



2009 Minerals Yearbook

ALASKA [ADVANCE RELEASE]

ALASKA

LEGEND

- ★ Capital
- City
- Regional boundary

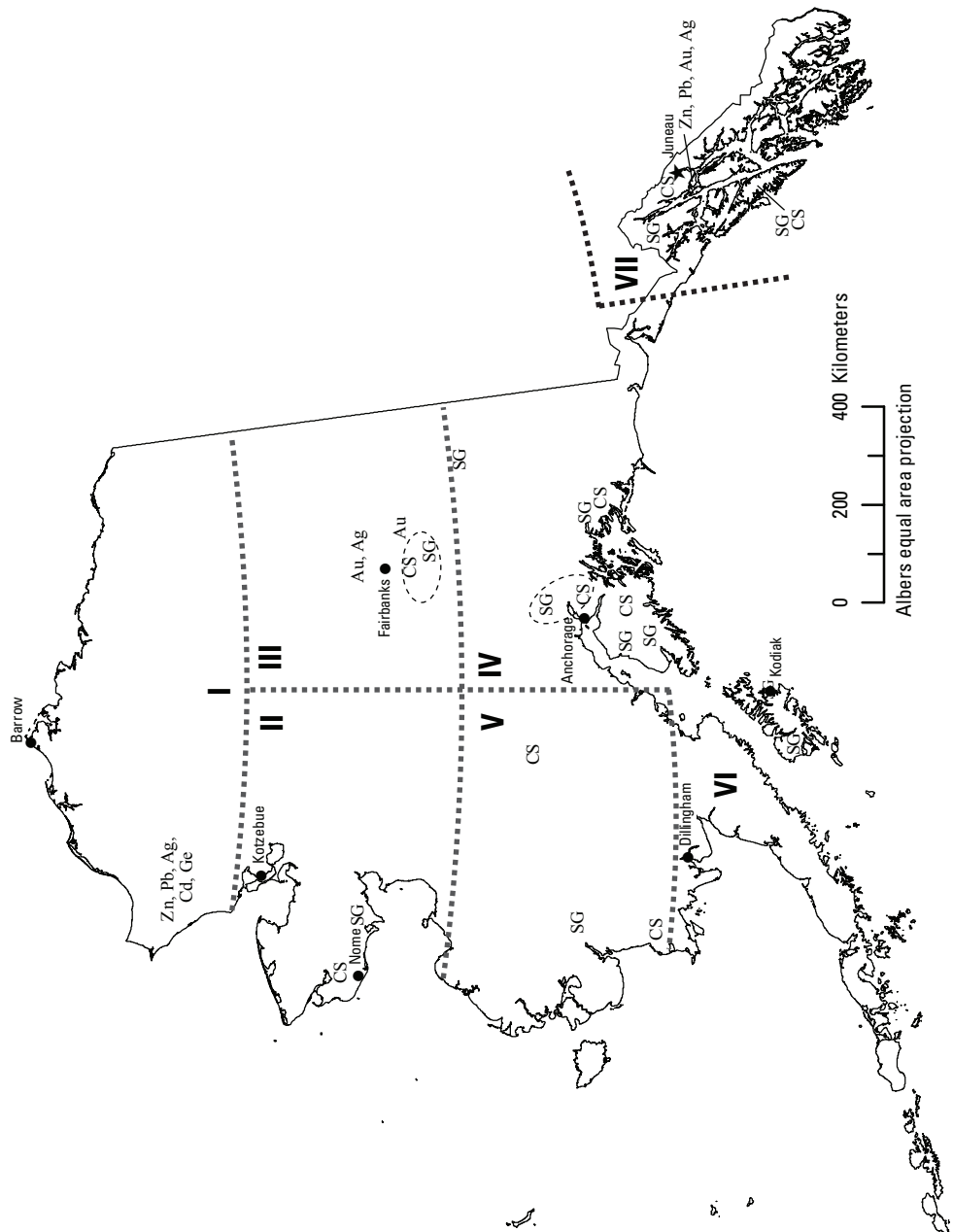
MINERAL SYMBOLS
(Principal producing areas)

- Ag Silver
- Au Gold
- Cd Cadmium (byproduct)
- CS Crushed stone
- Ge Germanium (byproduct)
- Pb Lead
- SG Sand and gravel
- Zn Zinc

○ Concentration of mineral operations

REGIONS

- I Northern
- II Western
- III Eastern interior
- IV Southcentral
- V Southwestern
- VI Alaska peninsula
- VII Southeastern



Source: Alaska Division of Geological and Geophysical Surveys/U.S. Geological Survey (2009).

THE MINERAL INDUSTRY OF ALASKA

In 2009, Alaska's nonfuel raw mineral production¹ was valued at \$2.62 billion, based upon annual U.S. Geological Survey (USGS) data. This was a \$31 million, or about 1%, decrease from the State's total nonfuel mineral value of \$2.65 billion in 2008, which followed an \$889 million, or 25%, decrease from a total production value of \$3.54 billion in 2007. The State rose to seventh from eighth among the 50 States in total nonfuel mineral production value and accounted for almost 4.5% of the U.S. total value, up from 3.7% in 2008. Per capita, the State led the Nation in the value of its mineral industry's nonfuel mineral production; with a population of 698,000, the value of production was about \$3,750 per capita.

The States leading nonfuel mineral commodities in 2009 were, by production value, zinc, gold, lead, and silver. These four mineral commodities accounted for more than 96% of the total value of Alaska's nonfuel mineral production. Zinc continued to be the State's leading nonfuel raw mineral produced. Two commodities in 2009 increased in production value: gold, up by 13%, and crushed stone, up by 11%, or almost \$3.5 million. All other mineral commodities decreased in production value (in descending order of value), most notably lead, down by 16%; construction sand and gravel, down by 35%, or \$29.3 million; zinc, down by 1.5%; and silver, down by 0.6%. In 2009, the quantities of the five major metallic mineral commodities produced in Alaska increased: lead, up by 17%; cadmium and zinc, up by 12% each; and gold and silver, up by about 1% each. The production of crushed stone remained essentially the same as that of 2008, whereas the production of construction sand and gravel decreased by 4 million metric tons (Mt), or 36%.

In 2009, Alaska continued to rank first in the production of cadmium, among 6 producing States; silver, among 11 producing States; and, zinc, among 6 producing States. The State rose to first in the production of lead, among 5 producing States, and remained second in the production of gold, among 11 producing States.

The following narrative was derived from the annual publication of the Alaska Division of Geological and Geophysical Surveys (DGGs). The DGGs, in cooperation with the Alaska Department of Commerce, Community and Economic Development, Division of Economic Development, compiled the data, which are based on DGGs surveys and estimates and may differ from USGS production figures as reported to and estimated by the USGS.

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the 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 2009 USGS mineral production data published in this chapter are those available as of September 2011. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

Employment

Total minerals industry employment in 2009 was estimated to be 3,280 full-time-equivalent jobs, a decrease of 112 jobs (3.3%) from the estimated 2008 total of almost 3,400 full-time-equivalent jobs. The largest change in employment compared to 2008 was the drop in mineral development jobs from approximately 520 to 370 in 2009, a 28% decrease. Exploration jobs also decreased from 550 jobs in 2008 to 420 in 2009, a 23% decrease. Mineral production employment increased significantly in 2009, with about 2,490 jobs across all production sectors in 2009 compared to 2,330 jobs in 2008. Lode gold mining jobs increased 13% in 2009, adding about 90 jobs. Placer gold mining employment also increased significantly in 2009, with about 120 full-time-equivalent jobs added to the 310 jobs estimated for 2008, a 39% increase. The high price of gold was the most significant factor in the increase of gold mining jobs and likely influenced the increase in recreational miners reported from 2008 to 2009. Full-time-equivalent jobs decreased in the base-metals sector by approximately 60 jobs, or 13%, from 2008 to 2009. Modest employment increases were seen in the polymetallic, and sand and gravel mining sectors.

The average monthly wage for mining in Alaska during 2009 was about \$7,600, according to the Alaska Department of Labor & Workforce Development (DLWD), compared to an average monthly wage for all industries in Alaska of approximately \$3,900. Mining jobs in Alaska have higher wages than any other industry except oil and gas. The average annual earnings for a mining job were \$91,100 in 2009, according to DLWD. Employees in mining jobs were paid nearly twice the Alaskan average annual earnings of nearly \$47,000 per year. Mining wages in Alaska totaled over \$183 million in 2009.

The DLWD reported there were over 2,100 mining jobs in Alaska in 2009, with total employment in all industries in Alaska during 2009 over 320,000 jobs. Mining employment included almost 690 jobs in the Fairbanks North Star Borough, 380 jobs in the Municipality of Anchorage, and about 280 jobs in the City and Borough of Juneau. During the last 10 years, according to the DLWD, employment growth by Alaska's mining industry has outpaced growth of the United States' total mining industry employment by nearly 40%; expansions in Alaska's mining industry employment have also eclipsed employment growth in most of Alaska's other private industries. The DLWD statistics do not include the self-employed, such as the majority of placer operators; their employment data also often do not include jobs in the exploration and development phases of mining. Jobs in these mining phases are often grouped by the DLWD in the engineering, environmental, or construction industries. These omissions in employment data may result in lower estimates of the mining industry's contribution to the earnings and employment numbers in the State.

The DLWD reported the average monthly wage for metal mining in Alaska during 2009 was almost \$7,800. They also report that the average employment during 2009 was about 1,770 full time equivalent jobs in metal mining, more than

300 in coal mining and nonmetallic mineral mining and quarrying, and about 9,320 in support activities for mining, oil, and gas. Nonmetallic mineral product manufacturing provided nearly 330 jobs, including an average of about 320 jobs in cement and concrete manufacturing for 2009. Primary metal manufacturing provided 23 full time equivalent jobs, while metal and mineral merchant wholesalers provided an average of 114 jobs during 2009.

In 2009, the Greens Creek Mine, the Red Dog Mine, and the Pogo Mine were the largest employers in Juneau, the Northwest Arctic Borough, and Southeast Fairbanks Census Area respectively. Fort Knox Mine and Usibelli Coal Mine are both the third largest employers in their respective boroughs. Kensington Mine was expected to become one of the top 10 private employers in Juneau by 2011.

Exploration and Development Activities

Nonfuel mineral exploration expenditures during 2009 were approximately \$180 million, 48% less than the nearly \$350 million spent in 2008. The worldwide economic downturn limited the amount of venture capital available for mineral exploration. In general, gold exploration projects were funded preferentially to other exploration projects following the increasing gold price throughout the year. Exploration was conducted in Alaska for a wide variety of metals and mineralization styles during 2009. Gold, grouped with other precious metals, remained a major exploration commodity, but exploration expenditures for polymetallic deposits were also very strong and accounted for 48% of total exploration expenditures. Platinum-group-element exploration expenditures in 2009 were slightly above the average platinum-group-element expenditures from 2001 through 2008.

Copper-gold porphyry systems were the major exploration targets in 2009, with slightly more than \$74 million in expenditures. In excess of \$64 million was spent on intrusion-related gold deposits and more than \$12 million was spent on various gold-quartz vein deposits. The sharp decrease in exploration expenditures for base-metal-rich, polymetallic massive-sulfide deposits was notable, with only \$15 million spent in 2009, compared to more than \$30 million spent in 2008 and almost \$60 million spent in 2007. About \$4.2 million was spent on platinum-group-element deposits and nickel-copper ultramafic-hosted deposits, and almost \$9.3 million was spent on uranium, diamond, tin, coal, placer gold, and other deposit types, including significant expenditures exploring for iron- titanium-rich beach placer deposits. Analysis of 2009 mineral exploration expenditures indicates that 41% of funds was spent exploring for porphyry copper-gold-molybdenum deposits, 36% for intrusion-related gold deposits, 8% for various types of massive-sulfide deposits, 7% for gold-vein deposits, and the remainder for a wide variety of deposit types. These percentages are not significantly different than the 2008 values.

Exploration took place across Alaska with more than \$99 million (55% of the exploration funds) spent in southwestern Alaska and \$35 million spent in the eastern interior region. In the southwestern region, there was a sharp decrease in exploration spending compared to 2008. Exploration

expenditures also dropped sharply in the northern region during 2009 compared to 2008; there were moderate decreases in the southcentral, eastern interior, and southeastern regions.

Exploration expenditures in the western region for 2009 increased 43% compared to 2008 expenditures. Two advanced exploration projects, Pebble and Donlin Creek, accounted for more than 50% of the exploration expenditures in 2009. The Pebble copper-gold porphyry project in southwestern Alaska, with resources of 33 Mt (72 billion pounds) of copper, 2.9 million kilograms (94 million troy ounces) of gold, and 2.2 Mt (4.8 billion pounds) of molybdenum, was a joint-venture project of Northern Dynasty Minerals Ltd. (Vancouver, British Columbia, Canada) and Anglo American PLC (London, England), and was the largest exploration project in 2009. The 1.1-million-kilogram (35.3-million-troy-ounce) Donlin Creek intrusion-hosted gold project in southwestern Alaska was a joint venture of Barrick Gold Corp. (Toronto, Ontario, Canada), NovaGold Resources Inc. (Vancouver, British Columbia, Canada), and Calista Corp. (Anchorage, Alaska).

New prospecting sites and mining claims were staked across the State in 2009, including almost 4,000 new State claims comprising about 200,000 hectares (ha) (494,000 acres), 40 new State prospecting sites comprising about 2,600 ha (6,400 acres), and about 1,060 new Federal claims comprising 8,500 ha (21,000 acres). State claim staking increased more than 7% from 2008 levels, while the number of new Federal mining claims decreased to 35% of the claims staked in 2008. The number of active Federal claims also decreased about 10% from 2008 to 2009. The amount of land in Alaska under claim increased approximately 13% from 2008 to 2009, with approximately 1.6 million ha (3.9 million acres) of land covered by claims and prospecting sites in 2009. Alaska had more than 10,400 active Federal and about 40,700 active State mining claims in 2009.

The development sector of the mining phases as used in this report refers to building infrastructure or activities that facilitate production of mineral products. Development expenditures refer to actual expenditures at mines as well as sustaining capital. Sustaining capital includes equipment replacement and rebuilding, facility upgrades, and other expenditures that must be amortized or depreciated in accordance with tax laws. Development expenditures for 2009, reported for 27 projects, totaled about \$330 million, down 16.5% from the almost \$400 million spent in 2008. Tailings storage facilities were expanded at the Red Dog Mine. All major underground development activities and surface facilities at Kensington, except the tailings facility, were completed in 2009. At the Fort Knox Mine, construction of the heap leach facilities continued, studies began regarding increasing the height of the tailings dam, and the final reclamation of the True North Gold Mine started. At the Nixon Fork Mine, an evaluation plan began, and a new resource estimate was expected in the fall of 2010. At the Greens Creek Mine, underground infill drilling and preliminary production expenditures were noted. The Rock Creek Mine continued in care and maintenance status. PacRim Coal LP continued environmental, permitting, and engineering work on the Chuitna Coal project near Anchorage.

Commodity Review

Industrial Minerals

Sand and Gravel, Construction, and Stone, Crushed.—Production of crushed stone was 1.6 Mt (1.8 million short tons) in 2009, compared with 2.2 Mt in 2008. Sand and gravel production was 6.4 Mt (7 million short tons) down from 11 Mt in 2008. These data reflect some significant shortfalls in reporting for both construction sand and gravel and crushed stone production. Several large rock, and sand and gravel producers declined to contribute nonmandatory information; as a result, sand and gravel, and crushed stone estimates are very incomplete and are possibly quite low.

Metals

Gold.—Gold production (both hard-rock and placer) was nearly 24,300 kg (781,000 troy ounces). Hard-rock (lode) gold production decreased approximately 3% in 2009, to about 22,400 kg (720,000 troy ounces) from 23,100 kg (744,000 troy ounces) in 2008. The Pogo Mine was the largest producer of gold in Alaska with 12,100 kg (390,000 troy ounces) produced. Placer production in Alaska increased in 2009 to 1,880 kg (60,300 troy ounces), up more than 6% from 1,770 kg (56,800 troy ounces) in 2008. Approximately 234 placer gold operations reported production in Alaska in 2009 compared to 195 in 2008.

Lead, Silver, and Zinc.—Lead production was 152,000 t (167,000 short tons) and silver production was estimated at 485,000 kg (15.6 million troy ounces). Zinc production from all Alaskan producers totaled 635,000 t (700,000 short tons) in 2009.

Government Programs and Activities

The DGGS continued to be an active participant in the STATEMAP program. STATEMAP is a component of the congressionally-mandated National Cooperative Geologic Mapping Program (NCGMP), through which the USGS 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.

In early 2009, the DGGS released airborne magnetic and electromagnetic geophysical maps for 114,000 ha (442 square miles) of the northern Chistochina mining district. During July 2009, geologists from the Mineral Resources Section of the DGGS conducted geologic mapping of about 29,000 ha (113 square miles) of the geophysical survey tract in the southern foothills of the Alaska Range, about 225 km (140 miles) southeast of Fairbanks and 32 km (20 miles) east of Paxson. The DGGS also conducted geologic fieldwork along the proposed gas pipeline corridor and the Alaska Highway from Tetlin Junction to the Yukon Territory-Alaska border. Surficial and bedrock mapping were completed at a scale of 1:63,360. The DGGS acquired airborne magnetic, electromagnetic, and radiometric geophysical data for approximately 168,000 ha (650 square miles) of mixed State-and Native-owned lands centered on Moran Creek and Moran Dome in the Tanana and Melozitna quadrangles. Survey data and maps for this area, about 240 km (150 miles) west-northwest of Fairbanks and 40 km (25 miles) west of the village of Tanana, were to be released in 2010.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ALASKA^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2007		2008		2009	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones, natural	NA	13	NA	69	NA	69
Sand and gravel, construction	13,400 ^r	78,000 ^r	11,400 ^r	84,800 ^r	7,320	55,500
Stone, crushed	1,750	20,000	1,990 ^r	31,400 ^r	1,940	34,800
Combined values of cadmium (byproduct from zinc concentrates), gold, lead, silver, zinc	XX	3,440,000	XX	2,540,000	XX	2,530,000
Total	XX	3,540,000	XX	2,650,000 ^r	XX	2,620,000

^rRevised. NA Not available. XX Not applicable.

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

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

TABLE 2
ALASKA: CRUSHED STONE SOLD OR USED, BY TYPE¹

Type	2008 ^f			2009		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Granite	7	255	\$3,080	8	290	\$4,270
Miscellaneous stone	20	1,730	28,300	21	1,650	30,600
Total	XX	1,990	31,400	XX	1,940	34,800

^fRevised. XX Not applicable.

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

TABLE 3
ALASKA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2009 BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Filter stone	W	W
Other coarse aggregate	9	63
Coarse aggregate, graded:		
Concrete aggregate, coarse	W	W
Bituminous aggregate, coarse	W	W
Bituminous surface-treatment aggregate	W	W
Fine aggregate (-¾ inch):		
Stone sand, concrete	W	W
Screening, undesignated	W	W
Other fine aggregate	20	234
Coarse and fine aggregates:		
Graded road base or subbase	W	W
Unpaved road surfacing	114	2,030
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	124	1,940
Unspecified:		
Reported	316	6,040
Estimated ²	1,300	24,000
Total	1,940	34,800

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

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

²Estimated production without a breakdown by end use.

TABLE 4
ALASKA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	1,100	\$9,780	\$8.89
Concrete products (blocks, bricks, pipe, decorative, etc.)	273	2,700	9.89
Asphaltic concrete aggregates and other bituminous mixtures	192	1,980	10.31
Road base and coverings	616	5,600	9.09
Fill	7	23	3.29
Snow and ice control	13	143	11.00
Filtration	10	92	9.20
Unspecified: ²			
Reported	459	2,340	5.10
Estimated	4,660	32,900	7.06
Total or average	7,320	55,500	7.58

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

²Reported and estimated production without a breakdown by end use.