



# 2008 Minerals Yearbook

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## MONTANA

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# THE MINERAL INDUSTRY OF MONTANA

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

In 2008, Montana's nonfuel raw mineral production was valued at \$1.36 billion, based upon annual U.S. Geological Survey (USGS) data. There was essentially no change from the production value of 2007, which in turn increased \$290 million, or 27%, from that of 2006. The State remained 17th in rank among the 50 States in nonfuel raw mineral production value and accounted for slightly less than 2% of the U.S. total production value. The State remained 5th in the Nation in the per capita value of its nonfuel mineral production. With a population of about 968,000 inhabitants, the production value per capita was \$1,400.

Metallic minerals accounted for 83% of Montana's total nonfuel mineral production value in 2008. Molybdenum ores and concentrates, copper, platinum, gold, and palladium were, in descending order of value, the State's leading nonfuel minerals, and accounted for 75% of the total production value. In descending order of value, the above metallic minerals, plus construction sand and gravel, portland cement, zinc, silver, and lead, accounted for 95% of the State's total nonfuel mineral production value.

In 2008, the State's metallic mineral commodities rose in total production value by 4%, which was much reduced from the 29% increase in 2007 from 2006. Conversely, the total production value for nonfuel industrial mineral commodities declined by 17% in 2008, though these commodities rose in total production value by 19% in 2007 from 2006.

The rise in the metallic mineral commodities was led by increases in the production and production values of molybdenum concentrates, platinum (only production value), lead, and silver. These four metallic mineral commodities had a combined increase of slightly more than \$77 million, or 16%, from the production value of 2007. The largest increases in production values for industrial mineral commodities were seen in lime and crude talc, which together saw an almost \$3 million increase, or almost 10%, from that of 2007. Smaller yet significant increases also took place (in descending order) in the values of cadmium (as a byproduct of zinc concentrates) and masonry cement. Almost all other nonfuel mineral commodities in Montana experienced declines in both production and production value in 2008.

In 2008, Montana continued to be the only State to have primary palladium and platinum mine production. The State remained first in the quantity of talc and industrial-grade garnets produced, fourth in lead (as lead content from ores), and fifth in copper, molybdenum concentrates, and gold. The State remained a moderate producer of construction sand and gravel and dimension stone. Montana rose in rank, by quantity and value, to fifth from sixth of the seven zinc-producing States, and to fifth from sixth of the seven cadmium-producing States (cadmium as byproduct of zinc concentrates). Montana ranked third in 2008 for the quantity of bentonite clay produced, a decrease from second in 2007.

The Montana Bureau of Mines and Geology (MBMG) provided the narrative information that follows. Production and other data in the following text are those reported by the MBMG, based upon its own surveys and estimates. The data may differ from some production figures reported by the USGS.

## Overview

During 2008, a significant shift in mining activity occurred in Montana. At the beginning of the year commodity prices remained high, which increased the availability of investment capital for exploration projects throughout the State. At the same time, the recent trends of high-operating costs and limited supplies and personnel continued to affect the State's mining industry. By the end of the second quarter, however, sources of investment capital began to decrease and the cost of petroleum-derived products rose in response to rising crude oil prices. The sustained increase in oil prices and petroleum-derived products depressed the profit margins of many mining operations in the State. By the third and fourth quarters, the cost of petroleum-based products began to decrease while nonfuel commodity prices began to decline quickly and significantly. The lower commodity prices contributed to the closure of smaller operations throughout the State and to the suspension of many exploration projects. Yearend saw many larger companies begin to downsize personnel and to trim operational expenses.

## Mineral Exploration and Development

Mineral exploration activities were widespread throughout the State at the beginning of the year. However, with the decline in levels of investment capital beginning in the second quarter and continuing into the fourth quarter, many companies had no funding reserves and began to suspend all activities. In spite of the midyear downturn in exploration, 2008 remained one of the most active years for mineral exploration in a decade.

**Copper.**—In western Montana, southeast of Missoula, Kennecott Exploration Inc. continued to drill in pursuit of a deep copper-porphyry target in and around the Copper Cliff mining district. At Garnet, east of Missoula, Grant-Hartford Corp. began a drilling program with several holes into gold skarns (Harper, 2008). They were searching for parallel veins to those that feed existing mines at Garnet and planned to continue a drilling program in 2009. Southwest of Philipsburg and southeast of Missoula, High Desert Gold Corp. drilled six diamond-drill holes in search of a copper target. West of Dillon, in the Beaverhead National Forest near the old ghost town of Coolidge, Silica Resources drilled two holes in the Elkhorn (Beaverhead County) porphyry deposit.

**Copper and Silver.**—Mines Management Inc. continued to receive comments on the draft Environment Impact Statement (EIS) for the Montanore silver-copper project located in

the Cabinet Mountains of northwestern Montana. The EIS was finished in November 2007. The company was moving forward with plans to match permitting and rehabilitation activities to better prepare the mine to continue development once all necessary operating permits have been acquired. Two sumps were excavated and placed into service to support the rehabilitation of the Libby Adit by Small Mines Development, LLC (SMD) (Boise, Idaho) (Mines Management Inc., 2008).

Near Noxon and the Mines Management Inc. Montanore project, R.C. Resources Inc. (a subsidiary of Revett Silver Co.) made significant progress with the construction of adit support facilities near the proposed upper portal. Montana Department of Environmental Quality (MDEQ) approved the final Environment Assessment (EA) for the revised Evaluation Adit Plan in December. An operating permit was contingent upon the courts following an appeal, by environmental organizations, of findings in the U.S. Forest Service (Kootenai National Forest) Record of Decision (ROD) and the U.S. Fish and Wildlife Service Biological Opinion (BO). At yearend, the company completed the water-treatment plant design and was waiting for a Montana Pollutant Discharge Elimination System (MPDES) wastewater discharge permit. The company also successfully acquired land in the West Fisher and Bull Lake areas for habitat mitigation efforts for the local grizzly bear population.

**Copper and Tungsten.**—Near Maxville, between Philipsburg and Drummond, Juno Minerals Ltd. (a subsidiary of Uran Ltd. (Australia)) completed an aerial magnetometer survey in the Finley Basin area. The company had plans to begin a copper and tungsten drilling program in 2009 (Uran Limited, 2008).

**Gold.**—Timberline Resources Corp. continued to drill for the Butte Highlands project, 24 kilometers (km) (15 miles) south of Butte. The drilling program measured and indicated approximately 529,000 metric tons (t) (about 583,000 short tons) of ore grading slightly more than 11 grams per metric ton (g/t) (0.335 troy ounce per short ton). The drilling program allowed for additional reserves to be inferred, totaling approximately 1,140,000 t (almost 1,260,000 short tons) grading at 9 g/t (0.268 troy ounces per short ton). The company planned, under a joint venture with SMD (Boise, Idaho), to drive a decline in early 2009 to prepare for a targeted production rate near 900 tons per day (1,000 short tons per day) (Timberline Resources, 2008).

East of Sheridan, Millstream Mines, Ltd. continued work on the Tamarack Mine and mill. The company successfully processed bulk samples in the mill, but operations were suspended until backup rescue support contracts were secured for all underground mining activities. Millstream temporarily refocused their efforts on increasing the rates of mill throughput and recovery.

Near Marysville, RX Exploration Inc. continued to drill the Drumlummon Mine. The mine has historical production estimated at about 31 t of gold (one million troy ounces). The drilling program has identified remaining resources in the old underground workings in addition to undiscovered and unexploited veins. Working down to the 120-meter (m) (400-foot) haulage level, the program has inferred 141,000 t (156,000 short tons) of material containing the equivalent of approximately 2,200 kg (71,000 troy ounces) of gold and about 60,000 kg (1,920,000 troy ounces) of silver. RX received an MPDES permit to allow dewatering down to the 490-m

(1,600-foot) level of dip-length workings to allow for further exploratory drilling in 2009. The company also began planning to drive a decline to access vein systems on the 240-m (800-foot) haulage level in an attempt to obtain bulk samples for metallurgical testing (RX Exploration Inc., 2008).

Additional exploratory projects continued at a smaller scale or in earlier stages of work. Near Libby, Great Northern Mining began to sample gold placers along the western side of Libby Creek. Northwest of Norris and west of Bozeman, the St. Lawrence Company drilled more than 20 shallow holes in the Norwegian Creek area in an attempt to identify parent material for the Norwegian Creek placer deposit. In the vicinity of Twin Bridges, south of Butte, private individuals hauled mill tailings and dumps from the Rochester and Dry Georgia Gulch areas, respectively, to the Golden Sunlight mill for processing. The U.S. Grant Mine and mill near Virginia City were re-permitted and the underground workings were rehabilitated by a small-scale owner.

**Gold and Copper.**—East of Boulder, near the ghost town of Elkhorn (Jefferson County), Elkhorn Goldfields Inc. did not acquire sufficient capital to begin development of the Golden Dream Mine project. Operations were suspended, though the mine completed the permitting process in less than 2 years and received the final EA from MDEQ in July 2008 (MDEQ, 2008).

Fifty-six km (35 miles) southeast of Butte, near Silver Star, Coronado Resources Ltd. shipped direct ship copper ore—a mixture of 12% native copper and 55% chalcocite—to a Chinese smelter midyear from their Madison underground project (to the north of the formerly producing Broadway Mine) (Coronado Resources Ltd., 2008a, 2008b). With the decline in commodity prices in the latter half of the year, the company temporarily suspended operations, but later began shipping gold ore to the Golden Sunlight mill for processing.

**Molybdenum.**—Bolero Resources continued their drill program at the Cannivan Gulch molybdenum deposit and completed two diamond-drill holes, approximately 48 km (30 miles) southwest of Butte.

**Other Polymetallic Projects.**—South of Nye, in southern central Montana, Nevoro, Inc. acquired Aurora Platinum Exploration, Inc. [formerly Aurora Metals (BVI) Ltd.], successfully transferring ownership of the Stillwater deposit exploration project, which is adjacent to the Stillwater Mining Co.'s Stillwater Mine. The company planned to expand operations to the Mountain View mine area, possibly from existing underground access points, and was also considering the historic properties of the Benbow East and Nye Basin deposits (Nevoro Inc., 2008).

**Talc.**—West of Yellowstone National Park and 18 km (11 miles) east of Dillon, Barretts Minerals Inc. (a subsidiary of Specialty Minerals Inc.) drilled six holes on the eastern extension of the Regal mine talc deposit. The extension had been approved by MDEQ in 2007 (MDEQ, 2007).

## Commodity Review

### Industrial Minerals

**Cement.**—At Montana City, southeast of Helena, Ash Grove Cement Co. successfully maintained production through the year, negotiated a 5-year labor contract, and formed a Community Advisory Committee to further enhance community relations (Ash Grove, 2009).

Holcim (U.S.) Inc. continued portland cement production at the Trident plant, northeast of Three Forks. The company reported market softening in 2008 but experienced no layoffs or reductions in labor. The Trident plant received additional equipment from two closed and two mothballed plants in other States.

**Garnet and Abrasive Materials.**—Near Alder, Ruby Valley Garnet LLC began an extensive redesign of the processing facility, aiming to increase annual production levels to 36,000 t (40,000 short tons) of processed garnet within the existing footprint. The processed garnet is used for filter bedding in water filtration systems, and as abrasive material for blasting and water-jet cutting. The demand for industrial garnets remained strong, and Ruby Valley Garnet entered into an exclusive distribution agreement with GMA Garnet Group (Australia). A feasibility study was due to be undertaken with Oro Management LLC in 2009 to study the possibility of garnet recovery from gold dredge tailings in Alder Gulch.

South of Melrose, Apex Abrasives Inc. worked steadily towards the construction of a new process facility. The operation, at the site of the former General Electric Co. tungsten mill, is designed to reprocess mill tailings to produce tungsten concentrates and garnet water-jet cutting media, with approximately 15% of the original tailings remaining as waste. The company had difficulty in hiring and retaining skilled construction labor, but by yearend had assembled equipment, completed building construction, and expected to produce tungsten concentrates and garnet water-jet cutting media by spring of 2009.

**Gemstones.**—The Roberts Yogo Co. reopened the Vortex sapphire mine near Utica. The mine is located on the Yogo dike east of town and production focused on unmined areas previously developed by the former owners.

**Lime and Calcium Carbonate.**—North of Townsend, Graymont Ltd. maintained production of burnt lime at the Indian Creek plant from the Mission Canyon formation (Graymont Ltd., undated). The market experienced softening, resulting in lower production. The supply of available labor was steady and the company made no changes in equipment inventory, although fuel and transportation costs were high during midyear.

**Talc.**—Southeast of Dillon, Barretts Minerals Inc. continued to produce talc from their Regal and Treasure mines. The company worked on new shop and communications facilities at the Regal mine site and considered capital investments in the form of a new excavator. The company did lay off approximately 10% of personnel and did not have immediate plans for replacement for personnel who retired. The demand for talc was lower in 2008 owing to a decline in demand from the automobile manufacturing industry—talc is a major component of ceramic substrates for catalytic converters.

Rio Tinto Minerals' Yellowstone Mine and Three Forks processing plant south of Ennis remained very stable in 2008. In addition to adding a fine-grind mill at the Three Forks plant, the company replaced old and purchased new maintenance equipment at the mine, including a snowplow. The company backfilled the old North Main pit while maintaining a near zero-change footprint and constructed a new water-filling station to allow pit runoff to be better utilized for dust control. While the market softened for many industrial minerals, the company did not experience layoffs. It did, however, offer an early-retirement incentive program and severance package that many employees accepted.

### Metals

**Copper and Silver.**—At the Troy Mine, near the town of Troy in northwestern Montana, Genesis Inc. (a subsidiary of Revett Silver Co.) achieved stability, with 12 months of no lost-time accidents and a steady workforce. Ore production averaged over 3,600 t per day (4,000 short tons). Throughout the latter half of the year, as copper prices declined from \$4 per pound to under \$2 per pound, the company employees took 10%-wage and 20%-salary cuts.

**Gold.**—At Whitehall, roughly 55 km (34 miles) from Butte, the Golden Sunlight Mining Co. (a subsidiary of Barrick Gold Corp.) continued production in its underground mine and completed the stage "5B" surface pit. Production totaled just over 3,700 kg (slightly less than 120,000 troy ounces) of gold. The company expected to finish production in the underground operation in early 2009 and planned to spend the next few years stripping 63 million metric tons (Mt) (70 million short tons) of waste rock to prepare the stage "5C" pit for production. The company also processed mine dumps from the surrounding area (hailed in by the company and by private individuals), as well as old dumps directly adjacent to the mine.

On the Calumet claim along Quartz Creek, northwest of Missoula near Superior, Hageman Construction completed mining for placer gold. The company moved to the lower Quartz Creek and reported finding "good values" in creek gravels adjacent to previously mined ground.

West of Helena and north of Avon, Darden Engineering mined the Ophir Creek gold placer. The skarn-sourced deposit yielded coarse gold, including several thumb-sized nuggets. The company reported a decrease in grade as the bedrock type changed along the deposit; however, the company planned to continue mining in 2009.

**Platinum-Group Metals.**—Stillwater Mining Co. remained the largest metal mining operation in Montana, and the only U.S.-based producer of palladium and platinum; nonetheless, it posted a loss of slightly under \$113 million for 2008. The industry-wide decline in mineral commodity prices beginning in the middle of the year, a decrease in demand for palladium and platinum end products, and a decrease in the availability of used automobile and truck catalytic converters for smelter reprocessing were all factors that contributed to the overall loss. Company operations, especially the East Boulder Mine near Big Timber, suffered staff reductions totaling 21% by yearend. At the Stillwater Mine at Nye, operations continued to develop the lower key haulage infrastructure of the off-shaft mining area. The company refocused operations towards improving ore grade and lowering production costs, while moving away

from focusing on tonnage throughput. The company postponed dilution pending increases in ore grade and incorporated other cost-cutting procedures at all operations. At Columbus, the second furnace at the metallurgical complex neared completion, with an anticipated commissioning in the first quarter of 2009 (Stillwater Mining Co., 2009).

**Other Polymetallic Mines.**—In Butte, Montana Resources LLP continued to maintain steady production of copper and molybdenum at its Continental Mine (Montana Resources, 2010). Although higher fuel costs in the first three quarters of 2008 and lower commodity prices towards the end of the year held down company profits, the company enjoyed a stable workforce and purchased six used 218-t (240-short-ton) haul trucks and an 81-t (90-short-ton) payload capacity electric shovel with a 31-cubic-meter (40-cubic-yard) rock bucket to increase production. Tire availability increased while costs significantly declined—a reversal of a recent trend for large-diameter tires.

North of Boulder, Montana Tunnels Mining Inc. (50% Apollo Gold Corp. and 50% Elkhorn Tunnels LLC) operated steadily and was on schedule to complete ore mining from the “L” pit in the last 2 months of the year. Processing of the more than 1.8 Mt (2,000,000 short tons) of ore was anticipated to continue into 2009, but the company planned to lay off half of the work staff upon completion of ore mining (Apollo Gold, 2008). At the end of 2008, the company was still waiting for a final permit to expand production into the “M” pit. The company faced difficulty in securing funding for the expansion, given the decline in commodity prices and investment capital at yearend. The project was scheduled to be placed under care and maintenance when processing finished in the early months of 2009 (Elkhorn Goldfields, 2010).

M & W Milling & Refining Inc. continued to test ore for a New Mexico company near Virginia City and Nevada City in southwestern Montana. Their sister company, Moen Builders Inc., continued to build and to assemble mining equipment for domestic and international companies (Moen Builders, 2011).

## Government Programs

The MBMG continued its active participation in the STATEMAP and EDMAP programs, mapping the geology in western and southwestern portions of the State. STATEMAP and EDMAP are components of the congressionally mandated National Cooperative Geologic Mapping Program (NCGMP), which distributes Federal funds to support geologic mapping efforts through a competitive funding process. The NCGMP has three primary components: (1) FEDMAP, which funds Federal geologic mapping projects; (2) STATEMAP, which is a matching-funds grant program with State geological surveys and; (3) EDMAP, a matching-funds grant program with universities that has a goal to train the next generation of geologic mappers. Many of the State’s activities created more detailed 1:100,000- and 1:24,000-scale maps from 1:250,000-scale maps previously published. New geologic maps of the Devils Fence 7.5 and Tacoma Park 7.5 quadrangles were developed and published online. Additional information about the Montana mineral industry, including current publications and activities, are available at the MBMG Web site (<http://www.mbmgt.mtech.edu/>).

Following the Crandall Canyon coal disaster that occurred in northwestern Utah in 2007, the Mine Safety and Health Administration (MSHA) began to implement changes to mining regulations and standards. Although the larger companies appear to have the available resources to respond to the changes, there is concern in the State that smaller scale operations may face closure for lack of sufficient capital and staff to meet new MSHA requirements.

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TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN MONTANA<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2006		2007		2008	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones, natural	NA	379	NA	386	NA	380
Palladium <sup>3</sup> kilograms	14,400	150,000	12,800	148,000	11,900	136,000
Platinum <sup>3</sup> do.	4,290	158,000	3,860	162,000	3,580	182,000
Sand and gravel, construction	13,700	95,300	15,900	134,000	13,200	108,000
Stone:						
Crushed	4,040	21,800	1,810 <sup>r</sup>	9,800 <sup>r</sup>	961	6,770
Dimension	W	W	W	W	58	9,490
Combined values of cadmium (byproduct from zinc concentrates), cement, clays (bentonite, common), copper, garnet (industrial), gold, lead, lime, molybdenum concentrates, silver, talc (crude), zinc, and values indicated by symbol W	XX	647,000 <sup>r</sup>	XX	910,000 <sup>r</sup>	XX	915,000
Total	XX	1,070,000	XX	1,360,000	XX	1,360,000

<sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; included in "Combined values" data. XX Not applicable.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Recoverable content of ores, etc.

TABLE 2  
MONTANA: CRUSHED STONE SOLD OR USED, BY TYPE<sup>1</sup>

Type	2007			2008		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone	2	453	\$2,450	2	436	\$3,070
Granite	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--	--	--
Traprock	2	527	2,240	1	94	406
Sandstone and quartzite	3	80	410	3	37	248
Volcanic cinder and scoria	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--	--	--
Miscellaneous stone	22 <sup>r</sup>	751 <sup>r</sup>	4,700 <sup>r</sup>	23	394	3,050
Total	XX	1,810 <sup>r</sup>	9,800 <sup>r</sup>	XX	961	6,770

<sup>r</sup>Revised. XX Not applicable. -- Zero.

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

TABLE 3  
MONTANA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Concrete aggregate (+1½ inch), riprap and jetty stone	W	W
Coarse aggregate graded:		
Bituminous aggregate, coarse	W	W
Railroad ballast	W	W
Fine aggregate (-¾ inch), stone sand (concrete)	W	W
Coarse and fine aggregates:		
Graded road base or subbase	W	W
Unpaved road surfacing	W	W
Chemical and metallurgical, cement manufacture	W	W
Unspecified: <sup>2</sup>		
Reported	15	77
Estimated	725	5,100
Total	961	6,770

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

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

<sup>2</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
MONTANA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008,  
BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W
Coarse aggregate, graded <sup>4</sup>	W	W
Fine aggregate (-¾ inch) <sup>5</sup>	W	W
Coarse and fine aggregates <sup>6</sup>	W	W
Chemical and metallurgical <sup>7</sup>	W	W
Unspecified: <sup>8</sup>		
Reported	15	77
Estimated	725	5,100
Total	961	6,770

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

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

<sup>2</sup>Specified districts are combined to avoid disclosing company proprietary data.

<sup>3</sup>Includes riprap and jetty stone.

<sup>4</sup>Includes bituminous aggregate (coarse) and railroad ballast.

<sup>5</sup>Includes stone sand (concrete).

<sup>6</sup>Includes graded road base or subbase and unpaved road surfacing.

<sup>7</sup>Includes cement manufacture.

<sup>8</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
MONTANA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products	1,230	\$10,900	\$8.82
Asphaltic concrete aggregates and other bituminous mixtures	640	8,850	13.83
Road base and coverings <sup>2</sup>	3,180	18,800	5.90
Fill	221	1,200	5.43
Snow and ice control	44	345	7.84
Railroad ballast	12	109	9.08
Other miscellaneous uses	10	168	16.80
Unspecified: <sup>3</sup>			
Reported	2,250	21,500	9.56
Estimated	5,600	46,000	8.21
Total or average	13,200	108,000	8.17

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

<sup>2</sup>Includes road and other stabilization (lime).

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 6  
MONTANA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products	998	9,390	233	1,470	--	--
Asphaltic concrete aggregates and other bituminous mixtures	W	W	W	W	73	401
Road base and coverings <sup>2</sup>	2,420	15,200	598	2,720	167	858
Fill	133	822	87	377	--	--
Other miscellaneous uses <sup>3</sup>	619	8,940	15	132	(4)	3
Unspecified: <sup>5</sup>						
Reported	134	975	2,090	20,400	19	43
Estimated	4,190	34,400	1,440	11,800	--	--
Total	8,490	69,700	4,460	37,000	259	1,310

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

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

<sup>2</sup>Includes road and other stabilization (lime).

<sup>3</sup>Includes railroad ballast and snow and ice control.

<sup>4</sup>Less than ½ unit.

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