MINING AND QUARRYING TRENDS

By Mary E. Ewell

Domestic survey data were prepared by the author and each of the statistical assistants who has responsibility for the mineral commodities indicated.

The mining and quarrying trends shown in this report were calculated from nonfuel mineral data reported to the U.S. Geological Survey (USGS) by mining and quarrying companies operating in the United States. The data for 2004 were reported on the "Mine, Development, and Mineral Exploration Supplement" statistical survey conducted by the USGS and on the production surveys for some more widely produced nonfuel mineral commodities, such as sand and gravel. Additional data for 2004 were derived from annual USGS production and consumption surveys of nonfuel mineral producers; these surveys covered 58 nonfuel mineral commodities produced in the United States. Nonfuel minerals exclude coal, petroleum coke, and related products.

As shown in this report, mining and quarrying data for 2004 include the annual data for construction sand and gravel and crushed and dimension stone. From 1981 to 1993, these mineral commodities were surveyed biennially and appeared alternately in this report. The inclusion of both sets of data in this report results in essentially a complete coverage of nonfuel mineral production in the United States. Comparisons of the 1994 to 2004 data with previously reported annual data, however, are not possible.

The data in the following tables are reported according to the primary product of a mine or operation. The primary product is usually determined by the product with the highest total value for the year. In some instances, the values of two products at the same operation are so similar that the products are coproducts. To account for the data without double counting, however, a product of lesser value is considered to be a byproduct. Total domestic mining of nonfuel mineral materials amounted to 5.8 billion metric tons (Gt) in 2004, a 5% increase compared with that of 2003. These materials included 4.3 Gt of crude ore mined or quarried and 1.5 Gt of mine ore and waste from development operations. Of the nonfuel mineral materials mined, 61% was for the production of industrial minerals, and 39% was for the production of metals. Overall, 98% of nonfuel minerals was mined and quarried at surface level, and 2% was mined underground.

Total surface mining and quarrying for industrial minerals amounted to 3.5 Gt, a 4% increase compared with that of 2003. Crude ore mined at these surface operations was 3.0 Gt, and 409 million metric tons (Mt) was ore and waste from development operations. Underground mining for industrial minerals amounted to only 108 Mt, nearly all of which was crude ore.

Total surface mining for metal ores amounted to 2.2 Gt, a 7% increase compared with that of 2003. Of the more than 2.2 Gt, nearly 1.2 Gt was crude ore mined, and slightly less than 1.1 Gt was ore and waste from development operations. Underground mining of metal ores amounted to only 16 Mt, of which 88% was crude ore.

The major States in which mining for nonfuel minerals took place, in order of total material handled, were Nevada, Arizona, Florida, California, Minnesota, Texas, Michigan, Utah, Pennsylvania, and Ohio. These 10 States accounted for about 63% of the tonnage of nonfuel minerals mined in the United States. Virtually all nonfuel mine production in these States was from surface operations.

MATERIAL HANDLED AT SURFACE AND UNDERGROUND MINES IN THE UNITED STATES, BY TYPE¹

	S	urface ²		Un	derground ³		А	ll mines	
Type of ore and year	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total
Metals:									
2000	1,120	1,020	2,140 ^r	32	1	33	1,150	1,020	2,170
2001	1,080	1,120	2,200 r	17	3	20	1,100 ^r	1,120	2,220 r
2002	1,060 ^r	1,020	2,080 ^r	15	3	18	1,070	1,020	2,090
2003	1,050 ^r	1,020 r	2,070	14	1 ^r	15 ^r	1,070	1,020 r	2,090 r
2004	1,160	1,060	2,220	14	2	16	1,180	1,060	2,240
Industrial minerals:									
2000	2,780	381	3,160	110	(5)	110	2,890	381	3,270
2001	2,840	358	3,200	114	(5)	114	2,960	358	3,310
2002	2,850	442	3,290	108	(5)	108	2,960	442	3,400
2003	2,900	416	3,310	107	(5)	107	3,000	416	3,420
2004	3,040	409	3,450	108	(5)	108	3,150	409	3,560
All mineral commodities:									
2000	3,900	1,400	5,300	142	2 ^r	144 ^r	4,040	1,400	5,450 ^r
2001	3,920	1,480	5,400 ^r	131	4 ^r	135 ^r	4,050	1,480	5,530
2002	3,910 ^r	1,460	5,370 ^r	123	3 ^r	126 ^r	4,030 ^r	1,460 ^r	5,490 ^r
2003	3,950 ^r	1,430 ^r	5,380	121	2 r	123 ^r	4,070 ^r	1,430 ^r	5,500
2004	4,200	1,470	5,670	122	2	124	4,320	1,470	5,790

(Million metric tons)

^rRevised.

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

²Includes materials from wells, ponds, and pumping operations.

³Includes solution mining.

⁴Includes ore and waste from development operations.

⁵Less than ¹/₂ unit.

MATERIAL HANDLED AT SURFACE AND UNDERGROUND MINES IN THE UNITED STATES IN 2004, BY COMMODITY AND STATE¹

	Number		Surface ³		U	Indergrour	nd ⁵	(3	All mines	
~ ~ ~ ~	of	(the	ousand metric	tons)	(thou	sand metri	c tons)	(th	ousand metric	tons)
Commodity or State	mines ²	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total
Metal ore:										
Gold	40	230,000	796,000	1,030,000	4,290	1,100	5,390	234,000	797,000	1,030,000
Iron	10	177,000	126,000	303,000				177,000	126,000	303,000
Other ⁶	41	756,000	135,000	891,000	9,700	414	10,100	766,000	135,000	901,000
Total	91	1,160,000	1,060,000	2,220,000	14,000	1,520	15,500	1,180,000	1,060,000	2,240,000
Industrial minerals:										
Barite	5	778	W	778 ⁷				778	W	778 7
Clays	639	40,400	35,100	75,500	W	(8)	W	40,400 9	35,100 9	75,500 9
Diatomite	10	620		620				620		620
Feldspar ¹⁰	12	1,480	W	1,480 7				1,480	W	1,480 7
Gypsum	36	13,900	3,530	17,400	1,730		1,730	15,600	3,530	19,100
Phosphate rock	15	146,000	W	146,000 7				146,000	W	146,000 7
Pumice ¹¹	17	1,490	726	2,220				1,490	726	2,220
Salt	66	7,340		7,340	32,600		32,600	39,900		39,900
Sand and gravel:										
Construction	10,164	1,240,000		1,240,000				1,240,000		1,240,000
Industrial	137	29,100		29,100	W		W	29,100 ⁹		29,100 ⁹
Soda ash	7				11,000		11,000	11,000		11,000
Stone:										
Crushed	3,170	1,550,000	118,000	1,660,000	47,700	324	48,100	1,590,000	118,000	1,710,000
Dimension	159	1.470	744	2.210	W		W	1.470 9	744	2.210 9
Talc and pyrophyllite	15	656	2.410	3.070	W		W	656 ⁹	2.410	3.070 9
Other ¹²	93	12.200	249.000	261.000	15.000		15.000	27.100	249.000	276.000
Total	14,545	3.040.000	409.000	3,450,000	108,000	324	108,000	3,150,000	409,000	3 560 000
Grand total	14 636	4 200 000	1 470 000	5,670,000	122,000	1 840	124 000	4 320 000	1 470 000	5,790,000
State:		1,200,000	1,170,000	3,070,000	122,000	1,010	121,000	1,320,000	1,170,000	5,790,000
Alabama	181	66 200	6 1 3 0	72 300	W	W	W	66 200 ⁹	6 1 3 0 ⁹	72 300 ⁹
Alaska	211	34 600	27 500	62,000	W	w	w	34 600 ⁹	27 500 9	62 000 ⁹
Arizona	422	488,000	27,500 W	488,000 7	W	w	w	488 000 ⁹	27,500 W	488,000 ^{7,9}
Arkansas	153	44 800	6 140	51,000	W		W	400,000 ⁹	6 140	51 000 ⁹
California	861	232,000	68 100	300,000	W	w	W	232 000 ⁹	68 100 ⁹	300,000 9
Calorada	295	60,400	25,100	105,000	w	w	W W	60,400 ⁹	25 400 ⁹	105 000 ⁹
Connactiout		18,400	33,400 876	10,000	vv	vv	vv	18,400	35,400	10,000
Deleviere	97	2 080	870	2 080				2 080	870	2 080
Elavida	100	2,980		2,980				2,980		2,980
Florida	188	273,000	W	273,000				273,000	W	273,000
Georgia	245	96,500	14,500	111,000	1,640	14	1,000	98,200	14,500	113,000
Hawan	25	6,450	415	6,860				6,450	415	6,860
Idano	399	36,900	w	36,900	W	w	W	36,900	w 5 000	36,900
	293	115,000	5,860	121,000	5,430	38	5,470	120,000	5,900	126,000
Indiana	2/4	79,400	4,720	84,100	7,060	46	7,110	86,500	4,760	91,300
lowa	382	47,600	2,680	50,300	7,220	45	7,260	54,900	2,720	57,600
Kansas	345	30,800	2,100	32,900	3,050	3	3,050	33,900	2,100	36,000
Kentucky	128	54,400	4,310	58,700	12,300	86	12,400	66,700	4,400	71,100
Louisiana	151	25,600	347	26,000	14,700		14,700	40,400	347	40,700
Maine	181	15,000	808	15,800				15,000	808	15,800
Maryland	95	48,000	2,950	50,900	W	W	W	48,000 ⁹	2,950 9	50,900 ⁹
Massachusetts	146	27,100	1,070	28,200				27,100	1,070	28,200
Michigan	585	147,000	W	147,000 7	2,040		2,040	149,000	W	149,000 7
Minnesota	588	199,000	87,400	287,000				199,000	87,400	287,000
Mississippi	119	18,000	1,120	19,200	W	W	W	18,000 ⁹	1,120 9	19,200 9
Missouri	298	79,400	6,490	85,900	8,200	25	8,230	87,600	6,510	94,100
Montana	238	38,700	W	38,700 7	1,370	W	1,370 7	40,100	W	40,100 7,9
Nebraska	170	22,000	668	22,700	W		W	22,000 ⁹	668	22,700 9
Nevada	859	477,000	591,000	1,070,000	W	W	W	477,000 ⁹	591,000 ⁹	1,070,000 9

See footnotes at end of table.

TABLE 2-Continued

MATERIAL HANDLED AT SURFACE AND UNDERGROUND MINES IN THE UNITED STATES IN 2004, BY COMMODITY AND STATE¹

	Number		Surface ³		τ	Indergroun	d ⁵		All mines	
	of	(the	ousand metric	tons)	(thou	sand metric	c tons)	(th	ousand metric	tons)
Commodity or State	mines ²	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total	Crude ore	Waste ⁴	Total
State—Continued:										
New Hampshire	103	13,700	397	14,100				13,700	397	14,100
New Jersey	93	47,500	2,100	49,600				47,500	2,100	49,600
New Mexico	524	57,600	W	57,600 ⁷	12,300		12,300	69,900	W	69,900 ⁷
New York	730	84,800	5,080	89,900	3,890	W	3,890 7	88,700	5,080 9	93,800
North Carolina	267	94,600	10,200	105,000	34	(13)	34	94,700	10,200	105,000
North Dakota	169	11,900	W	11,900 7				11,900	W	11,900 7
Ohio	368	129,000	7,070	136,000	W	W	W	129,000 ⁹	7,070 9	136,000 ⁹
Oklahoma	173	56,700	4,150	60,800	W	W	W	56,700 ⁹	4,150 9	60,800 ⁹
Oregon	349	44,400	2,630	47,000				44,400	2,630	47,000
Pennsylvania	352	130,000	9,090	139,000	3,220	23	3,240	133,000	9,110	142,000
Rhode Island	28	4,240	128	4,370				4,240	128	4,370
South Carolina	117	40,600	3,260	43,800	W	W	W	40,600 9	3,260 9	43,800 9
South Dakota	335	22,200	20,100	42,300				22,200	20,100	42,300
Tennessee	211	65,200	5,370	70,600	2,570	W	2,570 7	67,800	5,370 ⁹	73,100
Texas	557	209,000	10,900	220,000	5,520	W	5,520 7	215,000	10,900 9	226,000
Utah	382	89,000	W	89,000 ⁷	642	W	642 7	89,700	W	89,700 ^{7,9}
Vermont	119	9,980	430	10,400	W		W	9,980 ⁹	430	10,400 9
Virginia	220	89,700	10,300	100,000		W	W	89,700	10,300 9	100,000 9
Washington	342	53,800	1,050	54,800	W		W	53,800 ⁹	1,050	54,800 ⁹
West Virginia	58	13,100	937	14,100	3,150	W	3,150 7	16,300	937 ⁹	17,200
Wisconsin	714	83,200	3,090	86,300				83,200	3,090	86,300
Wyoming	395	21,100	3,660	24,800	9,770		9,770	30,900	3,660	34,600
Undistributed ¹⁴		38,000	496,000	534,000	17,800	1,560	19,300	55,800	497,000	553,000
Total	14,636	4,200,000	1,470,000	5,670,000	122,000	1,840	124,000	4,320,000	1,470,000	5,790,000

W Withheld to avoid disclosing company proprietary data; included with "Other" or "Undistributed." -- Zero.

¹Data are rounded to no more than three significant digits except "number of mines;" may not add to totals shown.

²Includes quarries and other mineral operations.

³Includes materials from wells, ponds, and pumping operations.

⁴Includes ore and waste from development operations.

⁵Includes solution mining.

⁶Includes beryllium, copper, gold-silver, lead, magnesium metal, molybdenum, platinum and palladium, silver, titanium, uranium, zinc, and metals indicated by symbol W.

⁷Excludes waste from mining operations and ore and waste from development operations.

⁸Withheld to avoid disclosing company proprietary data; included with "Grand total."

⁹Excludes materials from underground operations.

¹⁰Includes aplite.

¹¹Excludes volcanic cinder and scoria; included with "Crushed stone."

¹²Includes abrasives, boron minerals, bromine, garnet, greensand marl, iodine, iron oxide pigments, kyanite, lithium minerals, magnesite, magnesium compounds, mica, olivine, perlite, potash, tripoli, vermiculite, wollastonite, zeolites, and industrial minerals indicated by symbol W.

¹³ Less than ¹/₂ unit.

¹⁴Includes States indicated by symbol W.

VALUE OF PRINCIPAL MINERAL PRODUCTS AND BYPRODUCTS OF SURFACE AND UNDERGROUND MINES IN THE UNITED STATES IN 2004¹

(Dollars per metric ton)

		Surface			Underground			All mines	
	Principal			Principal			Principal		
	mineral			mineral			mineral		
Commodity	product	Byproduct	Total	product	Byproduct	Total	product	Byproduct	Total
Metal ore:									
Gold	13.49	0.30	13.79	W	W	W	13.49 ²	0.30 2	13.79 ²
Iron	16.35		16.35				16.35		16.35
Average, metals ³	10.76	0.80	11.56	186.66	18.11	204.77	13.60	1.08	14.68
Industrial minerals:	_								
Barite	26.70		26.70				26.70		26.70
Clays	41.11		41.11	W		W	41.11 ²		41.11 ²
Feldspar ⁴	25.89	W	25.89 ⁵				25.89	W	25.89 ²
Gypsum	6.79		6.79	9.29		9.29	7.07		7.07
Phosphate rock	6.84		6.84				6.84		6.84
Pumice ⁶	16.82		16.82				16.82		16.82
Salt	64.83		64.83	18.98		18.98	26.22		26.22
Sand and gravel:									
Construction	5.33		5.33				5.33		5.33
Industrial	23.18		23.18	W		W	23.18 ²		23.18 2
Soda ash				70.27		70.27	70.27		70.27
Stone:									
Crushed	6.01		6.01	6.10		6.10	6.01		6.01
Dimension	181.48		181.48	W		W	181.48 ²		181.48 2
Talc and pyrophyllite	27.38		27.38	W		W	27.38 ²		27.38 ²
Average, industrial minerals ⁷	7.04	0.03	7.07	19.22	0.18	19.40	7.48	0.03	7.51
Average, industrial minerals, excluding									
sand and gravel and stone ⁷	20.54	0.21	20.75	28.34	0.32	28.66	22.30	0.23	22.53
Average, metals and industrial minerals ^{3, 7}	7.86	0.20	8.06	37.77	2.17	39.94	8.81	0.26	9.07
Average, metals and industrial minerals,									
excluding sand and gravel and stone ^{3, 7}	12.78	0.68	13.46	56.25	3.45	59.70	15.77	0.87	16.64

W Withheld to avoid disclosing company proprietary data; included in appropriate "Average." -- Zero.

¹Values calculated from unrounded data; may not add to totals shown because of independent rounding.

²Value of products at surface operations only.

³Includes values of copper, gold-silver ore, lead, magnesium metal, molybdenum, platinum and palladium, silver, titanium, zinc, and metals indicated by symbol W. ⁴Includes aplite.

⁵Value of principal mineral product only.

⁶Excludes volcanic cinder and scoria; included with "Crushed stone."

⁷Includes values of abrasives, boron minerals, bromine, garnet, greensand marl, iodine, iron oxide pigments, kyanite, lithium minerals, magnesite, magnesium compounds, mica, olivine, perlite, potash, tripoli, vermiculite, wollastonite, zeolites, and industrial minerals indicated by symbol W.

TABLE 4 TWENTY-FIVE LEADING METAL AND INDUSTRIAL MINERAL MINES AND QUARRIES IN THE UNITED STATES IN 2004, IN ORDER OF OUTPUT OF CRUDE ORE

Type of ore and name				
of mine, quarry, or operation ¹	State	Operator	Commodity	Mining method
Metal ore:				
Morenci	Arizona	Phelps Dodge Corp.	Copper-molybdenum ore	Open pit.
Newmont Nevada Operations ²	Nevada	Newmont Mining Corp.	Gold ore	Open pit and stoping.
Betze-Post	do.	Barrick Goldstrike Mines, Inc.	do.	Open pit.
Bagdad	Arizona	Phelps Dodge Corp.	Copper ore	Do.
Ray	do.	ASARCO Incorporated	do.	Do.
Sierrita	do.	Phelps Dodge Corp.	Copper-molybdenum ore	Do.
Minntac	Minnesota	U.S. Steel Corporation	Iron ore	Do.
Bingham Canyon	Utah	Kennecott Utah Copper Corp.	Copper ore	Do.
Chino	New Mexico	Phelps Dodge Corp.	Copper-molybdenum ore	Do.
Cortez	Nevada	Placer Dome U.S. Inc.	Gold ore	Do.
Round Mountain	do.	Round Mountain Gold Corporation	do.	Do.
Hibbing Taconite Co.	Minnesota	Cleveland-Cliffs, Inc.	Iron ore	Do.
Tilden Mining Co.	Michigan	do.	do.	Do.
Mission Complex	Arizona	ASARCO Incorporated	Copper ore	Open pit and stoping.
Keewatin Taconite	Minnesota	U.S. Steel Corporation	Iron ore	Open pit.
Cresson	Colorado	Cripple Creek & Victor Gold Mining Co.	Gold ore	Do.
Empire Iron Mining Partnership	Michigan	Cleveland-Cliffs, Inc.	Iron ore	Do.
Florida Canyon and Standard	Nevada	Apollo Gold Corp.	Gold ore	Do.
Fort Knox and True North Mines	Alaska	Kinnross Fairbanks Gold Mining Incorporated	do.	Do.
Continental Pit	Montana	Montana Resources, Inc.	Copper-molybdenum ore	Do.
Peter Mitchell Mine	Minnesota	Northshore Mining Co.	Iron ore	Do.
United Taconite Company, LLC	do.	United Taconite Company, LLC	do.	Do.
Iluka Green Cove Springs FL	Florida	Iluka Resources Inc.	Titanium ore	Dredging.
Rochester	Nevada	Coeur Rochester, Inc.	Gold ore	Open pit.
Robinson	do.	Robinson Nevada Mining Company	do.	Do.
Industrial minerals:				
Florida mines (seven)	Florida	Mosaic Co., The	Phosphate rock	Do.
South Pasture	do.	CF Industries, Inc.	do.	Do.
F.E.C. Ouarry	do.	Rinker Materials Corporation	Stone	Open quarry.
Swift Creek	do.	PCS Phosphate Co., Inc.	Phosphate rock	Open pit.
White Rock	do.	Vecellio & Grogan, Inc.	Stone	Open quarry.
Georgetown	Texas	Texas Crushed Stone Co., Inc.	do.	Do.
Aurora	North Carolina	PCS Phosphate Co., Inc.	Phosphate rock	Open pit.
Pennsuco	Florida	Titan Atlantic LLC (Tarmac America, Inc.)	Stone	Open quarry.
Crushed Limestone Operation	Missouri	Tower Rock Stone Co	do	Do
McCook 378	Illinois	Vulcan Materials Co.	do.	Do.
Mosaic Co The	New Mexico	Mosaic Co., The	Potash	Stoping.
Alico Ouarry	Florida	Rinker Materials Corporation	Stone	Open quarry.
Thorton Quarry	Illinois	Material Service Corporation	do.	Do.
Stoneport Quarry	Michigan	Lafarge North America. Inc.	do.	Do.
TXI Operations, LP	Texas	Texas Industries. Inc.	do.	Do.
Grand Rivers Ouarry	Kentucky	Vulcan Materials Co.	do.	Do.
Balcones Plant	Texas	Cemex Inc	do	Do
OMYA CA Inc.	California	Pluess-Stauffer (CA) Industries, Inc.	do.	Do.
Krome Quarry	Florida	Rinker Materials Corporation	do	Do
Macon Ouarry	Georgia	do.	do.	 Do.
Prairie Materials Sales. Inc.	Illinois	Prairie Materials Sales, Inc.	Sand and gravel	Open pit.
Lytle Creek	California	Cemex. Inc.	do.	Do.
Clinton Plant	New York	Oldcastle Inc./Materials Group	Stone	Open quarry.
TXI Operations. LP	Oklahoma	Texas Industries, Inc.	do.	Do.
Dupont Pit	Washington	Glacier Northwest, Inc.	Sand and gravel	Open pit.

¹Owing to commodity reporting differences, the rank of individual mining operations may not be available.

²Includes Battle Mountain Gold complex, Carlin Mines complex, Lone Tree complex, Twin Creeks Mine, and Midas Mine; ore was mined from 13 open pit mines and 4 underground mines.

TABLE 5 TWENTY-FIVE LEADING METAL AND INDUSTRIAL MINERAL MINES AND QUARRIES IN THE UNITED STATES IN 2004, IN ORDER OF OUTPUT OF TOTAL MATERIAL HANDLED

Type of ore and name				
of mine, quarry, or operation ¹	State	Operator	Commodity	Mining method
Metal ore:				
Betze-Post	Nevada	Barrick Goldstrike Mines, Inc.	Gold ore	Open pit.
Newmont Nevada Operations ²	do.	Newmont Mining Corp.	do.	Open pit and stoping.
Morenci	Arizona	Phelps Dodge Corp.	Copper-molybdenum ore	Open pit.
Ray	do.	ASARCO Incorporated	Copper ore	Do.
Bingham Canyon	Utah	Kennecott Utah Copper Corp.	do.	Do.
Bagdad	Arizona	Phelps Dodge Corp.	do.	Do.
Minntac	Minnesota	U.S. Steel Corporation	Iron ore	Do.
Cortez	Nevada	Placer Dome U.S. Inc.	Gold ore	Do.
Mission Complex	Arizona	ASARCO Incorporated	Copper ore	Open pit and stoping.
Robinson	Nevada	Robinson Nevada Mining Company	Gold ore	Open pit.
Chino	New Mexico	Phelps Dodge Corp.	Copper-molybdenum ore	Do.
Cresson	Colorado	Cripple Creek & Victor Gold Mining Co.	Gold ore	Do.
Round Mountain	Nevada	Round Mountain Gold Corporation	do.	Do.
Hibbing Taconite Co.	Minnesota	Cleveland-Cliffs, Inc.	Iron ore	Do.
Sierrita	Arizona	Phelps Dodge Corp.	Copper-molybdenum ore	Do.
Fort Knox and True North Mines	Alaska	Fairbanks Gold Mining Inc.	Gold ore	Do.
Empire Iron Mining Partnership	Michigan	Cleveland-Cliffs, Inc.	Iron ore	Do.
Marigold	Nevada	Glamis Gold Inc.	Gold ore	Do.
Tilden Mining Co.	Michigan	Cleveland-Cliffs, Inc.	Iron ore	Do.
Florida Canyon and Standard	Nevada	Apollo Gold Corp.	Gold ore	Do.
Montana Tunnels	Montana	Montana Tunnels Mining, Inc.	do.	Do.
Keewatin Taconite	Minnesota	U.S. Steel Corporation	Iron ore	Do.
Peter Mitchell Mine	do.	Northshore Mining Co.	do.	Do.
Wharf	South Dakota	Wharf Resources, Ltd.	Gold ore	Do.
United Taconite Company, LLC	Minnesota	United Taconite Company, LLC	Iron ore	Do.
Industrial minerals:				
Florida mines (seven)	Florida	Mosaic Co., The	Phosphate rock	Do.
Boron Mine	California	U.S. Borax, Inc.	Boron	Do.
F.E.C. Quarry	Florida	Rinker Materials Corporation	Stone	Open quarry.
South Pasture	do.	CF Industries, Inc.	Phosphate rock	Open pit.
Swift Creek	do.	PCS Phosphate Co., Inc.	do.	Do.
Aurora	North Carolina	do.	do.	Do.
White Rock	Florida	Vecellio & Grogan, Inc.	Stone	Open quarry.
Georgetown	Texas	Texas Crushed Stone Co., Inc.	do.	Do.
Pennsuco	Florida	Titan Atlantic LLC (Tarmac America, Inc.)	do.	Do.
Crushed Limestone Operation	Missouri	Tower Rock Stone Co.	do.	Do.
McCook 378	Illinois	Vulcan Materials Co.	do.	Do.
Alico Quarry	Florida	Rinker Materials Corporation	do.	Do.
Thorton Quarry	Illinois	Material Service Corporation	do.	Do.
Stoneport Quarry	Michigan	Lafarge North America, Inc.	do.	Do.
Mosaic Co., The	New Mexico	Mosaic Co., The	Potash	Stoping.
TXI Operations, LP	Texas	Texas Industries, Inc.	Stone	Open quarry.
Grand Rivers Quarry	Kentucky	Vulcan Materials Co.	do.	Do.
Balcones Plant	Texas	Cemex, Inc.	do.	Do.
OMYA CA Inc.	California	Pluess-Stauffer (CA) Industries, Inc.	do.	Do.
Krome Quarry	Florida	Rinker Materials Corporation	do.	Do.
Macon Quarry	Georgia	do.	do.	Do.
Clinton Plant	New York	Oldcastle Inc./Materials Group	do.	Do.
Prairie Materials Sales, Inc.	Illinois	Prairie Materials Sales, Inc.	Sand and gravel	Open pit.
TXI Operations, LP	Oklahoma	Texas Industries, Inc.	Stone	Open quarry.
Lytle Creek	California	Cemex, Inc.	do.	Do.

¹Owing to commodity reporting differences, the rank of individual mining operations may not be available.

²Includes Battle Mountain Gold complex, Carlin Mines complex, Lone Tree complex, Twin Creeks Mine, and Midas Mine; ore was mined from 13 open pit mines and 4 underground mines.

MARKETABLE PRODUCT AND ORE TREATED OR SOLD AT SURFACE AND UNDERGROUND MINES IN THE UNITED STATES IN 2004, BY SELECTED COMMODITY AND STATE¹

(Thousand metric tons)

	Ν	Aarketable produ	ct	(Ore treated or sol	d
Commodity or State	Surface	Underground	Total	Surface	Underground	Total
Metal ore:						
Gold	W	W	W	205,000	4,290	209,000
Iron ore, usable	54,900		54,900	127,000		127,000
Industrial minerals:						
Barite	W		W	700		700
Clays	40,400	(2)	40,400	40,400	(3)	40,400
Diatomite	620		620	620		620
Feldspar ⁴	1,410		1,410	1,590		1,590
Gypsum	13,900	1,730	15,600	13,900	1,730	15,600
Phosphate rock	35,800		35,800	146,000		146,000
Pumice ⁵	1,490		1,490	1,490		1,490
Salt	(6)	37,500	37,500	(7)	38,500	38,500
Sand and gravel:						
Construction	1,240,000		1,240,000	1,240,000		1,240,000
Industrial	29,100	(2)	29,100	29,100	(3)	29,100
Soda ash		11,000	11,000		11,000	11,000
Stone:						
Crushed	1,550,000	47,700	1,590,000	1,550,000	47,700	1,590,000
Dimension	1,470	(2)	1,470	1,460	(3)	1,460
Talc and pyrophyllite	672	(2)	672	681	(3)	681
State:						
Alabama	66,900	(2)	66,900	66,900	(3)	66,900
Alaska	12,400	(2)	12,400	27,600	(3)	27,600
Arizona	92,100	(2)	92,100	488,000	(3)	488,000
Arkansas	45,000	(2)	45,000	45,000	(3)	45,000
California	229,000	(2)	229,000	233,000	(3)	233,000
Colorado	52,700	(2)	52,700	72,100	(3)	72,100
Connecticut	18,400		18,400	18,400		18,400
Delaware	2,980		2,980	2,980		2,980
Florida	160,000		160,000	264,000		264,000
Georgia	97,800	1,640	99,400	98,000	1,640	99,600
Hawaii	6,450		6,450	6,450		6,450
Idaho	27,600	(2)	27,600	37,100	(3)	37,100
Illinois	115,000	5,430	120,000	115,000	5,430	120,000
Indiana	79,600	(2)	79,600	79,600	(3)	79,600
Iowa	48,900	7,220	56,100	48,900	7,220	56,100
Kansas	31,200	3,040	34,300	31,200	3,040	34,300
Kentucky	54,700	12,300	67,000	54,700	12,300	67,000
Louisiana	25,500	13,300	38,800	26,300	14,100	40,400
Maine	14,600		14,600	14,600		14,600
Maryland	48,000	(2)	48,000	48,000	(3)	48,000
Massachusetts	27,400		27,400	27,400		27,400
Michigan	122,000	1,730	124,000	147,000	1,950	149,000
Minnesota	109,000		109,000	153,000		153,000
Mississippi	18,100	(2)	18,100	18,100	(3)	18,100
Missouri	79,600	3,760	83,300	79,600	8,200	87,800
Montana	18,900	(2)	18,900	39,500	(3)	39,500
Nebraska	22,100	(2)	22,100	22,100	(3)	22,100
Nevada	56,300	(2)	56,300	236,000	(3)	236,000
New Hampshire	13,700		13,700	13,700		13,700
New Jersey	47,700		47,700	47,700		47,700
New Mexico	18,600	(2)	18,600	59,400	(3)	59,400
a						

See footnotes at end of table.

TABLE 6—Continued MARKETABLE PRODUCT AND ORE TREATED OR SOLD AT SURFACE AND UNDERGROUND MINES IN THE UNITED STATES IN 2004, BY SELECTED COMMODITY AND STATE¹

	Ν	Iarketable produc	t	Ore treated or sold			
Commodity or State	Surface	Underground	Total	Surface	Underground	Total	
State—Continued:							
New York	85,700	6,370	92,100	85,700	6,370	92,100	
North Carolina	89,800	(2)	89,800	95,000	(3)	95,000	
North Dakota	12,100		12,100	12,100		12,100	
Ohio	129,000	(2)	129,000	129,000	(3)	129,000	
Oklahoma	56,900	(2)	56,900	56,900	(3)	56,900	
Oregon	44,500		44,500	44,500		44,500	
Pennsylvania	130,000	(2)	130,000	130,000	(3)	130,000	
Rhode Island	4,240		4,240	4,240		4,240	
South Carolina	40,600	(2)	40,600	40,600	(3)	40,600	
South Dakota	19,700		19,700	22,400		22,400	
Tennessee	65,400	(2)	65,400	66,200	(3)	66,200	
Texas	211,000	9,430	221,000	212,000	9,600	221,000	
Utah	41,600	(2)	41,600	89,100	(3)	89,100	
Vermont	10,000	(2)	10,000	10,000	(3)	10,000	
Virginia	87,100		87,100	87,100		87,100	
Washington	54,300	(2)	54,300	54,300	(3)	54,300	
West Virginia	13,300	3,150	16,500	13,300	3,150	16,500	
Wisconsin	83,500		83,500	83,500		83,500	
Wyoming	21,100	9,770	30,900	21,100	9,770	30,900	

W Withheld to avoid disclosing company proprietary data. -- Zero.

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

²Withheld to avoid disclosing company proprietary data; included in "Marketable product, surface."

³Withheld to avoid disclosing company proprietary data; included in "Ore treated or sold, surface." ⁴Includes aplite.

⁵Excludes volcanic cinder and scoria; included with "Crushed stone."

⁶Withheld to avoid disclosing company proprietary data; included in "Marketable product, underground."

⁷Withheld to avoid disclosing company proprietary data; included in "Ore treated or sold, underground."

TABLE 7 MINING METHODS USED AT SURFACE OPERATIONS IN THE UNITED STATES BY COMMODITY, IN 2004

(Percentage of total material handled)

	Preceded by drilling	Not preceded by drilling
Commodity	and blasting	and blasting
Porullium		
Coppor	100	
Gold	90	1
Gold silver	100	1
Iron	99	
Magnesium metal	100	
Magnesium	100	
Silver	100	
Titanium		100
Uranium		100
Zinc	100	
Industrial minerals:	100	
Abrasives		
Barite	2	98
Boron minerals	100	
Bromine	2	98
Clavs		100
Diatomite		100
Feldspar ²	53	47
Garnet	54	46
Greensand marl		100
Gypsum	98	2
Iodine		100
Iron oxide pigments		100
Kvanite	100	
Lithium minerals		100
Magnesite	100	
Magnesium compounds		100
Mica, scrap	28	72
Olivine	46	54
Perlite	33	67
Phosphate rock	3	97
Potash		100
Pumice ³	13	87
Salt		100
Sand and gravel:		
Construction		100
Industrial		100
Stone:		
Crushed	99	1
Dimension		100
Talc and pyrophyllite	91	9
Tripoli	63	37
Vermiculite	29	71
Wollastonite	100	
Zeolites	100	

-- Zero.

¹Includes drilling and cutting without blasting, dredging, mechanical excavation and nonfloat washing, and other surface mining methods.

²Includes aplite.

³Excludes volcanic cinder and scoria; included with "Crushed stone."

EXPLORATION ACTIVITY IN THE UNITED STATES IN 2004, BY METHOD, COMMODITY, AND STATE¹

	Churn	Diamond	Rotary and reverse	Percussion and other	
Commodity or State	drilling	drilling	circulation drilling	drilling, and trenching	Grand total
Commodity:					
Gold	263,000	156,000	578,000	W	997,000
Silver		1,800	2,500		4,300
Other ²		40,800	32,400	329,000	402,000
Total	263,000	198,000	612,000	329,000	1,400,000
Percentage of grand total	19.0	14.0	44.0	23.0	100.00
State:					
Alaska	2,500	24,100	35,700	W	62,300
Montana		1,800		W	1,800
Nebraska			20,700	W	20,700
Nevada	261,000	132,000	544,000	W	937,000
Undistributed ³		40,800	11,600	329,000	382,000
Total	263,000	198,000	612,000	329,000	1,400,000

(Meters)

W Withheld to avoid disclosing company proprietary data; included with "Other" or "Undistributed." -- Zero.

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

²Includes boron minerals, cobalt, copper, iron ore, molybdenum, soda ash, uranium, and commodities indicated by symbol W. ³Includes Arizona, California, Colorado, Idaho, North Carolina, and States indicated by symbol W.