

THE MINERAL INDUSTRY OF ALASKA

In 1999, the preliminary estimated value¹ of nonfuel mineral production for Alaska was about \$1.1 billion, according to the U.S. Geological Survey (USGS). This was about a 9% decrease from that of 1998,² following a 1.6% increase from 1997 to 1998. The State, which rose in rank in 1999 to 12th from 15th among the 50 States in total nonfuel mineral production value, accounted for close to 3% of the U.S. total.

Overall, metallic minerals accounted for more than 92% of the State's total nonfuel mineral production value in 1999. A large majority of this was from zinc, lead, and silver production at Cominco Alaska Inc.'s Red Dog Mine, which is near Kotzebue in northwestern Alaska, and gold production from the Kinross Gold Corp.'s Fort Knox Mine, which is near Fairbanks in east-central Alaska. (Listings of mineral commodities are in descending order of value, magnitude of change in value, or quantity produced.) In 1999, most of the State's increase in nonfuel mineral value resulted from a 17% increase in the production of lead; 16%, silver; and 13%, zinc. Crushed stone also showed a relatively small increase. Only gold, construction sand and gravel, and copper showed decreased values. Gemstones remained the same. In 1998, significant decreases in the production and values of gold and crushed stone were more than balanced by increases in those of zinc, lead, construction sand and gravel, and silver resulting in the State's rise in value (table 1).

On the basis of USGS estimates of the quantities produced in the 50 States during 1999, Alaska remained first in zinc and second in lead. The State remained second in the production of silver and third in gold.³ Production of peat was not

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on 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 1999 USGS mineral production data published in this chapter are preliminary estimates as of May 2000 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. A telephone listing for the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1998 may vary from the Minerals Yearbook, Area Reports: Domestic 1998, Volume II, owing to the revision of preliminary 1998 to final 1998 data. Data for 1999 are preliminary and are expected to change; related rankings may also be subject to change.

³Gold figures in table 1 for 1997 and 1999, as reported to the USGS, conflict with estimates made by the Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys (DGGGS). The canvassing of gold placer mineral production was discontinued by the U.S. Bureau of Mines (the Federal agency formerly responsible for U.S. nonfuel mineral production data collection) in 1994. Gold production and value data in table 1 contain 1997 and preliminary 1999 numbers that will be further estimated by the USGS in cooperation with the DGGGS. Current estimates based on data collected by the DGGGS indicate the production quantity in 1997 was 18,400 kilograms (kg) valued at \$207 million; and in 1999, 15,700 kg valued at \$140

million (Swainbank and Szumigala, 2000). The USGS final 1997 and 1999 total gold production and value data for Alaska, done in collaboration with the DGGGS, will be reflected in the upcoming USGS Mineral Industry Surveys - Gold, 1999 Annual Review.

reported to the USGS, partly because of reporting difficulties associated with the seasonal, intermittent nature of the mineral commodity's mining in the State. The Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys (DGGGS), estimated peat production to be about 29,100 cubic meters for an estimated value of about \$190,000. Additionally, the DGGGS reported production of jade and soapstone to be about 1.8 metric tons (t) at an estimated value of \$25,000 (Swainbank and Szumigala, 2000).

The DGGGS provided the following narrative information; the data are based on DGGGS surveys and estimates (Swainbank and Szumigala, 2000). The Red Dog Mine increased production of lead, zinc, and silver and continued to be the world's largest producer of zinc. The Red Dog Mine produced 522,000 t of zinc, 90,000 t of lead, and an estimated 190 t of silver in 1999, which accounted for almost 70% of all metal produced in Alaska.

Kennecott's Greens Creek Mine, which is west of Juneau, remained one of the largest producers of silver in the United States, and continued to produce significant amounts of lead, zinc, and gold. The mine produced an estimated 57,000 t of zinc, 21,000 t of lead, 2.5 t of gold, and 317 t of silver from about 517,000 t of ore milled.

Fort Knox Mine, which is near Fairbanks, was Alaska's largest gold producer—10.9 t in 1999. A 1999 report commissioned by the Fairbanks North Star Borough showed that the mine created 260 direct and 312 indirect jobs in Fairbanks, spent more than \$35 million per year on local goods and services, and had a \$107-million-per-year impact on the local economy. Although production from all the placer mines in the State has not yet been fully accounted for, it appears to be in excess of 1.6 t.

The underground Nixon Fork Mine, which is near McGrath, was placed on care-and-maintenance status in May but produced about 310 kilograms (kg) of gold and 600 t of copper in 1999 before closing. Likewise, the Illinois Creek (Dakota Mining Co.) open pit mine, which is near Galena, was on care-and-maintenance status for the year but produced about 210 kg of gold and 1,900 kg of silver as the existing heaps were rinsed. Kvaerner Environmental Technologies Inc. continued its closure of the A-J Mine in downtown Juneau.

Development expenditures were about \$26 million, mainly at the Red Dog Mine, the Fort Knox Mine, the Kensington Mine (Coeur Alaska's mine north of Juneau), and the Greens Creek Mine in 1999, compared with \$55.4 million in 1998. The drop was mainly because the Production Rate Increase Project at the Red Dog Mine had not been completed by the end of 1998; in 1999, the mine was performing at the expected rate.

Development at the Red Dog Mine was mainly at the port site, with drainage projects and modification of the conveyor

system, as well as modification of the flotation system at the mine site, which is 84 kilometers inland. The port may possibly be modified in the future to allow direct loading of ships rather than the present system of lightering concentrates with barges to ships anchored offshore.

At the Fort Knox Mine, pit dewatering and random waste disposal accounted for most of the development reported, but about 3,900 meters (m) of in-pit development drilling confirmed additional reserves.

At the Greens Creek Mine, Kennecott drove about 1,500 m of development drifts to access the new ore reserves.

At the Kensington Mine, mining optimization studies continued throughout the year.

Exploration highlights included the discovery at depth of a new zinc-rich ore body north of the Red Dog Mine and expansion of the gold mineralized zone at the Pogo property east of Fairbanks. Other exploration programs in the Pogo area identified new gold-rich areas that will require further exploration and drilling.

Estimated minimum exploration expenditures throughout Alaska during 1999 were \$48.2 million, which was down 16% from the \$57.3 million invested in 1998. Alaska's exploration sector fared quite well, considering the massive reductions (20% to 30%) in exploration budgets worldwide. The eastern interior region of Alaska consumed 69% of exploration expenditures. The Goodpaster mining district was the hub of exploration activity as companies conducted initial exploration programs on claims that had been staked around the Pogo property in 1998.

About 8,800 new State mining claims and 230 new Federal claims were staked in Alaska in 1999. The Noatak district

was the most active area for new claim locations, followed by staking in the Big Delta quadrangle in the Goodpaster and the Richardson mining districts.

In 1999, the DGGS contracted for an airborne geophysical survey of about 2,600 square kilometers northwest of the Pogo deposit. The survey included radiometrics with the standard electromagnetic and magnetic components. The results were expected in early 2000. A magnetic/electromagnetic survey of parts of Prince of Wales Island in southeastern Alaska was completed in 1999 with funding from the U.S. Bureau of Land Management, the Ketchikan Gateway Borough, the cities of Coffman Cove and Helm Bay, and the Alaska State Mental Health Land Office, with additional survey data from previous years provided by the Sealaska Native Corp.

A team of geologists from the DGGS began investigations in the Fortymile area, which had been the subject of a 1998 airborne survey. A preliminary geologic map of the Eagle A-2 quadrangle will be released later this year. Field mapping will continue in 2000.

The State Division of Mining, Land, and Water Management, which was working with the USGS, continued its studies of the natural water quality for baseline studies in the Fortymile and the Goodpaster River drainages east of Fairbanks.

Reference Cited

Swainback, R.C., and Szumigala, D.J., 2000, Alaska's mineral industry 1999—A summary: Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys, Information Circular 46, 12 p.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1997		1998		1999 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	11	NA	11	NA	11
Gold 3/ 4/ kilograms	18,400	196,000	18,300	174,000	18,200	164,000
Sand and gravel: Construction	12,500	57,400	13,700	72,700	13,200	71,200
Stone: Crushed 5/	3,350 r/	23,600 r/	1,700	9,970	1,790	10,800
Combined values of copper, lead, silver, stone [crushed dolomite and limestone (1997), crushed dolomite, limestone, shell, slate (1998-99)], zinc	XX	706,000	XX	743,000	XX	843,000
Total	XX	983,000	XX	999,000	XX	1,090,000

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.

3/ Recoverable content of ores, etc.

4/ Data collected by the State.

5/ Excludes certain stones; kind and value included with "Combined values" data.

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

	1997				1998			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone-dolomite	1	W	W	\$3.28 r/	1	W	W	\$3.60
Shell	1	(3/)	(3/)	5.78	1	W	W	4.33
Traprock	4 r/	612 r/	\$2,000 r/	3.27	5	605	\$2,700	4.46
Slate	1	(3/)	(3/)	4.72 r/	1	W	W	6.86
Miscellaneous stone	5	2,670	21,400	8.00	9	1,100	7,270	6.64
Total or average	XX	3,350 r/	23,6 00 r/	7.05 r/	XX	1,700	9,970	5.86

r/ Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

2/ Data derived, in part, from information obtained from the Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys.

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

TABLE 3
ALASKA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 1998, BY USE 1/ 2/ 3/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregates (+1 1/2 inch):			
Riprap and jetty stone	3	\$37	\$12.23
Filter stone	10	91	9.13
Coarse aggregate, graded:			
Concrete aggregate, coarse	46	182	3.95
Bituminous aggregate, coarse	7	58	8.34
Fine aggregate (-3/8 inch): Screening, undesignated			
	3	44	14.61
Coarse and fine aggregates:			
Graded road base or subbase	42	321	7.65
Unpaved road surfacing	17	108	6.35
Crusher run or fill or waste	17	127	7.48
Other construction materials	20	94	4.70
Other specified uses not listed	1	3	3.14
Unspecified: 4/			
Actual	977	6,465	6.62
Estimated	555	2,438	4.39
Total or average	1,700	9,970	5.86

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

2/ Data derived, in part, from information obtained from the Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys.

3/ Recoverable content of ores, etc.

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

TABLE 4
ALASKA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1998,
BY MAJOR USE CATEGORY 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregates and concrete products	328	\$2,150	\$6.55
Asphaltic concrete aggregates and other bituminous mixtures	346	4,440	12.82
Road base and coverings	1,310	6,930	5.29
Fill	386	1,050	2.71
Snow and ice control	28	127	4.54
Railroad ballast	91	650	7.14
Unspecified: Actual 3/	11,200	57,300	5.10
Total or average	13,700	72,700	5.29

1/ To avoid disclosing company proprietary data, no region tables were produced for 1998.

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

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