies and metallurgical testing to determine their potential as reserves. <sup>6</sup>

In August 1990, Homestake Mining Co. signed a consent decree with the U.S. Environmental Protection Agency (EPA) concerning Whitewood Creek Superfund site. The agreement reached called for Homestake to pay for past EPA response measures, to fund future measures, and for monitoring possible health and environmental risk caused by past discharges of arsenic-bearing tailings material into Whitewood Creek. Homestake is the only mining company still in business of the approximately 60 that, over the past 100 years, used the creek for discharging their tailings. Discharges into the creek were stopped in the late 1970's.

#### **EMPLOYMENT**

Employment in the State's mining industry averaged 2,600 workers during the year, a drop of less than 1%

compared with that of 1989. Mining production workers' earnings averaged \$12.52 per hour, and the average work week was 42.6 hours. Both the earning level and hours worked per week rose slightly above the previous year's level.<sup>7</sup>

No fatal injuries occurred in 1990 at any of South Dakota's underground mines, surface mines, or associated mills and/or operation plants. During the almost 4.5 million employee-hours worked at these facilities, a reported 103 injuries occurred to workers resulting in lost workdays, and an additional 130 injuries occurred with no workdays lost.8

### **REGULATORY ISSUES**

The State Board of Minerals and Environment issued three life-of-mine permits in 1990. All three permits were issued to a single operator for sites in Pennington County. The material permitted to be mined was slate.

### **EXPLORATION ACTIVITIES**

Fifteen exploration permits were issued during the year, down slightly from the number issued in 1989. The seven companies receiving the permits indicated precious metals as the primary target, and all were for sites in Lawrence County.

Permits were issued for 1,887 exploration drill tests, 1.5% above the number permitted the previous year. The testing utilized a variety of methods, including rotary, core, and churn drilling.

Although exploration activity remained at approximately the same level as in 1989, it was significantly below the peak levels reached in 1987 and 1988. Ballot measures the past several years by environmental groups, and public concern over mining in the Black Hills, has slowed exploration activities by some companies owing to uncertainties regarding future regulatory requirements or additional moratoriums on mine permitting. Currently, exploration is focused primarily on defining ore boundaries at, and adjacent to, existing mine sites.

### LEGISLATION AND GOVERNMENT PROGRAMS

During the 1990 session of the South Dakota Legislature, a bill was enacted into law that was of particular interest to the State's gold mining industry. The legislation, Senate bill 257, contained, in part, measures to impose a moratorium on the issuing of permits for any new large-scale gold and silver mines in the Black Hills prior to January 1, 1992. It limited expansion of existing operations during the moratorium to 200 acres per operator, with mandatory concurrent reclamation of an equal number of acres of previously mined land. The bill also provided for creation of a seven-member Governor-appointed review committee to evaluate and make recommendations about the cumulative environmental evaluation as required under provision of the State's 1989 Environmental Protection Act.

A ballot initiative that would have limited gold and silver mining in the Black Hills to a cumulative 3,100 acres was narrowly defeated in the November general election. Currently, as a result of the 1989 Environmental Protection Act, the State imposed a limit of 3,500 acres until completion of a cumulative environmental evaluation.

The South Dakota Mining and Mineral Resources Research Institute (MMRRI). at South Dakota School of Mines and Technology in Rapid City, received a \$145,000 grant from the U.S. Bureau of Mines in 1990. The funding was made available under provision of title III of the Surface Mining Control Reclamation Act of 1977, Public Law 95-87, as revised. MMRRI has the mission of coordinating and administering training and research in fields of mining, mineral resources, mineral development, and mineral processing, in response to the interest and needs of the State, region, and Nation, with provisions for due regard for the environment.9

The South Dakota Geological Survey (SDGS) continued basic research projects involving mineral and water resources of the State during the year. SDGS

completed a drilling project to obtain stratigraphic and geochemical data from Cretaceous rocks and Precambrian Sioux quartzite. The project, partially funded by the U.S. Geological Survey, was part of a study to support manganese exploration in the southeastern part of the State. Data developed during the project was being included in an SDGS open file report.

A U.S. Bureau of Mines report entitled "An Appraisal of Selected Mineral Resources of the Black Hills National Forest, South Dakota and Wyoming" was completed during the year. In 1989-90, the U.S. Bureau of Mines appraised selected high resource potential areas containing gold, rare-earth elements, or pegmatite deposits in or near the Black Hills National Forest. The economic feasibility of possible operations and the probability of exploration and development within the next decade were assessed. This mineral land assessment report (MLA-90) is available consultation at U.S. Bureau of Mines headquarters in Washington, DC, and its field office in Denver, CO.

### REVIEW BY NONFUEL MINERAL COMMODITIES

#### Metals

Gold and Silver.—The quantity and value of gold and silver produced in the State increased significantly over those of the previous year. In 1990, the quantity of gold produced was at its highest level since 1970. Production of silver, obtained as a coproduct with gold, rose to a record high of the past 70 years. All of the active, major gold operations were within a 7-mile radius of Lead, in Lawrence County. Collectively, all of the gold mining operations processed in excess of 7.5 million short tons of ore from which 542,068 troy ounces of gold and 194,945 troy ounces of silver were recovered as bullion. The average unit prices in 1990 were \$386.91 per troy ounce for gold and \$4.82 per troy ounce for silver.

Homestake Mining Co. was the State's largest gold producer; accounting for more than two-thirds of the total output. According to company reports, 10 gold production from the Homestake and Open Cut Mines at Lead totaled 388,000 troy ounces, a 1.5% increase over that of Ore produced from the underground mine was 1,755,000 short tons grading 0.180 ounce of gold per ton; open cut ore amounted to 632,000 short tons grading 0.128 ounce of gold per ton. The combined average head grade of ore milled from the underground and open cut operations was 0.164 ounce of gold per ton, an increase of 3% compared with that of 1989. Mill recovery rate was 95%. Full production cost of the Lead operation in 1990 totaled \$311 per ounce, a decrease of \$11 per ounce from that of the previous year. Yearend proven and probable reserves of underground ore were pegged at about 20.4 million short tons containing 0.237 ounce of gold per ton. Open cut ore reserves were cited at about 8.6 million short tons containing 0.122 ounce of gold per ton.

Despite a number of startup problems encountered by Golden Reward Mining Co. in both the mining and processing phases of its operation, approximately 1.2 million short tons of ore was mined, crushed, and placed on leach pads, yielding 30,000 ounces of refined gold. Recovery of the precious metal from the ore was 71% of contained gold and 25% of contained silver. Minable reserves of leachable material within the company's 772-acre mine permit area was stated to be 12.5 million short tons averaging 0.042 ounce of gold per ton. The overall stripping ratio was cited as 1.6:1.11

At Wharf Resources' open pit heap-leach gold mine 5 miles southwest of Lead, a total of 2.6 million short tons of ore was processed in 1990. The average grade of processed ore was 0.042 ounce of gold per short ton, and the average recovery rate was 73.80%. Gold produced during the year amounted to 80,621 ounces, a 4.7% increase over that of the previous year. Proven and probable reserves of ore within the pit design and mining permit boundary were cited to be 23.7 million short tons. The

grade of the ore reserves was stated as 0.037 ounce of gold per short ton.<sup>12</sup>

Brohm Mining Corp.'s Gilt Edge Mine near Deadwood produced 33,054 ounces of gold and 23,931 ounces of silver during the year. Ore mined from an open pit and processed through its heapleach facility totaled 1,321,425 short tons in 1990, an increase of 87% compared with the 1989 tonnage. The average grade of the ore processed was 0.042 ounce of gold per short ton. The average recovery of the gold from the ore was 60.6%. Proven and probable reserves of oxide ore were stated at 2.6 million short tons, having a grade of 0.041 ounce of gold per short ton. Sulfide ore reserves were cited as 45.1 million short tons, carrying a grade of 0.040 ounce of gold per short ton. 13

The Richmond Hill Mine and heap-leach operation, approximately 5 miles northwest of Lead, produced 38,897 ounces of gold and 59,000 ounces of silver during the year. The gold produced was from treatment of 1.16 million short tons of ore having an average mill head grade of 0.033 ounce of gold per short ton. The stripping ratio was 0.67:1. Probable ore reserves were listed as 2.3 million short tons having a grade of 0.05 ounce of gold per short ton. <sup>14</sup>

Iron Ore.—Pete Lien & Sons Inc. produced iron ore from a pit near Nemo. The ore was used by the South Dakota Cement Plant in Rapid City as an ingredient in cement manufacturing.

#### **Industrial Minerals**

Cement.—Cement manufactured in South Dakota came exclusively from the State-owned plant in Rapid City. The output consisted of four types of portland cement and a prepared masonry cement, which collectively increased slightly in quantity and value compared with those of the previous year. The increase was attributed to strong sales to ready-mix dealers that more than offset declines to highway contractors for paving projects within the State and in North Dakota. Nearly two-thirds of the portland cement

shipments from the plant were handled by truck, with the remainder by rail. Plant shipments were handled principally in bulk form, with only a minor amount shipped in containers. During the year, the South Dakota Cement Plant consumed in excess of 1 million tons of nonfuel mineral raw materials mined in the State in its cement manufacturing.

Clays.—The South Dakota Cement Commission mined common clay from pits in Pennington County and accounted for the total State output during the year. The clays were used exclusively in cement manufacturing. Output decreased 7% in quantity and 13% in value compared with 1989 figures.

Feldspar.—Feldsparproductiondecreased more than one-third in quantity and value compared with that of the previous year. Pacer Corp. was the sole producer during the year, obtaining its output from pegmatite deposits in Custer County. Approximately one-half of the hand-cobbed feldspar produced was used in potterymaking and the remainder in various other uses.

Gemstones.—No commercial gem stone mining operations were reported in South Dakota in 1990. No precise value is known for gem material that rockhounds, mineral collectors, and other hobbyists collected. The value for gem stones indicated in table 1 is an estimated amount.

Gypsum.—Crude gypsum production rose 47% in quantity and 48% in value compared with 1989 figures. Output was from the Lange Mine in Meade County, operated by the South Dakota Cement Commission. The entire output was used in cement manufacturing.

Lime.—The State's entire lime production in 1990 was from the Pete Lien & Sons Inc. plant in Rapid City. Output increased approximately 20% both in quantity and value over that of 1989. Both quicklime and hydrated lime were produced at the facility.

Mica.—Mica production decreased 17% in quantity and 18% in value compared with 1989 figures. Pacer Corp. accounted for the entire State output. Production was from its Brite-X Mine in Custer County and was processed at the company's grinding mill in Custer.

Sand and Gravel.—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; data for odd-numbered years are based on annual company estimates. This annual report contains actual data for 1988 and 1990 and estimates for 1989.

Construction sand and gravel output increased 51% in quantity and 14% in value over that estimated for the previous year. The largest specified use of the sand and gravel consumed during the year was in road bases and coverings. Construction sand and gravel statistics are compiled by geographical districts as shown on the State map. Table 3 presents end-use data for the four districts covering the State. The leader in terms of value of sand and gravel output was Codington County, followed respectively by Hanson County and Dewey County.

Stone.—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; data for even-numbered years are based on annual company estimates. This annual report contains estimates for 1988 and 1990 and actual data for 1989.

Crushed.—Estimated crushed stone output increased 25% in quantity and 17% in value over that recorded in 1989.

Dimension.—Dimension stone production was estimated to have decreased 7% in quantity and 27% in value compared with that reported for the previous year. Near midyear, a joint venture was undertaken between Dakota Granite Co. of Milbank, SD, and Rock of Ages Corp. of Barre Town, VT, resulting in the purchase of inventory, quarrying equipment, and quarries of Field Enterprises, a business that owned the Dakota Mahogany quarry in Milbank and another quarry in

Bellingham, SD. The new business will be called Whetstone Granite Co. Ownership of the company is divided equally between the two principals.

TABLE 2
SOUTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1990, BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregates (including concrete sand)	657	\$2,875	\$4.38
Plaster and gunite sands	5	23	4.60
Concrete products (blocks, bricks, pipe, decorative, etc.)	- 4	24	6.00
Asphaltic concrete aggregates and other bituminous mixtures	356	1,509	4.24
Road base and coverings	3,554	6,897	1.94
Fill	565	737	1.30
Snow and ice control	37	60	1.62
Other	91	142	1.56
Unspecified: <sup>2</sup>	-		
Actual	3,777	9,472	2.51
Estimated	644	1,951	3.03
Total <sup>3</sup> or average	9,689	23,689	2.44

<sup>&</sup>lt;sup>1</sup>Includes road and other stabilization (cement).

TABLE 3
SOUTH DAKOTA: SAND AND GRAVEL SOLD OR USED BY PRODUCERS IN 1990, BY DISTRICT AND USE

(Thousand short tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantit	y Value	Quantit	y Value	Quantit	y Value	Quantity	Value
Concrete aggregates (including concrete sand)	w	w	w	w	_	_	248	816
Plaster and gunite sands	_	_	_			_	5	23
Concrete products (blocks, bricks, etc.)	_	_	_	_	_	-	4	24
Asphaltic concrete aggregates and other bituminous mixtures	5	29	58	134	148	524	145	822
Road base and coverings	615	104	948	2,087	687	1,176	1,305	2,586
Fill		_	59	129	45	78	461	529
Snow and ice control	2	7	<b>(²</b> )	(*)	4	15	30	38
Other miscellaneous <sup>3</sup>	319	1,671	117	430	38	61	25	38
Actual	667	1,622	900	2,132	783	1,785	1,428	3,933
Estimated	205	370	_	_	327	1,400	112	181
Total <sup>4</sup>	1,812	4,747	2,082	4,912	2,032	5,039	3,763	8,991

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

<sup>&</sup>lt;sup>1</sup>Former State Mineral Officer, U.S. Bureau of Mines, Minneapolis, MN. He has 33 years of experience in mineral-related work in private industry and government. Assistance in the preparation of the report was given by Wanda J. West, editorial assistant.

<sup>&</sup>lt;sup>2</sup>Homestake Mining Co. (San Francisco, CA). 1990 Annual Report to Stockholders, 40 pp.

<sup>&</sup>lt;sup>3</sup>Work cited in footnote 2.

<sup>&</sup>lt;sup>4</sup>Wharf Resources Ltd. (Toronto, Ontario, Canada). 1990 Annual Report to Stockholders, 27 pp.

<sup>&</sup>lt;sup>5</sup>United Coin Mines Limited (Toronto, Ontario, Canada). Interim Report to Shareholders. July 31, 1991, 14 pp.

<sup>&</sup>lt;sup>6</sup>LAC Minerals Ltd. (Toronto, Ontario, Canada). 1990 Annual Report to Stockholders, pp. 9-11, 28.

<sup>&</sup>lt;sup>7</sup>South Dakota Department of Labor. Employment & Earnings Covered by Unemployment Insurance. 1990, p. 4.

 $<sup>^{8}</sup>$ U.S. Department of Labor. Mine Injuries and Worktime, Quarterly. 1990, p. 15.

<sup>&</sup>lt;sup>9</sup>South Dakota School of Mines and Technology (Rapid City, SD). South Dakota Mining and Mineral Resources Research Institute. Annual Status and Final Report. 1991, 136 pp.

<sup>10</sup> Work cited in footnote 2.

<sup>11</sup>Work cited in footnote 5.

<sup>12</sup> Work cited in footnote 4.

<sup>&</sup>lt;sup>15</sup>MinVen Gold Corporation (Lakewood, CO). 1990 Annual Report to Stockholders, 109 pp.

<sup>14</sup>Work cited in footnote 6.

<sup>&</sup>lt;sup>2</sup>Includes production reported without a breakdown by end use and estimates for nonrespondents.

<sup>&</sup>lt;sup>3</sup>Data may not add to totals shown because of independent rounding.

Includes road and other stabilization (coment).

<sup>&</sup>lt;sup>2</sup>Loss than 1/2 unit.

<sup>&</sup>lt;sup>3</sup>Includes production reported without a breakdown by end use and estimates for nonrespondents.

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

### TABLE 4 PRINCIPAL PRODUCERS

Commodity and company	Address	Type of activity	County	
Cement:				
South Dakota Cement Commission	Box 360 Rapid City, SD 57709	Plant	Pennington.	
Clays:				
South Dakota Cement Commission	do.	Open pit mine	Do.	
Feldspar:				
Pacer Corp.	Box 912 Custer, SD 57730	Open pit mines and dry- grinding plant	Custer.	
Gold:				
Bond Gold-Richmond Hill Inc., a subsidiary of Bond International Gold Inc. <sup>1</sup>	601 West Main St. Lead, SD 57754	Open pit and leach pads	Lawrence.	
Brohm Mining Corp., a division of MinVen Gold Corp. <sup>1</sup>	Box 485 start here Deadwood, SD 57732	do.	Do.	
Golden Reward Mining Co.1	Box 888 Lead, SD 57754	do.	Do.	
Homestake Mining Co. <sup>1</sup>	Box 875 Lead, SD 57754	Underground mine and open pit, cyanidation mill, gravity separation, refinery	Do.	
Wharf Resources (U.S.A.) Inc. <sup>1</sup>	Box 897 Lead, SD 57754	Open pit and leach pads	Do.	
Gypsum:			-	
South Dakota Cement Commission	Box 360 Rapid City, SD 57709	Open pit mine	Meade.	
Iron ore:				
Pete Lien & Sons Inc.	Box 440 Rapid City, SD 57709	do.	Lawrence.	
Lime:				
Pete Lien & Sons Inc.	do.	Plant	Pennington.	
Mica:				
Pacer Corp.	Box 912 Custer, SD 57730	Mine and dry-grinding plant	Custer.	
Sand and gravel (construction):				
Birdsall Sand & Gravel Co. a division of Pete Lien & Sons Inc.	Box 767 Rapid City, SD 57709-0767	Pits and plants	Fall River, Pennington, Sully	
Brownlee Construction Co.	717 South Broadway Watertown, SD 57201	do.	Codington.	
Fisher Sand & Gravel Co.	Box 1034 Dickinson, ND 58602	do.	Beadle, Clark, Davison, Hanson, Pennington, Sanborn Union, Walworth.	
Myrl & Roy's Paving Inc.	1300 North Bahnson Sioux Falls, SD 57103	do.	Lincoln and Minnehaha.	
Sweetman Construction Inc.	Box 84140 Sioux Falls, SD 57118	do.	Minnehaha and Roberts.	
Stone (1989):				
Crushed:				
Limestone:				
Pete Lien & Sons Inc.	Box 440 Rapid City, SD 57709	Quarry and plant	Pennington.	

SOUTH DAKOTA—1990

### TABLE 4-Continued PRINCIPAL PRODUCERS

Commodity and company	Address	<ul> <li>Type of activity</li> </ul>	County
Stone (1989)—Continued			
Crushed—Continued			
Limestone—Continued	<u></u>		
Northwestern Engineering Co. (Hills Materials Co.)	Box 2320 Rapid City, SD 57709	Quarries and plants	Do.
South Dakota Cement Commission	Box 360 Rapid City, SD 57709	Quarry and plant	Do.
Sandstone-quartzite:			
L. G. Everist Inc.	Box 829 Sioux Falls, SD 57101	do.	Minnehaha.
Spencer Quarries Inc.	Box 25 Spencer, SD 57374	do.	Hanson.
Sweetman Construction Co.	Box 809 Sioux Falls, SD 57101	do.	Minnehaha.
Dimension, granite:			
Cold Spring Granite Co.	202 South 3d Ave. Cold Spring, MN 56320	Quarries and plant	Grant.
Dakota Granite Co.	Box 1351 Milbank, SD 57252	do.	Do.

Also silver.

## MINERAL-RELATED GOVERNMENT AGENCIES

#### **FEDERAL**

U.S. Department of the Interior
U.S. Bureau of Mines
Karl Starch
Denver Regional Office of State
Activities
Bldg. 20, Denver Federal Center
Denver, CO 80225-0086
Telephone: (303) 236-0435

U.S. Department of the Interior Bureau of Land Management Thomas Lonnie, Deputy State Director for Mineral Resources Box 36800 Billings, MT 59107 Telephone: (406) 255-2805

U.S. Department of Labor
Mine Safety and Health Administration
Vernon R. Gomez, District Manager
Rocky Mountain District Office
Metal and Nonmetal Mine Safety and
Health
Box 25367, Denver Federal Center
Denver, CO 80225-0367
Telephone: (303) 231-5465

U.S. Forest Service
Region I (Custer National Forest)
Lands and Minerals
Charles E. Wassinger, Director
Box 7669
Missoula, MT 59807
Telephone: (406) 329-3595

U.S. Forest Service
Region II (Black Hills National Forest)
Watershed, Soils, and Minerals
Charles Hendricks, Director
Box 25127
Lakewood, CO 80225
Telephone: (303) 236-9467

#### **STATE**

South Dakota Cement Commission Gary Pechota, President Box 360 Rapid City, SD 57701 Telephone: (605) 342-4252

South Dakota Department of Environment and Natural Resources Robert E. Roberts, Secretary 523 East Capitol Joe Foss Bldg. Pierre, SD 57501 Telephone: (605) 773-3151

South Dakota Geological Survey Merlin J. Tipton, State Geologist Science Center University of South Dakota Vermillion, SD 57069 Telephone: (605) 677-5227

South Dakota School of Mines and Technology William Hughes, Vice President 501 East St. Joseph St. Rapid City, SD 57701-3995 Telephone: (605) 394-2256

South Dakota School of Mines and Technology
Zbigniew Hladysz, Director
Mining and Mineral Resources Research
Institute
501 East St. Joseph St.
Rapid City, SD 57701-3995
Telephone: (605) 394-1971