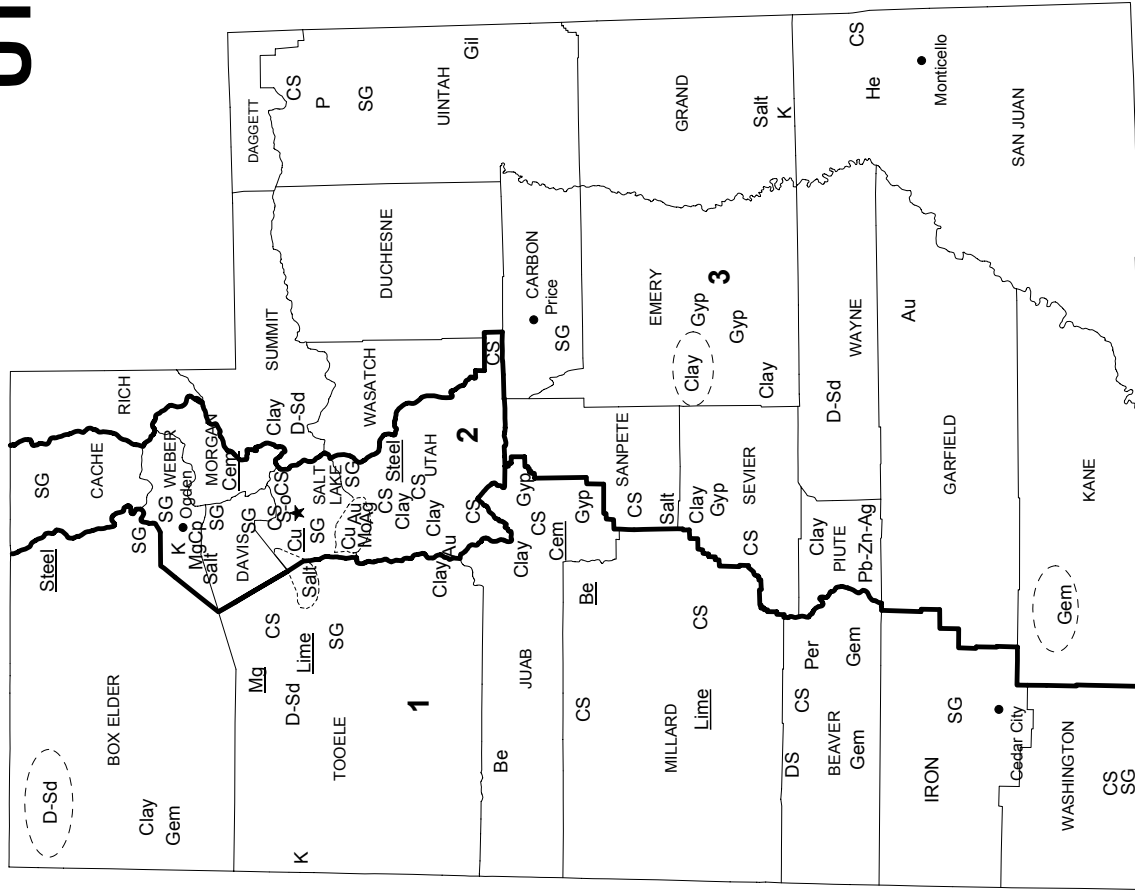


UTAH



Source: Utah Geological Survey/U.S. Geological Survey (2001)

LEGEND

- County boundary
- ★ Capital
- City

1 — Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

- Ag Silver
- Au Gold
- Be Beryllium
- Be Beryllium plant
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- Cu Copper
- Cu Copper plant
- D-Sd Dimension sandstone
- DS Dimension stone
- Gem Gemstones
- Gil Gilsonite
- Gyp Gypsum
- He Helium
- K Potash
- Lime Lime plant
- Mg Magnesium metal plant
- MgCp Magnesium compounds
- Mo Molybdenum
- P Phosphate rock
- Pb-Zn-Ag Lead-zinc-silver
- Per Perlite
- S-o Sulfur (oil)
- Salt Salt
- SG Construction sand and gravel
- Steel Steel plant
- Concentration of mineral operations

THE MINERAL INDUSTRY OF UTAH

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Utah Geological Survey for collecting information on all nonfuel minerals.

In 2001, the estimated value¹ of nonfuel raw mineral production for Utah was \$1.53 billion, based upon preliminary U.S. Geological Survey (USGS) data. This was a 5.6% decrease from that of 2000² and followed a 7.5% increase from 1999 to 2000. For the second consecutive year, the State was ninth in rank among the 50 States in total nonfuel mineral production value, of which Utah accounted for about 3.5% of the U.S. total.

Metals accounted for about 60% of Utah's nonfuel mineral production value, with copper being significantly more than one-half of the State's entire metal value. In 2001, the most significant change in value in the metals sector was a more than \$40 million drop in the value of copper. Similarly, magnesium metal was down more than \$25 million in contrast to magnesium compounds that, with a more than doubling of production from that of 2000, was up by about \$10 million. Also, the value of molybdenum concentrates was down by \$10 million.

In 2000, the rise in Utah's value from that of 1999 was mainly attributable to increases of more than \$100 million in copper, \$30 million in gold, \$16 million in salt, \$10 million in molybdenum concentrates, and more than \$4 million in lime. The most significant decreases were those of a \$16 million drop in the value of construction sand and gravel and a \$3 million decrease in crushed stone (table 1).

Based upon USGS estimates of quantities produced in the 50 States during 2001, Utah remained the only State to produce beryllium concentrates; second in copper and gold; second of 2 magnesium-metal- and 3 potash-producing States; fourth in perlite and magnesium compounds and fourth of 4 States that produce phosphate rock; fifth in silver, gemstones, and bentonite; and sixth in salt (each ranking listed in descending order of value). While the State rose to second from third in magnesium compounds, it dropped to third from second in molybdenum concentrates. Additionally, the State was a

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2001 USGS mineral production data published in this chapter are preliminary estimates as of August 2002 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2000 may differ from the Minerals Yearbook, Area Reports: Domestic 2000, Volume II, owing to the revision of preliminary 2000 to final 2000 data. Data for 2001 are preliminary and are expected to change; related rankings may also change.

significant producer of portland cement, construction sand and gravel, and lime.

The Utah Geological Survey³ (UGS) provided the following narrative information. UGS production data are based upon its own surveys, estimates, and information gathered from company annual reports. These data may differ from some USGS preliminary estimates and final production figures, which are based upon USGS company surveys and estimates.

Production

The value of Utah's mineral production (including coal) in 2001 was estimated to be \$1.94 billion, about \$27 million more than in 2000. Contributions from each of the major industry segments are as follows: base metals, \$693 million (36% of total); industrial minerals, \$538 million (28% of total); coal, \$473 million (24% of total); and precious metals, \$240 million (12% of total). Compared with 2000, the 2001 values of base metals decreased by \$56 million, industrial minerals increased by \$38 million, coal increased by \$17 million, and precious metals increased by \$28 million.

In 2001, Utah had 74 active large mines (excluding sand and gravel) that are grouped by industry segment as follows: base metals, 4; precious metals, 2; coal, 12; and industrial minerals (including gemstones, geodes, fossils, and others), 56. In 2001, 97 small mines reported production, 23 fewer than in 2000. These small mines are grouped as follows: base metals, 1; precious metals, 11; and industrial minerals, 85.

Base-metal operations, with an estimated total value of \$693 million, were the largest of contributors to the value of minerals produced in Utah in 2001. Those metals, in descending order of value, were copper, magnesium metal, molybdenum, and beryllium. Kennecott Utah Copper Corp.'s Bingham Canyon Mine, west of Salt Lake City, Salt Lake County, is the State's sole producer of copper and molybdenum and a major producer of gold and silver, the combined value of which was more than one-third of the total value of all minerals produced statewide.

Copper production from Kennecott's Bingham Canyon Mine increased slightly in 2001 to 313,000 metric tons (t) of copper contained in concentrates, up from 2000 production of 296,000 t. Kennecott idled its North concentrator in June and closed it permanently at yearend. The company announced that open pit reserves will be exhausted in the next 10 to 12 years and that no decision has been made to extend a portion of the mine underground (Bon and Gloyn, 2002).

Magnesium Corp. of America produces magnesium metal from Great Salt Lake brines at its electrolytic plant at Rowley in Tooele County. The plant, having a capacity of 43,000 metric tons per year (t/yr) of magnesium metal (99.9% purity), was one

³Robert Gloyn, Senior Geologist, and Roger Bon, Industry Outreach Specialist, at the Utah Geological Survey authored the text of the State mineral industry information provided by that agency.

of only two active primary processing facilities in the United States. By yearend, the Utah facility was the only active plant in the United States. Magnesium production was less than capacity in 2001 because the company was modernizing its plant with the installation of new electrolytic cells.

Kennecott's Bingham Canyon Mine, one of six molybdenum-producing mines in the United States in 2001, produced 14,000 t of molybdenum concentrates, containing 8,100 t of molybdenum, a 20% decrease from that of 2000 (Bon and Gloy, 2002). Molybdenum was recovered as a byproduct from the copper milling operation.

Utah continued to be the Nation's sole producer of beryllium ore (bertrandite), which is mined at Brush Wellman Inc.'s Topaz and Hogs Back mines in Juab County and processed at the company's plant a few miles north of Delta in Millard County. The product (beryllium hydroxide) is then sent to the company-owned refinery and finishing plant in Ohio, where it is converted into beryllium metal, alloys, and oxide. In 2001, 36,000 t of ore was mined and trucked to the processing plant; this was substantially less than previous years because of reduced demand and increased processing of stockpiled ore.

No vanadium or uranium was mined in Utah in 2001, and International Uranium Corp.'s White Mesa mill in San Juan County and U.S. Energy Co.'s Shootaring Canyon mill in Garfield County were idle the entire year. No milling is planned at either facility until there is a significant increase in the price of uranium or vanadium.

Precious-metal production in 2001, which included gold (91% of total value) and silver (9% of total value), was valued at an estimated \$240 million. Gold production increased about 10% in 2001 to an estimated 24,100 kilograms (kg), from nearly 21,800 kg in 2000. Gold was mined during 2001 by two companies. Kennecott owned two surface mines—one primary producer (Barneys Canyon Mine) and one byproduct operation (Bingham Canyon Mine), both located in Salt Lake County. Chief Gold Mines, Inc. owned one smaller underground mine, its newly reopened Trixie Mine near Eureka in Utah County. Several other small mines in the State are known to produce minor amounts of gold and silver, but these companies reported no metal-specific information to the UGS. Barneys Canyon Mine, having exhausted its reserves, ended its mining and ore crushing operations in mid-December 2001 but will continue to produce gold for 4 to 5 more years at a reduced rate until its leach pads are depleted. Since the beginning of mining in 1989, the operation has produced about 40,500 kg of gold. Silver production statewide mainly from two sources—a byproduct metal from the Bingham Canyon Mine and a component of polymetallic ore from the Trixie Mine—was estimated to be 140,000 kg, 16,000 kg more than in 2000.

Industrial minerals with an estimated value of \$538 million was the second largest contributor to the value of minerals produced in Utah in 2001. The States' major commodities by group or individual commodity (descending order of value) included salines—including salt, magnesium chloride, potash (potassium chloride), and sulfate of potash; crushed stone and sand and gravel; portland cement, lime, limestone, and dolomite; phosphate; gilsonite; expanded shale; gypsum; and common clay and bentonite.

Salt and other brine-derived products, to include magnesium chloride and potash [potassium chloride and sulfate of potash (SOP)], are the largest contributors (up from third largest in 2000) to the value of industrial minerals production in Utah, with a combined value of about \$172 million. The statewide production of the same (this excludes magnesium metal) was estimated to be 3.2 million t in 2001, about 90,000 t higher than in 2000. Potash production (including SOP) was estimated to be 304,000 t in 2001, approximately 90,000 t more than in 2000. One company (North Shore Ltd. Partnership) produces a small amount of concentrated brine that is used as an ingredient in mineral food supplements.

Salt production alone was estimated to be 2.5 million t in 2001, about 180,000 t less than in 2000, with most coming from three operators using brine from Great Salt Lake. These operators, in descending order of production, are IMC Kalium Ogden Corp. (formerly GSL Minerals), Cargill Salt Co., and Morton International, Inc. In addition, three other companies produce salt and/or potash from operations not located on Great Salt Lake. They are Reilly Chemical Co. at Wendover in Tooele County (potash), Moab Salt LLC near Moab in Grand County (salt and potash), and Redmond Minerals, Inc. near Redmond in Sanpete County (salt).

Crushed stone (including limestone and dolomite) and sand and gravel were the second highest contributors to the value of industrial minerals produced in 2001, down from first in 2000. These materials are produced in every county in Utah by commercial operators and by Federal, State, and county agencies. Preliminary data compiled by the USGS show that about 28 million metric tons (Mt) of sand and gravel and 11 Mt of crushed stone was produced in 2001, with a combined value of \$156 million, compared with 31 Mt of sand and gravel and 8.5 Mt of crushed stone produced in 2000, with a combined value of \$151 million (table 1).

Portland cement, lime, limestone, and dolomite collectively were the third highest in value industrial minerals produced in 2001, with a combined value of \$134 million. Two operators manufactured portland cement in Utah—Holcim (US) (formerly Holnam, Inc.) and Ash Grove Cement Co. Holcim's Devils Slide plant is east of Morgan in Morgan County, and Ash Grove's Leamington plant is east of Lynndyl in Juab County. Both companies have expanded production capacity, and the two plants have a combined capacity of more than 1.4 million metric tons per year (Mt/yr) of cement. Both plants operated near capacity in 2001, although total production was slightly less than in 2000. In addition to limestone, both companies mined silica that is used for the manufacture of cement—Holcim from diatomite in Skull Valley and Ash Grove from a sandstone quarry near its plant.

Lime production was about 5% lower in 2001 than in 2000. Graymont Western U.S., Inc. (formerly Continental Lime Co.), which produces dolomitic lime and high-calcium lime, and Chemical Lime of Arizona, Inc., which produces dolomitic lime, are the two suppliers of calcined limestone (quicklime) and hydrated lime in Utah, with a combined capacity of more than 0.9 Mt/yr. Both operations serve markets in Utah and surrounding States. Graymont's plant is in the Cricket Mountains, approximately 56 kilometers (km) southwest of

Delta in Millard County, and is rated as 1 of the 10 largest lime plants in the United States. Chemical Lime's plant is about 13 km northwest of Grantsville in Tooele County.

Twelve companies quarried about 1.68 Mt of limestone and dolomite in 2001, which was used mainly in construction, flue gas desulfurization in powerplants, and steelmaking. The three largest suppliers of crushed limestone used in construction are Valley Asphalt Co., from two quarries in Utah County; Harper Construction Co., from one quarry in Salt Lake County; and Pelican Point Rock Products Co. (formerly Larsen Limestone Co.), from one quarry in Utah County. A small amount of limestone and dolomite was also crushed to a fine powder and marketed as "rock dust" to the coal mining industry.

Utah's only phosphate producer, SF Phosphates, Ltd.'s Vernal phosphate operation, is 18 km north of Vernal in Uintah County. SF Phosphates is a partnership of Farmland Industries, Inc. (with headquarters in Missouri) and J.R. Simplot, Inc. (with headquarters in Idaho). The company mines 2.7 Mt of ore, which is processed into about 0.9 Mt of concentrate and transported in slurry form to the company's Rock Springs, WY, fertilizer plant via a 144-km-long underground pipeline. During 2001, the Vernal operation mined more than 3.4 Mt of ore, the highest production level in the past 10 years (Bon and Gloyn, 2002).

Gilsonite production, which has been relatively stable for the past several years, was estimated to be 54,000 t in 2001, essentially the same as that of 2000. Gilsonite is an unusual solid hydrocarbon that has been mined in Utah for more than 100 years. The three companies that mine gilsonite all have mines near Bonanza in eastern Uintah County. In descending order of production, they are American Gilsonite Co. (Bonanza mine), Zeigler Chemical and Minerals Co. (Cowboy, Neal State, and Hardaway Mines), and Lexco, Inc. (Cottonwood Mine). Gilsonite is marketed worldwide for use in more than 150 products ranging from printing inks to explosives.

Utelite, Inc. mined 180,000 t of shale in 2001, the same as in 2000, to manufacture "expanded shale" for use as a lightweight aggregate for the construction industry. The mine is located near Wanship in Summit County.

Seven companies mined 350,000 Mt of gypsum from 10 pits in 2001, nearly 100,000 Mt less than in 2000. In descending order of production, the companies are U.S. Gypsum Co., Georgia Pacific Corp.; Nephi Gypsum, Inc.; H.E. Davis and Sons; Nephi Sandstone Co.; D.K. Gypsum Industries; and Western Clay Co. Both U.S. Gypsum and Georgia Pacific operate wallboard plants near Sigurd in Sevier County. The majority of gypsum produced in Utah is used for making wallboard, but several operators supply raw gypsum to regional cement companies where it is used as an additive to retard the setting time of cement and to the agriculture industry for use as a soil conditioner.

More than 247,000 t of common clay and 41,000 t of bentonite were mined by nine companies in 2001, a 16% decrease in common clay and a 25% decrease in bentonite compared with 2000. The four largest common clay mines, in descending order of production, are Interstate Brick Co., Peck Rock Products Co., Interpace Industries, and Paradise Management Co. More than 75% of all common clay is used in the manufacture of brick. Bentonite is used as a sealant in many

civil engineering applications, as a pet-waste absorbent (litter-box filler), as an additive in oil and gas drilling fluids, and as a binder in foundry molds.

The value of nonfuel raw mineral production in Utah is expected to decrease moderately in 2002. Operator surveys indicate that both base- and precious-metal production will be lower, coupled with continued low metal prices. Industrial mineral values will also trend lower with lower sand and gravel production partially offset by an increase in that of crushed stone. The production of cement and lime was expected to remain nearly the same as in 2001.

Exploration and Development

During 2001, the Utah Division of Oil, Gas and Mining (DOGMA) received 5 large mine permit applications (2 hectares and larger disturbance) and 32 new small mine permit applications (less than 2 hectares disturbance). The five large mine applications were made to change from small to large mine classification and to include four dimension stone quarries and one tar-sand pit. The 32 new small mine applications include 29 for industrial minerals (including gemstones, geodes, fossils, and others) and 3 for precious metals.

Kennecott Utah Copper Co. announced that open pit mining at the Bingham Canyon copper mine likely will end in 2012. Previous announcements made before the drop in copper prices estimated completion of open pit mining at 2020 or even later. No decision has been announced on underground mining of either porphyry or skarn ore, which would extend the life of the operation. Published underground reserves (proven and probable) include 321 Mt of "block cave" (porphyry) ore and 14 Mt of skarn ore (Rio Tinto Annual Report, 2000).

Chief Gold Mines, Inc. (100% owned by Chief Consolidated Mining Co.) initiated development of its recently discovered 75-85 extension ore body at the Trixie Mine in the East Tintic district. The ore body was reached in October 2001, and by yearend, approximately 4,500 t of ore had been mined with an average mined grade of 25.7 grams per metric ton (g/t) gold and 85.7 g/t silver. Mining is continuing at a rate of 90 to 140 metric tons per day (t/d).

The new corporation Western Utah Copper Co. (WUCC) has substantially consolidated all of the major copper districts (San Francisco, Beaver Lake, and Rocky Range districts) in western Beaver County. In late January 2002, WUCC entered into a purchase agreement to acquire all of the holdings of Nevada Star Resources Corp. WUCC plans to initially develop the identified resources by underground mining and has hired Western Mine Development, Inc. to conduct its underground operations. The first mining operation will be on the higher grade skarn deposits in the Rocky Range district northwest of Milford. The company plans an aggressive exploration program in conjunction with mining and developing its reserves.

During 2001, Unico Inc. continued rehabilitation of the Deer Trail Mine, located southwest of Marysville in Piute County, and began mining in the 3400 area. Three stopes were developed on two high-grade manto horizons on the PTH tunnel level and approximately 2,700 t of ore was mined and stockpiled. The mantos currently being mined in the 3400 area are 1.2 to 1.5 meters (m) thick and contain high-grade ore. Based on

sampling of the workings, the ore averages 4.8 g/t gold, 1,030 g/t silver, 8.4% lead, 17% zinc, and 1.3% copper.

In September 2001, Unico signed a lease/option agreement with Kaibab Industries covering 6 patented and 21 unpatented claims in the Bromide Basin area east of Mount Ellen in northern Garfield County. During the summer, Unico mapped and took bulk samples of the high-grade gold-bearing Bromide and Crescent veins and the Kimble-Turner shear zone. Unico planned to continue developing the properties in 2002 by extending the El Dorado adit by 210 m to intersect the Bromide and Crescent veins 90 and 150 m, respectively, below the adit levels and stoping up on the veins. Unico planned to mine 68 to 90 t/d during the 6 summer months when the property is accessible.

In mid-2001, Atlas Mining Co. (Osburn, ID) signed a lease/option agreement on the Dragon halloysite property in the southern part of the Tintic district approximately 4 km south of Eureka. The company intends to build a processing plant and begin mining the deposit at an initial rate of 6,800 t/yr ramping up to 27,000 t/yr. Announced reserves are 270,000 t; the total resource is estimated at 0.9 Mt.

In August 2001, Gemstone Mining Inc. (GMI) ceased mining and closed the processing plant on the Red Emerald (formerly Ruby Violet) red beryl mine in southern Beaver County. The mine was the only known source of gem-quality red beryl in the world. Several months earlier, GMI had failed to make the final payment for purchase of the property. The underlying owners began foreclosure procedures, and the matter was in litigation.

Base- and precious-metal exploration remained at a very low level in 2001. The DOGM received 14 new notices of intent (NOIs) to explore, one less than in 2000 and significantly lower

than the 50 to 60 per year received during the early 1990s. Six NOIs were for precious or base metals, two for sandstone, two for limestone, two for slate, and the remaining two for kaolin and humate. Four of the base- or precious-metal NOIs were from individuals, and two were from small- to medium-sized companies. The new NOIs listed by county include Beaver, two; Duchesne, one; Emery, one; Juab, two; Kane, one; Millard, one; San Juan, one; Sanpete, one; Utah, two; and Washington, two.

The Milford area was the most active in metals exploration in the State. Exploration and drilling was done by several companies and individuals, including WUCC; Sepa Resources, Inc.; and Breccia Development Co. Most drilling activity was in the Frisco area, but a few holes were drilled on the east side of the Star Range and northwest of Blue Mountain. Most exploration was for copper and precious metals, but two projects were for kaolinite and/or alunite. In the San Francisco district, several holes intersected ore-grade copper and gold, but no discoveries were announced.

Other exploration areas include the East Tintic district and the West Desert. In the East Tintic district, three holes were drilled on a Trixie-like target, and all intersected anomalous precious metals with one 1.5-m intercept assaying 17.4 g/t gold. In the West Desert district, owners and vendors of gold prospects reported increased interest from companies but few firm offers to lease or acquire the properties.

Reference Cited

Bon, R.L., and Gloyn, R.W., 2002, South Dakota, in Annual review 2001: Mining Engineering, v. 54, no. 5, May, p. 81-87.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN UTAH 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1999		2000		2001 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Beryllium concentrates metric tons	5,070	6	4,510	5	4,510	5
Clays, common	327	4,600	335	5,380	335	5,380
Gemstones	NA	1,040	NA	1,030	NA	1,020
Salt	1,890	92,000	2,110	108,000	2,370	87,500
Sand and gravel, construction	39,500	125,000	30,900	109,000	27,800	99,500
Stone, crushed	8,550 r/	44,400 r/	8,520	42,100	11,000	56,000
Combined values of cement (portland), clays (bentonite), copper, gold, gypsum (crude), helium (Grade-A), lime, magnesium compounds, magnesium metal, molybdenum concentrates, perlite (crude), phosphate rock, potash, silver, stone (dimension quartzite and sandstone) indicated by symbol W	XX	1,060,000	XX	1,160,000 r/	XX	1,100,000
Total	XX	1,330,000	XX	1,430,000 r/	XX	1,350,000

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

TABLE 2
UTAH: CRUSHED STONE SOLD OR USED, BY KIND 1/

Kind	1999				2000			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone 2/	21 r/	4,830 r/	\$30,400 r/	\$6.29 r/	20	4,840	\$23,600	\$4.87
Dolomite	3	2,810	9,030	3.21	3	2,350	8,310	3.54
Sandstone and quartzite	4	W	W	W	4	W	W	W
Volcanic cinder and scoria	3	W	W	W	4	W	W	W
Miscellaneous stone	6	241 r/	1,130 r/	4.69 r/	9	527	4,110	7.80
Total or average	XX	8,550 r/	44,400 r/	5.19 r/	XX	8,520	42,100	4.94

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

1/ Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

2/ Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2000, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+ 1 1/2 inch):			
Macadam	W	W	\$3.30
Riprap and jetty stone	38	\$271	7.13
Other coarse aggregate	275	916	3.33
Coarse aggregate, graded:			
Bituminous aggregate, coarse	27	110	4.07
Bituminous surface-treatment aggregate	2	7	3.50
Railroad ballast	(3/)	(3/)	6.30
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	35	125	3.57
Screening, undesignated	244	1,440	5.89
Other fine aggregate	328	1,190	3.64
Coarse and fine aggregates:			
Graded road base or subbase	419	1,580	3.78
Unpaved road surfacing	(3/)	(3/)	3.75
Terrazzo and exposed aggregate	(3/)	(3/)	21.33
Crusher run or fill or waste	(3/)	(3/)	3.41
Other construction materials	4	13	3.25
Agricultural:			
Agricultural limestone	50	803	16.06
Other agricultural uses	3	85	28.33
Chemical and metallurgical:			
Cement manufacture	2,340	15,100	6.45
Lime manufacture	(3/)	(3/)	3.59
Dead-burned dolomite manufacture	(3/)	(3/)	4.62
Flux stone	(3/)	(3/)	17.38
Sulfur oxide removal	(3/)	(3/)	6.06
Special, mine dusting or acid water treatment	(3/)	(3/)	4.40
Unspecified: 4/			
Reported	2,490	9,140	3.68
Estimated	490	2,200	4.53
Total or average	8,520	42,100	4.94

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

1/ Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

2/ Includes dolomite, limestone, limestone-dolomite, miscellaneous stone, sandstone and quartzite, and volcanic cinder and scoria.

3/ Withheld to avoid disclosing company proprietary data; included in "Total."

4/ Reported and estimated production without a breakdown by end use.

TABLE 4
UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2000, BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
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	W	W	--	--
Coarse and fine aggregate 5/	W	W	W	W	W	W	--	--
Other construction materials	--	--	4	13	--	--	--	--
Agricultural 6/	W	W	W	W	--	--	--	--
Chemical and metallurgical 7/	2,780	13,400	W	W	W	W	--	--
Special 8/	W	W	--	--	--	--	--	--
Unspecified: 9/								
Reported	2	8	2,320	8,280	80	422	86	430
Estimated	60	280	430	1,900	--	--	--	--
Total	3,460	18,200	4,840	22,600	132	878	86	430

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

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

2/ Includes macadam, riprap and jetty stone, and other coarse aggregate.

3/ Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, and railroad ballast.

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

5/ Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, and unpaved road surfacing.

6/ Includes agricultural limestone and other agricultural uses.

7/ Includes cement manufacture, dead-burned dolomite manufacture, flux stone, lime manufacture, and sulfur oxide removal.

8/ Includes mine dusting or acid water treatment.

9/ Reported and estimated production without a breakdown by end use.

TABLE 5
UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2000,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	5,360	\$22,600	\$4.22
Plaster and gunite sands	67	486	7.25
Asphaltic concrete aggregates and other bituminous mixtures	1,930	8,340	4.31
Road base and coverings 2/	4,350	16,400	3.77
Fill	2,720	5,950	2.18
Snow and ice control	44	85	1.93
Other miscellaneous uses 3/	168	1,040	6.17
Unspecified: 4/			
Reported	7,770	24,500	3.15
Estimated	8,500	30,000	3.48
Total or average	30,900	109,000	3.52

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

2/ Includes road and other stabilization (cement).

3/ Includes railroad ballast and roofing granules.

4/ Reported and estimated production without a breakdown by end use.

TABLE 6
 UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2000,
 BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	1,110	4,100	3,650	14,900
Asphaltic concrete aggregates and other bituminous mixtures	522	2,280	685	3,260
Road base and coverings 3/	954	3,740	1,630	6,440
Fill	155	303	2,300	5,170
Other miscellaneous uses 4/	52	118	101	476
Unspecified: 5/				
Reported	1,230	4,520	5,640	15,800
Estimated	1,300	4,500	6,700	23,000
Total	5,290	19,500	20,700	69,400
	District 3		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	478	3,050	189	1,040
Asphaltic concrete aggregates and other bituminous mixtures	378	1,500	349	1,300
Road base and coverings 3/	1,610	5,830	159	395
Fill	206	389	63	86
Other miscellaneous uses 4/	59	528	--	--
Unspecified: 5/				
Reported	806	4,010	94	157
Estimated	530	1,800	--	--
Total	4,060	17,100	854	2,980

-- Zero.

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

2/ Includes plaster and gunite sands.

3/ Includes road and other stabilization (cement).

4/ Includes railroad ballast, roofing granules, and snow and ice control.

5/ Reported and estimated production without a breakdown by end use.