

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 value¹ 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 Corp. joint venture; and the Diamond Hill property, owned by Pegasus Gold, Inc. Numerous companies showed significant interest in searching Statewide

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MONTANA¹

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	⁵ 10,000	⁵ 32,000	7,500	24,000
Silver ³ metric tons	197	24,990	127	17,566	108	14,900
Stone (crushed) thousand metric tons	⁵ 1,996	⁵ 6,200	2,816	10,375	² 1,100	⁵ 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

¹Estimated. ^pPreliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

²Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

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

⁴Recoverable content of ores, etc.

⁵Placer canvassing discontinued beginning 1994.

⁶Data 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	(?)	(?)	1.33
Agricultural: Poultry grit and mineral food	(?)	(?)	16.30
Chemical and metallurgical:			
Cement manufacture	1,364	4,772	3.50
Lime manufacture	(?)	(?)	4.19
Flux stone	24	(?)	(?)
Chemical stone	(?)	(?)	5.10
Sulfur oxide removal	(?)	(?)	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."

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

²Less than 1/2 unit.

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

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

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

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

⁷Total shown in thousand short tons and thousand dollars.

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.

[†]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	2,108	5,725	2.72	XX	3,104	10,375	3.34

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

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

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

³Total shown in thousand short tons and thousand dollars.