

Alaska's Mineral Industry 2007

SPECIAL REPORT 62

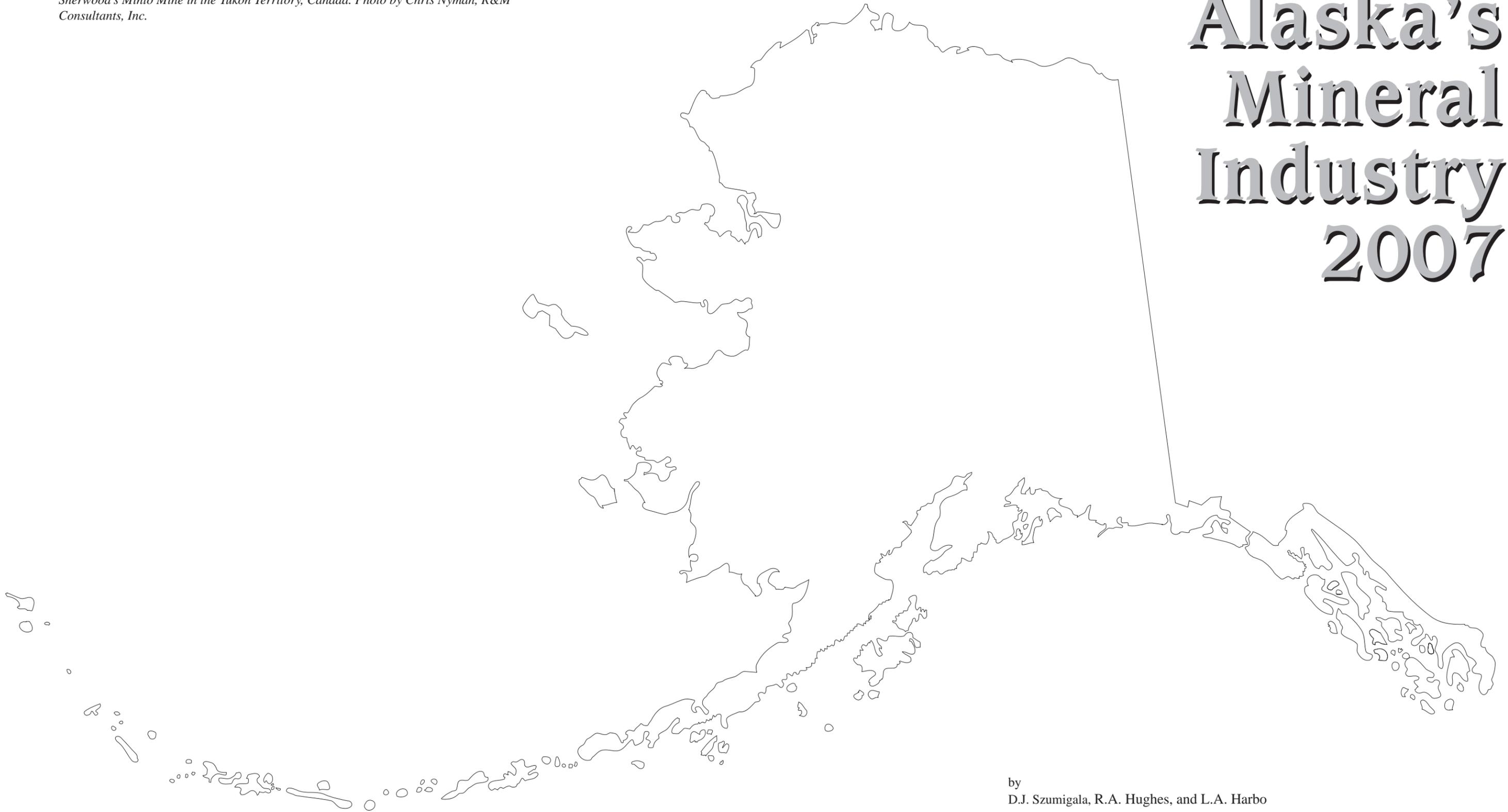


DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
in cooperation with
Office of Economic Development and
Division of Mining, Land & Water



Front cover. Unloading a Cat bulldozer at the Skagway ore terminal. The Alaska Industrial Development & Export Authority (AIDEA) and Sherwood Copper Corp. signed a 7-year agreement to use the Skagway ore terminal for copper-gold ore concentrates from Sherwood's Minto Mine in the Yukon Territory, Canada. Photo by Chris Nyman, R&M Consultants, Inc.

Alaska's Mineral Industry 2007



by
D.J. Szumigala, R.A. Hughes, and L.A. Harbo

**Division of Geological & Geophysical Surveys
SPECIAL REPORT 62**



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GOVERNOR'S FOREWORD



I am honored to present this report detailing the continuing strength of Alaska's mineral industry in 2007. Facts and figures throughout this report tell the story of a healthy, growing, and vital sector of our state's economy. As the world looks to the Arctic regions, Alaska stands as a shining example of a place where responsible natural resource development can be done in an environmentally conscious manner.

Alaska is blessed with a vast array of natural resources, and it is our responsibility to provide responsible stewardship and wise development of these resources for the benefit of the people of our state. As we reach the end of our first half-century of statehood and look eagerly towards the future, it is satisfying to know that we are successfully fulfilling this responsibility.

The total value of the Alaskan mineral industry continues to increase. The value of minerals produced in Alaska increased over the last year by 18 percent to almost \$3.4 billion. We now have six large producing mines in the state—Greens Creek, Fort Knox, Red Dog, Pogo, Rock Creek, and Usibelli. Numerous small mines throughout the state also contribute to Alaska's economy.

Mining continues to offer Alaskans benefits that come with long-term jobs that pay among the highest average wages in the state. In 2007, mining generated an estimated 3,558 full-time jobs. Many of these employment opportunities occur in rural areas where residents are eager to provide the needed staffing and services. The mineral industry and support industries will continue to generate even more jobs as more prospects are proven viable.

I am proud of the accomplishments of the men and women who make up Alaska's mining community, and of the spirit that makes those accomplishments possible. I wish them continued success as they, and we, look to the future with excitement and confidence.

Governor Sarah Palin

COMMISSIONER'S FOREWORD



The Department of Commerce, Community & Economic Development (Commerce) is pleased to participate with the Department of Natural Resources (DNR) to bring you the 27th annual report on Alaska's mineral industry.

This report clearly shows that the Alaska minerals industry continues to mature and expand. The Department of Commerce is proud to contribute to the important industry growth by assisting in the responsible development of Alaska's vast and diverse mineral resources.

In 2007, for the 11th consecutive year, the total value of the industry exceeded \$1 billion and actually exceeded \$4 billion, approximately \$475 million more than in 2006. The state moved from sixth to fifth in ranking among the 50 states for value of non-fuel minerals production.

Rising metal prices bode well for the profitability of future and now-producing mines, for moving existing projects forward, and for enticing exploration for new and existing discoveries in the state.

Existing projects provided approximately 3,500 high paying jobs in 2007, about the same as in 2006. Maintaining the employment number in spite of reduced development but increased hard rock mining and exploration indicates a strong minerals industry. Demand for skilled and technical workers exceeded availability. Significant improvements in the industry's value and an increase in job opportunities are expected in future years due to a number of major projects now in progress.

The Pogo Mine continued to improve productivity, but failed to reach full production goals of 340,000 ounces of gold per year. Coeur Alaska continued construction at the Kensington project, but has been unable to settle the tailings disposal issue revolving around using the Lower Slate Lake disposal site; this issue is being heard by the U.S. Supreme Court. In the meantime, Coeur is requesting a permit for disposal of tailings on the Lynn Canal side of the site in paste form. Rock Creek/Big Hurrah continues in the advanced stages of development with initial production expected in late 2008. Nixon Fork produced for a short period during 2007, but shut down due to ore reserve issues. Barrick/NovaGold's advanced stage Donlin Creek gold exploration project continues to move forward with feasibility, advanced ore definition, and engineering.

Other major exploration projects demonstrate the mineral potential and attractiveness of the state to the mining industry. The Pebble Copper project in southwestern Alaska continues to be intensely explored by Northern Dynasty and Anglo American. Copper-gold porphyry projects in southwestern Alaska include Whistler, Kawisgag, Mount Estelle, Pebble South, and Chisna projects. Intrusion-related gold exploration continued in the Interior at Livengood, Liberty Bell, Gold Hill, Kisa, and Vinasale. High-grade gold deposit exploration was conducted at Terra, Pogo, Lucky Shot, Golden Summit, Rob, Maple Leaf, Ganes Creek, Blue Quartz, and Little Squaw projects. Base-metal exploration was conducted at Red Dog, Lik-Su, Arctic, and Sun SEDEX and volcanogenic massive sulfide (VMS) properties in the Brooks Range and at the Palmer and Niblack properties in southeastern Alaska, and at the LWM project in the eastern Interior region. Platinum and associated metals exploration continued at the MAN project in the Alaska Range and in the Goodnews Bay area. The statewide minerals industry is forecast to grow significantly although commodity prices will influence intensity of effort.

The Palin Administration continues to provide a favorable business climate for statewide mineral industry growth. Alaska's taxation and fee structure is fair and stable, and the regulatory structure is progressive. State government's direct support through incentives, information, and technical support provides a valuable asset for companies active in Alaska mineral development.

Emil Notti, Commissioner, Department of Commerce, Community and Economic Development

COMMISSIONER'S FOREWORD



2007 was another successful year for Alaska's mining industry, eclipsing highs measured in 2006. As this report shows, the mining industry continues to be an increasingly important sector of Alaska's economy, and it is doing so in an environmentally responsible manner. In 2007, the value of Alaska's mineral industry reached an all-time high, and exploration expenditures increased by 84 percent. In addition to providing 3,558 full-time jobs, the mineral industry was the largest tax payer in the City and Borough of Juneau, the Fairbanks North Star Borough, the Denali Borough, and the Northwest Arctic Borough.

This increase in mining activity comes with an increased public awareness of the industry, and increased scrutiny. I am proud of the environmental record of Alaska's mining industry, and I believe we have a sound permitting and regulatory system. Nevertheless, our process continues to be challenged, and wherever appropriate, we will continue to work to improve that process. In the past year, state and federal regulators have made numerous presentations at various public forums throughout the state to inform the public about mining and mine permitting, as well as to hear the public's concerns. This effort will continue and I urge all Alaskans to attend these presentations and to educate themselves about mining and our regulatory process. I want all Alaskans to have confidence that we can responsibly permit and regulate mines.

Soaring energy costs are stressing our citizens, especially the residents of rural Alaska. People are leaving the villages and moving to the cities because they can't afford to heat their homes. Governor Palin is working on several fronts to address this dire situation, and we cannot overlook the huge potential that mineral development has for helping some rural regions of our state. Mining holds great promise for alleviating many of the economic problems in rural Alaska. Large mines have the potential to lower energy costs for nearby communities. Also, high-paying mining jobs can give residents the economic means to better afford fuel and electricity, and to support their families.

I'd like to highlight some of the mining industry and DNR's accomplishments in 2007. Permits were issued for the new Walter Valley heap leach, a major expansion at the Fort Knox mine; a facility that is projected to add 10 years to the life of the mine. Construction continued at the Kensington mine near Juneau and the Rock Creek Mine near Nome. The state has been actively following federal wetlands litigation regarding the Kensington mine that is now before the U.S. Supreme Court, as it may have broader implications for development throughout Alaska.

Major exploration efforts continued at Donlin Creek and the Pebble project. DNR issued permits for some 70 exploration projects, including advanced exploration projects such as Niblack on Prince of Wales Island. Other activities at DNR included permitting for ongoing major mine projects, monitoring and inspection of operating and closed mines, and the remediation of abandoned mine lands from an era before the current permitting and regulatory regime. In 2007, applications for small placer gold mining operations and the maintenance of mining records were at all-time highs.

In 2007, the DNR Division of Geological & Geophysical Surveys (DGGS) continued its active data acquisition programs to gather and disseminate new geological and geophysical information. The staff at DGGS work hard to provide unbiased scientific information on natural hazards, energy resources, and mineral occurrences that are essential for responsible development and maintaining a healthy economy. This report provides valuable information to Alaskans about our mining industry and is a tool we can all use as we continue to improve our stewardship of Alaska's natural resources.

Tom Irwin, Commissioner, Department of Natural Resources

EXECUTIVE SUMMARY

Alaska's Mineral Industry 2007 is the 27th annual report produced in a cooperative venture between the Division of Geological & Geophysical Surveys (DGGs) and the Division of Mining, Land & Water in the Department of Natural Resources, and the Office of Economic Development in the Department of Commerce, Community and Economic Development (Commerce). This report and data supersede previously published DGGs Information Circular 57.

The total value of Alaska's mineral industry in 2007 set a new record of approximately \$4 billion, a 13.3 percent rise over the 2006 level. The total value is determined by combining exploration and development expenditures with production value. The new record was the 12th straight year in which the total value exceeded \$1 billion.

The mineral industry paid a total of \$142.4 million in royalty and tax payments to the State of Alaska and Alaska municipalities in 2007. These payments represented a reduction of almost \$30 million from the 2006 payments, but were still the second highest on record. Mining license taxes dropped by 31.2 percent from 2006 values. Mining companies were the largest taxpayers in the City and Borough of Juneau and the Fairbanks North Star, Denali, and Northwest Arctic boroughs, contributing total payments of almost \$15.8 million. Teck Alaska Inc., operator of the Red Dog Mine, paid the Alaska Industrial Development & Export Authority annual user fees of \$17.7 million for use of the State-owned DeLong Mountain Regional Transportation System. Teck Cominco Ltd. paid NANA Regional Corp. \$58.1 million in FY07 as a net smelter royalty, nearly double the FY 2006 payment of \$29.7 million.

Minerals industry employment was 3,558 full-time-equivalent jobs in 2007, an increase of 35 jobs above the 2006 estimate, and the highest number of jobs over the past decade. The exploration, development, and production sectors accounted for 499, 735, and 2,324 jobs, respectively. Alaskan metal miners made an average weekly wage of \$1,578 during 2007.

Exploration expenditures in Alaska during 2007 reached \$329.1 million, 84 percent higher than the \$178.9 million spent in 2006. At least 33 projects had exploration expenditures of \$1 million or more and 85 projects had exploration expenditures in excess of \$100,000. These projects were dotted across Alaska, with more than \$180 million spent in southwestern Alaska. Companies explored for a wide variety of mineral deposits, and copper-gold porphyry systems (grouped with polymetallic deposits) were the major exploration target in 2007. Advanced exploration projects included Barrick Gold Corp.-NovaGold Resources Inc.-Calista Corp.'s 33.7-million-ounce Donlin Creek intrusion-hosted gold project and Northern Dynasty Minerals Ltd.'s Pebble copper-gold porphyry project, both in southwestern Alaska. The Pebble project, with newly announced measured mineral resources of 74 billion pounds of copper, 87 million ounces of gold, and 5.2 billion pounds of molybdenum, was the largest Alaska mineral exploration project in 2007. New mineral resources were announced at Geoinformatic Exploration Inc.'s Whistler project, International Tower Hill Mines Ltd.'s LMS and Terra projects, NovaGold Resources Inc.'s Ambler project, and Barrick Gold Corp. and NovaGold Resources Inc.'s Donlin Creek project.

Mineral development projects were spread statewide, with total expenditures of \$318.8 million, a 35.7 percent decrease from the record 2006 value of \$495.7 million. Development continued at the Rock Creek project near Nome. Construction was completed at the Mystery Creek project at Nixon Fork and operation was commissioned in the first quarter. Significant expenditures were noted at Red Dog Mine, Fort Knox Mine, the Chuitna Coal project, Greens Creek Mine, and the Kensington project.

Mineral production value of \$3.367 billion eclipsed all previous years on record, with metals accounting for 95 percent of the value. Production volumes were up for all commodities except coal and rock. Continued strong metal prices also contributed to record production values for Alaska's minerals. Values of production, in decreasing order, were from Red Dog Mine (70.1 percent); Greens Creek Mine (11.8 percent); Fort Knox Mine (7.0 percent); Pogo Mine (5.5 percent); rock, sand, and gravel operations (3.0 percent); coal and peat (1.3 percent); and placer gold operations (1.1 percent). Zinc accounted for 60.8 percent of the total mineral production, followed by gold (15.2 percent), lead (11.6 percent), silver (8.0 percent), rock, sand, and gravel (3.0 percent), coal and peat (1.4 percent); and copper (0.01 percent).

Alaska's mineral exports topped \$1.3 billion in 2007, a 10 percent increase from 2006 and a new record. Zinc ore was the highest value commodity exported from the state.

Hard-rock (lode) gold production increased from 509,747 ounces in 2006 to 673,084 ounces in 2007. The increase in hard-rock production primarily reflects a higher output from Pogo Mine and some production from Nixon Fork Mine. Placer gold production decreased from 60,382 ounces in 2006 to 53,849 ounces in 2007. Rapidly increasing operating costs have had a negative effect on operations. However, recreational placer mining continues to increase with the improved gold prices, with 1,882 ounces produced in 2007 compared to 1,133 ounces for 2006.

Sales of sand and gravel in 2007 totaled 14.2 million tons, up slightly from 14.0 million tons in 2006. Rock production was 2.2 million tons, down from 2.4 million tons in 2006.

The Alaska Railroad earned \$16.3 million in net income during 2007 from total revenue of \$169.3 million. Freight accounted for \$91.8 million (54 percent) of the total, with revenue from mineral products (coal, sand, and gravel) amounting to \$14.8 million, down 16.6 percent from 2006 levels.

Drilling was conducted during all phases of mining (exploration, development, and production) on various projects across Alaska during the year. Total drill footage of 1,168,704 feet easily exceeded the 2006 total of 835,795 feet and set a new record. Drilling totals for 2007 are 830,478 feet of core drilling, 268,112 feet of reverse-circulation drilling, 50,539 feet of core and reverse-circulation drilling on coal operations, and 19,575 feet of placer auger/churn drilling. Major drilling programs were conducted in most areas of the state. Barrick Gold had the largest drill program in Alaska with more than 230,000 feet of core drilling on the Donlin Creek property.

Alaska Division of Geological & Geophysical Surveys (DGGS) mapped and sampled in the northeastern Fairbanks mining district and along part of the Alaska Highway portion of the proposed gas pipeline corridor between Delta Junction and Dot Lake.

The State of Alaska, through DGGS, funded and acquired airborne magnetic and electromagnetic geophysical surveys for 180 square miles of the 708-square-mile Styx River survey area in the northeastern Lime Hills and northwestern Tyonek quadrangles. DGGS also released airborne magnetic and electromagnetic geophysical survey data for 613 square miles of the eastern Bonnifield district. DGGS acquired additional airborne magnetic and electromagnetic geophysical data, with funding from the U.S. Bureau of Land Management, for a 250-square-mile area of the western Fortymile mining district.

Sherwood Copper Corp. signed an agreement with Alaska Industrial Development & Export Authority (AIDEA) to use the Skagway ore terminal for copper-gold ore concentrates from its Minto Mine in the Yukon Territory, Canada. The ore terminal began receiving truckloads of high-grade concentrates in July.

Beginning in 2007, mining licenses were issued by the Alaska Department of Revenue (DOR) instead of the Alaska Department of Natural Resources (DNR). The DNR Water Section began requiring a temporary water permit use for drilling in 2007.

The Ninth U.S. Circuit Court of Appeals ruled in 2007 that the Kensington project wastewater discharge permit issued by U.S. Army Corps of Engineers violated the federal Clean Water Act. The tailings permit, as well as a permit to build a marine terminal to service the mine, was to be vacated. The case will likely be petitioned to the U.S. Supreme Court.

Funding for the U.S. Bureau of Land Management's (BLM) Alaska Minerals Program was not included in the BLM budget for 2008.

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Alaska's Mineral Industry 2007

D.J. Szumigala¹, R.A. Hughes², and L.A. Harbo²

INTRODUCTION

Alaska's mineral industry continued its robust growth from 2006 through 2007 primarily due to continued strong metal prices. Mineral production from Alaska's existing mines remained strong, but rising costs and labor shortages are continued concerns. Two new lode mines began production in 2007, and two gold development projects may begin production in 2008. Exploration activities for a wide variety of commodities continued across all regions of Alaska and new discoveries were announced.

The total value of Alaska's mineral industry in 2007 set a new record of approximately \$4 billion. The total value is determined as a combination of exploration and development expenditures and production value. This total value, even though it is a combination of expenses and receipts, is an effective way of tracking the annual strength of the mineral industry. Table 1 shows the estimated annual value of the mineral industry in Alaska between 1981 and 2007, as divided between exploration and development investments, and the gross value of the mineral products. The Alaska mineral industry's total value increased 13.6 percent from the 2006 value of \$3.53 billion. The year 2007 was the twelfth consecutive year with a total value above \$1 billion, the sixth consecutive with production value above \$1 billion, and the first year with production value above \$3 billion. This increased production value moved Alaska to fifth place in production value among the states, according to the U.S. Geological Survey. Exploration expenditures above \$300 million also set new records in 2007, and it was the third consecutive year with exploration expenditures of more than \$100 million. Development expenditures dropped from the record value set in 2006, but still added a fourth consecutive year of expenditures exceeding \$200 million.

Figure 1 shows the regions of the state that are used in this report. Table 1 and figure 2 show the estimated value of the mineral industry in Alaska per year between 1981 and 2007, as divided between

exploration and development investments, and the gross value of mineral products. Company information is used to define the exploration and development parameters. Average metal prices are calculated from the daily London PM closing price for gold, and from the average weekly spot price on the London Metal Exchange for the other metals. It is important to note that these prices are used to calculate the value of metals produced in the state, but do not take into account the costs of mining or transportation, or smelter charges and penalties. Coal prices are estimated from average coal prices for similar grade material around the Pacific Rim. Industrial material prices are based on regional rates provided by some operators.

Please note that the formatting and presentation of data in some tables has changed compared to previous editions of this report, reflecting changes in data collected and accounting practices by the mining industry. Whenever possible, the authors have worked to maintain consistency of data for seamless year-to-year comparisons. Most changes are noted in footnotes in the affected tables.

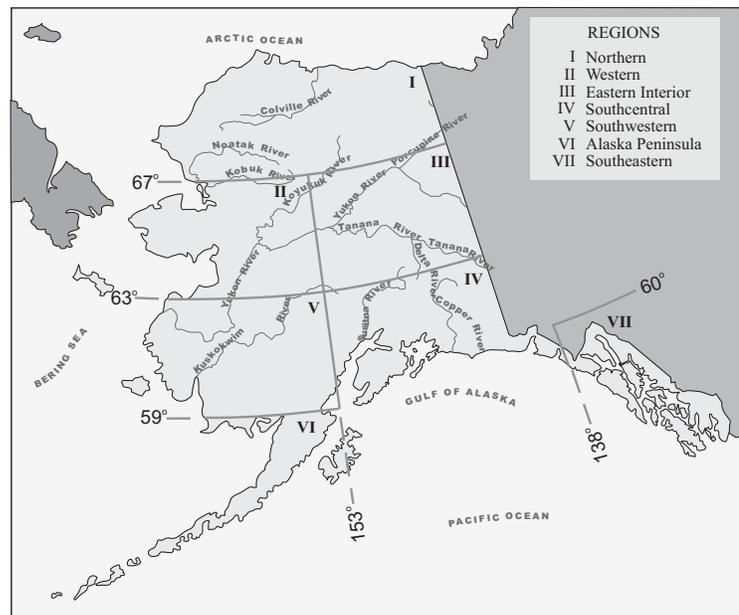


Figure 1. Regions of mineral activity as described in this report.

¹Alaska Division of Geological & Geophysical Surveys, 3354 College Rd., Fairbanks, Alaska 99709-3707.

²Alaska Department of Commerce, Community & Economic Development, Office of Economic Development, 211 Cushman St., Fairbanks, Alaska 99701.

This summary of Alaska's mineral industry activity for 2007 is the 27th in the series of annual reports, and is made possible by information provided through press releases, annual reports, phone interviews, and replies to questionnaires mailed by the Alaska Division of Geological & Geophysical Surveys (DGGS). This report is part of a cooperative venture between DGGS and the Division of Mining, Land & Water (DMLW) in the Department of Natural Resources (DNR) and the Office of Economic Development in the Department of Commerce, Community and Economic Development (Commerce). Commerce provides the funding to print the report. Information in this report supersedes data previously published in DGGS Information Circular 57.

EMPLOYMENT

Figure 3 displays employment within various segments of Alaska's mineral industry. Table 2 lists estimated Alaska mineral industry employment over the past nine years and figure 4 shows the trends in that employment over the same period. Total minerals industry employment in 2007 is estimated to be 3,558 full-time-equivalent jobs, an increase of 35 jobs from the estimated 2006 total of 3,523 jobs. As expected, the number of jobs in the development sector decreased significantly following completion of initial construction of the Pogo gold mine. It is expected that the number of jobs in the development sector will continue to decline for 2008 because the development phases of the Rock Creek and Kensington projects are nearly complete. The significant decrease in employment in the sand and gravel and rock production sectors is believed to be a mix of a slight decrease in employment and a lack of employment information. The steady rise in exploration expenditures from 2003 through 2007 is reflected in the steady increase in exploration employment for that period. The number of jobs in the lode gold production sector will continue to increase as the Rock Creek Mine, and possibly the Kensington Mine, begins

Table 1. Total value of the mineral industry in Alaska by year (in millions of dollars U.S.)

Year	Exploration (expenditure)	Development (expenditure)	Production (value)	Total (calculated)
1981	\$ 76.3	\$ 24.7	\$ 188.6	\$ 289.6
1982	45.6	41.6	196.4	283.6
1983	34.1	27.9	212.4	274.4
1984	22.3	53.4	199.4	275.1
1985	9.2	34.1	226.6	269.9
1986	8.9	24.3	198.5	231.7
1987	15.7	100.3	202.4	318.4
1988	45.5	275.0	232.2	552.7
1989	47.8	134.3	277.0	459.1
1990	63.3	14.3	533.0	610.6
1991	39.9	25.6	546.5	612.0
1992	30.2	29.6	560.8	620.6
1993	30.3	27.7	448.7	506.7
1994	31.1	45.0	507.5	583.6
1995	34.3	148.6	537.2	720.1
1996	44.7	394.0	590.4	1,029.1
1997	57.8	168.4	936.2	1,162.4
1998	57.3	55.4	921.2	1,033.9
1999	52.3	33.8	1,032.9	1,119.0
2000	34.9	141.7	1,106.4	1,283.0
2001	23.8	81.2	917.3	1,022.3
2002	26.5	34.0	1,012.8	1,073.3
2003	27.6	39.1	1,000.7	1,067.4
2004	70.8	209.1	1,338.7	1,618.6
2005	103.9	347.9	1,401.6	1,853.4
2006	178.9	495.7	2,858.2	3,532.8
2007	329.1	318.8	3,367.0	4,014.9
TOTAL	\$1,542.1	\$3,325.5	\$21,550.6	\$26,418.2

Source: Alaska's Mineral Industry reports published annually by DGGS/Commerce.

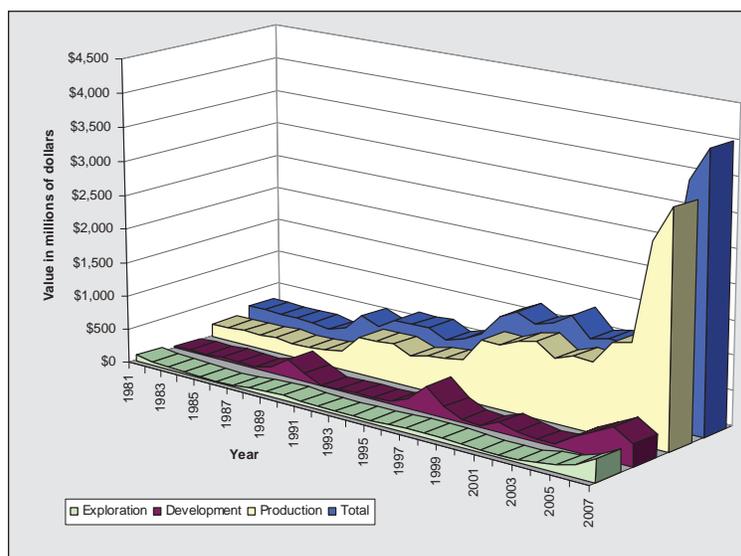


Figure 2. Alaska's mineral industry total value, 1981–2007.

Table 2. Estimated Alaska mine employment, 1999–2007^a

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Gold/silver mining									
Placer	591	470	176	148	82	64	86	242	208
Lode	296	274	337	413	325	433	411	704	808
Polymetallic mining	275	275	275	262	295	265	250	245	276
Base metals mining	549	556	559	580	388	508	449	457	457
Recreational mining	240	250	210	180	175	175	175	45	54
Sand and gravel	590	603	556	702	349	567	400	337	284
Rock	128	150	137	177	35	475	148	104	124
Coal	121	121	121	100	65	90	95	95	102
Peat ^b	38	36	32	21	20	4	6	11	11
Tin, jade, soapstone, ceramics, platinum	20	20	20	20	20	--	--	--	--
Mineral development	135	345	333	135	64	283	498	848	735
Mineral exploration	183	83	79	86	88	184	303	435	499
TOTAL	3,166	3,183	2,835	2,824	1,906	3,048	2,821	3,523	3,558

^aReported man-days are calculated on a 260-day work year to obtain average annual employment unless actual average annual unemployment numbers are provided.

^bThis figure does not include all of the man-days associated with peat operations; most of those man-days are included in sand and gravel numbers.

-- = Not reported.

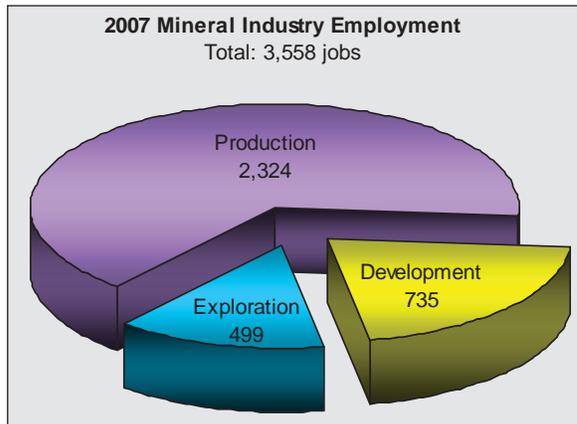
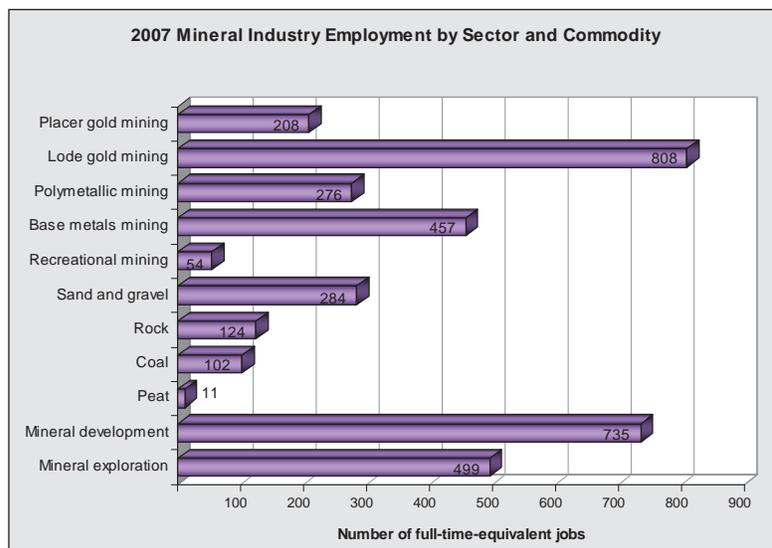


Figure 3. 2007 mineral industry employment in Alaska by category.



full commercial production in 2008. Higher gold prices may also spur more placer gold mining and employment, but higher fuel and energy prices, along with increased costs of other commodities, have dampened positive reactions to high metal prices.

The average weekly wage for mining in Alaska during 2007 was \$1,578, according to the Alaska Department of Labor & Workforce Development (DLWD). They report that the average employment in mining was 1,850 jobs during the first and second quarters of 2007. The average weekly wage for metal mining in Alaska during 2007 was \$1,611, according to the DLWD. They also report that the average employment during the first and second quarters of 2007 was 1,636 in metal mining, 100 in coal mining, 140 in nonmetallic mineral mining and quarrying, and 8,413 in support activities for mining. Nonmetallic mineral product manufacturing provided 327 jobs, cement and concrete manufacturing provided an average of 316 jobs during 2007, glass manufacturing provided two jobs, primary metal manufacturing provided 17 jobs, and other nonmetallic mineral product manufacturing provided an average of 11 jobs. Metal and mineral merchant wholesalers provided an average of 110 jobs during the first two quarters of 2007. Please note that the Labor & Workforce Development statistics are collected using different methods than the employment figures collected for this report; thus there is no direct correlation between the two sets of employment figures.

GOVERNMENT REVENUES FROM ALASKA'S MINERAL INDUSTRY

The State of Alaska mining laws grant the holder of a mining claim exclusive right to the locatable minerals in the ground covered by that mining claim. State mining claims have recording, rental, and other fees associated with them. Mining claim location certificates and recording fees must be recorded in the recording district office in which the claim is located within 45 days of the posting date. Recording fees change from time to time and the recording office should be contacted for the correct fee; recording fees are also posted at the following web site address: www.dnr.state.ak.us/ssd/recoff/fees.cfm. Rental fees under regulation 11 AAC 86.215 will either be \$25 (quarter-quarter-section location or 40 acres) or \$100 (quarter section location or 160 acres), and must be paid according to the instructions on the back of the certificate form. The first rental payment covers the period from the date of posting the claim to the following September 1st.

Upon prospecting, the discovery of a locatable mineral, and the staking of mineral location, annual labor must be performed on the location each year in the further development of the locatable mineral so that it can

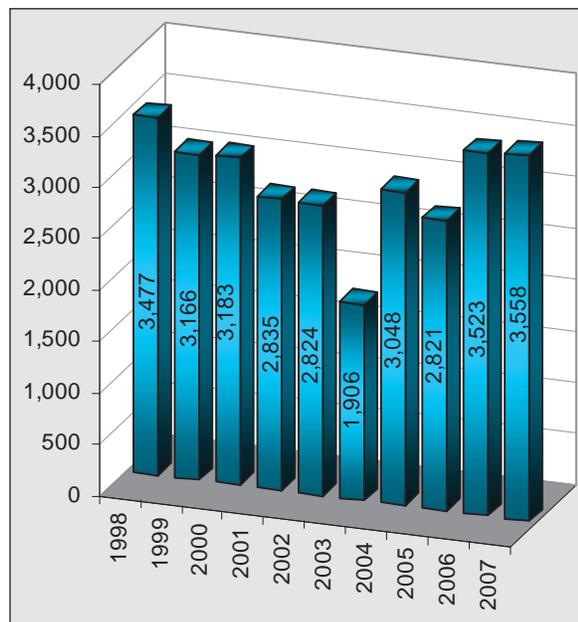


Figure 4. Total mineral industry employment in Alaska from 1998 to 2007.

be mined. The minimum amount of labor that must be performed is dependent upon the size of the location. For traditional or quarter-quarter-section meridian-township-range-section-corner (MTRSC) locations, a minimum of \$100 worth of work per year is necessary. For quarter-section MTRSC locations, a minimum of \$400 worth of work per year is necessary. The holder of a mining claim, leasehold location, or mining lease may instead make a cash payment to the State equal to the value of labor required (\$100 or \$400 per claim).

In 1989, the Alaska State Legislature enacted a new production royalty law, Alaska Statute 38.05.212, which requires holders of state mining locations to pay a production royalty on all revenues received from minerals produced on state land. The production royalty requirement applies to all revenues received from minerals produced from a state mining claim or mining lease during each calendar year. Payment of royalty is in exchange for and to preserve the right to extract and possess the minerals produced. The production royalty is 3 percent of net income as determined under the Mining License Tax Law AS 43.65, and regulation 15 AAC 65. Department of Natural Resources regulations 11 AAC 86.760–796 spell out the production royalty requirements.

The State of Alaska also receives revenue from material sales from state-owned land. Materials include sand, gravel, riprap, rock, limestone, slate, peat, and any other substances from the ground that are not applied

for through the location system for mining claims (for example, gold, silver, and other metals), or leasing (for example, energy minerals such as coal, oil, and gas). Materials are measured and sold in cubic yards. The price charged for materials depends on the type, or size, of sale, but prices are based on a competitive or fair market sales price of material in the area. The DNR information

office should be contacted for further information.

The mineral industry paid a total of \$142.4 million to the State of Alaska and Alaska municipalities in 2007 (table 3). These payments decreased by almost \$30 million from the \$172.3 million collected in 2006. Although the industry reported an overall record value and record gross production value in 2007, revenue

Table 3. Revenues paid to the state of Alaska and municipalities by Alaska's mineral Industry, 2002–2007

	2002	2003	2004	2005	2006	2007
State mineral rents and royalties^a						
State claim rentals	1,908,228	2,129,440	2,657,939	3,308,752	3,460,803	4,649,795
Production royalties	23,447	270,734	162,637	124,338	171,220	800,548
Annual labor	124,741	224,519	226,191	332,439	155,007	163,279
Subtotal	2,056,416	2,624,693	3,046,767	3,765,529	3,787,030	5,613,622
State coal rents and royalties						
Rents	256,927	237,912	236,532	257,112	337,764	253,376
Royalties	860,633	1,064,208	1,239,257	1,476,250	1,473,948	1,443,050
Bonus	0	0	0	129,880	10	0
Offshore Prospecting Permits	0	0	0	0	0	0
Subtotal	1,117,560	1,302,120	1,475,789	1,863,242	1,811,722	1,696,426
State material Sales						
Mental Health	151,993	134,512	76,267	129,409	89,634	24,835
Division of Land	1,595,708	542,311	467,360	944,905	1,582,769	2,615,810
SPCO	24,725	208,309	112,047	46,877	118,904	57,056
Subtotal	1,772,426	885,132	655,674	1,121,191	1,791,307	2,697,701
State mining miscellaneous fees						
Filing fees	3,000	4,700	1,300	8,465	965	1,750
Penalty fees	450	0	26,110	20,280	46,249	24,005
Explore incentive app filing fee	0	0	0	0	0	0
Bond pool payment	45,208	44,878	35,426	32,331	36,721	43,909
Surface coal mining app fee	2,530	1,005	3,116	3,150	10,897	10,458
APMA mining fees	11,975	15,113	14,550	17,131	17,475	20,877
Subtotal	63,163	65,696	80,502	81,357	112,307	100,099
State Fuel Taxes						726,563
State corporate income tax ^b	(221,936)	406,064	2,104,144	23,641,883	71,299,684	61,331,540
Mining License Tax ^{c-f}	351,387	3,224,684	10,317,238	18,637,996	79,141,526	54,408,227
State Total	5,139,016	8,508,389	17,680,114	49,111,198	157,943,576	126,575,078
Payments to Municipalities	9,703,208	10,510,048	10,999,663	11,975,892	14,388,329	15,827,501
TOTAL	14,842,224	19,018,437	28,679,777	61,087,090	172,331,905	142,402,579

^aIncludes upland lease and offshore lease rentals.

^bPreliminary data for 2007.

▶only subchapter C corporations pay income tax.

▶this report may not reflect 100% of the returns received in a year.

▶data from 2001 through 2006 has been updated to reflect revenue to the state for the succeeding fiscal year; for example, FY07 receipts are shown in calendar year 2006.

▶In FY2003 (calendar year 2002) more refunds were given than revenues received by the state.

^cIncludes metals, coal and material.

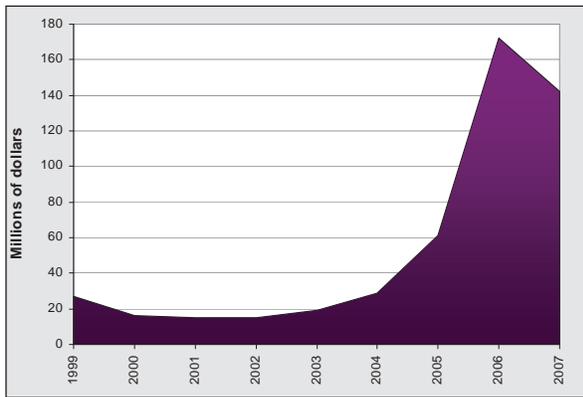
^dMining license tax has been adjusted to reflect actual receipts for the succeeding fiscal year for the period 2001 to 2006; see note for income tax above.

^eData does not match earlier reports.

^f2007 numbers are preliminary and are subject to revision.

returned to government was lower due to increased operating costs more than offsetting improved commodity prices. Mining license taxes decreased by 31.2 percent from 2006 values, following reduced profitability at all mines. Mining companies were the largest taxpayers in the City and Borough of Juneau and the Fairbanks North Star, Denali, and Northwest Arctic boroughs, with total payments of almost \$15.8 million. Teck Pogo Inc. also paid the City of Delta Junction \$500,000 as part of a payment in lieu of taxes (PILT) agreement in 2007. Teck Alaska Inc., operator of the Red Dog Mine, paid the Alaska Industrial Development & Export Authority (AIDEA) annual user fees of \$17.7 million for use of the State-owned road and port, the DeLong Mountain Regional Transportation System. The AIDEA payments are not included in the fees reported in table 3. Teck Cominco Ltd. paid NANA Regional Corp. \$58.1 million in FY07, ending September 30, 2008, as a net smelter royalty. This was an increase of 95.8 percent over the payment of \$29.7 million for FY 2006.

Revenue to the State of Alaska from mineral-indus-



try-specific fees, rent, sales, and royalties from 1999 to 2007 are shown in figure 5. Revenue has increased an average of 1,000 percent in the past 4 years (2004–2007) compared to the average revenue from 1990 to 2003.

ACKNOWLEDGMENTS

This report on the Alaska mineral industry is intended to provide current, accurate, and technically reliable information. The authors wish to thank all companies, agencies, and individuals that responded to the questionnaires or phone calls and provided information about their activities and operations. Without their voluntary and timely information this report would not be possible. DGGs mailed and emailed more than 700 questionnaires in December 2007 and continued sending additional questionnaires through 2008. We received 166 responses and followed questionnaire requests with phone calls and other means of contact. Dave Szumigala (DGGs) and Rich Hughes (Commerce) prepared the body of the text, tables, graphic illustrations, and appendices with information supplied by many individuals and with the assistance of staff from other agencies. Some photos and images used in this report were provided by members of the public and these contributions are greatly appreciated. Where appropriate, these people have been acknowledged in the text. Information and text previously compiled for DGGs Information Circular 57 were used extensively.

The cover design is by Joni Robinson. Paula Davis (DGGs) edited the final version, and Joni Robinson completed the layout and design. Commerce's Office of Economic Development paid printing costs.

Figure 5. Mining industry revenue to State of Alaska and municipalities from 1999 to 2007.

EXPLORATION

Exploration expenditures in Alaska during 2007 were more than \$329.1 million, 84 percent higher than the \$178.9 million spent in 2006. Figure 6 shows the location of the most significant exploration projects in Alaska during the year. At least 85 exploration projects in Alaska spent more than \$100,000 each in 2007 and 33 of those exploration projects spent more than \$1 million each. Total drill footage of 1,168,704 feet easily exceeded the 2006 total of 835,795 feet.

Increased exploration expenditures in Alaska mirror increased worldwide mineral exploration budgets. The increases in worldwide exploration expenditures resulted from a combination of increased spending by major mining companies, a significant reduction in the nega-

tive influence of industry consolidation from peak years 2000 and 2001, and higher spending by junior mining companies in response to stronger gold and base-metal prices. As in years past, most exploration funds (>80 percent) were from Canadian sources.

Figure 7 shows a graph of mineral exploration expenditures in Alaska from 1956 to 2007. Exploration expenditures per year are shown with raw (not adjusted for inflation) and adjusted values (inflation adjusted to 2007 dollars). Exploration expenditures over the last several years has exceeded any previous era of mineral exploration in Alaska over the past 50 years. Companies explored for a wide variety of mineral deposits in Alaska during 2007. Table 4 lists exploration expenditures by

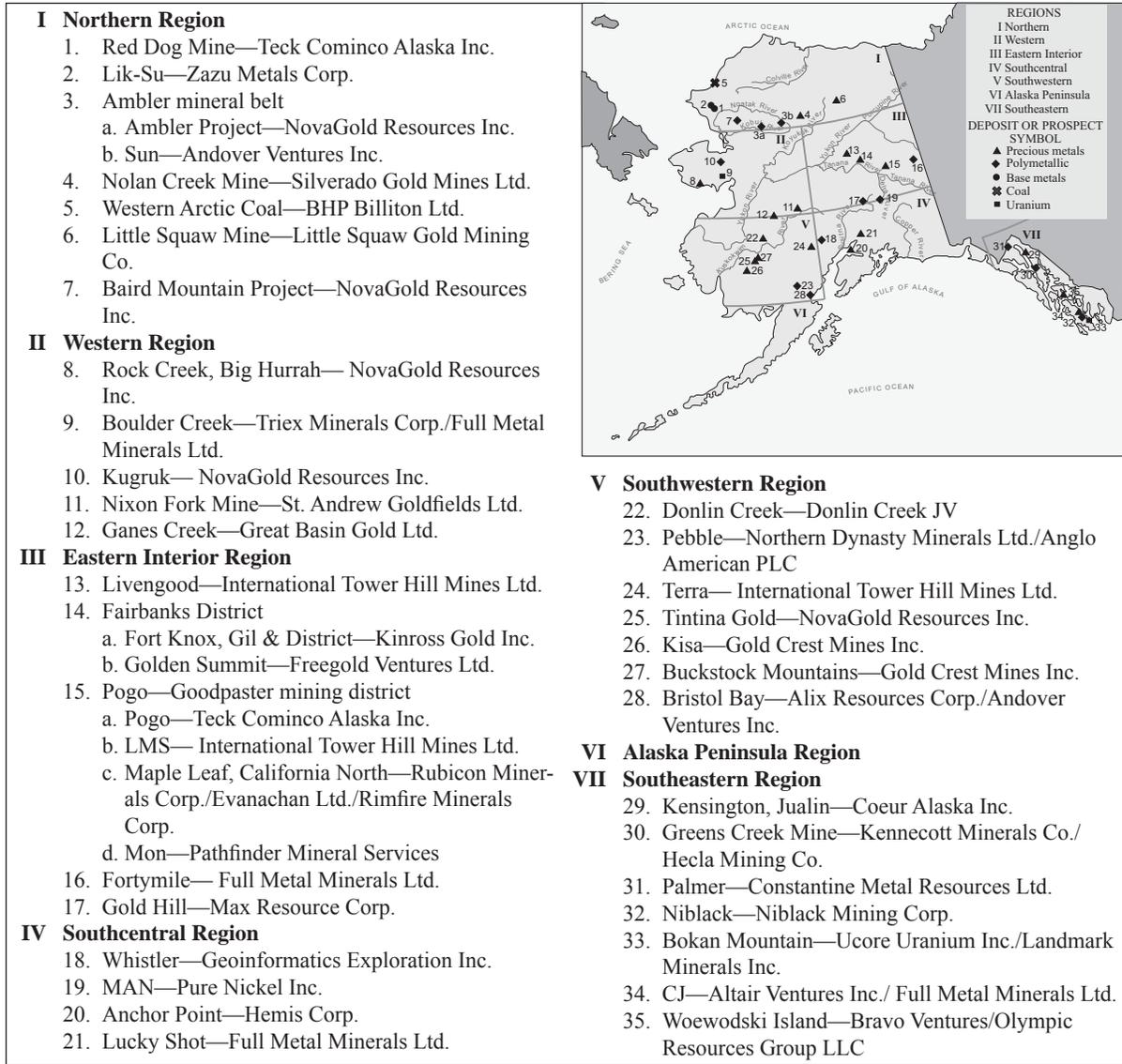
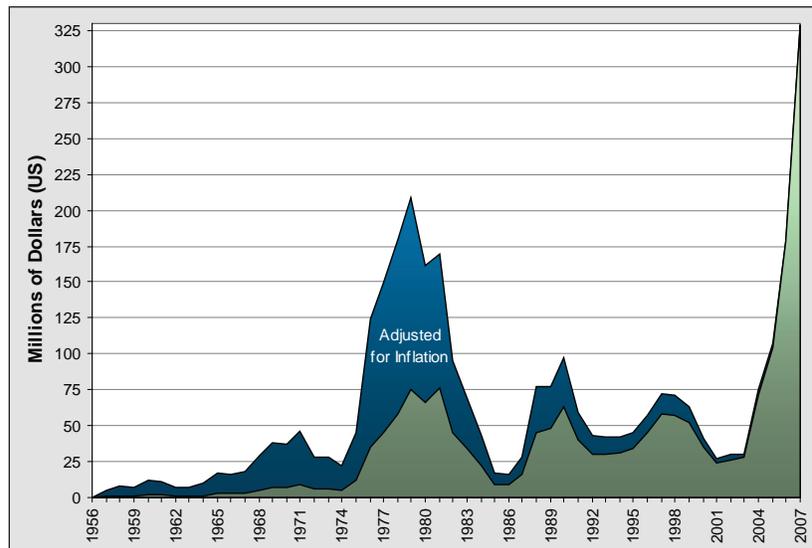


Figure 6 (above). Selected exploration projects in Alaska, 2007.

Figure 7 (right). Alaska mineral exploration expenditures, 1956–2007. Inflation adjusted to 2007 dollars.



commodity and figure 8 shows the data graphically. Record exploration expenditures were set for base-metal, polymetallic, and precious-metal deposits in 2007. Gold, grouped with other precious metals, remained a major exploration commodity, but exploration expenditures for deposits with a mixed group of metals (polymetallic) was also very strong. Platinum-group-element exploration expenditures in 2007 were slightly above the average expenditures from 2001 to 2006. Figure 9 shows 2007 Alaska exploration expenditures by deposit type. Copper-gold porphyry systems (grouped with polymetallic deposits in table 4) were the major exploration target in 2007, with \$102.9 million spent. More than \$87.8 million was spent on intrusion-related gold deposits and more than \$61.7 million was spent on various gold-quartz

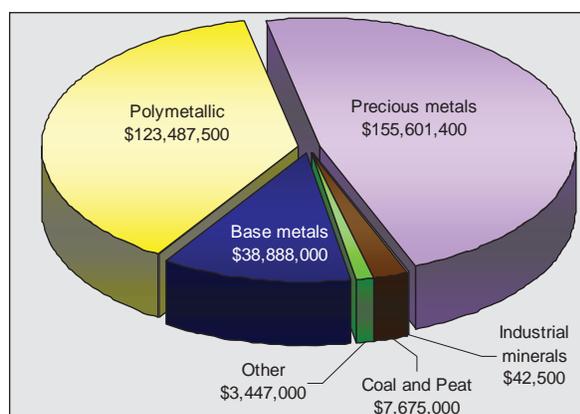


Figure 8. Exploration expenditures in Alaska in 2007 by commodity.

Table 4. Reported exploration expenditures in Alaska by commodity, 1981–2007

	Base metals	Polymetallic ^a	Precious metals ^b	Industrial minerals	Coal and peat	Other ^c	Total
1981	\$28,262,200	N/A	\$35,273,200	\$10,300,000	\$2,341,000	\$127,000	\$76,303,400
1982	31,757,900	N/A	10,944,100	--	2,900,000	15,300	45,617,300
1983	9,758,760	N/A	20,897,555	2,068,300	1,338,454	70,000	34,133,069
1984	4,720,596	N/A	14,948,554	270,000	2,065,000	279,500	22,283,650
1985	2,397,600	N/A	6,482,400	--	270,000	--	9,150,000
1986	1,847,660	N/A	6,107,084	170,000	790,000	--	8,914,744
1987	2,523,350	N/A	11,743,711	286,000	1,150,000	31,000	15,734,061
1988	1,208,000	N/A	41,370,600	160,200	2,730,000	--	45,468,800
1989	3,503,000	N/A	43,205,300	125,000	924,296	5,000	47,762,596
1990	5,282,200	N/A	57,185,394	370,000	321,000	97,000	63,255,594
1991	4,789,500	N/A	34,422,039	92,000	603,000	2,000	39,908,539
1992	1,116,000	3,560,000	25,083,000	25,000	425,000	--	30,209,000
1993	910,000	5,676,743	23,382,246	163,500	--	125,000	30,257,489
1994	600,000	8,099,054	18,815,560	225,000	2,554,000	810,000	31,103,614
1995	2,770,000	10,550,000	20,883,100	100,000	--	3,000	34,306,100
1996	1,100,000	11,983,364	31,238,600	400,000	--	--	44,721,964
1997	1,700,000	22,347,000	32,960,500	80,000	720,000	--	57,807,500
1998	1,000,000	13,727,000	42,441,000	12,000	87,000	--	57,267,000
1999	3,869,000	3,168,000	44,891,000	1,000	--	410,000	52,339,000
2000	8,545,000	3,933,000	21,579,000	58,500	--	736,100	34,851,600
2001	4,810,000	1,977,000	15,820,000	50,000	10,000	1,106,000	23,773,000
2002	1,700,000	5,162,000	17,342,000	185,000	--	2,113,000	26,502,000
2003	262,000	7,081,000	19,726,000	--	W	533,000	27,602,000
2004	3,100,000	40,237,000	26,954,000	213,000	50,000	258,000	70,812,000
2005	1,764,000	54,271,000	46,255,000	142,000	--	1,463,000	103,895,000
2006	5,069,000	81,073,000	89,793,000	20,000	2,394,000	580,000	178,929,000
2007	38,888,000	123,487,500	155,601,400	42,500	7,675,000	3,447,000	329,141,400
Total	\$173,253,766	\$396,332,661	\$915,345,343	\$15,559,000	\$29,347,750	\$12,210,900	\$1,542,049,420

^aPolymetallic deposits considered a separate category for the first time in 1992.

^bApproximately \$3.0 M spent on platinum-group-element exploration during 2007 (\$1.4M in 2006, \$4.4M in 2005, \$3.4M in 2004, \$2.4M in 2003, \$650,000 in 2002, \$2M in 2001).

^cIncludes diamonds and tantalum.

N/A = Not available.

-- Not reported.

W = Withheld; data included in "Other" column.

vein deposits. The sharp increase in exploration expenditures for base-metal-rich, polymetallic massive-sulfide deposits was notable, with almost \$59.4 million spent in 2007, compared to \$18.8 million spent in 2006 and \$10.0 million spent in 2005. About \$3 million was spent on platinum-group-element-nickel-copper ultramafic-hosted deposits and about \$14.3 million was spent on uranium, diamond, tin, coal, placer gold, and other deposit types.

Exploration occurred across Alaska, as shown in table 5, but more than \$180 million (or 55 percent of the exploration funds) were spent in southwestern Alaska (fig. 10). The eastern Interior and northern regions saw a sharp increase in exploration spending compared to 2006. Exploration expenditures dropped sharply in the Alaska Peninsula region during 2007 compared to 2006.

Two advanced exploration projects, Pebble and Donlin Creek, accounted for most of the exploration expenditures and drill footage in 2007. The Pebble copper-gold porphyry project in southwestern Alaska, with resources of 74 billion pounds of copper, 87 million ounces of gold, and 5.2 billion pounds of molybdenum, is a joint-venture project of Northern Dynasty Minerals Ltd. and Anglo American PLC, and was the largest exploration project in 2007. The 33.7-million-ounce Donlin Creek intrusion-hosted gold project in southwestern Alaska is a joint venture of Barrick Gold Corp., NovaGold Resources Inc., and Calista Corp.

Exploration was conducted in Alaska for a wide variety of metals and mineralization styles during 2007. Copper-gold porphyry projects in southwestern Alaska include the Whistler, Kawisgag, Mount Estelle, Pebble

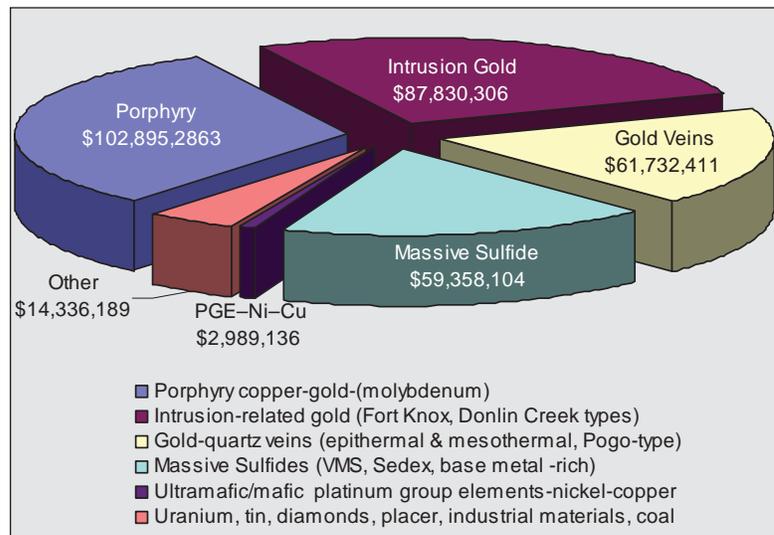


Figure 9. 2007 Alaska exploration expenditures by deposit type.

Table 5. Reported exploration expenditures and employment in Alaska, 2007

	Northern	Western	Eastern interior	South-central	South-western	South-eastern	Alaska Peninsula	Total
Exploration expenditures								
Placer	\$ 1,566,945	\$ 683,910	\$ 60,654	\$ 49,380	\$ 50,000	\$ 5,300	\$ --	\$ 3,216,189
Lode	47,731,571	8,154,967	59,232,912	10,392,316	180,448,688	19,789,980	174,808	325,925,242
TOTAL	\$49,298,516	\$8,838,877	\$59,293,566	\$11,241,696	\$180,498,688	\$19,795,280	\$174,808	\$329,141,431
Exploration employment								
Employment								
Workdays	16,158	7,422	13,191	5,769	75,827	10,236	144	128,747
Workyears ^a	62	28	55	22	292	39	1	499
Companies reporting ^b	9	17	30	21	19	14	2	112

^aBased on 260-day workyear.

^bSome companies were active in several areas.

-- Not reported.

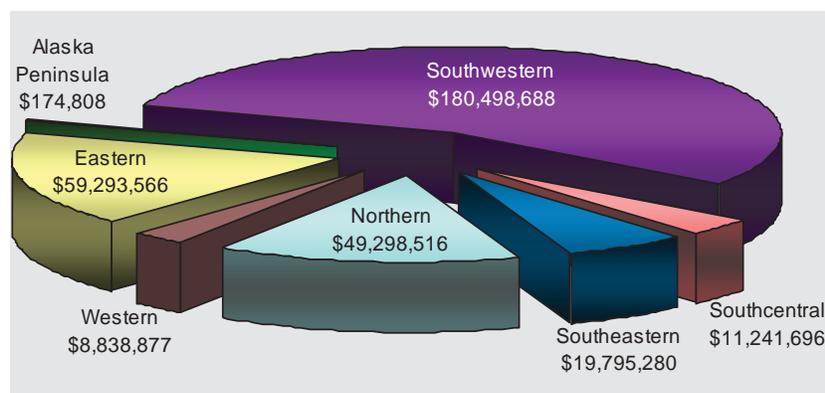


Figure 10. 2007 Alaska exploration expenditures by region.

South, and Chisna projects. Continued exploration around the Fort Knox and Greens Creek mines made discoveries that extended mine resources. Exploration for intrusion-related gold deposits in southwestern and Interior Alaska continued at the Livengood, Liberty Bell, Gold Hill, Kisa, and Vinasale projects. Work on high-grade gold-quartz veins was conducted at the Terra, Pogo, Lucky Shot, Golden Summit, Rob, Maple Leaf, Ganes Creek, Blue Quartz, and Little Squaw projects. Base-metal exploration was conducted at the Red Dog, Lik-Su, Arctic, and Sun SEDEX and volcanogenic massive sulfide (VMS) properties in the Brooks Range, at the Greens Creek Mine, the Palmer and Niblack properties in southeastern Alaska, and at the LWM project in the

eastern Interior region. Platinum and associated metals exploration continued at the MAN project in the Alaska Range and in the Goodnews Bay area. Other exploration continued for uranium (Boulder Creek, Bokan Mountain), diamonds (Yenlo Hills), placer gold (Little Squaw), and coal (Point Lay).

Table 6 summarizes the number of new and active (new plus existing) mining claims per year, from 1991 to 2007. The table lists the number of 20-acre federal mining claims, 160-acre state prospecting sites, and 40- or 160-acre state mining claims. About 6,607 new state mining claims (987,440 acres), 57 new state prospecting sites (9,120 acres), and 933 new federal claims (18,660 acres) were staked in 2007. State claim staking increased

Table 6. Summary of claim activity by acres, 1991–2007

Year	State Claims				State Prospecting Sites		Federal Claims	
	New (Active) 40 acre ^a	New (Active) 160 acre	Total (Active) 40 acre ^a	Total (Active) 160 acre	New	Total	New	Total
1991	3,277	0	37,862	0	747	1,723	1,299	23,222
1992	2,640	0	36,250	0	454	1,472	695	20,254
1993	2,120	0	34,340	0	1,412	2,259	601	9,298
1994	4,057	0	34,400	0	802	2,378	341	8,495
1995	4,512	0	30,464	0	1,030	2,725	376	7,766
1996	9,489	0	36,602	0	2,082	3,687	681	9,346
1997	8,678	0	42,836	0	2,480	5,305	1,872	11,320
1998	9,786	0	49,816	0	3,194	7,148	427	11,033
1999	11,978	0	56,107	0	1,755	7,600	308	10,176
2000	4,560	614	54,393	614	1,143	5,675	523	7,805
2001	858	907	49,627	1,503	27	3,091	464	8,248
2002	745	826	44,056	2,179	61	2,138	261	8,100
2003	856	2,603	38,076	4,387	101	1,857	676	8,424
2004	1,070	3,533	34,380	7,719	59	1,484	66	8,313
2005	806	4,502	34,066	11,551	128	1,612	411	8,200 ^b
2006	1,111	5,747	33,864	16,249	103	1,646	457	7,805 ^b
2007	576	6,031	31,305	20,208	57	1,625	933	8,820 ^b

Information provided by Jack Davis (Land Records Information Section, DNR) and Robert Brumbaugh, Karon Goslin, and John Hoppe (US-BLM). Table has been reorganized to conform with computer records available after 1990.

^aIncludes claim fractions varying from 1 to 39 acres.

^bEstimated.

2.5 percent from 2006 levels, while the number of new federal mining claims more than doubled from 2006 to 2007, and was more than 14 times as high as the number of new federal mining claims in 2004. The number of active federal claims reached its highest level in 8 years during 2007. State mining leases covered 48,029 acres of land, and offshore mining leases or permits totaled 131,841 acres. The amount of land in Alaska under claim increased from 2006 to 2007, with approximately 4.63 million acres of land covered by claims and prospecting sites in 2007. This acreage is an increase of 4.3 percent from 2006 levels and the largest amount of land covered by mining claims, prospecting sites, and mining leases for the past decade. Alaska had 8,820 active federal mining claims in 2007.

Prospecting sites and mining claims were staked across Alaska, with detailed information listed in Appendices A and B. Several large blocks of mining claims were staked in 2007. In southwestern Alaska, Anglo American Exploration Inc. staked seven hundred five 160-acre state mining claims covering 112,800 acres bordering Lake Clark National Monument just northwest of Lake Clark. Millrock Resources Inc. also staked 124 state mining claims in the area, abutting the Anglo claim group to the west. NovaGold Resources Inc. staked 125 claims (20,000 acres) north of Kisaralik Lake and west of Gemuk Mountain. Nearby, Gold Crest Mines Inc. staked the Luna claims west of the Kisa claim block, as well as four additional claim blocks 45 miles northeast of the Kisa prospect.

NovaGold Resources Inc. staked six hundred three 160-acre claims covering 96,480 acres on the Seward Peninsula west of the Kiwalik Mountains and east of the Kugruk River. Andover Ventures Inc. staked 87 state mining claims to the west of the Sun claim block in the central Brooks Range. At the Tanacross Project, Full Metal Minerals Ltd. staked seven claim groups covering syngenetic massive sulfide and copper–gold–molybdenum porphyry targets. Millrock Resources Inc. staked three blocks of state mining claims in the Fortymile mining district. Rhyolite Resources Ltd. staked 18 mineral claims at the White Gold property.

Niblack Mining Corp. staked 45 additional federal lode mining claims surrounding the core Niblack claim block in southeastern Alaska. Niblack Mining also staked the Ruby Tuesday property near the Niblack property with 120 federal mining claims and the Cayenne property on Prince of Wales Island. Constantine Metal Resources Ltd. staked 27 state claims in the area of the Palmer property, Quattera Resources Inc. staked 67 federal claims around the Herbert Glacier property near Juneau, Pure Nickel Inc. staked 115 federal mining claims at the Salt Chuck property, and Landmark Minerals Inc. staked 100 federal claims on Bokan Mountain.

NORTHERN REGION

Silverado Gold Mines Ltd. continued placer and lode mineral exploration programs concurrent with underground drift mining activities at the Nolan Creek placer gold mine. During 2007, more than 6,000 feet of reverse-circulation (RC) drilling in 103 drill holes was completed at the Jack London Bench, a possible extension of the Mary's East deposit to the north, and eastern extensions of the Ogden–Eureka Bench, where buried channels might be found. Out of the 130 drill holes, 52 show the presence of gold, ranging from 0.001 to 0.055 ounces of gold per bank cubic yard. Lode surface exploration completed during 2007 included the expansion of the VLF-EM geophysical survey and soil grid in the generalized area known as the 'Solomon Shear Zone', and a VLF-EM geophysical survey and soil grid in the 'Fortress' vein–fault area of gold-bearing quartz veins between Nolan Creek and the Hammond River. The geophysical data are interpreted by Silverado to show northwest-striking structures offsetting dominantly northeast structural trends. Seven trenches, totaling 1,420 feet, were excavated by backhoe in the Solomon shear zone and 168 select chip and continuous chip rock samples were collected during the trenching program and analyzed. Results included values as high as 5.22 ounces of gold per ton and 8.74 percent antimony over 16.4 feet, with some select samples containing up to 48.07 percent antimony. Twelve drill holes totaling 2,715 feet tested the swarm of thin, closely spaced, stibnite–quartz veins and veinlets on Pingle Bench north of Smith Creek. Seven holes totaling 2,301 feet tested the Workman's bench stibnite–quartz zone. Sample results include 19 feet grading 0.078 ounces of gold per ton and 3.24 percent antimony in hole 07SH01, 11.4 feet grading 0.057 ounces of gold per ton and 4.99 percent antimony in hole 07SH14, and 5 feet grading 0.057 ounces of gold per ton and 3.45 percent antimony in hole 07SH015. Silverado also collected 989 soil samples in the Workman's Bench, Hillside, and Fortress areas.

Zazu Metals Corp. concluded an agreement with GCO Minerals Co. and purchased a 50 percent interest in the Lik deposit near the Red Dog Mine for \$20 million, with the remaining interest held by Teck Cominco Ltd. Under the Lik Block Agreement, Zazu (as successor to GCO) may earn an additional 30 percent equity interest from Teck Cominco by qualifying expenditures prior to 2018 of \$25 million, which are to be adjusted for inflation indexing and escalations. The adjusted amount is estimated to be about \$40 million. Zazu completed an 11-hole diamond drilling program with an aggregate depth of 4,574 feet. The drilling confirmed previous drilling results, filled in some portions of the deposit, and provided samples for metallurgical testing. Drill intercepts include hole DDH-136 with 42 feet grading 9.78 percent

zinc and 1.61 percent lead starting at a 270-foot depth, hole DDH-137 with 139 feet grading 6.49 percent zinc and 1.67 percent lead starting at a 112-foot depth, hole DDH-138 with 84 feet grading 8.20 percent zinc and 2.44 percent lead starting at a 23-foot depth, and hole DDH-143 with 52 feet grading 14.05 percent zinc and 9.41 percent lead starting at a 255-foot depth.

Andover Ventures Inc. purchased the remaining interest in the Sun property to complete 100 percent ownership in the property, and staked 87 state mining claims to the west of the original claim block. Andover continued exploration of the Sun volcanogenic massive sulfide occurrences, including collecting 760 soil and rock samples and a 20-hole diamond drilling program totaling 14,750 feet. Drilling at the Main Sun deposit was spaced along fences approximately 500 feet apart with holes spaced approximately 160 feet down dip of the known mineral zones. Drill results include massive sulfide mineralization in 39 horizons ranging in thickness from 5 to more than 100 feet in 19 of 20 holes. The 39 horizons encountered averaged more than 22 feet in thickness of massive and semi-massive mineralization to a depth of 820 feet and a strike length of 4,600 feet. Average grade was 1.5 percent copper, 1.0 percent lead, 3.85 percent zinc, 1.84 ounces of silver per ton and 0.008 ounces of gold per ton. Selected drill intercepts include: hole Sun-07-10 with an upper, 35.8-foot intercept of 2.34 percent copper, 0.77 percent lead, 5.98 percent zinc, 1.99 ounces of silver per ton, and 0.008 ounces of gold per ton; and a 16.7-foot lower intercept of 4.34 percent copper, 0.58 percent lead, 2.76 percent zinc, 2.89 ounces of silver per ton, and 0.006 ounces of gold per ton; hole Sun-07-12 with a 106.4-foot intercept of 1.04 percent copper, 0.80 percent lead, 2.83 percent zinc, 2.37 ounces of silver per ton, and 0.008 ounces of gold per ton; hole Sun-07-13 with a 121.4-foot intercept of 1.17 percent copper, 1.85 percent lead, 7.26 percent zinc, 1.28 ounces of silver per ton, and 0.005 ounces of gold per ton; and hole Sun-07-14 with a 99.1-foot intercept of 1.06 percent copper, 0.69 percent lead, 2.03 percent zinc, 1.25 ounces of silver per ton, and 0.010 ounces of gold per ton.

Drilling by Andover Ventures indicated that mineralization at the Sun property extended to the Picnic Creek area 1,100 feet to the north of the main prospect, with the discovery of the Hot zone. Hole Sun-07-06 intersected 103 feet of the Hot zone with an average grade of 0.90 percent copper, 0.40 percent lead, 1.50 percent zinc, and 0.461 ounces of silver per ton. Hole Sun-07-17 intersected 28.2 feet grading 0.80 percent copper, 0.60 percent lead, 2.60 percent zinc, and 0.983 ounces of silver per ton. Andover reported intersecting a new thicker zone, averaging 116 feet in depth and 1.05 percent copper, 0.81 percent lead, 3.26 percent zinc, and 1.251 ounces of silver per ton in the three holes from the

southernmost fence. This new mineralization extends the main Sun deposit about 1,650 feet to the south and leaves it open in that direction.

Little Squaw Gold Mining Co. drilled 15,550 feet in 111 reverse-circulation placer drill holes, distributed on 11 drill lines spaced 500 feet apart. A total of 3,110 drill samples were collected. Drilling identified at least 7.5 million cubic yards of mineralized material in the Little Squaw Creek drainage. The pay horizon was intersected in 73 holes and averaged \$14.85 per cubic yard over a thickness of 83 feet using a gold price of \$600 per ounce, or \$22.27 per cubic yard at \$900 per ounce gold. Lateral limits and overall grade of the gold-bearing gravels containing the potentially economic “pay horizon” have not been fully delineated and other drainage systems remain to be tested. Lode exploration during 2007 on the Little Squaw property included soil and rock geochemical sampling, ground magnetic surveys, geologic mapping, and extensive excavator trenching. Trenching on the Summit prospect cut a 20-foot wide, east–west-trending structure with irregular quartz lenses that assayed 0.309 ounces of gold per ton.

Teck Cominco Ltd. continued exploration for additional SEDEX deposits in the Red Dog area. Drilling intersected encouraging sulfide intervals that warrant additional drilling in 2008.

BHP Billiton Ltd. drilled the coalfields in the western Arctic on land owned by Arctic Slope Regional Corp. In 2007, BHP drilled nine holes to test the thickness of the coal seams and evaluate the quality of the coal in the historic Kuchiak Mine area that Arctic Slope tested in 1994 (fig. 11). BHP also began environmental baseline studies and initiated cleanup activities at the Kuchiak Mine during the year. More than 45 people from Point Hope and Point Lay worked on the Western Arctic Coal Project at some point this year.

NovaGold Resources Inc. continued exploration at their Ambler property in the southern Brooks Range. The 2007 program included nearly 10,000 feet of core drilling in five holes. Two holes about 0.3 miles north of the Arctic deposit intersected a deeper limb of the complex fold containing the Arctic massive sulfide deposit, and up to 33 feet of weak mineralization and chlorite–talca alteration. SRK Consulting (U.S.) Inc. was contracted to upgrade the historical Ambler resource to an NI 43-101³ compliant estimate. The Ambler project is estimated to contain an indicated resource of 1.5 billion pounds of copper, 2.2 billion pounds of zinc, and 0.4 million ounces of gold, with an additional inferred resource of 0.9 billion pounds of copper, 1.3 billion pounds of zinc, and 0.3 million ounces of gold. The indicated resource

³Canadian Securities Administration reporting standard.

contains 18.51 million tons with an average grade of 4.14 percent copper, 6.03 percent zinc, and 0.023 ounces of gold per ton. The inferred resource contains 13.11 million tons with an average grade of 3.56 percent copper, 4.99 percent zinc, and 0.020 ounces of gold per ton. The average metal content exceeds 8 percent copper equivalent, as calculated by NovaGold.

NovaGold Resources Inc. continued exploration in the Baird Mountains. NovaGold acquired its initial land holdings in the area in 2006 by staking the Frost, Deadfall and Peak occurrences and subsequently optioned the Omar property from Aur Resources Inc. Fieldwork in 2007 included collection of 3,304 soil samples, 355 rocks, 144 silt samples, 45 pan concentrate samples, and 23 talus fine samples along with detailed and broad-scale mapping of the mineralized areas. NovaGold rock samples at the Omar prospect include up to 34.3 percent copper, 0.85 percent zinc, and 0.4 percent cobalt from select samples along chalcopyrite–bornite–chalcocite mineralized and brecciated dolostone. A 200 ppm copper anomaly in soils and talus fines defines a 2 mile by 0.3 mile area. Significant zinc and cobalt soil anomalies mimic the copper mineralization at the Omar prospect. Continuous channel sampling of a 154-foot-wide, steeply dipping zone of disseminated coarse-grained sphalerite and galena in recrystallized dolomite at the Deadfall prospect returned 39 feet of 10.1 percent zinc and 1.24 ounces of silver per ton. The zone trends eastward to a 2.5 mile by 1 mile zinc and lead soil and talus fine anomaly. Select rock samples from a massive barite–sulfide–fluorite zone with sphalerite, galena, bornite, and chalcopyrite at the Frost prospect contain up to 30.6

percent zinc, 20.2 percent copper, and 1.53 ounces of silver per ton. Soil and talus fine sampling defined a large copper and zinc anomaly at the Frost prospect. NovaGold also sampled smithsonite encrustations and coarsely crystalline disseminated sphalerite, galena, and massive barite along a 10-mile linear zone at the Peak prospect, with select rock samples containing up to 33.1 percent zinc and 4.1 percent lead.

WESTERN REGION

NovaGold Resources Inc. completed 33,532 feet of reverse-circulation drilling focused on exploration leases around the Rock Creek Mine, including significant work on the Saddle deposit, as well as the Mt. Distin lease area, adjacent state claims, and the Big Hurrah exploration area. Drilling around the pit margin at Rock Creek continues to show positive results, indicating potential resource expansion. At Big Hurrah, an extensive soil sample program identified at least three significant new gold-in-soil targets for further evaluation.

NovaGold also continued exploration on the Kugruk property, near the historic Independence Mine on the northern Seward Peninsula. Work in 2007 followed up targets identified in a 2006 airborne electromagnetic survey. NovaGold collected approximately 2,000 soil samples in 2007 from wide-spaced east–west lines placed across the Kugruk pluton and across other mineralized trends and geophysical anomalies on the property. Copper soil anomalies were associated with the margin of the Kugruk pluton and cover a second apparent intrusive center farther south. Silver, lead, and zinc anomalies were detected along the trend of the historic base-metal prospects. NovaGold also assayed historic drill core from 1978 drilling by Placid Oil Co. at a magnetite-rich copper–iron skarn on the east margin of the Kugruk pluton. Highlights from the NovaGold sampling of the remaining core include DDH20-78 with 127 feet of 60.8 percent iron and 0.11 percent copper, and DDH6-78 with 85 feet of 60.9 percent iron and 0.08 percent copper.

Mystery Creek Resources Inc., a wholly owned subsidiary of St. Andrew Goldfields Ltd., continued underground and surface exploration drilling at the Nixon Fork project. The drill program continued through the winter.



Figure 11. BHP Billiton Ltd. geologist examining coal seam near Point Lay. Photo provided by BHP Billiton Ltd.

Full Metal Minerals Ltd. and Triex Minerals Corp. completed first-pass drilling at the Boulder Creek uranium deposit, with 2,920 feet of drilling in eight holes. No new and continuous zones of significant radioactivity were intersected. Concurrent regional exploration discovered new uranium mineralization, named the Fireweed occurrence, located to the north in Death Valley. The regional program focused on two areas with strong airborne radiometric anomalies, and geologic settings similar to that of the Boulder Creek deposit. A total of 1,790 soil samples were collected over 73 line-miles at McCarthy Marsh, 18 miles west of Boulder Creek, and 230 soil samples were collected over 13 line-miles over the new Fireweed occurrence 15 miles north along-strike from Boulder Creek. A ground magnetic susceptibility survey was completed over the entire McCarthy Marsh grid, and a portion of the Fireweed grid. Detailed mapping and scintillometer prospecting were done in both areas. A total of 129 biogeochemical samples were also collected from these two grid areas. Uranium content ranges from 0.14 percent to 0.81 percent U_3O_8 in 21 rock samples collected from three main areas spanning the 1-mile width of the Fireweed prospect. The grid of 230 soil samples at Fireweed produced an anomaly area coincident with the area of mapped radioactive pebbles, with values of up to 145 ppm uranium in soil. A quick, first-pass drill test was done at Fireweed in September following completion of the main drill program at the Boulder Creek deposit. Five short drill holes were completed for a total of 876 feet. Overburden in four of five holes was only 5 feet thick. Quartz syenite is predominant, and in all five holes there are intervals with 2 to 3 times background radioactivity.

Millrock Resources Inc. formed a joint venture with Alix Resources Corp. (formerly NPN Investment Group) to explore the Divide property on the Seward Peninsula. Millrock will secure a 50 percent interest in the project by paying 50 percent of all costs associated with the Divide Option—a total of \$500,000 over a 5-year period. Additionally Millrock will issue 500,000 shares to NPN. The Divide Option will require Millrock and NPN to pay a sliding-scale net smelter return royalty ranging between 2 and 5 percent on production of precious metals and 3 percent on base and other metals. Five holes totaling 1,841 feet were drilled to test an 8,000-foot-long by 2,000-foot-wide gold-arsenic soil anomaly. Drilling highlights include 29.5 feet, starting at 157-foot depth, grading 0.044 ounces of gold per ton in hole DIV-07-03, 10 feet, starting at 306.5-foot depth, grading 0.29 ounces of gold per ton in hole DIV-07-04, and 27 feet, starting at 7-foot depth, grading 0.169 ounces of gold per ton in hole DIV-07-05.

Millrock also has the option to earn a 60 percent interest in the Inmachuk property from Full Metal

Minerals. Drilling focused on the Hannum zone, where a 2,500-foot drilling program consisting of five holes explored for carbonate-hosted silver–lead–zinc mineralization. The mineralized zone exposed at surface and in shallow historic drilling was intersected along strike and down dip. Hole 1002IM intersected 10 feet grading 1.25 percent zinc starting at 33-foot depth, hole 1004IM intersected 21.7 feet grading 2.06 percent zinc starting at 63-foot depth, and hole 1005IM had a 2-foot intercept grading 5.55 percent zinc and 3.66 percent lead, and a 3-foot intercept grading 4.56 percent zinc starting at 52 and 68.9 feet, respectively.

Andover Ventures worked on the Bulk Gold property 22 miles north of Nome. Andover drilled seven holes at Bulk Gold in 2007, totaling about 2,100 feet. The drilling focused on testing the down-dip potential of the old Hed & Strand vein in hole BG-07-01 as well as the 5,000-foot-long Dorothy Creek soil anomaly in holes BG-07-05 and BG-07-07. Drilling results for hole BG-07-05 contained a 48-foot intercept of 0.03 ounces of gold per ton and hole BG-07-07 had a 34.6-foot intercept of 0.017 ounces of gold per ton.

Freegold Ventures Ltd. optioned the Vinasale gold property near McGrath from Doyon Ltd., an Alaskan Native regional corporation, and staked additional claims adjacent to the property. Exploration included the collection of stream silt and pan-concentrate samples and flying a 1,090-line-mile high-resolution electromagnetic and magnetic geophysical survey over the project area.

Gold Crest Mines Inc. explored for gold mineralization hosted in quartz–carbonate–clay altered, stockwork-veined and brecciated carbonaceous schist and carbonate at the Kelly Creek Project, about 90 miles northwest of Nome, under an exploration lease and option to purchase agreement with Greatland Exploration Ltd. The 2007 program included collection of more than 330 rock, soil, and stream-sediment samples. This work expanded two known prospects, KC and Ox, and discovered three new prospect areas. The newly discovered Wolverine prospect has a 500-foot-wide by 1,500-foot-long soil anomaly with values ranging from 15 to 1,146 parts per billion gold.

Great Basin Gold Ltd. optioned the Ganes Creek gold property from Clark/Wiltz Mining Co. and conducted an extensive trenching program. Terms of the agreement require minimum 2007 exploration expenditures of \$800,000, followed by an additional \$1 million by the end of 2008 and a final \$1.2 million in expenditures by the end of 2009. Approximately 32,000 feet of trenching was completed with a Caterpillar D-7 and a Hitachi EX160 excavator. Some of the trenches were not sampled due to time constraints, but 1,685 rock samples, mostly continuous chip samples, were collected and analyzed.

Minor amounts of placer gold exploration continued across the region, especially on the Seward Peninsula. Paul Sayer conducted trenching at Ester Creek in the Innoko mining district.

EASTERN REGION

Kinross Gold Inc. continued mine site exploration at Fort Knox Mine by drilling for a possible Phase 7 mine expansion. More than 166,000 feet of drilling was completed by five drill rigs. The exploration contributed 1.2 million ounces of gold to year-end reserves.

Freegold Ventures Ltd. conducted a 679-hole, 40,100-foot drill program that resulted in the discovery of new high-grade veins and bulk tonnage shear zones on its Golden Summit project near Fairbanks. Shallow, closely spaced holes were drilled during the year in 18 different fences. These fences were oriented to provide cross sections through the 5,000-foot-long by 2,000-foot-wide zone of mineralization previously identified by surface trenching in 2005 and 2006 and with the first bulk sampling conducted in late 2006. Some of the higher-grade intersections from this drilling included 6 feet of 0.682 ounces of gold per ton (Fence 3); 3 feet of 1.070 ounces of gold per ton and 3 feet of 0.647 ounces of gold per ton, (Fence 4); 3 feet of 1.032 ounces of gold per ton, 6 feet of 0.636 ounces of gold per ton, and 9 feet of 0.738 ounces of gold per ton (Fence 5); 3 feet of 0.671 ounces of gold per ton, 3 feet of 0.519 ounces of gold per ton, and 3 feet of 0.528 ounces of gold per ton (Fence 6); 3 feet of 0.992 ounces of gold per ton and 3 feet of 0.662 ounces of gold per ton (Fence 9); 3 feet of 1.464 ounces of gold per ton, 3 feet of 1.015 ounces of gold per ton, and 3 feet of 0.639 ounces of gold per ton (Fence 11); 9 feet of 0.831 ounces of gold per ton (Fence 16); and 3 feet of 0.787 ounces of gold per ton (Fence 18). The 2007 drilling also identified multiple parallel zones of lower-grade mineralization over widths from 100 to 600 feet, which are traceable from fence to fence across the open-ended, mile-long zone. For example, Fence 1 had a 620-foot north-south width grading 0.020 ounces of gold per ton and fence 5 had a 275-foot-wide zone grading 0.035 ounces of gold per ton and a 300-foot-wide zone grading 0.020 ounces of gold per ton. These low-grade gold zones appear to widen as they trend from east to west. Gold grades compare favorably to the average mill feed grade at Fort Knox Mine in 2006. Freegold also continued the bulk sampling program in the Beistline shaft and the Fence 1 areas, and permitted and constructed a 1,200-ton-per-day portable gravity circuit in order to recover the gold from the bulk samples.

Freegold also worked on the Rob property in the Goodpaster area. High-grade gold mineralization was intersected in all eight core holes (1,529 feet of drilling)

drilled into the Gray Lead vein (including 0.846 ounces of gold per ton over 13 feet and 0.586 ounces of gold per ton over 13.5 feet) over a strike length of 170 feet and a down-dip length of 240 feet. Gold mineralization is in sugary-textured quartz veins, containing fine-grained bismuthinite and arsenopyrite, within a biotite augen gneiss host rock. Nine holes totaling 1,985 feet were drilled at the O'Reely vein and intersected non-mineralized or weakly mineralized (anomalous gold with values up to 0.061 ounces of gold per ton over 3 feet, and 0.027 ounces of gold over 17 feet) quartz veins hosted in altered biotite granodiorite.

International Tower Hill Mines Ltd. is earning a 60 percent interest from Anglo Gold Ashanti (USA) Exploration Inc. in the LMS project. The LMS project is located along the Pogo Mine winter access road approximately 9 miles from the paved Richardson Highway. International Tower Hill completed an extensive, deep auger drill soil sampling program across the LMS property, discovered two previously unknown areas of mineralization (at Liscum and NW Camp), and better defined the known NW and South Ridge anomalies. A total of 1,735 samples were collected at the LMS property in 2007, including traditional pit soil samples, deep auger drill soil samples, and mobile-metal-ion soil samples. International Tower Hill completed an initial mineral resource estimate for the Camp Zone deposit at its LMS project near Delta Junction. Gold mineralization within the Camp Zone is associated with a siliceous breccia horizon within a schist unit. The independent study determined an initial inferred gold resource of 167,000 ounces of gold at a cutoff grade of 0.009 ounces of gold per ton with an average grade of 0.026 ounces of gold per ton.

International Tower Hill discovered a potential large, bulk tonnage, road-accessible gold deposit on its Livengood project northwest of Fairbanks. Drilling results, with 15 core holes in 2007, outlined an open-ended zone of gold mineralization approximately 1.2 miles long and more than 0.3 miles wide, with an average mineralization thickness of 279 feet exceeding 0.007 ounces of gold per ton. Significant 2007 drill results are listed in table 7. Mineralization consists of gold in multiple stages of quartz veins associated with variable amounts of pyrite, arsenopyrite, stibnite, and minor to trace amounts of other sulfides. Mineralization is stratabound, controlled by structures and stratigraphy, primarily hosted in a folded sequence of volcanic and calcareous sedimentary rocks and averages 0.025 ounces of gold per ton. The target horizon lies under a large gold-in-soil anomaly, is 600 to 1,000 feet thick, and dips shallowly to the south. The new sediment-hosted mineralization is characterized by decalcification, chaotic fracturing, strong oxidation, and pervasive silicification. The highest grade areas of these

new zones are associated with strong decalcification and albitic alteration and commonly contain stibnite. Based on the highly encouraging 2007 results, International Tower Hill outlined an approximate 150-hole drill program for 2008.

International Tower Hill also worked on the Chisna project in the Chistochina area north of the Glenn Highway. Fugro World Wide was contracted to fly an aeromagnetic and electromagnetic survey over the prop-

erty, covering 46.3 square miles on 656-foot line spacing. Exploration identified two new dioritic porphyry systems with elevated hydrothermal magnetite and associated gold–copper mineralization. Preliminary work had anomalous gold and copper values from surface soil and rock chip sampling over an area of approximately 0.4 square miles centered on a partially exposed mineralized porphyry system. Initial rock samples from this area average 0.085 ounces of gold per ton and 0.68 percent

Table 7. International Tower Hill Mines Ltd. (Talon Gold) 2007 significant drill results at the Livengood property

Hole Number	From (feet)	To (feet)	Length (feet)	Gold Grade (ounces per ton)	Host rock
MK-07-12	259.4	270.4	11.0	0.109	upper volcanic unit
MK-07-12	360.6	393.4	32.8	0.043	upper volcanic unit and fault zone
MK-07-13	33.6	55.0	21.4	0.037	fault zone and shale
MK-07-13	320.8	394.0	73.3	0.023	upper volcanic unit
MK-07-13	931.5	953.8	22.3	0.033	lower volcanic unit
MK-07-14	114.0	147.0	33.0	0.018	fault zone
MK-07-15	107.6	200.8	93.2	0.048	upper volcanic unit and fault zone
MK-07-15	262.2	496.5	234.4	0.029	upper volcanic unit
MK-07-16	617.7	640.5	22.7	0.034	lower sandstone unit
MK-07-17	385.8	507.2	121.4	0.024	main volcanic unit
MK-07-18	45.3	67.0	21.7	0.036	sedimentary rocks
MK-07-18	253.6	282.4	28.8	0.290	sedimentary rocks
MK-07-18	307.4	335.3	27.9	0.281	sedimentary rocks
MK-07-18	398.0	655.8	257.8	0.032	volcanic rocks
MK-07-19	149.3	173.7	24.4	0.043	upper sedimentary rocks
MK-07-19	234.0	255.9	21.9	0.036	upper sedimentary rocks
MK-07-19	391.3	437.2	45.9	0.014	upper sedimentary rocks
MK-07-19	469.0	484.9	15.9	0.031	upper sedimentary rocks
MK-07-19	588.8	617.0	28.2	0.016	main volcanic unit
MK-07-19	621.4	656.2	34.8	0.016	main volcanic unit
MK-07-19	1,088.4	1,184.4	96.0	0.017	main volcanic unit
MK-07-20	138.0	194.0	56.0	0.031	upper sedimentary rocks
MK-07-20	232.1	292.0	59.9	0.020	upper sedimentary rocks
MK-07-20	417.0	607.2	190.2	0.035	main volcanic unit
MK-07-20	643.1	690.8	47.8	0.024	lower sedimentary rocks
MK-07-21	15.0	35.8	20.8	0.071	upper plate rocks
MK-07-21	442.9	495.3	52.3	0.031	main volcanic unit
MK-07-21	543.0	584.3	41.3	0.021	main volcanic unit
MK-07-21	607.0	651.0	44.0	0.016	main volcanic unit
MK-07-21	832.0	922.2	90.2	0.018	main volcanic unit
MK-07-22	221.1	241.2	20.0	0.069	sedimentary rocks
MK-07-22	261.2	366.7	105.5	0.022	sedimentary rocks
MK-07-22	468.4	476.2	7.8	0.086	sedimentary rocks
MK-07-22	1,018.2	1,191.7	173.4	0.017	volcanic rocks
MK-07-23	248.3	259.2	10.9	0.105	sedimentary rocks
MK-07-23	331.6	341.9	10.3	0.058	sedimentary rocks
MK-07-23	414.7	510.3	95.5	0.019	sedimentary rocks
MK-07-23	538.4	560.3	21.9	0.022	volcanic rocks
MK-07-23	616.3	824.2	207.9	0.023	volcanic rocks
MK-07-24	481.0	492.0	11.0	0.040	sedimentary rocks
MK-07-24	505.3	521.4	16.1	0.028	sedimentary rocks
MK-07-24	601.6	675.9	74.3	0.014	sedimentary rocks

copper. The average assay of 246 rock samples taken over a 2.75-square-mile area in the Chisna Southeast area was 0.011 ounces of gold per ton, 0.041 ounces of silver per ton, and 0.08 percent copper. Sixty-three soil samples were also collected in the Chisna Southeast area.

International Tower Hill continued work on the Coffee Dome project on Cleary Summit. Work in 2007 defined a number of high-grade gold veins in trenches, with rock sample results up to 4.871 ounces of gold per ton, and three large gold-in-soil anomalies along a 2.5-mile trend. International Tower Hill also signed a two-stage exploration agreement with option to lease with the University of Alaska for approximately 3,200 acres of land lying to the north of the existing Coffee Dome project.

International Tower Hill drilled its West Tanana project held under lease from Doyon Ltd. Highlights include a 4-inch-wide quartz vein with visible gold within a 1-foot drill interval in hole WT-07-02 assaying 0.45 ounces of gold per ton and a broader breccia zone returning 0.07 ounces of gold per ton over 14 feet. International Tower Hill interpreted, based on the drill results, a shallow easterly dipping zone of broad gold mineralization related to a series of stacked low-angle shear zones, with a possible high-angle feeder zone of quartz veins and breccia.

Full Metal Minerals Ltd. drilled the Fish and LWM prospects on the 40 Mile property (fig. 12). All six holes intersected carbonate replacement deposit-style massive sulfide mineralization. Drill hole LWM07-17 returned a 43-foot intersection grading 13.3 percent zinc, 4.64 ounces of silver per ton, 9.5 percent lead, and 0.3 percent

copper of carbonate replacement style massive sulfide mineralization. The hole was drilled 130 feet west of hole LWM07-04, which intersected 146.3 feet grading 15.9 percent zinc, 5.3 percent lead, and 2.23 ounces of silver per ton. Other drill intercepts include a 27.9-foot intercept in hole LWM07-05 grading 12.3 percent zinc, 8.0 percent lead, and 3.07 ounces of silver per ton; a 51.2-foot intercept in hole LWM07-07 grading 21.2 percent zinc, 8.7 percent lead, 0.22 percent copper, and 3.70 ounces of silver per ton; and a 21.3-foot intercept in hole LWM07-09 grading 31.6 percent zinc, 11.3 percent lead, 1.41 percent copper, and 13.54 ounces of silver per ton. Both drilling and ground magnetic geophysics data suggest that the carbonate package hosting the massive sulfide mineralization dips toward the south and trends toward Full Metal's Fish prospect, 4 miles to the northeast. Three step-out drill holes were completed at the Fish zinc-silver oxide, carbonate replacement prospect on the 40 Mile property. The deepest hole drilled at Fish (hole Fish07-09) attempted to intersect primary sulfides; however, this hole encountered 26.4 feet averaging 12.3 percent zinc in mineralized material that was still oxidized.

Full Metal also collected surface samples from the Eva, Drumstick, and Oscar prospects. A total of 14 rock samples were collected from subcrop and historic prospect pits at the Eva Prospect, with best silver results of 108.79, 57.17, and 37.33 ounces of silver per ton. The average of all samples of mineralized rock from the Eva prospect was 27.91 ounces of silver per ton, 23.6 percent zinc, 12.6 percent lead, and 0.9 percent copper. At Drumstick, three samples of mineralized rock were collected from prospect pits and two of these samples returned 21.6 percent zinc, 19.1 percent lead, 6.47 ounces of silver per ton; and 11.6 percent zinc, 8.1 percent lead, and 25.17 ounces of silver per ton, in addition to anomalous gold and copper. One hundred rock samples were collected from two chalcopyrite-magnetite skarn outcrops at Oscar. The average of 38 samples from the upper outcrop was 0.6 percent copper and 0.895 ounces of silver per ton. The average of 62 samples from the lower outcrop was 0.16 percent copper, 0.19 percent zinc, and 0.134 ounces of silver per ton. A historic soil grid was extended at the Oscar prospect by collecting 222 soil samples during 2007.



Figure 12. Helicopters were a vital transportation means during Full Metal Minerals Ltd.'s exploration program in the Fortymile mining district. Photo courtesy of Full Metal Minerals Ltd.

Teck Cominco Ltd. continued exploration on 1,230 Alaska state mining claims, mining leases, and millsite leases surrounding the Pogo Mine. Exploration was mostly a helicopter-supported two-rig surface drill program carried out from May 19 to September 7. Geological mapping, soil and rock sampling, and basic prospecting were also carried out in selected areas within the property. Exploration workers were housed at Pogo Mine's Lower Camp. Boart-Longyear (Salt Lake City, UT) was the drill contractor, providing two LF-70 type drill rigs. Helicopter services (H500D) were provided by Prism Helicopters (Wasilla). Approximately 2,800 drill core, soil, and rock samples were collected and analyzed for gold and other elements. Initial assays were done at the assay lab in the Pogo mill complex. Additional assays and geochemical work were contracted through Alaska Assay Labs in Fairbanks.

Rubicon Minerals Corp. acquired the New Horizon claims, a large group of mining claims in the Pogo area, from Evanachan Ltd., wholly owned by Robert McEwen, for a major stake in Rubicon through a minimum investment of \$10 million. Rubicon also optioned nearby claims (California North, ER-Ogo-Fire, Eagle-Hawk, California-Surf, and Bou-Swede) from Rimfire Minerals Corp. Under the terms of the Rimfire option agreement, Rubicon must complete expenditures totaling \$4.8 million in exploration over 6 years to earn a 60 percent interest in the five properties. Upon vesting, Rubicon may obtain an additional 10 percent interest in the properties by completing a feasibility study, and at Rimfire's election, may obtain an additional 5 percent (for a total of 75 percent). Project management, land management, and project-related work was carried out under the supervision of Avalon Development Corp. Prospecting identified a 1-square-mile area known as the Maple Leaf showing on the New Horizon claims, with 17 percent of samples (total 114 rock samples to date), containing an average of 0.15 ounces of gold per ton. Mineralization is characterized by sugary-textured quartz veins and, locally, stockwork veins associated with intrusive and country rock (gneiss and schist) containing trace to 2 percent sulfides containing arsenopyrite \pm bismuthinite \pm molybdenite and, locally, visible gold. A combination of grid and reconnaissance mapping, prospecting, and soil sampling (670 samples) was carried out on the California-Surf and Eagle-Hawk, Bou-Swede, and ER-Ogo-Fire properties. Weakly anomalous gold mineralization (up to 0.007 ounces of gold per ton over 2.6 feet) was encountered in a four-hole, 3,627-foot drilling program at the Maple Leaf showing. Rubicon also identified two new areas, the American Eagle and Tourmaline Ridge, with gold anomalies in quartz-veined granite and tourmaline-vein breccias and quartz-veined gneiss rock samples. Results from a seven-hole, 5,740-

foot drill program at the Cal-Surf property include Hole CN07-01, drilled to test the California North gold and arsenic soil geochemical anomaly, with an intersection of quartz vein mineralization at a depth of 238 feet that averaged 0.035 ounces of gold per ton over a 24.3-foot width, including an intercept of 0.065 ounces of gold over 8.2 feet. A later hole at California North intersected a 40-foot section of quartz-arsenopyrite mineralization that was anomalous in gold (maximum 70 ppb gold over 4 feet).

Rimfire completed work on their claims in the Pogo area before the joint-venture agreement with Rubicon.

Rhyolite Resources Ltd. completed a three-hole 912-foot diamond drill program on the Super Cub target area of the Delta property. The program tested a gravity geophysical anomaly defined in 2006, as well as the extension of siliceous-pyritic schist material found in outcrop. No significant mineralization was encountered. Rhyolite also staked 18 mineral claims at the White Gold property.

MAX Resource Corp. drilled the Gold Hill property in the Valdez Creek area with a five-hole program to test a broad molybdenum-copper-gold and geophysical magnetic anomaly. Hole DH-07-01 assayed a total of 0.048 percent molybdenum disulfide over the entire core length of 965 feet, with the best interval of 250 feet of 0.080 percent molybdenum disulfide beginning at 260 feet downhole. Copper mineralization occurs as chalcopyrite. Drill hole DH-07-03 returned 0.058 percent molybdenum disulfide over a core length of 1,000 feet, which included a higher grade intercept of 0.18 percent molybdenum disulfide (0.107 percent molybdenum) over 45 feet. Drill hole DH-07-05 had 0.0466 percent molybdenum disulfide over a core length of 822 feet, which included a higher grade intercept of 352 feet of 0.0706 percent molybdenum disulfide.

Metallica Resources Inc. conducted exploration at the Liberty Bell gold project in the western Bonfield mining district after optioning the property. Under terms of the agreement, Metallica will invest \$2 million in exploration expenditures and deliver a feasibility study by the end of 2011, or incur additional exploration expenditures totaling \$5.5 million and deliver a feasibility study by the end of 2015. Drilling is planned in 2008.

Midas Resources Ltd. withdrew from the Uncle Sam project prior to the 2007 field season.

At the Tanacross Project, Full Metal staked seven claim groups covering syngenetic massive sulfide and copper-gold-molybdenum porphyry targets. Full Metal completed mapping and soil sampling surveys on these targets.

Millrock Resources Inc. staked three blocks of state mining claims in the Fortymile mining district. Millrock is targeting disseminated and vein-style intrusion-related

lode gold deposits in the project area. The claim blocks are strategically located adjacent to ~135-million-year-old felsic to intermediate intrusions with downstream gold placers.

Linux Gold Corp. optioned the Lost Dog claims on Ester Dome in the Fairbanks area and conducted exploration for lode gold mineralization.

Placer exploration continued on a small scale across the region. Prospecting was conducted by Bed Rock Enterprises, Hard Head Mining dug holes and trenches on Montana Creek, Bill Lance prospected in the Jack Wade Creek area, and Rolling Stone Inc. staked and sampled mining claims (fig. 13).



Figure 13. Rolling Stone Inc.'s sand and gravel operation. The company conducted some exploration during 2007. Photo courtesy of Rolling Stone Inc.

SOUTHCENTRAL REGION

Geoinformatics Exploration Inc. announced the initial independent mineral resource estimate at its Whistler project near Rainy Pass. The indicated resource is estimated at 33.06 million tons grading 0.025 ounces of gold per ton, 0.072 ounces of silver per ton, and 0.24 percent copper, containing 840,000 ounces of gold, 2.37 million ounces of silver, and 159 million pounds of copper. The inferred resource is estimated at 147.7 million tons grading 0.019 ounces of gold per ton, 0.064 ounces of silver per ton, and 0.20 percent copper, containing 2.74 million ounces of gold, 9.44 million ounces of silver, and 573 million pounds of copper. In 2007, Geoinformatics completed seven drill holes (10,900 feet) on the Whistler Zone. Drill results include the identification of a new copper-rich area within the Whistler Zone that is interpreted to be a new high-grade zone or a western

extension of the Main Zone. Drillhole WH-07-02 successfully established a western extension to the Whistler Zone and intersected a new high-grade adjunct to the Main Zone, recording some of the highest grades seen to date at Whistler, including 433 feet grading 0.016 ounces of gold per ton, 0.16 percent copper, 0.021 ounces of silver per ton, and 154 feet grading 0.047 ounces of gold per ton, 0.40 percent copper, and 0.060 ounces of silver per ton. Drillhole WH-07-07, at the northern end of the Main Zone, included a 50.8-foot intersection grading 0.015 ounces of gold per ton and 0.55 percent copper, and a 531.5-foot intersection grading 0.013 ounces of gold per ton and 0.21 percent copper.

International Tower Hill Mines completed a preliminary exploration program on the South Estelle project, held under option from Hidefield Gold PLC. High-grade gold mineralization was found at the Shoeshine, Train, and Portage prospects in north-northwest-trending, steeply dipping veins. The Shoeshine vein system, generally hosted in the Mount Estelle monzonite batholith, has a currently defined strike length in excess of 2,300 feet, with numerous high-grade chip samples, including one quartz-sulfide vein sample with 6.94 ounces of gold per ton and 11.35 ounces of silver per ton, and a 1-foot-wide channel sample with 3.67 ounces of gold per ton.

Nevada Star Resource Corp. joined Pure Nickel Inc. in a reverse takeover in March. Pure Nickel continued exploration in the MAN area focused on the Alpha and Beta complexes with a program consisting of a 2,067 line-mile, helicopter-borne versatile time-domain electromagnetic (VTEM) and magnetometer survey by Geotech Ltd., with 180-foot terrain clearance for the VTEM system and 246-foot terrain clearance for the magnetic sensor. A soil-sampling program, completed by Mineral Exploration Services of Reno, over the Alpha and Beta complexes resulted in 2,282 samples collected at 164-foot spacing along north-south-aligned lines spaced 164 or 328 feet apart on a northwest-trending grid. Soil sample results confirmed and better defined previously identified geochemical anomalies, and elevated nickel and copper soil sample values were coincident with west-northwest-striking exposures of ultramafic rock layers within the complexes. Thirteen targets were drilled by Peak Exploration Ltd. on the Alpha Complex in 15 holes totaling 11,018 feet. Drilling intersected disseminated to small bleb sulfides within picritic to gabbroic rocks in all the holes over a 12-mile strike length.

The disseminated sulfide mineralization occurs over thick intervals, including 254 feet in hole MANPNI-07-001, 984 feet in hole MANPNI-07-006, 663 feet in hole MANPNI-07-007, 1,069 feet in hole MANPNI-07-008, and 918 feet in hole MANPNI-07-010. Geochemical results include an average of 0.26 percent nickel, 0.12 percent copper, 139 parts per billion palladium, and 62 parts per billion platinum from ultramafic rocks with disseminated sulfides over a 260-foot interval in drill hole MAN-PNI-001. Other drilling results include 70 feet of disseminated sulfides in serpentinized dunite in hole MAN-PNI-07-003 that assayed 0.26 percent nickel, 0.05 percent copper, 61 ppb platinum, 71 ppb palladium and 13 ppb gold; serpentinized peridotite and dunite interlayers in hole MAN-PNI-07-006 with a 36.7-foot interval averaging 0.22 percent nickel and 0.06 percent nickel; a 177-foot interval of interlayered and altered peridotite and dunite in hole MAN-PNI-07-007 that averaged 0.20 percent nickel, 0.02 percent copper, and trace amounts of platinum, palladium, and gold; a 216-foot interval of serpentinized dunite in hole MAN-PNI-07-011A averaged 0.21 percent nickel, and trace amounts of copper, platinum, and palladium; and a 135-foot interval of interlayered serpentinized peridotite and dunite in hole MAN-PNI-07-009 averaged 0.21 percent nickel, and trace amounts of copper, platinum, and palladium. Pure Nickel interprets the drill results to indicate that targeted electromagnetic conductors can be attributed to sulfide mineralization within the Alpha ultramafic complex. In addition, drill hole correlation and surface mapping by Pure Nickel suggest that the sulfide mineralization in the Alpha Complex is stratiform, and has a mile-scale lateral continuity. For example, a 600- to 1,000-foot interval of 0.45 percent disseminated sulfides can be traced for 1.62 miles between holes MAN-PNI-07-006 and MAN-PNI-07-007.

Full Metal Minerals dropped their exploration permit to explore for coal on Alaska Mental Health Trust Authority land near Chickaloon. The land had previously been mined for high-quality coking-grade coal and may contain up to 30 million tons of coal. Local residents had protested any exploration work, including Full Metal's plan for a drilling and trenching program, in the area.

Full Metal Minerals tested three of four known fault blocks at the Lucky Shot property during a 45,000-foot drill program, extending continuous gold mineralization to more than 1.5 miles along strike and 2,300 feet down-dip. Hole C07-92 from the Murphy zone returned 3.2 feet grading 1.59 ounces of gold per ton. Best intercepts from holes C07-105, 110, and 112 at the near-surface Coleman zone returned 3 feet grading 0.505 ounces of gold per ton, 1.6 feet grading 2.09 ounces of gold per ton and 1.6 feet grading 0.621 ounces of gold per ton, respectively. Hole C07-143 from the Lucky Shot zone

returned 1.6 feet grading 2.25 ounces of gold per ton. Full Metal began metallurgical testing, permitting, and feasibility studies in 2007 and plans to complete feasibility studies in 2008 as well as begin underground exploration and rehabilitation.

Hemis Corp. acquired Aspen Exploration Corp.'s Anchor Point gold project in the Cook Inlet area. Under the terms of the agreement, Aspen was paid \$50,000 at signing and will be paid this amount on each anniversary of the agreement in order to maintain Hemis's interest in the project. Aspen is entitled to a 5 percent production royalty, which may be taken in kind or in cash. Earthfield Technologies of Houston was contracted to process newer aeromagnetic data covering lower Cook Inlet. A preliminary oceanographic survey indicated that the water depth was less than 35 feet in many of the areas of interest. A geophysical survey consisting of a fathometer, side-scan sonar, and a sparker survey was conducted by Watson Geophysics. The goal of the sparker survey was to image the shallow subsurface sediments. Concurrently, a shallow coring program was conducted by Kinnetic Labs using a Vibracore® drill rig. Ultimately, cores were recovered from 11 of the 15 target areas, with gravel encountered in nine holes.

Pacific North West Capital Corp. sampled outcrops and mapped nickel, copper, and platinum-group-element mineralization hosted in dunite and lherzolite within the Tonsina Ultramafic Complex on the Tonsina property, centered on Sheep Hill in the northeastern Chugach Mountains. The Tonsina project is part of a reconnaissance agreement with Stillwater Mining Co. Sulfide-bearing outcrop grab samples contain up to 0.97 percent nickel and 0.58 percent copper. Petrographic examination revealed the presence of widespread pentlandite together with millerite and lesser covellite in select mineralized samples. Chip channel samples of chromite and sulfide-bearing outcrop contain up to 0.025 ounces of platinum per ton and 0.032 ounces of palladium per ton over a 6.4-foot interval.

Full Metal completed surface sampling and mapping at its Goldigger Project, located in the Talkeetna Mountains. Targets include multiple occurrences of epithermal gold-silver mineralization. Full Metal gave notice that it was dropping the option agreement for the property.

The State of Alaska, through DGGs, funded and acquired airborne magnetic and electromagnetic geophysical surveys for 180 square miles of the 715-square-mile Styx River survey area in the northeastern Lime Hills and northwestern Tyonek quadrangles. The surveys were conducted by Fugro Airborne Surveys Corp. and managed by Stevens Exploration Management Corp. Funding was provided by the Alaska State Legislature as part of the DGGs Airborne Geophysical/ Geological Mineral Inventory (AGGMI) program.

Diamond Gold Corp. continued to evaluate their properties in the Yenlo Hills and Kahiltna River area for diamond and gemstone potential. Gold Cord Development Corp. continued an exploration drift at the Gold Cord Mine and also conducted a small core drilling program.

Minor amounts of placer exploration occurred across the region. Most activity was in the road-accessible areas of the Petersville and parts of the Valdez Creek and Yentna mining districts.

SOUTHWESTERN REGION

Northern Dynasty Minerals Ltd.'s Pebble property, near Iliamna in southwestern Alaska, was Alaska's largest exploration project in 2007. Recent discoveries of copper, gold, and molybdenum metal resources at the Pebble property have outlined a possible open-pit resource at the Pebble West Deposit and a likely underground resource at the Pebble East Deposit. Exploration in 2007 concentrated on drilling the Pebble East deposit. Announced metal resources for the Pebble deposit total 74 billion pounds of copper, 87 million ounces of gold, and more than 5.2 billion pounds of molybdenum, making this the second-largest "porphyry copper" deposit in the world. During 2007, a wholly owned subsidiary of Anglo American PLC became a 50 percent partner on the Pebble Project, with a total stage investment commitment of \$1.425 billion, including spending \$125 million to complete the prefeasibility study and another \$325 million to complete a feasibility study. The companies formed the Pebble Partnership to continue the project forward.

Drilling continued in 2007 with up to nine drill rigs; 157,000 feet of core drilling was completed in 36 holes. Core drilling was contracted to American Recon Inc. and Boart Longyear Ltd. Geotechnical drilling was contracted to Foundex Pacific Inc. Drilling continued to intersect long intervals of higher grade copper–gold–molybdenum mineralization and drill results established a very high level of deposit continuity in the Pebble East deposit. Hole 7359 intersected 2,228 feet grading 1.42 percent copper equivalent comprising 0.92 percent copper, 0.015 ounces of gold per ton, and 0.035 percent molybdenum; hole 7374 intersected 2,449 feet grading 1.19 percent copper equivalent comprising 0.61 percent copper, 0.012 ounces of gold per ton, and 0.056 percent molybdenum; and hole 7386 intersected 2,570 feet grading 1.17 percent copper equivalent comprising 0.66 percent copper, 0.011 ounces of gold per ton, and 0.049 percent molybdenum. Other drill results include hole 7378 with a 1,846-foot intersection grading 1.45 percent copper equivalent comprising 0.91 percent copper, 0.020 ounces of gold per ton, and 0.033 percent molybdenum; hole 7379 with a 2,560-foot intersection grading 1.17 percent copper

equivalent comprising 0.74 percent copper, 0.009 ounces of gold per ton, and 0.040 percent molybdenum; hole 7381 with a 2,111-foot intersection grading 1.37 percent copper equivalent comprising 0.77 percent copper, 0.019 ounces of gold per ton, and 0.037 percent molybdenum; hole 7384 with a 1,186-foot intersection grading 1.27 percent copper equivalent comprising 0.74 percent copper, 0.019 ounces of gold per ton, and 0.026 percent molybdenum; and hole 7387 with a 1,961-foot intersection grading 1.44 percent copper equivalent comprising 0.89 percent copper, 0.020 ounces of gold per ton, and 0.026 percent molybdenum.

Preliminary mining engineering activities designed to assess Pebble East as a high-volume, low-cost underground mine continued through 2007 at the Pebble Project. Pre-feasibility-level metallurgical and comminution testwork on Pebble East mineralization continued in 2007. Environmental and socioeconomic baseline data studies continued and expanded the geographic scope of investigations to support Pebble East planning. This work was undertaken by more than 45 independent consulting firms. The Pebble Partnership facilitated 430 meetings with project stakeholders throughout Alaska. The 2007 workforce totaled 1003 employees, including 544 Alaskans. More than 140 local people from more than 16 communities in the Bristol Bay area were employed at the Pebble project last year, and significant expenditures were made on local goods, services, and salaries.

NovaGold Resources Inc. reported results from 498,688 feet of drilling completed in 2006 and 2007 at the Donlin Creek gold deposit. The exploration averaged 220 feet of mineralization per hole, grading 0.105 ounces of gold per ton. In excess of 230,000 feet of drilling was completed in 2007 by Barrick Gold Corp. The two best drill intersections during 2007 were hole DH-1556 with 981 feet grading 0.153 ounces of gold per ton and hole DH-1564 with 1,010 feet grading 0.134 ounces of gold per ton; both holes are in the East Acma area and extend mineralization beyond the current pit model boundaries.

Donlin Creek drill results from 2007 in the Acma area are: hole DC07-1499 with 11 mineralized intervals totaling 718.5 feet grading 0.092 ounces of gold per ton; hole DC07-1515 with nine mineralized intervals totaling 354 feet grading 0.124 ounces of gold per ton; hole DC07-1541 with eight mineralized intervals totaling 564 feet grading 0.148 ounces of gold per ton; hole DC07-1548 with six mineralized intervals totaling 328 feet grading 0.145 ounces of gold per ton; hole DC07-1550 with six mineralized intervals totaling 367.4 feet grading 0.210 ounces of gold per ton; hole DC07-1575 with eight mineralized intervals totaling 479 feet grading 0.119 ounces of gold per ton; hole DC07-1589 with ten mineralized

intervals totaling 452.8 feet grading 0.118 ounces of gold per ton; hole DC07-1593 with eight mineralized intervals totaling 351 feet grading 0.140 ounces of gold per ton; hole DC07-1595 with two mineralized intervals totaling 59 feet grading 0.326 ounces of gold per ton; hole DC07-1598 with six mineralized intervals totaling 377.3 feet grading 0.173 ounces of gold per ton; and hole DC07-1639 with 11 mineralized intervals totaling 623.4 feet grading 0.119 ounces of gold per ton.

Donlin Creek drill results from the East Acma area are: DC07-1649 with nine mineralized intervals totaling 236.2 feet grading 0.098 ounces of gold per ton; hole DC07-1663 with 13 mineralized intervals totaling 623.4 feet grading 0.143 ounces of gold per ton; and hole DC07-1667 with 18 mineralized intervals totaling 876 feet grading 0.094 ounces of gold per ton. These drill hole intercepts continue to demonstrate excellent gold grades in the East Acma target area and expand mineralization along the shallowly plunging Donlin anticline, which contains the rhyodacite porphyry intrusive bodies that host the majority of the Donlin Creek mineralization. Similar geology projects roughly 3,000 to 4,000 feet further to the east and south from this new East Acma drilling, with the potential to add substantially to the overall mineral resource.

NovaGold Resources announced in early 2008 that the measured and indicated resource for the Donlin Creek project increased by 77 percent to 29.4 million ounces of gold, with a gold grade of 0.072 ounces per ton, successfully converting a majority of the inferred resources to the measured and indicated category. New inferred gold resources are 3.46 million ounces, with a gold grade of 0.067 ounces per ton. The new resource estimate includes an additional 443,000 feet of drilling from 359 holes, incorporating all of the 2006 drill program and roughly 72 percent of the 2007 drill program at Donlin Creek. The remaining approximately 65,620 feet of 2007 drill results will be incorporated into future modeling. The resource was constrained within a conceptual pit based on a gold price of \$650 per ounce and using recent estimates of mining, geotechnical, and metallurgical parameters. Environmental baseline data collection, in addition to a wide range of engineering work, was completed in support of the feasibility study. NovaGold and Barrick Gold Corp. ended a bitter, year-long battle in November when the two companies agreed to advance the project as equal partners. The Donlin Creek project is managed by a new limited-liability company, the Donlin Creek LLC, which is jointly owned by NovaGold and Barrick Gold Corp. on a 50/50 basis. Work in the first half of 2008 will focus on completing a series of optimizing studies for power, logistics, processing, and production levels, and will integrate all data from the 2007 program into a final feasibility study.

NovaGold Resources also conducted exploration on four claim blocks totaling 583 Alaska state mining claims 20 to 40 miles south of Aniak near the Aniak River that were staked due to indication of clay alteration on ASTER imagery, anomalous reconnaissance stream silt or rock geochemical results, and favorable geology for a Donlin Creek type gold deposit. NovaGold collected 104 rock, soil, and silt samples during 2007 on the 6-mile-long Ash claim block and results include extensive arsenic anomalies with some low-level anomalous gold, including rhyodacite dike rock samples with up to 57 parts per billion gold. During the 2003 and 2007 field seasons, NovaGold collected 340 rock samples, 134 soil samples, and 287 stream-sediment samples on the large Timber claim block in an area where rhyolite dikes and quartz monzonite plugs intrude Cretaceous shale and volcanic rocks. Sampling returned gold values from rocks up to 1.02 ppm. The best gold concentrations were from areas of quartz veining in rhyolite, rhyodacite, and siltstone in the central and south-central part of the Timber claims. Geochemical results from 121 samples collected during 2003 and 2007 on the Kipchuk claim block include a few detectable gold values up to 81 ppb and some anomalous arsenic, mercury, bismuth, and antimony results associated with clay alteration along northeast-trending structural zones. NovaGold collected 202 rock and soil samples in 2003 and 2007 from rhyolite domes intruding Cretaceous Kuskokwim Group sedimentary rocks on the Cone claim block. Gold values reach 1.3 ppm with numerous samples in the 0.5 to 0.75 ppm range. High gold, arsenic, and antimony values are associated with northeast-trending low sulfidation quartz veining in the rhyolite dome complex in a zone approximately 300 feet across.

International Tower Hill holds a 60 percent joint-venture interest in the Terra project, with the balance held by AngloGold Ashanti (U.S.A.) Exploration Inc. Drilling, including 12 holes in 2007 at the Ben Zone, three holes at the Ice Vein area, and other exploration work, define a 3-mile-long, high-grade gold-quartz epithermal vein system from the Fish Creek area to the north, through the Ben Vein area, to the Ice area 2 miles to the south. Significant drilling results in 2007 from the Ben Vein include 3.8 feet grading 0.356 ounces of gold per ton in hole TR07-21; 1.61 feet grading 1.781 ounces of gold per ton in hole TR07-22; 5.61 feet grading 0.604 ounces of gold per ton in hole TR07-26; 8.14 feet grading 0.821 ounces of gold per ton in hole TR07-27; and 7.07 feet grading 0.488 ounces of gold per ton in hole TR07-28. All three holes drilled at the Ice target intersected a previously unknown high-grade gold vein zone. Drillhole TR-07-29 intersected 2.2 feet grading 0.197 ounces of gold per ton and 7.94 feet grading 0.278 ounces of gold per ton; hole TR-07-30 intersected 16.57

feet grading 0.115 ounces of gold per ton and 5.35 feet grading 0.107 ounces of gold per ton; and hole TR-07-32 intersected 1.57 feet grading 0.66 ounces of gold per ton. An independent study by Mineral Resource Services Inc. and Giroux Consultants Ltd. based on 20 drill holes determined an initial inferred resource estimate of 168,000 ounces of gold and 318,000 ounces of silver at a cutoff grade of 0.146 ounces of gold per ton, having an average grade of 0.356 ounces of gold per ton, and 0.674 ounces of silver per ton over an average 7.55-foot width. Gold in the Ben Vein deposit occurs as native gold and electrum with associated silver minerals. Initial gold characterization studies indicate good gravity recovery results (79 percent as native gold, 10 percent as gold in sulfide concentrate). International Tower Hill provided notice on November 5 to AngloGold Ashanti (U.S.A.) Exploration Inc. that it had incurred sufficient expenditures to vest its 60 percent ownership in the project. AngloGold had 90 days to decide whether or not to exercise its right to earn back an additional 20 percent interest in the project by incurring \$4 million in expenditures over the next 2 years.

International Tower Hill also identified a 5-mile-long belt of precious-metal-rich massive sulfide mineralization related to Cretaceous intrusive rocks in the region. The BMP project targets copper–silver mineralization hosted in Paleozoic sedimentary rocks in the Farewell district. A very unusual style of skarn mineralization was discovered at the 6120 Prospect where the average grade

of 22 outcrop samples collected was 2.1 percent copper, 0.09 ounces of gold per ton, 0.87 ounces of silver per ton, 0.14 percent nickel, and 0.06 percent cobalt.

Andover Ventures has several properties in the Iliamna Lake region under option from Bristol Bay Native Corp. and held in a 50 percent joint-venture with Alix Resources Corp. (formerly NPN Investment Group). Historic drill core from the Kemuk iron prospect was re-logged and analyzed during the spring of 2007, but no significant platinum-group-element mineralized zones were detected. Andover conducted first-pass geological and geochemical examination at the Samuelsen, Chilikat West, and Chilikat East prospects. A total of 542 samples were taken from the properties.

Andover Ventures optioned a 50 percent interest in the KUY, Fog, and Kamishak properties to Alix Resources Corp. Four core holes totaling 2,602 feet were drilled at KUY in August with holes KUY-08-07 and KUY-09-07 encountering significant clay (kaolinite?) alteration in dacitic rocks with up to 15 percent pyrite with disseminated chalcopyrite and veinlets. Induced polarization (IP) and resistivity surveys at the Kamishak property in 2007 detected significant anomalous zones outside of previous drilled areas. No work was completed on the Fog Lake property in 2007.

Gold Crest Mines Inc. completed a total of 3,102 feet of diamond drilling in six drill holes at the Kisa property (fig. 14). Broad zones of weak to moderate alteration and low-grade mineralization in sedimentary



Figure 14. Drilling on precipitous terrain at Gold Crest Mines Inc.'s Kisa property. Note the drill rig and waterline just right of center in the photo. Photo provided by Gold Crest Mines Inc.

and intrusive lithologies were observed in holes K07-2 through K07-6. A 378.5-foot intercept averaged 0.02 ounces of gold per ton, with an included interval of 0.252 ounces of gold per ton.

Gold Crest Mines identified new mineralized dikes through mapping, sampling, and about 2,100 square miles of airborne geophysical work. The Luna claims were staked west of the Kisa claim block, as well as four additional claim blocks 45 miles northeast of the Kisa prospect. Gold mineralization is hosted in calcareous siltstone, chert, and tuffaceous sedimentary rocks, as well as in porphyritic intrusive rocks.

Pacific North West Capital Corp., with approval from Calista Corp., entered into a joint-venture agreement with Stillwater Mining Co. on the Goodnews platinum project. Stillwater can earn a 50 percent interest in the project by spending \$4 million by December 31, 2010, and may elect to increase its interest to 60 percent by incurring an additional \$8 million in exploration expenditures within an additional 2-year period or upon completion of a feasibility study, whichever occurs first. Stillwater may increase its interest to 65 percent by arranging for 100 percent of the project financing required to place the property into commercial production within an additional 3 years. Pacific North West collected 651 rock outcrop grab samples, 26 coarse wash pan concentrate samples, and 110 auger soil samples during 2007. Rock samples of chromite-bearing dunite assayed up to 0.067 ounces of platinum per ton at the Last Chance prospect at the head of Dowry Creek on Red Mountain. Magnetite-clinopyroxene veins cutting dunite are also present but have lower platinum/palladium ratios. The bedrock platinum anomaly at the Last Chance prospect measures 2,500 feet by 575 feet, aligned lengthwise in a north-south direction with 164 feet of vertical exposure. A 650-foot by 115-foot tear-shaped anomaly, with greater than 50 parts per billion platinum was defined by an auger soil sampling program at the Susie West prospect. Soil sample results of soils derived from clinopyroxene-rich rocks ranged up to 432 parts per billion platinum. Rock sample results from wehrlite outcrops on the southwestern ridge of Susie Mountain at the Rock Mite prospect expanded surface mineralization. Seven of 20 rock samples had assay results greater than 100 parts per billion platinum, with the highest result being 603 parts per billion (0.018 ounces of platinum per ton) platinum.

Full Metal Minerals and Highbury Projects Inc. announced a gold discovery at the Moore Creek property. Three new discoveries (Spring Zone, Troy Zone, and Broken Shovel Zone) were made during a two-phase trenching program, with the best result of 0.260 ounces of gold per ton over 36 feet at the Spring Zone. Gold mineralization is hosted in steeply dipping sheeted quartz

veins that range from 0.4 to 4 inches thick, and are hosted within pervasive tourmaline altered and silicified monzonite intrusive rock. Forty rock samples were taken from the seven trenches in the Spring Zone. Quartz veins at the Troy Zone, immediately north of the Spring Zone, were tested with 177 bedrock and colluvium samples from trenches. One quartz vein in the Troy Zone was traced for more than 160 feet and sampled in three locations, with analytical results of 2.581 ounces of gold per ton, 1.05 ounces of gold per ton, and a 10-foot channel sample of 0.222 ounces of gold per ton. Three trenches were completed at the Broken Shovel prospect, about 600 feet north of the Troy Zone, and 12 rock samples were collected. The best sample result was 0.112 ounces of gold per ton, 32.229 ounces of silver per ton, and highly anomalous bismuth, arsenic, and mercury levels.

Millrock Resources Inc. optioned and agreed to a joint venture with Liberty Star Uranium and Metals Corp. at the Bonanza Hills property. Millrock will have the option to secure a 60 percent interest in the project by expending a total of \$3.5 million and by issuing a total of 1 million shares of Millrock over a 4-year period. Millrock also staked 124 state mining claims on another property with similar geologic attributes about 20 miles to the south of the Bonanza Hills property and centered on an anomalous airborne magnetic feature. Anglo American Exploration Inc. staked a much larger area abutting and to the east of the claim group.

Full Metal Minerals signed an option agreement with Freeport-McMoRan Copper and Gold Inc. under which Freeport can earn a 60 percent interest in the Pebble South property. The agreement includes funding \$1.8 million in exploration expenditures over 4 years, and a minimum of 6,400 feet of drilling in the first year. Freeport can earn an additional 20 percent interest by funding all expenditures related to the property through and including a decision to build a mine with a capacity of at least 30,000 tons per day of ore.

During the spring and summer of 2007, Full Metal staked multiple copper-gold-molybdenum porphyry targets in Alaska, and conducted reconnaissance-scale mapping and sampling programs. Full Metal Minerals subsequently signed an option agreement with BHP Mineral Services Co., a subsidiary of BHP Billiton, in which BHP Billiton can acquire up to an 80 percent interest in Full Metal's six copper-gold-molybdenum porphyry targets in Alaska. BHP Billiton can earn an initial 60 percent interest in the properties by incurring \$2.5 million in expenditures over 36 months, and acquire a further 20 percent interest by incurring an additional \$3.5 million within 36 months of exercising the initial option.

Goldmark Minerals Ltd. entered into an agreement to acquire Geocom Resources Inc.'s interest in the Il-

iamna project, previously explored under a joint-venture agreement by TNR Gold Corp. and Geocom Resources Inc. Goldmark would purchase a 52.5 percent interest in the H claim section and a 38.5 percent interest in the D claim section of the copper porphyry Iliamna project. The acquisition was under review at year's end.

Barrick Gold Corp. explored for intrusion-related gold on the Julian Creek property. Newmont Mining Corp. conducted regional gold exploration, including geochemical and geophysical surveys, across southwestern Alaska.

Ray Hanson recently sold all of his patented ground and federal mining claims in the Salmon River drainage area and on the flanks of Red Mountain in the Goodnews Bay mining district to XS Platinum Ltd., an offshore venture-capital firm based in the U.K., with major business connections in Australia. Hanson retained a 10 percent net smelter return.

TNR Gold Corp. mapped and sampled at the Shotgun property to identify drill targets along extensions of the Winchester zone.

Lyman Resources conducted some exploration work in the Donlin Creek area during their placer mining activities (fig. 15). Placer gold exploration was also conducted in the Nyac mining district.



ALASKA PENINSULA

Metallica Resources Inc. conducted mapping, geochemical sampling, and water sampling at the Bee Creek and the Kawisgag prospects.

SOUTHEASTERN REGION

Greens Creek Mining Co. continued surface and underground exploration programs at Greens Creek Mine. Most of the underground exploration focused on the silver-rich 5250 North Extension zone and the West Gallagher zone. In the 5250 zone, a hole was drilled 1,000 feet above and along strike of the known reserve and resource and intersected silver grades of 30 ounces per ton with 18 percent zinc and lead. The surface exploration program conducted in 2007 consisted of 17,540 feet of drilling in 14 holes and focused on identifying resource extensions in proximity to the current Greens Creek infrastructure, as well as identifying "mine horizon" rocks and defining target areas with soil geochemical sampling, geologic mapping, and geophysical surveys elsewhere on the property that could represent a whole new deposit. Drilling included work at the Little Sore, Upper Gallagher, and West Gallagher prospects. Three holes drilled from the West Gallagher East drillpad successfully intersected multiple fold repeats of the mine contact along 1,200 feet of strike length and show that there are still significant areas east and west of the Gallagher Fault that remain prospective. A new surface drill hole from the North Big Sore drillpad successfully intersected the mine contact zone intersected last year. Although not mineralized, these results are significant because for the first time an altered mine contact zone has been intersected to the east of the East Ore trend. These drilling results open up a new area to explore for mine extensions in close proximity to underground infrastructure.

Niblack Mining Corp. continued surface exploration on the Niblack volcanogenic massive sulfide property. Initial drilling during the 2007 surface program focused on expanding the South Lookout Zone, which is several hundred feet south and parallel to massive sulfide of the main Lookout Zone trend. The surface exploration program plan included at least 12,500 feet of diamond drilling in 17 holes. Drill hole LO-195 intersected 21.3 feet of massive sulfide grading 0.065 ounces of gold per ton, 1.546 ounces of silver per ton, 6.16 per-

Figure 15. Spencer Lyman collecting dirt and gravel to pan from a prospect hole near Crooked Creek. Photo courtesy of Lyman Resources Alaska Inc.

cent copper, and 8.19 percent zinc, within a wider zone grading 0.040 ounces of gold per ton, 1 ounce of silver per ton, 3.56 percent copper, and 3.16 percent zinc over 61.3 feet. A second zone of high-grade massive sulfide intersected in hole LO-195 graded 0.268 ounces of gold per ton, 3.850 ounces of silver per ton, 7.11 percent copper, and 6.80 percent zinc over 10.3 feet. A total of ten holes were drilled in the South Lookout Zone in 2006 and 2007. The average of all 2006 and 2007 mineralized intersections is 27.3 feet grading 0.086 ounces of gold per ton, 1.342 ounces of silver per ton, 2.58 percent copper, and 3.64 percent zinc. Additional drilling in 2007 focused on other targets on the property including the Dama Zone and the Trio Zone. Drilling at the Trio Zone included drill hole LO-206, which intersected 34.9 feet of massive sulfide and stockwork mineralization grading 0.098 ounces of gold per ton, 1.429 ounces of silver per ton, 3.46 percent copper, and 4.49 percent zinc, and drill hole LO-207, testing the sulfide horizon 130 feet down dip of LO-206, which intersected 18.6 feet grading 0.118 ounces of gold per ton, 1.604 ounces of silver per ton, 2.52 percent copper, and 5.31 percent zinc. Drilling at the Dama Zone in hole LO-203 intersected stockwork mineralization grading 0.54 percent copper over 60 feet, and 1.1 feet of massive sulfide grading 0.064 ounces of gold per ton, 2.071 ounces of silver per ton, 10.8 percent copper, and 8.18 percent zinc.

Following a comprehensive permit review process, Niblack Mining Corp. began an underground exploration program in September 2007 (fig. 16). Niblack planned to drive an adit approximately 6,000 feet to provide access for 30,000 feet of underground drilling at the Mammoth Zone of the Niblack property during late 2007 and through 2008. The new access would allow the company to test more than 1.2 miles of massive-sulfide-favorable stratigraphy and provide for year-round exploration. Niblack Mining selected J.S. Redpath Corp. as the underground development contractor at the Niblack project. Underground drilling began in mid-November and three holes were completed by year's end. Approximately 680 feet of adit had been completed by year's end.

Niblack Mining staked 45 additional federal lode mining claims surrounding the core Niblack claim block. The Ruby Tuesday volcanogenic massive sulfide prospect, 10.5 miles southeast of the Niblack property, was also staked with 120 federal mining claims. The property includes two major zinc-copper-gold-silver showings. Niblack Mining also staked a new copper-zinc-silver-gold volcanogenic massive sulfide property, the Cayenne property, on Prince of Wales Island. The Cayenne property includes the former-producing Khayyam and Stumble-On deposits. Mineralization at the Cayenne property consists of at least six near-vertical stratiform massive and semi-massive sulfide lenses of coarse-grained pyrite, chalcopyrite, sphalerite, and pyrrhotite. Sulfide lenses are elongate and are as much as 20 feet thick and 550 feet long. Work completed on the Cayenne property in 2007 included reconnaissance geologic work, limited rock sampling, and a CSAMT geophysical survey. The CSAMT survey was completed on four survey lines for a total of 1.5 line miles. Multiple strong conductors were identified at depth, some of which correlate well with known sulfide lenses mined near surface, while others may represent new sulfide lenses. Chip sampling across a 6.5-foot-wide surface outcrop of massive sulfide yielded 9.66 percent zinc, 0.88 percent copper, 0.181 ounces of silver per ton, and 0.009 ounces of gold per ton. Sampling of boulders from the mine dump assayed up to 14.6 percent zinc, 15.4 percent copper, 3.179 ounces of silver per ton, and 0.167 ounces of gold per ton.



Figure 16. Road building and access construction for underground exploration at the Niblack VMS property. Photo provided by Niblack Mining Corp.

Coeur Alaska Inc. completed 2,189 feet of exploration drilling from surface platforms on the Jualin property and 12,873 feet of underground drilling at Kensington for a total of 15,062 feet. No results were announced.

Ucore Uranium Inc. formed a joint venture with Landmark Minerals Inc. to acquire, through staking and option agreements with claim holders, a 100 percent interest in the Bokan Mountain uranium–rare-earth-element property. The property includes the Ross–Adams uranium deposit, with a total of 1.3 million pounds of uranium produced at an average grade of 0.76 percent U_3O_8 during three separate production periods between 1957 and 1971. Uranium and rare-earth-element mineralization, uraninite, uranothorite, and coffinite, is hosted within or near a circular Jurassic-age A-type peralkaline intrusive complex, including pipes, shear zone-related pods or lenses, and pegmatitic dikes. Alteration includes albite, chlorite, calcite, fluorite, and hematite. A helicopter-borne radiometric and magnetic survey was completed by Precision GeoSurveys Inc. with grid lines spaced at 320-foot intervals (fig. 17). Nine diamond drill holes, totaling 1,385 feet, were completed at the previously tested but unmined I&L zone. All holes intersected uranium mineralization, with the best mineralization in hole LM07-01, intersecting 164.8 feet of mineralization averaging 0.47 percent U_3O_8 and hole LM07-05, intersecting 50 feet of 0.47 percent U_3O_8 .



Figure 17. Precision GeoSurveys Inc. conducting a helicopter-borne radiometric and magnetic survey in rugged terrain at Ucore Uranium Inc. and Landmark Minerals Inc.'s Bokan Mountain uranium–rare-earth-element property. Photo provided by Ucore Uranium Inc.

Constantine Metal Resources Ltd. drilled a total of 7,593 feet in seven holes at the Palmer project. Five holes were drilled at the Glacier Creek prospect. Hole CMR07-09 intersected 58.9 feet, starting at 502.1 feet depth, of zinc–copper-rich barite-hosted sulfide mineralization in the Southwall fold limb, possibly equivalent to the Main zone, that assayed 7.76 percent zinc, 1.03 percent copper, 0.62 percent lead, 0.027 ounces of gold per ton, and 1.97 ounces of silver per ton. Hole CMR07-09 intersected a second interval of zinc–chert–barite mineralization, possibly equivalent to the RW zone, starting at 787-foot depth, with 11.2 feet grading 11.17 percent zinc, 0.18 percent copper, and 0.53 ounces of silver per ton. Hole CMR07-07 intersected 45.90 feet of 3.79 percent copper, 7.24 percent zinc, 0.011 ounces of gold per ton, and 1.372 ounces of silver per ton, thought to be the RW horizon. The last hole of the 2007 program (CMR07-10) was drilled from the same location as CMR07-09 and intersected a major pyrite–pyrrhotite stringer and alteration zone over a core length of 1,013 feet from 468-foot depth to the final hole depth of 1,481 feet. The Cap prospect target, about 1.67 miles west of the Glacier Creek prospect and on a separate mineral corridor, was tested by drill holes CMR07-04 and CMR07-05. Both holes intersected long intervals of altered pyritic rocks over intervals of 730 feet in CMR07-04 and 300 feet in CMR07-05. A 25.5-foot interval in hole CMR07-04 assayed 1.25 ounces of silver per ton, 1.2 percent zinc, and 0.60 percent lead. Constantine also staked 27 state claims in the area of the Palmer property in late September.

Bravo Venture Group Inc. reported that it completed detailed gravity and three-dimensional IP geophysical surveys and two core holes totaling 1,419 feet at the East Lake volcanogenic massive sulfide target on its Woewodski Island project. Both holes (WW07-034 and -035) contained greater than 50-foot-thick down-hole intervals of anomalous silver and zinc with associated anomalous, but less continuous, barium and gold values. Much of the 2007 exploration program focused on the Blue Quartz and Red Quartz gold prospects along the western and southern margins of Woewodski Island

where 33 relatively short core holes were drilled for a total of 8,337 feet. Drilling targeted gold–quartz veins that occur within broad, up to 30-foot-thick, strongly-carbonate-altered shears. Quartz veins were intersected in many of these holes and higher-grade results include 13.7 feet grading 0.117 ounces of gold per ton, and 2.4 feet grading 0.210 ounces of gold per ton.

Full Metal Minerals mapped and collected rock and soil samples of a sediment-hosted, structurally controlled, high-grade gold vein system at the CJ property on east-central Prince of Wales Island. Historic and recent assay data indicate gold:silver ratios ranging from 1:1 to 1:10, with mineralization occurring as native gold and fine-grained sulfides. Altair Ventures Inc. optioned the property in a joint-venture agreement to earn a 60 percent interest in the property and supported an 8-hole, 3,330-foot drill program. All eight holes encountered gold mineralization, spanning more than 1 mile of strike length. Best drill results include hole CJ07-01, drilled to explore the down-dip extension of vein mineralization mined at the Crackerjack Mine, with a 10.5-foot intercept grading 0.144 ounces of gold per ton and 0.167 ounces of silver per ton, and hole CJ07-03, also drilled to explore the down-dip extension of vein mineralization mined at the Crackerjack Mine, with a 20.5-foot intercept grading 0.080 ounces of gold per ton and 1.245 ounces of silver per ton.

Full Metal Minerals completed a 13-hole, 4,892-foot drilling program to test multiple copper–iron targets at the Mount Andrew property on the Kasaan Peninsula of Prince of Wales Island by stepping-out from historic workings and from 2006 drill sites. Copper mineralization occurs along an 8.7-mile-long trend within semi-massive to massive magnetite bodies within andesitic volcanic rocks and associated intermediate intrusive rocks, crosscut by later post-mineralization dikes. Andesitic rocks commonly exhibit skarn-style alteration, coupled with strong sodic and potassic alteration. The

mineralization is interpreted by Full Metal to represent an iron-oxide copper–gold (IOCG) system. Multiple zones of high-grade copper hosted within massive magnetite were encountered in drilling, including 72 feet averaging 1.24 percent copper and 30.3 percent iron in hole KMA07-06, 187 feet averaging 0.48 percent copper and 35.7 percent iron in hole KMA07-07, 37.5 feet averaging 1.24 percent copper and 37.1 percent iron in hole KMA07-10, and 45.9 feet averaging 1.46 percent copper, 32.8 percent iron, and 0.169 ounces of silver per ton in hole KMA07-11.

Quaterra Resources Inc. optioned 17 federal claims from JEDI Syndicate, longtime Juneau prospectors, at the Herbert Glacier gold property near Juneau, and staked an additional 67 federal claims around the property. Mineralization is hosted in at least four vein-fault structures in altered diorite that contain banded or ribbon quartz-sulfide (arsenopyrite, pyrite, and galena, with lesser chalcopyrite, sphalerite, and scheelite) veins. Quaterra collected 199 rock chip samples and did reconnaissance mapping of the property over the summer. Nearly half the samples collected assayed at more than 0.03 ounces of gold per ton and included one sample of a 1.5-foot-wide banded quartz vein with visible gold that assayed at 2.39 ounces of gold per ton.

Quaterra also contracted an expert in ultramafic-related ore deposits to review all data from its Duke Island project and make recommendations for further work, if any. The primary conclusion was that the ultramafic rocks may be related to a layered mafic intrusive complex with potential for hosting Cu–Ni–PGE mineralization in economic quantities. The study identified several undrilled targets with higher grade potential and recommended an airborne electromagnetic survey.

Other work in southeastern Alaska included Pure Nickel staking 115 federal mining claims and acquiring an additional 94 contiguous federal claims at the Salt Chuck property.

DEVELOPMENT

Reported and estimated mineral development expenditures in 2007 were approximately \$318.8 million, a 35.7 percent decrease from the 2006 value of \$495.7 million. The decrease is a result of the completion of the Pogo project and near completion of the Kensington project. Development continued at the Rock Creek project near Nome. Construction was completed at the Mystery Creek project at Nixon Fork and operation was commissioned in the first quarter. Significant expenditures were noted at Red Dog Mine, Fort Knox Mine, the Chuitna Coal project, Greens Creek Mine, and the Kensington project. Total full-time-equivalent employ-

ment dedicated to development amounted to 735 for the year compared to 848 for 2006.

Table 8 shows development investment and regional employment. Table 9 compares the 2007 investment with that of the previous 26 years by commodity. Figure 18 shows the locations of selected development projects. Development activity was reported in all but the Alaska Peninsula region.

NORTHERN REGION

Total expenditures in the region amounted to \$41.4 million, all at Red Dog Mine.

Table 8. Reported mineral development expenditures and employment in Alaska by commodity and region, 2007

	Northern	Western	Eastern Interior	South-central	South-western	Alaska Peninsula	South-eastern	Total
Development Expenditures								
Base metals	\$41,374,880	\$ --	\$ --	\$ --	\$ --	\$ --	\$ --	\$ 41,374,880
Polymetallic	--	--	--	--	--	--	30,766,902	30,766,902
Precious metals								
Placer	--	182,750	95,300	26,500	850,000	--	--	1,154,550
Lode	--	96,832,023	49,474,467	--	20,000	--	92,300,000	238,626,490
Coal and peat	--	--	385,000	5,000,000	--	--	--	5,385,000
Industrial minerals	--	--	270,500	1,050,000	--	--	--	1,320,500
Other	--	--	--	150,000	--	--	--	150,000
TOTAL	\$41,374,880	\$97,014,773	\$50,225,267	\$6,226,500	\$870,000	\$ -	\$123,066,902	\$318,778,321
Development Employment								
Employment								
Workdays	15,699	60,491	16,481	10,434	320	0	87,552	190,977
Workyears ^a	60	233	63	40	1	0	337	735
No. of companies reporting ^b	4	6	12	7	3	0	2	34

^aBased on 260-day work year.
^bSome companies are active in more than one area/commodity.
-- = No expenditures reported.

Table 9. Reported mineral development expenditures in Alaska by commodity, 1982–2007

	Base metals	Polymetallics	Precious metals	Industrial minerals	Coal and peat	Total
1982	\$ 10,270,000	N/A	\$ 19,320,000	\$ 4,251,000	\$ 7,750,000	\$ 41,591,000
1983	19,500,000	N/A	7,112,500	1,000,000	250,000	27,862,500
1984	10,710,500	N/A	15,058,555	579,000	27,000,000	53,348,055
1985	13,000,000	N/A	16,890,755	1,830,000	2,400,000	34,120,755
1986	3,260,800	8,000,000	12,417,172	124,000	530,000	24,331,972
1987	38,080,000	48,000,000	13,640,848	188,000	342,000	100,250,848
1988	165,500,000	69,000,000	40,445,400	--	--	274,945,400
1989	118,200,000	411,000	6,465,350	7,000,000	2,196,000	134,272,350
1990	--	4,101,000	7,136,500	30,000	3,079,000	14,346,500
1991	--	8,000,000	14,994,350	262,000	2,318,000	25,574,350
1992	80,000	4,300,000	23,151,300	404,000	1,655,000	29,590,300
1993	--	10,731,136	15,103,000	433,500	1,400,000	27,667,636
1994	10,000,000	5,000,000	27,392,850	5,000	2,545,000	44,942,850
1995	11,200,000	9,590,000	127,165,750	426,000	200,000	148,581,750
1996	60,000,000	60,100,000	273,042,000	495,000	400,000	394,037,000
1997	133,880,000	7,300,000	26,299,000	500,000	410,000	168,389,000
1998	28,000,000	5,600,000	15,602,000	5,355,000	850,000	55,407,000
1999	12,500,000	2,500,000	15,864,000	400,000	2,575,000	33,839,000
2000	100,000,000	16,400,000	24,699,000	611,000	--	141,710,000
2001	43,800,000	3,300,000	32,719,000	300,000	1,040,000	81,159,000
2002	--	5,700,000	26,655,000	250,000	1,450,000	34,055,000
2003	--	--	38,839,332	315,000	--	39,154,332
2004	17,700,000	6,215,000	177,440,081	4,991,434	2,760,000	209,106,515
2005	28,000,000	16,700,000	301,011,469	856,500	1,350,000	347,917,969
2006	31,200,000	26,183,280	420,759,203	1,566,000	15,985,000	495,693,483
2007 ^a	41,374,880	30,766,902	239,931,040	1,320,500	5,385,000	318,778,322
TOTAL	\$896,256,180	\$347,898,318	\$1,939,155,455	\$33,492,934	\$83,870,000	\$3,300,672,887

N/A = Figures not available prior to 1986.

-- = Not reported.

^aPrecious metals includes values for "other" - gemstone development.

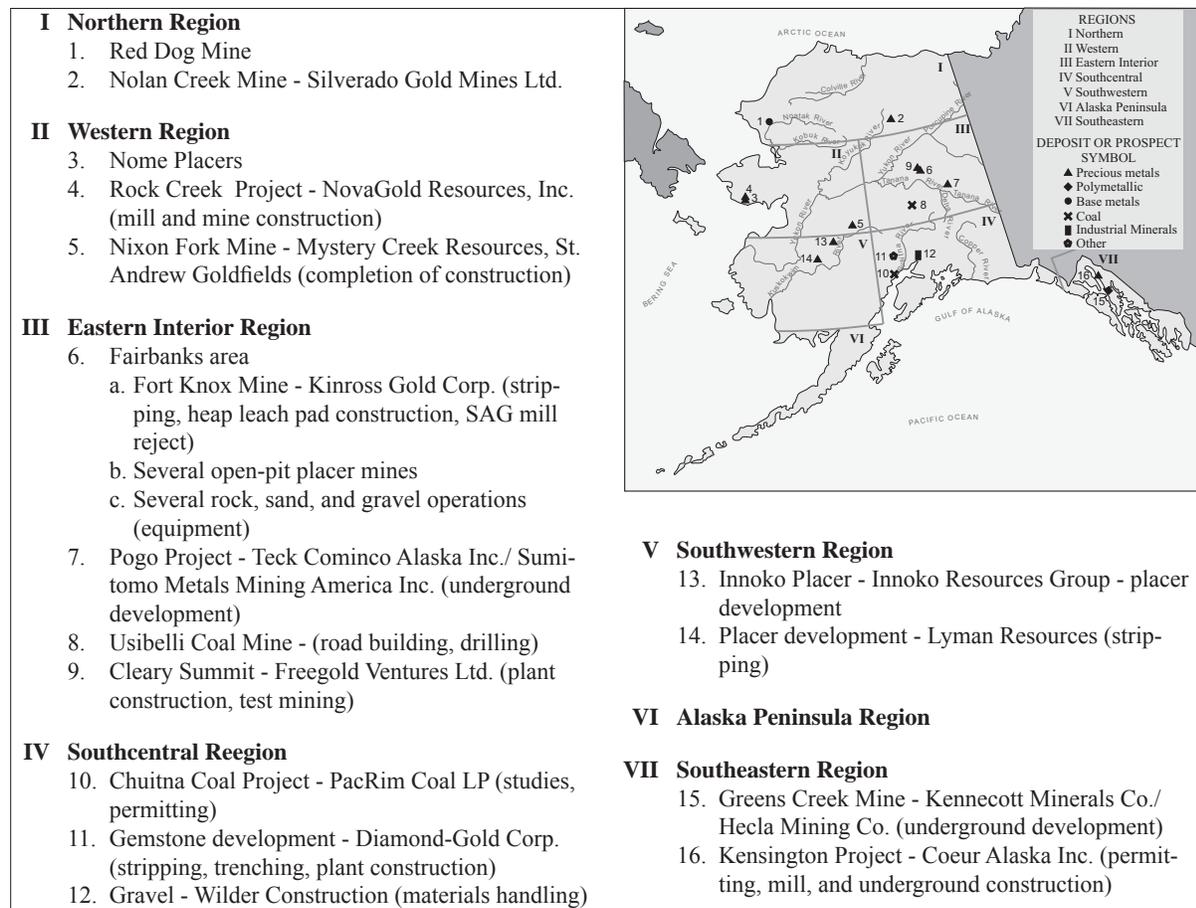


Figure 18. Selected development projects, 2007.

Capital expenditures at Red Dog Mine, owned and operated by Teck Cominco, were \$41.4 million during the year. Projects included \$8.4 million for additional flotation capacity, \$18.6 million for tailings dams upgrading, \$13.0 million on other sustaining capital projects, and \$1.3 million on in-fill drilling at the Aqqaluk deposit. The Aqqaluk in-fill drilling amounted to 28,097 feet of core hole drilling. Employment allocated to development activity was 65 full-time-equivalent positions during the year.

Efforts to define a useable gas source at Red Dog to replace diesel power generation continued during the year. After completing three holes in a five-spot pattern in the summer of 2007, the program has switched to monitoring the rate of gas production. The monitoring process started by dewatering the drill holes, which was initiated in the spring of 2007. Pumping will continue for a couple years to allow gas to flow to the hole and for accurate monitoring of its rate of generation. Once monitoring information is in hand, the next steps will be determined.

WESTERN REGION

Development expenditures were reported for lode, placer, and sand and gravel projects. Six projects reported development expenditures amounting to \$97.0 million compared to \$55.7 million for 2006, an increase of 74.1 percent. Total employment associated with these expenditures was 233 full-time-equivalent positions.

NovaGold Resources Inc. began construction on the Rock Creek and Big Hurrah projects in late August 2006 (fig. 19). Construction continued through 2007 but permit challenges, resource constraints, unforeseen issues with equipment, severe weather conditions, and other factors delayed its completion. The U.S. Army Corps of Engineers (COE) suspended the 404 permit for the Rock Creek project on December 6, 2006, to review the permit evaluation and decision documents. A complaint had been filed against the COE by a Nome group arguing that there had not been a sufficient public process. A modified COE permit was restored on March 13, 2007, that contained additional stipulations that covered reporting and mitigation. Expenditures for mining and milling equipment and construction of facilities during 2007 were reported to be \$78.0 million. Forecast



Figure 19. Aerial view of construction at NovaGold Resources Inc.'s Rock Creek gold mine and mill complex. Photo provided by NovaGold Resources Inc.

expenditures for 2008 are \$30 million. The capital cost estimate in the feasibility study was \$158 million, but, given the current status of construction, the total outlay is expected to exceed this amount. Employment averaged 114 full-time-equivalent positions during the year. Probable reserves at Rock Creek and Big Hurrah are 8.6 million tons at a grade of 0.0379 ounces of gold per ton and 1.32 million tons at 0.140 ounces of gold per ton, respectively (table 10). The company expects to commission the operation during 2008 and bring in \$28 million in free cash flow. The planned production rate is 7,700 tons per day to produce 100,000 ounces per year during full capacity. Employment is forecast at 160 persons.

Mystery Creek Resources Inc., a wholly owned subsidiary of St. Andrew Goldfields Ltd., completed construction at the Nixon Fork project during the first part of the year. The company encountered ore production issues in the upper portion of the 3300 zone of the Crystal deposit. The actual geometry of the mineralized zone was found to be much different than that used in the mineral reserve estimate. On August 14, the company announced

that milling operations would be shut down for about 6 weeks to perform modifications to the mill circuits. On October 10, ongoing construction of these projects, mainly the cyanide leach facility and the installation of dry stack tailings disposal system, was also suspended. Construction and other capitalized costs amounted to \$7.7 million for the year. Activity since the suspension has been directed at re-definition of ore reserves and resources and wrapping up construction projects. The property has been put up for sale. Employment allocated to construction and other development activity amounted to 15 full-time-equivalent positions for the year.

EASTERN INTERIOR REGION

Total construction expenditures allocated to the Eastern Interior region amounted to \$50.2 million compared to \$249.9 million for 2006. This reduction of \$199.7 million, or 79.9 percent, was primarily attributable to the completion of construction and capitalization at the Pogo project. A total of 12 projects reported development activity. Employment allocated to development amounted to 63 full-time-equivalent persons for the year.

Table 10. Gold reserves and resources at Rock Creek, Big Hurrah, and various holdings at Nome, as of December 31, 2007

Reserves				
Project	Bank Category	Tons	Cubic Yards	Ounces
Rock Creek	Probable	8,600,000	--	320,000
Big Hurrah	Probable	1,320,000	--	190,000
Total	Probable	9,920,000	--	510,000
Resources				
Project	Bank Category	Tons	Cubic Yards	Ounces
Rock Creek	Indicated	5,100,000	--	170,000
	Inferred	2,200,000	--	70,000
Big Hurrah	Indicated	1,000,000	--	80,000
	Inferred	220,000	--	20,000
Saddle	Historical	3,970,000	--	260,000
Nome Gold	Measured	--	103,500,000	800,000
	Indicated	--	109,600,000	760,000
	Inferred	--	40,000,000	250,000
Total		12,490,000	253,100,000	2,410,000

-- = Not reported.

The Pogo gold mine, operated by Teck Pogo Inc., is a joint venture between Sumitomo Metal Mining Co. Ltd. (51 percent), Sumitomo Corp. (9 percent), and Teck Cominco Ltd. (40 percent). Pogo was declared to have reached commercial production in April 2007. However, the underground mine has not reached full capacity of 2,500 tons per day; the surface ore stockpile accumulated during the fourth quarter 2006 power failure was essentially depleted. Capital expenditures at the project during 2007 were \$17.7 million and included an upgrade of living quarters to accommodate added underground development contractor personnel and capitalization of operating losses (\$2 million)⁴ for the first part of 2007. A third filter press was commissioned and modifications to the filtered tailings handling system to improve paste backfilling were completed in the first quarter of 2007. At year end Pogo had 251 employees and 88 additional persons employed by contractors in housekeeping and underground development.

Development expenditures at Fort Knox Mine amounted to \$30 million during 2007. The mine is operated by Fairbanks Gold Mining Co. Inc., a wholly owned subsidiary of Kinross Gold Corp. Efforts included stripping in phase 6, construction of the Walter Creek Heap

Leach facility, and construction of a SAG mill reject conveyor. Manpower allocation to the development effort was 43 full-time-equivalent persons for the year.

Stripping of phase 7 is scheduled to begin in the fourth quarter of 2008. Phase 7 (southwest side) contains 33.1 million tons of ore, mining of which was dependent on permitting of the Walter Creek Heap Leach facility. The Walter Creek Heap Leach Certificate of Approval to Construct a Dam was received from the Corps of Engineers on October 31, 2007. The proposed Walter Creek fill heap leach facility project will be situated in the northwest portion of the mine site, upstream of the Fort Knox tailings impoundment and seepage collection system. The heap leach project would encompass 403 acres, including 57.6 acres of federal waters, and the facility would be capable of handling 161 million tons of rock. The Alaska Departments of Natural Resources and Environmental Conservation issued state authorizations for the project on July 3. Phase 7 stripping will allow Fort Knox pit production to continue until 2014. Stockpile material will be mined and placed on the heap leach facility until 2017.

Water with trace amounts of cyanide was found seeping from a hillside near the Fort Knox Mine tailings dam during the year. Fairbanks Gold Mining Inc. spent in excess of \$2.5 million to deal with the water seep, including digging a trench to collect the seep and

⁴Teck Cominco 2007 annual report.

installing some additional interceptor wells on the valley floor below the tailings dam.

Other development activities were noted for an additional ten projects in the Interior. Development expenditures for these projects amounted to \$2.5 million. The most significant portion of this was spent by Freegold Ventures Ltd. at the Golden Summit project north of Fairbanks in test mining of the property. Other notable projects included placer, coal, and sand and gravel projects.

SOUTHCENTRAL REGION

Development expenditures totaling \$6.2 million were reported for seven projects in 2007, in contrast to \$8.98 million spent in 2006, a 31 percent reduction. Commodities to which these expenditures and efforts were applied included placer, coal, peat, sand and gravel, and gemstones. Employment corresponding to this region's development was 40 full-time-equivalent employees.

PacRim Coal LP continued environmental, permitting, and engineering work on the Chuitna Coal project, located west of Anchorage on the north side of Cook Inlet. The project is being designed to include a coal export terminal at Ladd Landing, connected to the mine with a 12-mile-long covered conveyor. Mine production capacity is designed to handle 3 to 12 million tons per year. Proven reserves are reported to be 772 million tons. Twenty employees were credited to the project for 2007.

Diamond-Gold Corp. undertook development activity at its Sable Elegance (diamond and colored gemstones) property in the Yentna mining district in the Alaska Range during the year. Activities included trenching and wash plant construction.

Five additional projects reported development activity during 2007; three projects were developed for sand and gravel production and two for placer gold recovery.

SOUTHWESTERN REGION

Limited development activity was reported for this region during 2007. Total expenditures were \$870,000 from three placer gold projects. One man-year of activity was credited to this effort.

ALASKA PENINSULA REGION

No development expenditures were reported in this region for 2007.

SOUTHEASTERN REGION

The southeastern region experienced the most development expenditures of any region during 2007. Development construction continued at Kensington project and ongoing development was undertaken at Greens

Creek Mine. Expenditures totaled \$123.1 million and employment was approximately 337 employees.

Construction at Coeur Alaska Inc.'s Kensington underground gold mine complex in southeastern Alaska, 45 miles north of Juneau, continued through 2007, although work on the tailings facility remained suspended. Efforts included construction of the mill and supporting surface facilities and underground development (fig. 20). Expenditures during the year were \$92.3 million in connection with development of the mine, nearly 20 percent higher than an estimate of \$77.7 million. Total development expenditures to the end of 2007 amounted to \$269.7 million. Coeur Alaska plans to spend \$26.2 million on the project during 2008. Employment, including contractors, during 2007 is estimated to be 292 full-time-equivalent persons. The company believes that production could begin in 2009, subject to successful and timely resolution of the legal issues more fully described below or if the permit were modified to allow for an alternate tailings facility. Coeur is proceeding with permitting for a paste tailings storage facility on the Lynn Canal side of the project should litigation fail to resolve the disposal in Lower Slate Lake.

Reserves at Kensington amount to 4,418,600 tons with a grade of 0.306 ounces per ton gold, containing 1,352,100 ounces. An additional resource of 4,320,000 tons containing 866,000 ounces of gold exists at the project. Coeur plans a production rate of 100,000 ounces per year at a cash cost of \$310 per ounce. The milling process will involve treating approximately 1,100 tons of ore per day and will involve primary crushing, SAG mill grinding, gravity, and flotation concentration, with about 40 percent of the tailings returned to the mine for backfill; the remaining tailings will be sent to the selected tailings disposal facility to be part of the court resolution. Concentrates will be packaged and shipped off site for final gold recovery. The mine will provide about 225 direct and approximately 500 indirect jobs.

Kensington construction was started in mid-2005 upon receipt of all permits, but on September 12, 2005, non-governmental organizations (NGO) lawsuits were filed against the Army Corps of Engineers (COE) and the U.S. Forest Service (USFS), resulting in suspension on November 22 of construction of tailings disposal facilities in Lower Slate Lake. On March 29, 2006, the COE reinstated Coeur Alaska's Section 404 permit; however, on April 6, the lawsuit challenging the permit was re-opened. On August 4, the Federal District Court in Alaska dismissed the Plaintiffs' challenge and upheld the Section 404 permit. On August 7, the Plaintiffs filed a Notice of Appeal of the decision to the Ninth Circuit Court of Appeals, and on August 9, Plaintiffs additionally filed a Motion for Injunction Pending Appeal with the Circuit Court. On August 24, 2006, the Circuit Court



Figure 20. Coeur Alaska Inc.'s mill complex at the Kensington gold property, with Lions Head Mountain in the background. Photo provided by Coeur Alaska Inc.

granted a temporary injunction pending appeal, enjoining certain activities relating to the lake tailings facility. The Circuit Court further ordered an expedited briefing schedule on the merits of the legal challenge.

The parties filed their briefs by October 13, 2006, and participated in an oral argument on December 4. On May 22, 2007, the Ninth Circuit Court reversed the District Court's August 4, 2006, decision that had upheld the company's 404 permit and issued its opinion that remanded the case to the District Court with instructions to vacate Coeur's 404 permit as well as the USFS Record of Decision approving the general tailings disposal plan as well as the Goldbelt 404 permit to construct the Cascade Point Marine Facility. On August 20, 2007, Coeur Alaska filed a Petition for Rehearing En Banc with the Ninth Circuit Court, as did the State of Alaska and Goldbelt Inc. In addition, the Department of Justice, on behalf of the Corps of Engineers and USFS, filed a limited Petition for Rehearing with the Ninth Circuit panel seeking reconsideration of the mandate of the May 22, 2007 panel decision. On October 29, the Ninth Circuit denied the Petitions for Rehearing En Banc. On November 14, the Ninth Circuit granted a stay of the mandate pending further appeal to the Supreme Court, subject to the development of a reclamation plan for the lake area. Coeur Alaska and the State of Alaska filed Petitions for Certiorari to the Supreme Court of the United States on January 28, 2008.

Capital expenditures at Greens Creek, owned by Kennecott Greens Creek (operator) and Hecla Mining Co., amounted to \$30,766,902 for 2007. Most of this expenditure was for development of ore. Manpower allocated to development amounted to 44.8 full-time-equivalent persons for the year.

Greens Creek Mine has historically been powered completely by diesel generators located on site. An agreement was reached during 2005 to purchase excess hydroelectric power from the local power company. Installation of the necessary infrastructure was completed in 2006, and use of hydroelectric power commenced during the third quarter of 2006. Low lake levels and increased demand in the Juneau area have combined to decrease power available to Greens Creek, and it is unlikely that Greens Creek will obtain sufficient utility power until 2009.⁵

Hecla Mining Co. announced the acquisition of the balance of the Greens Creek Mine on February 12, 2008. The transaction, amounting to \$750 million, transferred Kennecott's (Rio Tinto) 70.27 percent interest in the project to Hecla; the transaction was completed on April 16, 2008.

⁵Hecla 2007 annual report.

PRODUCTION

Mineral production value in Alaska during 2007 is estimated to be \$3,367.0 million. The estimate represents an increase in value of approximately \$508.8 million over the 2006 production values; this is a 17.8 percent change from 2006. Reporting shortfalls are noted in the placer and industrial minerals sectors, although there appears to be a fairly significant downturn in sand, gravel, and rock production. Metals (gold, silver, copper, lead, and zinc) account for \$3,219.8 million, coal and peat for \$45.6 million, and industrial minerals for \$101.6 million. Employment attributed to production is estimated to be 2,324 full-time positions.

The increased value of production can be attributed both to increased commodity production and to improved commodity prices; minor copper production was credited to the state for the first time in a number of years. Significantly higher gold production was noted due to commissioning of the Pogo Mine. All commodities with the exception of coal and rock were produced in larger

quantities. Metal prices were higher in 2007 than in 2006 with the exception of zinc, which was the same.

Table 11 shows the estimated mineral production quantity and value for 2005 through 2007. Figures 21, 22, and 23 show the historic production of sand and gravel, gold, and coal. Selected production sites are shown in figure 24.

Allocation of value of production by commodity is shown in figure 25. Zinc leads with by far the most value at 60.84 percent, with Red Dog being the most significant contributor. Gold has moved forward to second place at 15.18 percent of total value. In descending order, the value of the remaining products are, lead at 11.57 percent, silver at 8.03 percent, industrial minerals at 3.02 percent, coal and peat at 1.36 percent, and copper at 0.01 percent.

Alaska mineral production value by sector/mine is shown in figure 26. Values of production, in decreasing order, were from Red Dog (70.08 percent), Greens Creek

Table 11. Estimated mineral production in Alaska, 2005–2007^a

Metals	Production Quantities			Estimated Values ^b		
	2005	2006	2007	2005	2006	2007
Gold (ounces) ^c	427,031	570,129	726,933	\$189,918,000	\$344,049,779	\$511,089,447
Silver (ounces)	11,670,000	16,489,394	20,203,985	85,382,000	190,415,907	270,402,055
Copper (tons) ^d	-- ^d	-- ^d	43.8 ^d	--	--	283,542
Lead (tons)	131,366	157,128	167,181	115,230,000	183,629,254	389,532,215
Zinc (tons)	684,462	673,967	696,115	862,108,000	2,002,971,414	2,048,451,644
Subtotal				\$1,252,638,000	\$2,721,066,354	\$3,219,758,903
Industrial Minerals						
Jade and soapstone (tons)	-- ^e	--	--	--	--	--
Sand and gravel million tons)	16.6	14.0	14.2	76,537,000	63,351,089	76,119,390
Rock (million tons)	2.8	2.4	2.2	22,547,000	23,846,024	25,509,775
Subtotal				\$99,084,000	\$87,197,113	\$101,629,165
Coal (tons)	1,402,174	1,397,500 ^f	1,273,004	49,076,000	48,912,500	44,555,140
Peat (cubic yards)	62,532	66,500	68,367	810,000	1,057,500	1,085,500
Subtotal				\$49,886,000	\$49,970,000	\$45,640,640
TOTAL				\$1,401,608,000	\$2,858,233,467	\$3,367,028,708

^aProduction data from DGGs questionnaire, phone interviews with mine and quarry operators, ADOT&PF, and municipalities, regional corporations, and federal land management agencies.

^bValues for selected metal production were based on average prices for each year (unless other values were provided by the operator); for 2007--gold \$695.39/ounce, silver \$13.38/ounce, copper \$3.24/lb, lead \$1.17/lb, zinc \$1.47/lb.

^c2007 lode production 673,084 ounces; placer production 53,849 ounces.

^dGreens Creek Mine has historically been credited with a small copper concentrate production; no credit was experienced for 2005–2007 production, but Nixon Fork Mine reported copper production.

^eJade and soapstone credit has been dropped.

^f2006 production corrected from 9.3 M tons.

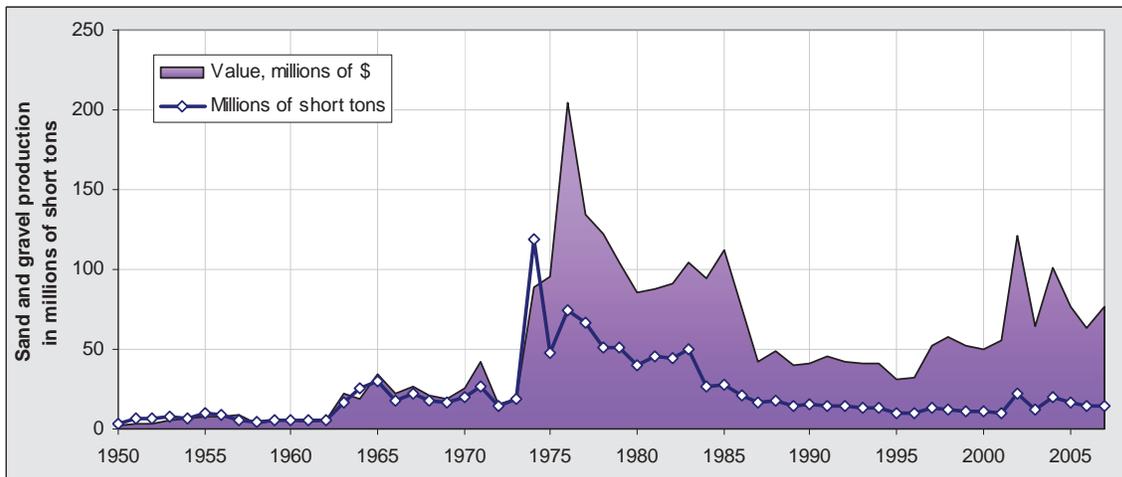


Figure 21. Sand and gravel production in Alaska 1950–2007.

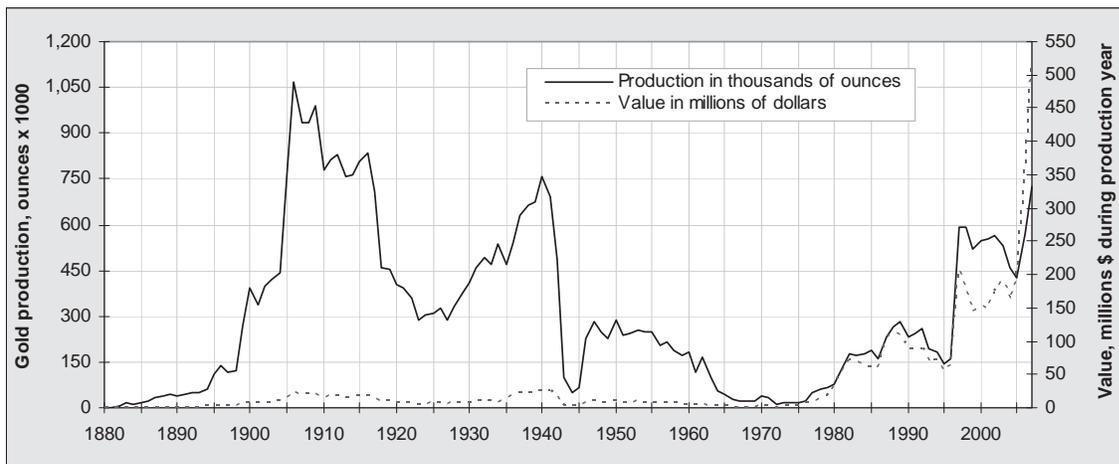


Figure 22. Amount of value of gold production in Alaska, 1880–2007.

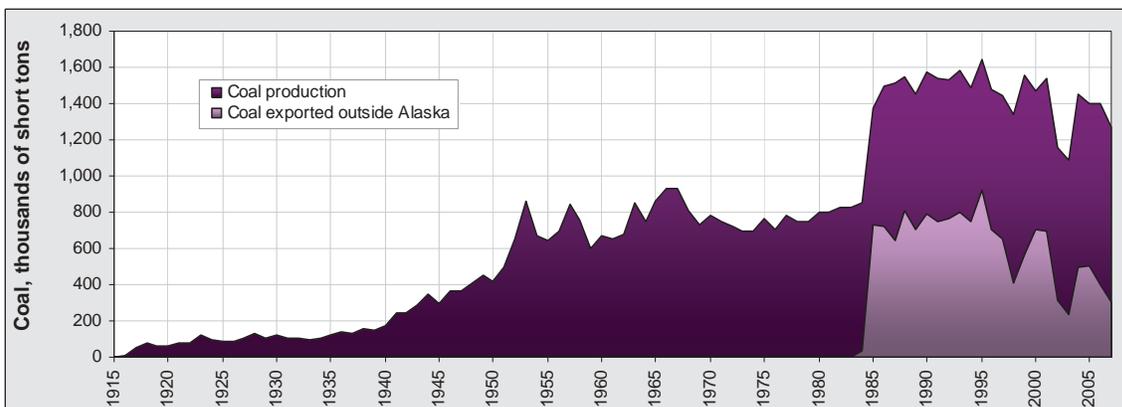


Figure 23. Coal production in Alaska, 1915–2007, including exports to Korea.

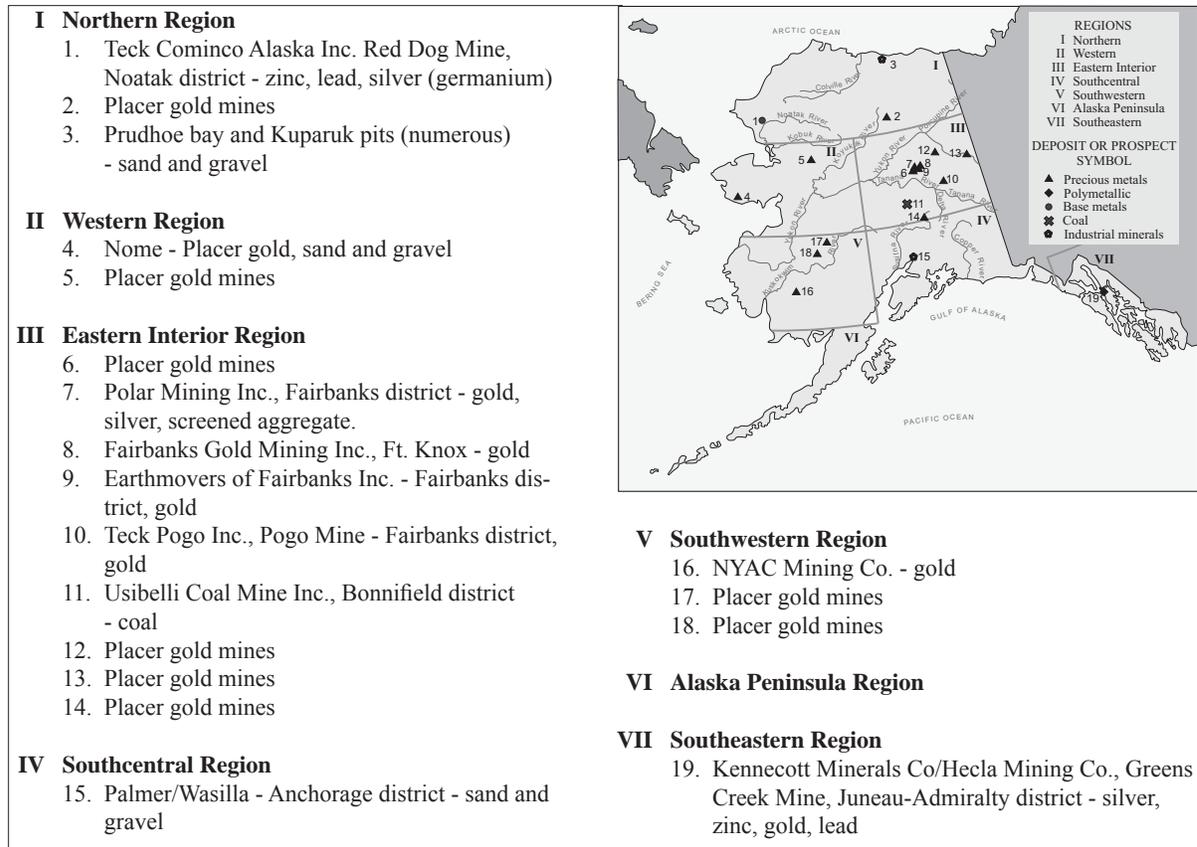


Figure 24. Selected production projects, 2007.

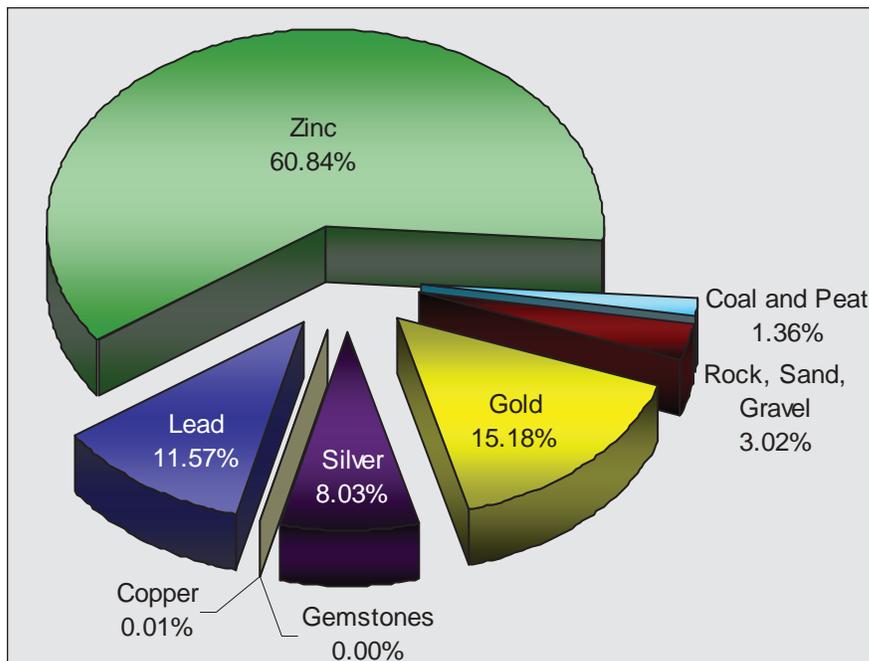


Figure 25. Alaska mineral production value by commodity.

(11.77 percent), Fort Knox (6.99 percent), Pogo (5.53 percent), rock, sand and gravel (3.02 percent), coal and peat (1.32 percent), placer gold (1.11 percent), and the remaining (0.18 percent).

Table 12 shows the average metal values used in this report over the last 14 years. Some respondents reported unit values received for production and these actual values were used in place of the values in the table. In general, however, metal values were computed from weekly averages on the London Metal Exchange and do not take into account mining, shipping, smelting, and other costs incurred by the producer. All but zinc show an appreciation in price; zinc held even with its price in 2006. Percentage increases in metal prices from 2006 to 2007 were: gold, 15.2 percent; silver, 15.6 percent; copper, 7.14 percent; and lead, 100.9 percent.

The production estimates included in this report are from questionnaires returned by miners, mining companies, Native organizations, government agencies, municipalities, and service companies, complemented by telephone queries, emails, faxes, searches of annual reports, 10-K reports, and news releases by producers. Additional information was derived from State of Alaska Annual Placer Mining Applications (APMA's) submitted to the Alaska Division of Mining, Land & Water.

The authors wish to thank the Alaska Railroad Corp., the Alaska Mental Health Trust Land Office, the Alaska Department of Transportation & Public Facilities, the Alaska Division of Mining, Land & Water, municipalities, the U.S. Forest Service, the U.S. Bureau of Land Management, Native regional corporations, the City and Borough of Juneau, and the Alyeska Pipeline Service Co., for providing information for this section of the report.

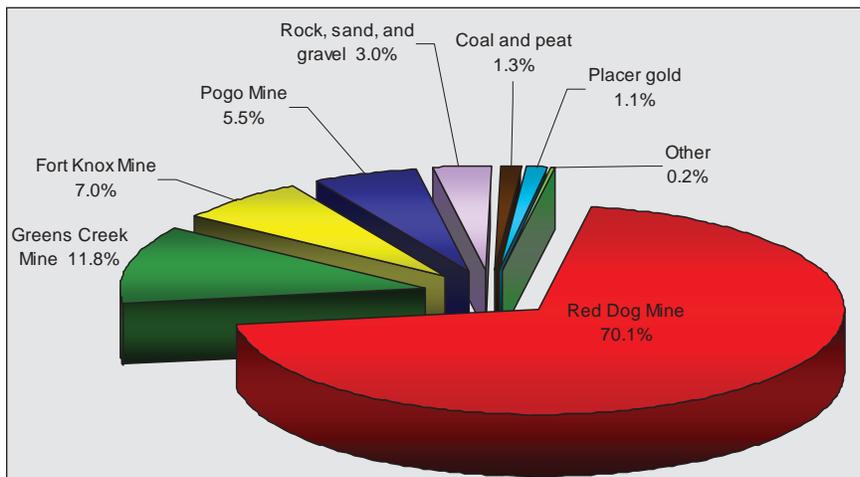


Figure 26. Alaska mineral production by mine or sector, 2007.

Table 12. Average metal prices, 1994–2007

	Gold \$/oz	Silver \$/oz	Copper \$/lb	Lead \$/lb	Zinc \$/lb	Percentage Change				
						Gold	Silver	Copper	Lead	Zinc
1994	386.00	5.41	1.05	0.35	0.45					
1995	395.00	5.43	1.33	0.34	0.48	2.33	0.37	26.67	-2.86	6.67
1996	387.60	5.19	1.03	0.37	0.49	-1.87	-4.42	-22.56	8.82	2.08
1997	330.76	4.91	1.03	0.28	0.59	-14.66	-5.39	0.00	-24.32	20.41
1998	293.88	5.53	0.75	0.24	0.46	-11.15	12.63	-27.18	-14.29	-22.03
1999	278.70	5.20	0.71	0.23	0.49	-5.17	-5.97	-5.33	-4.17	6.52
2000	279.10	4.96	0.82	0.21	0.51	0.14	-4.62	15.49	-8.70	4.08
2001	271.04	4.37	0.71	0.22	0.40	-2.89	-11.90	-13.41	4.76	-21.57
2002	310.06	4.61	0.41	0.21	0.35	14.40	5.49	0.00	-4.55	-12.50
2003	363.38	4.88	0.81	0.23	0.38	17.20	5.86	14.08	9.52	8.57
2004	409.72	6.67	1.29	0.40	0.47	12.75	36.68	89.26	73.91	23.68
2005	444.74	7.32	1.61	0.43	0.63	8.55	9.75	24.81	7.50	34.04
2006	603.46	11.55	3.02	0.58	1.47	35.69	58.20	87.58	34.88	133.33
2007	695.39	13.38	3.24	1.17	1.47	15.23	15.58	7.14	100.86	0.00

Tables 13 and 14 show gold production by region of the state, and placer production by small, medium, and large-sized producers. Two placer operations achieved a “large-sized” rating. Hard-rock (lode) gold production increased 32.0 percent, from 509,747 ounces in 2006 to 673,084 ounces in 2007. Placer gold production appears to have decreased slightly from 60,382 in 2006 ounces to 53,849 ounces in 2007; the rapidly increasing operating costs have had a negative effect on operations. The increase in hard-rock production primarily reflects a higher output from Pogo Mine and some production from Nixon Fork Mine. Production of gold should increase again in 2008 with continued improvement at Pogo, commissioning of Rock Creek/Big Hurrah, and maintenance-level production from most other sources. The longer range

forecast for gold production is very positive with new projects such as Donlin Creek, Kensington, Pebble, and other smaller hard-rock projects being explored.

Tables 15 and 16 show the value and regional importance of sand, gravel, and rock stockpiling and sales. Sales of sand and gravel in 2007 totaled 14.2 million tons, up slightly from 2006 at 14.0 million tons. Rock production was 2.2 million tons, down from 2.4 million tons in 2006. These numbers reflect some shortfall in reporting.

The export value of minerals was \$1,317 million for 2007, 10.12 percent higher than the 2006 total of \$1,196 million. Minerals exports for 2007 set a new record (table 17, fig. 27).

Table 13. Reported refined gold production, number of operators, and industry employment in Alaska, 2005–2007^a

Region	Number of operators			Production in ounces			Number of employees ^b		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Northern	3	20	18	60	1,910	8,555	3	40	31
Western	16	41	34	12,649	14,900	21,904	61	58	122
Eastern Interior	37	100	97	339,414	474,900	621,784	453	821	858
Southcentral	11	25	13	385	5,837	1,801	64	36	26
Southwestern	3	9	12	1,511	8,773	4,714	14	25	25
Alaska Peninsula ^c	-	1	1	-	-	-	-	-	-
Southeastern ^d	2	5	3	73,014	63,809	68,173	252	255	283
TOTAL	72	201	178	427,033	570,129	726,931	847	1,235	1,345

^a2007 production includes 673,084 ounces of gold from hardrock mines and 53,849 ounces of gold from placer sources.

^bIncludes recreation numbers (operators, ounces, employees) for 2006 and 2007 and is calculated on the basis of full-year employment.

^cProduction from this single source is combined with southwestern production for confidentiality purposes.

^dIncludes employment figures from Greens Creek Mine, which is a polymetallic producer with a strong gold component.

Table 14. Production for selected Alaska placer gold mines, 2000–2007

Mine Size	Number of Mines							
	2000	2001	2002	2003	2004	2005	2006	2007
Small ^a	60	33	43	58	60	50	177	153
Medium ^b	14	5	4	4	5	20	21	19
Large ^c	4	4	2	2	3	1	3	2
TOTAL	78	42	49	64	68	71	201	174
Mine Size	Production in Ounces ^d							
	2000	2001	2002	2003	2004	2005	2006	2007
Small	8,981	5,048	9,931	8,124	7,621	6,783	23,343	19,755
Medium	15,186	6,234	4,739	4,976	4,504	17,822	22,144	23,366
Large	22,147	11,559	7,711	10,500	15,950	- ^e	14,895	10,728
TOTAL	46,314	22,841	22,381	23,600	28,075	24,605	60,382	53,849

^a<650 ounces of gold per year.

^b650–2,500 ounces of gold per year.

^c>2,500 ounces of gold per year.

^dDoes not include recreational production before 2006.

^e2005 production combined with “Medium” producers.

Peat resources mined and sold amounted to 68,367 cubic yards in 2007 compared to 66,500 cubic yards in 2006. Again, reporting shortfalls are noted for this commodity.

NORTHERN REGION

The value of production of Alaska's minerals in the northern region is estimated at \$2,371.7 million and employment at 514 full-time-equivalent positions. Red Dog Mine dominated the production value and employment numbers. Placer gold, sand and gravel, and minor rock production were noted in the region.

Red Dog Mine near Kotzebue in northwestern Alaska is the world's largest zinc producer, and it continued to dominate Alaska's mineral production value. Red Dog

Mine accounted for more than 70 percent of the total value of Alaska's mineral production during the year. Red Dog Mine is 100 percent owned and operated by Teck Cominco Alaska Inc. under an agreement with NANA Regional Corp., a Native Alaskan regional corporation. The Red Dog deposit comprises a number of sedimentary-hosted exhalative (SEDEX) lead-zinc sulfide deposits hosted in Mississippian- to Pennsylvanian-age sedimentary rocks. The ore bodies are lens shaped and occur within structurally controlled (thrust fault) plates. The sulfide mineralization consists of semi-massive to massive sphalerite, pyrite, marcasite, and galena. The mining method employed is conventional drill and blast open-pit mining. The main pit has an expected life of 5 years at current rates of production (table 18).

Table 15. Reported sand and gravel production and industry employment in Alaska by region, 2007.

Region	Companies and agencies reporting ^a	Tons	Estimated unit value (\$/ton) ^b	Total value	Estimated number of employees
Northern	8	1,167,483	\$5.48	\$6,395,972	24.9
Western	8	601,645	5.97	3,591,680	12.8
Eastern Interior	24	4,398,849	4.78	21,009,642	94.0
Southcentral	22	7,545,306	5.68	42,820,231	134.3
Southwestern	4	319,950	5.35	1,711,602	15.1
Alaska Peninsula	--	--	--	--	--
Southeastern	26	130,442	4.53	590,263	2.9
TOTAL	92	14,163,675	\$5.37	\$76,119,390	284.0

^aFrom returned questionnaires, telephone surveys, follow-up fax questionnaires, and e-mails to probable producers, etc. Data were also returned from the Alaska Railroad, Alyeska Pipeline Service Co., DML&W, USFWS, USBLM, USFS, regional corporations, and others.

^bValues are based on estimates from producers.

-- = Not Reported.

Table 16. Reported rock production and industry employment in Alaska by region, 2007^a

Region	Companies and agencies reporting ^b	Tons	Estimated unit value (\$/ton) ^c	Total value	Estimated number of employees
Northern	2	90	\$20.00	\$1,800	0.1
Western	4	177,161	\$12.14	\$2,150,457	1.5
Eastern Interior	3	104,680	\$10.09	\$1,056,160	6.2
Southcentral	5	198,583	\$11.09	\$2,201,850	18.1
Southwestern	2	320,250	\$12.01	\$3,846,600	18.1
Alaska Peninsula	0	--	--	--	--
Southeastern	9	1,411,190	\$11.52	\$16,252,908	79.8
TOTAL	25	2,211,954	\$11.53	\$25,509,775	123.8

^aIncludes shot rock, crushed stone, D-1, riprap, and modest quantities of ornamental stone.

^bFrom 15 returned DGGS questionnaires, more than 100 telephone surveys, follow-up fax questionnaires, more than 100 e-mails to probable producers, etc. Data were also returned from the Alaska Railroad, Alyeska Pipeline Service Co., DML&W, DOT&PF, USFS, USBLM, USFS, regional corporations, and others.

^cValues are based on estimates from producers, from historic records, etc.

-- = Not reported.

Additional reserves have been identified in the vicinity of the processing facilities sufficient to extend the life of the operation by 15 years for a total mine life of 23 years.

The mineral processing facilities employ conventional grinding and sulfide flotation methods to produce zinc and lead concentrates. The shipping season at Red Dog is restricted to approximately 100 days per year because of sea ice conditions, and Red Dog's sales are seasonal with the majority of sales in the last 5 months of each year. Concentrate is stockpiled at the port facility and is typically shipped between July and October.

Teck reported an operating profit at Red Dog Mine of \$763.2 million in 2007; this is down 19.8 percent from its 2006 profit, which was reported to be \$951.5 million. The project milled 3.73 million tons of ore with

a zinc grade of 20.2 percent, lead grade of 6.1 percent, and silver of 3.1 oz/ton (table 19). The project produced 633,511 tons of zinc and 146,152 tons of lead, and was credited with an estimated 11.6 million ounces of silver in 2007.

The significant increase in Red Dog's cost of sales was mainly due to the change in the royalty regime that occurred in 2007, although fairly significant operating cost increases were also experienced. The royalty, in accordance with the operating agreement with NANA governing the Red Dog Mine, increased to 25 percent of net proceeds of production in the fourth quarter of 2006. The royalty had previously been 4.5 percent of net smelter returns. The increase is partially offset by a decline in the base on which royalties are calculated. Operating, distribution, selling, and management fees,

Table 17. Alaska international mineral exports^a

	Export value (millions)
1996	249
1997	369
1998	317
1999	359
2000	293
2001	329
2002	380
2003	414
2004	505
2005 ^a	603
2006 ^a	1,196
2007 ^a	1,317

Source: U.S. Census Bureau, Origin of Movement Series.

^aIncludes mineral/metal ores and concentrates, coal, and unwrought, nonmonetary gold exports.

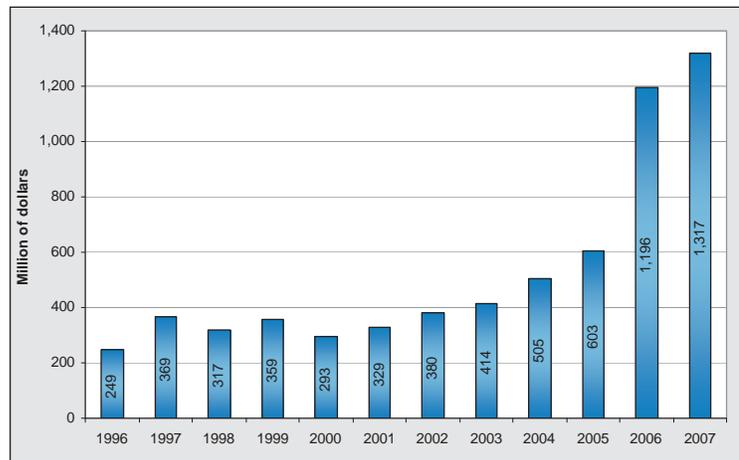


Figure 27. Alaska international mineral exports, 1996–2007.

Table 18. Reserves and resources by category at the Red Dog Mine as of December 31, 2007 (Teck Cominco Ltd. Annual report)

Class	Metal	Category	Tons, millions	Grade, percent
Reserves	Zinc	Proven	13.89	20.0
		Probable	56.88	16.7
	Lead	Proven	13.89	5.5
		Probable	56.88	4.4
Resources	Zinc	Indicated	6.72	19.5
		Inferred	36.59	15.1
	Lead	Indicated	6.72	6.6
		Inferred	36.59	4.5

Table 19. Red Dog Mine production statistics, 1989–2007^a

	Tons milled	Ore Grade			Total Tons Concentrate Produced ^b	Contained Tons Zinc	Contained Tons Lead	Million Ounces Silver ^c	Employees
		Zinc (%)	Lead (%)	Silver (oz/ton)					
1989	33,300	20.4	7.6	3.6	8,532	--	--	--	228
1990	996,700	26.5	8.5	3.6	443,600	191,981	31,187	1.60	350
1991	1,599,300	22.5	6.6	2.8	521,400	234,510	43,815	1.46	331
1992	1,582,000	19.9	6.0	2.9	474,900	231,363	15,960	1.38	349
1993	1,874,600	18.4	5.7	2.8	539,800	255,149	24,788	1.51	376
1994	2,339,500	18.8	5.7	2.8	658,000	328,160	32,775	1.84	391
1995	2,485,900	19.0	5.8	2.8	753,600	358,676	55,715	3.62	397
1996	2,312,600	18.7	5.0	2.8	765,300	357,680	65,886	4.30	417
1997	2,127,000	20.3	5.2	2.9	799,400	373,097	69,284	4.27	479
1998	2,752,587	21.4	5.2	2.7	1,015,773	490,461	80,193	5.20	466
1999	3,282,788	21.3	5.2	2.7	1,207,160	574,111	97,756	6.21	539
2000	3,365,508	21.0	4.7	2.5	1,211,539	585,030	91,557	5.84	536
2001	3,560,430	19.8	5.0	2.5	1,215,837	570,980	105,000	5.90	559
2002	3,489,600	21.1	5.4	2.7	1,366,480	637,800	118,880	6.75	560
2003	3,476,689	21.7	6.2	3.1	1,397,246	638,569	137,679	7.70	388
2004	3,249,613	22.0	6.0	3.0	--	610,900	128,970	7.22	508
2005	3,402,831	21.7	5.6	3.0	--	626,112	112,766	1.97	449
2006	3,569,280	20.6	6.1	3.0	--	614,538	136,135	7.62	457
2007	3,726,910	20.2	6.1	3.1	--	633,511	146,152	11.55	459

^aRevised slightly from Special Report 51, Alaska's Mineral Industry 1995, based on new company data.

^bTotals for years 1990 through 1995 include bulk concentrate.

^cEstimate calculated at 56 ounces per ton of lead metal produced to from 1990 to 2004 and 2006, as reported credit for 2005, net of treatment charges, calculated at 3.1 oz/ton of ore for 2007.

-- = No concentrate produced.

an allowance for future reclamation and closure costs, capital costs, and deemed interest are deductible in the calculation of the royalty. The NANA royalty charge was \$190 million in 2007, compared with \$57 million in 2006. The net proceeds royalty will increase by 5 percent every fifth year to a maximum of 50 percent. The increase to 30 percent of net proceeds will occur in 2012. NANA shares approximately 62 percent of the royalty with other Alaskan Native corporations in accordance with 7(i) and (j) provision of ANCSA⁶.

Red Dog's location in northwestern Alaska exposes the operation to severe weather and winter ice conditions that can significantly impact its production volumes and operating costs. Supply deliveries and concentrate shipments occur during a short ocean shipping window, generally during the period early July to late October. During 2007 Red Dog's shipping season began on July 5, 2007, and was completed on October 24, 2007, with a total of 1,179,140 tons of zinc concentrate and 288,725 tons of lead concentrate shipped from the mine. Red Dog's sales volumes are normally higher in the last six months of the year than in the first six months, which can result in significant volatility in its earnings. Site operating costs increased 25 percent over 2006 due to higher sales volumes and a 9 percent increase in unit operating costs due to higher fuel, supplies, and labor costs.⁷

Employment at Red Dog during 2007 was 459 full-time-equivalent positions, nearly the same as in 2006. The mine provides direct employment for approximately 360 people. An additional 100 people work for either (1) NANA Management Services Inc., providing camp management, housekeeping, catering, and other services, or (2) NANA/Lynden LLC, hauling fuel, freight, and concentrate between the mine and port. More than 50 percent of the employees are NANA shareholders.

⁶NANA Regional Corp. annual report: "70 percent of all net revenues received by the Company for subsurface and timber resources transferred under the Act to the Company [NANA] must be distributed to all regional corporations, including itself (the funds are allocated based on the final number of Natives enrolled in each region in 1971); and similarly, the Company receives its pro-rata share of 70 percent of resources revenues received by the other 11 Native regional corporations which are recorded as revenues when the amount thereof is determined; of the 70 percent of the resource revenues of the Native regional corporations to which NANA is entitled, 50 percent of a portion of such revenues, which portion is based on the ratio of the nonvillage shareholders and enrolled village shareholders to total NANA shareholders, must be distributed to NANA's enrolled nonvillage shareholders and the Kikiktagrak Inupiat Corporation. NANA retains the shares of such revenues that the merged village corporations would have been entitled to receive."

⁷Teck Cominco 2007 annual report.

In the third quarter of 2007, the U.S. Environmental Protection Agency withdrew a recently-issued renewal of the Red Dog Mine's water discharge permit in the face of an appeal of the permit by a local community group and several environmental organizations. As a result, the permit renewal is expected to form part of the review and approval of a Supplemental Environmental Impact Statement (SEIS). The SEIS will focus on Red Dog's permit renewal and the projected impacts from mining the Aqqaluk deposit, which is the next ore body scheduled to be developed by Teck. Necessary authorizations must be in place prior to 2010 to ensure continuous operation of the mine at current production levels.

Silverado Gold Mine's Nolan Creek operation in the Alaska Range near Coldfoot produced 3,727 ounces of gold from 18,320 cubic yards mined from underground operations on Mary's Bench. The mine operates during the winter months in the frozen gravels to avoid thawing. The ore is stockpiled for summer washing and gold recovery. This is the only currently active underground placer mining operation in the state.

WESTERN REGION

Thirty-four placer operations, three recreational in size, reported production in the region for 2007. This is compared to 41 placer operations and five recreational for 2006. Reported production for 2007 was 21,904 ounces of gold compared to a production of 14,900 ounces in 2006. Placer gold employment in 2007 was estimated to be 122 persons compared to 58 for 2006.

St. Andrew Goldfields Ltd. began mining operations at the Nixon Fork Mine near McGrath in the fourth quarter of 2006 after 3 years of exploration, engineering design, mining infrastructure rehabilitation, and permitting. Super sacks of concentrates are back-hauled from the mine site to Fairbanks and then transported by rail and barge to the Xstrata Copper Horne Smelter in Rouyn-Noranda, Quebec, Canada. For the 9 months that ended September 30, 2007, St. Andrew Goldfields achieved a head grade of 0.50 ounces per ton from the mining of 19,957 tons of ore from the upper portion of the 3300 zone of the Crystal deposit. The result is substantially different from the reserve head grade outlined in the independent technical report prepared for the Nixon Fork gold mine in October 2006. St. Andrew shut down its milling operations in August for about 6 weeks to modify its mill circuits. On October 10, 2007, the company announced the temporary suspension of production at the Nixon Fork gold mine to provide sufficient time to continue delineation drilling of the existing mineral resources and reserves in the C3000 and C3300 zones in the Crystal deposit in order to better define the irregular geometry of the gold mineralization for improved future mining recovery and dilution. The

underground core drilling program is ongoing. In addition to the underground drilling program conducted during the winter of 2007, a surface drilling program is planned for spring 2008 at various locations along the approximately 2.5-mile-long monzonite-limestone skarn contact zone where previous drilling has intersected a number of anomalous zones, namely the Mystery, J5A, Southern Cross, and Whalen zones that have potential to add to the current resource base. Production during the year amounted to 6,775 ounces of gold, 87,627 pounds of copper, and 3,739 ounces of silver. The mine has been placed up for sale. Employment at the project amounted to 69 for the year.

Sand and gravel production from the region was reported to be 601,645 tons from eight operations. Production in 2006 was 558,281 tons from eight operations. Employment in 2007 was estimated to be 12.8 full-time-equivalent jobs compared to 8.5 during 2006.

Rock production from the region during 2007 was reported to be 177,161 tons from four operations. Production numbers for 2006 were estimated to be 52,271 tons from one operation. Full-time-equivalent jobs during 2007 were estimated to be 1.5 compared to 3.0 for 2006.

EASTERN INTERIOR REGION

As in previous years, the Eastern Interior region was one of the most active regions during 2007. Fort Knox open-pit gold mine continued to be the leading producer in value of production and number of employees. Pogo Mine assumed commercial production during the year, but did not reach intended production goals. Total gold production from the region was 621,784 ounces. Lode gold (hard rock) production amounted to 598,279 ounces and placer gold production amounted to 23,505 ounces. Rock, sand, gravel, and peat production continued to be an important segment in the Interior.

Fort Knox gold mine, operated by Fairbanks Gold Mining Co., a wholly owned subsidiary of Kinross Gold Corp., produced 338,459 ounces of gold during 2007 (table 20). This is a 1.52 percent increase from 2006, when Fort Knox recorded 333,383 ounces of gold produced. Mill throughput for 2007 was 14,021,400 tons compared to 14,839,297 tons in 2006. Average recoverable grade was 0.0241 ounces per ton for 2007 compared to 0.0225 for 2006. Mining activity produced 45.98 million tons of material during the year, an average rate of 126,000 tons per day. All production was from phase 6. Ore production averaged 60,300 tons per day in 2007 compared to an average of 33,900 tons during 2006; lower grade materials were stockpiled for future heap leaching. Waste stripping amounted to 23.92 million tons compared to 35.0 million tons during 2006. Total manpower for 2007 was 399 full-time-equivalent persons.

Pogo Mine is a joint venture with Sumitomo Metal Mining Co. Ltd (51 percent), Sumitomo Corp. (9 percent), and Teck Cominco Ltd. (40 percent). Teck Cominco is the operator of the mine, located 90 miles southeast of Fairbanks. The mine produced 715,665 tons of ore and processed 715,400 tons, out of which 259,820 ounces of gold was recovered during 2007 as opposed to a planned production of 340,000 ounces (table 21). Gold recovery was calculated to be 84.71 percent. The mine has not reached full capacity due to the construction and commissioning of the filter projects in the first quarter and poor equipment availability that impacted online time and throughput rates. The ore is extremely abrasive, and continuous improvement projects are focused on equipment reliability. Reduction of dilution in mining has been accomplished by using smaller equipment in narrow ore headings during the second half of 2007. Mill recoveries have improved and various upgrade projects are in progress, including automation of the flotation circuit, expected to be complete by the first half of 2008. Operating costs are high but improving; the average for 2007 was \$515 per ounce. Production for 2008 is expected to be between 340,000 and 360,000 ounces. Full-time-equivalent employment at year end was 251 mine employees and 88 contractor employees.

Usibelli Coal Mine continued production of sub-bituminous coal from its Two Bull Ridge mine site near Healy with an output of 1.357 million tons of coal. This was lower than in 2006 by about 43,000 tons. Shipments to Glencore International AG for Chile amounted to 308,146 tons. The mine also supplies six power plants in interior Alaska with approximately 900,000 tons of coal annually. Employment was 102 full-time-equivalent persons for the year.

Agrium continued to study its Blue Sky project for a coal gasification plant to feed the company's fertilizer plant on Alaska's Kenai Peninsula; Usibelli was involved by proposing to provide coal to this project. The plant was closed in December 2007 due to lack of natural gas feedstock. A preliminary engineering design for the coal gasification plant was completed during the year. Phase one was a feasibility study for the project; this was completed in August 2006. An announcement was released on March 13, 2008. The company found that the economics were not sufficient to proceed with a gasification facility, and the plant has been mothballed.

Placer gold production in 2007 from Interior mines amounted to 23,505 ounces from 95 operations of various sizes. Employment estimates for these operations amounts to 120 full-time-equivalent persons; previous

Table 20. Fort Knox Gold Mine production statistics, 1996–2007.

	Tons Mined (ore + waste)			Tons milled (ore)			Ounces Produced	Employment
	Fort Knox	True North ^a	Total	Fort Knox	True North ^a	Total		
1996	16,684,000		16,684,000	769,700		769,700	16,085	243
1997	32,380,000		32,380,000	12,163,151		12,163,151	366,223	249
1998	33,294,000		33,294,000	13,741,610		13,741,610	365,320	245
1999	30,350,000		30,350,000	13,819,010		13,819,010	351,120	253
2000	35,600,000		35,600,000	15,000,000		15,000,000	362,929	253
2001	25,957,900	8,448,400	34,406,300	13,282,614	2,377,386	15,660,000	411,220	360
2002	24,583,500	11,461,000	36,044,500	11,887,200	3,371,800	15,259,000	410,519	360
2003	30,597,940	12,707,100	43,305,040	11,473,000	3,611,682	15,084,682	391,831	316
2004	44,187,000	3,763,000	47,950,000	12,917,966	1,675,854	14,593,820	338,334	427
2005	63,248,000	--	63,248,000	14,384,842	--	14,384,842	329,320	411
2006	51,070,000	--	51,070,000	14,839,297	--	14,839,297	333,383	406
2007	45,940,000	--	45,940,000	14,021,400	--	14,021,400	338,459	399

^aTrue North started production in 2001 and suspended production in 2004.
 -- = Not reported.

Table 21. Pogo Mine production statistics, 2006–2007.

	Tons Ore Mined	Tons Ore Milled	Ounces of Gold Recovered	Head Grade Recovery, %	Oz/ton	Employees ^a
2006	447,129	338,000	113,364	85.0	0.395	477
2007	715,665	715,400	259,820	84.4	0.430	339

^aIncludes contractor employees; calculated as 11 hour days, 260 employee-days per year.

year production amounted to 28,153 ounces from 100 operations. Employment for 2006 was estimated at 118 persons.

Industrial minerals are an important sector in the Interior region and this activity continued during 2007. Sand and gravel production amounted to 4.4 million tons from 24 different operations compared to 1.16 million tons from 11 operators in 2006. Employment for these operations was approximately 94 persons compared to 100 full-time positions during 2006. Rock production amounted to approximately 105,000 tons and created 6.2 full-time positions for 2007. This compares to 737,544 tons and 25 full-time positions for 2006. Peat production was reported to be 25,000 bank cubic yards for 2007, the same as for 2006. Reporting shortfalls are noted in this commodity. Employment for the peat industry was estimated to be 3.7 persons for 2007.

SOUTHCENTRAL REGION

Rock, sand, gravel, and peat (topsoil) continue to be the most valuable commodities produced for this region. The region was the largest producer of these products, even with only 31 operations reporting compared to 71 operations reporting for 2006. Sand and gravel production amounted to 7.55 million tons for the year, compared to 6.42 million tons for 2006. In 2007, sand and gravel provided an equivalent of 134 full-time jobs, compared to 105 for 2006. Rock production in 2007 was 198,583 tons compared to 386,567 tons in 2006. Rock production operators provided an equivalent of 18.1 full-time positions compared to 11 for 2006. Reported peat production totaled 43,367 bank cubic yards compared to 41,500 in 2006. Reported full-time positions associated with peat production were 7, the same number as in 2006. Reporting shortfalls are fairly significant and could be up to 50 percent below actual numbers.

Placer gold production reported for this region during 2007 was 1,801 ounces compared to 5,837 for 2006. A total of 13 operators reported placer gold production compared to 25 during 2006. Eight of the operators were recreational in size; this compares to 10 considered recreational in size in 2006. Total full-time-equivalent employment in 2007 amounted to 26 positions, compared to 36 for 2006. One full-time gemstone operator is included in the placer numbers and no segregation is provided for confidentiality reasons.

SOUTHWESTERN REGION

Placer gold production from the region during 2007 amounted to 4,714 ounces, compared to 8,706 ounces during 2006. Calculated full-time-equivalent employment was 25, the same as in 2006. Twelve operators reported production compared to 9 for 2006. Three of the 2007 operations were considered recreational in size.

Rock, sand, and gravel production was reported from the southwestern region in 2007 compared to no reports in 2006. Sand and gravel production amounted to 319,950 tons and provided 15 full-time-equivalent jobs. Rock production amounted to 320,250 tons and provided 18 full-time-equivalent jobs. Four sand and gravel and 2 rock operations provided reports.

ALASKA PENINSULA REGION

No production was reported for any commodity during 2007, the same as in 2006. This is believed to be a reporting shortfall rather than a lack of production, particularly considering rock, sand, and gravel needs.

SOUTHEASTERN REGION

The southeastern region reported polymetallic, rock, sand, gravel, and placer gold production for 2007. Total minerals industry production employment for the region in 2007 was approximately 362 compared to 489 for 2006. The difference is believed to be reporting shortfalls in the rock, sand, and gravel sector.

Greens Creek Mine, a Kennecott Minerals Co.–Hecla Mining Co. joint venture in southeastern Alaska, is a polymetallic, volcanogenic massive sulfide deposit (silver, zinc, lead, gold, and copper) and considered the fifth largest silver producer in the world. It produces a silver–gold doré and sulfide concentrates containing zinc and lead. Greens Creek Mine was operated by Kennecott Minerals Co., which owned 70.3 percent; Hecla Mining Co. owned the remaining 29.7 percent. Kennecott and Hecla consummated an agreement to transfer full ownership to Hecla for \$750 million; the agreement was finalized on April 16, 2008, and Hecla has assumed operation and control of the mine. Greens Creek Mine has produced a total of about 150 million ounces of silver and approximately 1 million ounces of gold since 1987 and currently has 116 million ounces of silver reserves and resources, with a mine life to 2019.

Production at Greens Creek mill was almost the same as in 2006 (table 22). Mill throughput was 732,227 tons compared to a 2006 throughput of 732,176 tons. Metal production totaled 8,646,825 ounces of silver, 68,006 ounces of gold, 62,603 tons of zinc, and 21,029 tons of lead. Production numbers for 2006 were 8,865,818 ounces of silver, 62,935 ounces of gold, 59,429 tons of zinc, and 20,992 tons of lead. Manpower numbers for 2007 were 321 full-time-equivalent persons, 45 of whom were reported in the development section of this report. The average grade of ore produced in 2007 was 9.67 percent zinc, 3.66 percent lead, 15.45 ounces of silver per ton, and 0.14 ounces of gold per ton.

Currently, Greens Creek is mining approximately 2,100 tons of ore per day from underground operations. Ore from the underground trackless mine is milled at

the mine site. The mill produces gold doré from gravity concentrates, lead, zinc, and bulk concentrates. Generally, the mine ships concentrates to Korea, Japan, Mexico, and Canada for smelting and metals recovery. Gold doré produced from the gravity circuit is shipped to other points in the U.S. for refining; this accounts for approximately 20 percent of the recovered gold.

The Greens Creek Mine had year-end reserves and resources as shown in table 23.

Three placer gold operations reported production totaling 168 ounces of gold for 2007. Calculated employment was six full-time-equivalent positions. This

compares to five operators reporting 874 ounces of production in 2006 with ten full-time-equivalent positions.

Rock, sand, and gravel operations in 2007 in the southeastern region produced 1.41 million tons of rock and 130,443 tons of sand and gravel. Nine rock producers and 26 sand and gravel producers reported. Production during 2006 was a total of 1.353 million tons, mostly rock. Total employment in 2007 was 80 compared to 68 during 2006. This is the only region with a greater amount of rock produced than sand and gravel; all other regions have a higher sand and gravel to rock production ratio. Shortfalls in reporting are indicated.

Table 22. Greens Creek Mine production statistics, 1989–2007

	Contained Metal							Employees
	Tons Milled	Tons Concentrate	Tons Zinc	Tons Lead	Tons Copper ^a	Ounces Gold	Ounces Silver	
1989	264,600	--	187,007	9,585	--	23,530	5,166,591	235
1990	382,574	--	37,000	16,728	--	38,103	7,636,501	265
1991	380,000	--	41,850	16,900	--	37,000	7,600,000	238
1992	365,000	113,827	40,500	16,500	--	32,400	7,100,000	217
1993 ^b	77,780	--	9,500	3,515	--	7,350	1,721,878	217
1994 ^c	--	--	--	--	--	--	--	--
1995 ^c	--	--	--	--	--	--	--	--
1996 ^b	135,000	43,000	9,100	4,200	193	7,480	2,476,000	265
1997	493,000	--	46,000	19,000	1,300	56,000	9,700,000	275
1998	540,000	--	58,900	22,700	1,300	60,572	9,500,000	275
1999	578,358	--	68,527	25,503	1,400	80,060	10,261,835	275
2000	619,438	--	84,082	31,677	1,400	128,709	12,424,093	275
2001	658,000	--	63,903	22,385	1,400	87,583	10,900,000	275
2002	733,507	217,200	80,306	27,582	1,600	102,694	10,913,183	262
2003	781,200	--	76,200	24,800	--	99,000	11,707,000	295
2004	805,789	--	69,115	21,826	--	86,000	9,707,000	265
2005	717,600	--	58,350	18,600	--	72,800	9,700,000	265 ^d
2006	732,176	--	59,429	20,992	--	62,935	8,865,818	245 ^e
2007	732,227	--	62,603	21,029	--	68,006	8,646,825	276 ^f

^aNo copper credits in 1989–1993 and 2003–2007.

^bPartial-year production.

^cNo production in 1994 and 1995 due to mine closure.

^dFifteen of these employees for 2006 were assigned to development effort.

^eFifty employees were assigned to development and reported in that section's employment.

^fForty-five employees were assigned to development and reported in that section's employment.

-- = Not reported.

Table 23. Reserves and resources by category at Greens Creek Mine as of December 31, 2007 (Hecla Mining Co. annual report)

Class	Tons	Grade			
		Silver oz/ton	Gold oz/ton	Lead percent	Zinc percent
Probable Reserve	8,455,096	13.7	0.11	3.8	10.2
Mineralized Material	347,797	5.6	0.13	3.4	7.9
Other Resources	2,266,061	14.5	0.13	4.0	10.5
Total	11,068,954	13.6	0.11	3.8	10.2

RECREATIONAL MINING

Recreational mining continues to increase with the improved gold prices. Production numbers are not believed to be large and are very difficult to obtain; the identity of recreational miners is not sought from individuals and reporting is believed to be very inadequate. Reports are sought from commercial ventures, but returns are meager. Production numbers from this sector of the industry are reported in the placer gold production in tables 13 and 14, and are estimated to amount to 1,882 ounces for 2007 compared to 1,133 ounces for 2006. Employment numbers provided in this report are educated guesses; they include commercial enterprise employees, miner time at the sites, and estimates of time involved by unorganized recreational miners in pursuit of the activity. The indicated full-time-equivalent jobs for 2007 were 55. Employment for 2006 was estimated at 45.

Steve Herschback, Alaska Mining and Diving, has provided an informative website to list recreational mining opportunities: www.akmining.com/mine/resites.htm. There are at least ten

commercial ventures that provide recreational mining opportunities (fig. 28). The ventures provide the right to mine along with varying degrees of services and facilities depending on the need, which in turn is driven by the remoteness of and access to the site. Charges for mining are moderate to high depending on the location and services provided. The website also lists other opportunities available to the recreational miner.



Figure 28. A recreational placer miner feeds a high-banker sluice box on Chicken Creek. Photo courtesy of Chicken Gold Camp & Outpost.

DRILLING

Drilling was conducted during all phases of mining (exploration, development, and production) on various projects across Alaska during the year. Table 24 lists companies with significant drilling programs in Alaska during 2007, and tables 25 and 26 summarize drilling activity in the state during 2007 by region and type of drilling. Drilling totals for 2007 are 830,478 feet of core drilling, 268,112 feet of reverse-circulation drilling, 50,539 feet of core and reverse-circulation drilling on coal operations, and 19,575 feet of placer auger/churn drilling. About 38 percent of the drilling footage for 2007 was from exploration projects in southwestern Alaska and 30 percent of the 2007 drilling footage was from exploration and development projects in the eastern Interior region of Alaska. The 2007 drilling footage increased almost 40 percent from the 2006 value, reflecting the substantial increase in exploration expenditures.

Major drilling programs were conducted in most areas of the state. Barrick Gold had the largest drill

program in Alaska with more than 230,000 feet of core drilling on the Donlin Creek property. The largest programs were in southwestern Alaska, with drilling by Barrick Gold Inc. on the Donlin Creek property, Northern Dynasty Minerals Ltd. at the Pebble property, and International Tower Hill Mines Ltd. at the Terra property. Major drilling programs in southeastern Alaska were conducted by Kennecott Minerals Co. with surface and underground drilling at Greens Creek Mine, by Coeur Alaska Inc. at the Kensington and Jualin properties, by Niblack Mining Corp. on the Niblack property, and by Bravo Ventures Ltd. at several prospects on Woewodski Island. Major drilling programs were conducted in the eastern Interior region by Teck Pogo Inc. on the Pogo property and Rubicon Minerals Corp. in the Goodpaster mining district, by Kinross Gold Corp. near the Fort Knox Mine and by Freegold Ventures Ltd. on the Golden Summit property in the Fairbanks mining district, by Full Metal Minerals Ltd. in the Fortymile mining district, and

International Tower Hill Mines Ltd. in the Livengood mining district. Little Squaw Mining Co. conducted a large reverse-circulation drilling program on the Little Squaw property in the Chandalar area (fig. 29) and Silverado Gold Mines Ltd. drilled placer and lode gold occurrences in the Nolan Creek area. In southcentral Alaska, major drilling programs were conducted by Full Metal Minerals Ltd. at the Lucky Shot property, by Geoinformatics Exploration Inc. at the Whistler property,

and by Pure Nickel Inc. on the MAN property. NovaGold Resources Inc. drilled at the Rock Creek, Big Hurrah, and Arctic properties in the northern and western regions. St. Andrew Goldfields Ltd./Mystery Creek Resources Inc. continued underground drilling at the Nixon Fork property. Teck Cominco Alaska Inc. drilled in the Red Dog Mine area and drilled the Aqqaluk deposit to define mineral resources.

Table 24. Companies reporting significant drilling programs in Alaska, 2007

Altair Ventures Inc.	Kennecott Minerals Co. & Hecla Mining Co.	Rubicon Minerals Corp.
Andover Ventures Inc.	Kinross Gold Corp. (Fairbanks Gold Mining Inc.)	Rhyolite Resources Ltd.
Barrick Gold Corp.	Little Squaw Mining Co.	Silverado Gold Mines Ltd.
BHP Billiton Ltd.	Max Resource Corp.	St. Andrew Goldfields Ltd. (Mystery Creek Resources Inc.)
Bravo Venture Group Inc.	Millrock Resources Inc.	Teck Cominco Alaska Inc.
Coeur Alaska Inc.	Niblack Mining Corp.	Teck Pogo Inc.
Constantine Metal Resources Ltd.	Northern Dynasty Minerals Ltd.	Triex Minerals Corp.
Freemgold Ventures Ltd.	NovaGold Resources Inc.	Ucore Uranium Inc. & Landmark Minerals Inc.
Full Metal Minerals Ltd.	Pathfinder Mineral Services	Usibelli Coal Mine Inc.
Geoinformatics Exploration Inc.	Pure Nickel Inc.	Zazu Metals Corp.
Gold Crest Mines Inc.		
International Tower Hill Mines Ltd.		

Table 25. Drilling footage by region in Alaska, 2007^a

Type of drilling	Northern	Western	Eastern interior	South-central	South-western	South-eastern	Alaska Peninsula	TOTAL
Placer subtotal	18,310	1,165	--	100	--	--	--	19,575
Coal subtotal ^b	--	--	--	--	--	--	--	--
Hardrock core	93,927	45,212	118,253	72,314	413,615	87,157	--	830,478
Hardrock rotary	12,514	41,878	232,269	--	31,990	--	--	318,651
Hardrock subtotal	106,441	87,090	350,522	72,314	445,605	87,157	--	1,149,129
TOTAL (feet)	124,751	88,255	350,522	72,414	445,605	87,157	--	1,168,704

-- = Not reported.

^aDrill footages do not include sand and gravel drilling.

^bCoal drilling included in hardrock RVC drill footage to protect confidentiality of information.



Figure 29. Lode drilling was conducted on Little Squaw Gold Mining Co.'s Chandalar property at the Summit prospect. Little Squaw also completed an extensive placer gold drilling program. Photo provided by Little Squaw Gold Mining Co.

Table 26. Drilling footage reported in Alaska, 1982–2007

Year	Placer Exploration	Placer Thawing	TOTAL PLACER	TOTAL COAL	TOTAL HARDROCK	Hardrock Core ^a	Hardrock Rotary ^a	TOTAL FEET
1982	30,000	94,000	124,000	80,000	200,000	--	--	404,000
1983	23,000	30,000	53,000	12,000	180,500	--	--	245,500
1984	31,000	98,000	129,000	25,700	176,000	--	--	330,700
1985	46,000	34,000	80,000	8,700	131,700	--	--	220,400
1986	32,400	227,000	259,400	28,800	50,200	--	--	338,400
1987	50,250	130,000	180,250	19,900	115,100	95,600	19,500	315,250
1988	152,000	300,000	452,000	26,150	353,860	223,630	130,230	832,010
1989	97,250	210,000	307,250	38,670	332,230	242,440	89,790	678,150
1990	78,930	105,000	183,930	18,195	760,955	648,600	112,355	963,080
1991	51,247	130,000	181,247	16,894	316,655	205,805	110,850	514,796
1992	6,740	65,000	71,740	12,875	359,834	211,812	148,022	444,449
1993	25,216	--	25,216	--	252,315	124,325	127,990	277,531
1994	21,000	--	21,000	8,168	438,710	347,018	91,692	467,878
1995	27,570	--	27,570	--	415,485	363,690	51,795	443,055
1996	61,780	--	61,780	8,500	658,857	524,330	134,527	729,137
1997	38,980	--	38,980	13,998	704,510	523,676	180,834	757,488
1998	33,250	--	33,250	2,300	551,078	505,408	45,670	586,628
1999	6,727	--	6,727	--	448,797	369,863	78,934	455,524
2000	15,480	--	15,480	--	546,268	418,630	127,638	561,748
2001	1,100	--	1,100	36,151	316,068	240,318	75,750	353,319
2002	1,250	--	1,250	--	488,902	385,290	103,612	490,152
2003	10,108	--	10,108	2,000	370,634	270,456	100,178	382,742
2004	107,526	--	107,526	--	451,652	415,628	36,024	559,178
2005	3,360	--	3,360	--	634,277	592,497	41,780	637,637
2006	8,759	--	8,759	7,500	819,536	765,363	54,173	835,795
2007	19,575	--	19,575	50,539	1,098,590	865,479	268,112	1,168,704

^aCore and rotary drilling not differentiated prior to 1987.

-- = Not reported.

GOVERNMENT ACTIONS

Geologists from the Minerals Resources Section of the Alaska Division of Geological & Geophysical Surveys (DGGs) mapped and sampled 189 square miles of the northeastern part of the Fairbanks mining district. A series of 1:50,000-scale geologic maps will be available in late 2008. This fieldwork is part of an integrated program following the airborne geophysical survey results previously released by DGGs in 2006.

DGGs also conducted geologic field work along the proposed gas pipeline corridor between Delta Junction and Dot Lake along the Alaska Highway during the summers of 2006 and 2007 (fig. 30). Surficial and bedrock mapping were completed at a scale of 1:63,360. In 2007 DGGs surficial geologists and contractors dug and logged several trenches to determine whether recent surface deposits have been offset by fault movement. Work in 2008 will continue this project from Dot Lake to Tetlin Junction.

The State of Alaska, through DGGs, funded and acquired airborne magnetic and electromagnetic geophysical surveys for 180 square miles of the 715-square-mile Styx River survey area in the northeastern Lime Hills and northwestern Tyonek quadrangles. The remainder of the data was to be acquired in early 2008 and released in summer 2008. DGGs also released airborne magnetic and electromagnetic geophysical survey data for 602 square miles of the eastern Bonnifield district along the northern flank of the Alaska Range. The surveys were conducted by Fugro Airborne Surveys Corp. and managed by Stevens Exploration Management Corp. These data, along with all historic DGGs publications and most U.S. Geological Survey publications on Alaska, are available for free download at the DGGs website (<http://www.dggs.dnr.state.ak.us>).

To date, with an investment of \$9.6 million, almost 9 million acres (more than 14,000 square miles) of

Alaska have been flown for detailed geophysical surveys and about 2.7 million acres of 1:63,360- and 1:50,000-scale geologic maps have been produced as part of the State-funded Alaska Airborne Geophysical/Geological Mineral Inventory (AGGMI) Program and state-funded Alaska Highway Corridor Study (table 27). Federal monies from the U.S. Geological Survey's STATEMAP Program fund some geologic mapping within the AGGMI Program.

DGGS also acquired airborne magnetic and electromagnetic geophysical data for a 250-square-mile area of the western Fortymile mining district. The survey, funded by the U.S. Bureau of Land Management, covers parts of the Eagle and Tanacross quadrangles and focuses on federal and Native lands. Table 28 shows the geophysical surveys flown in Alaska that were funded largely by federal monies through the U.S. Bureau of Land Management.

DGGS requested input from the Alaska mineral industry for the formation of a voluntary sponsor group to help financially support DGGS's mineral-resource programs. This program would be modeled after the successful energy industry sponsorship program for DGGS's energy-related field studies and supporting analyses. These programs allow increased footprint of mapped areas and provide an efficient means of optimizing the State's goal of providing pertinent high-resolution information on potentially developable resources.

The DGGS Geologic Materials Center (GMC) received mineral industry samples and data during the year. The U. S. Bureau of Land Management deposited nickel-copper-cobalt mineral core from the U. S. Bureau of Mines Funter Bay Hole No. 1 (44 boxes of core, total depth of hole was 443 feet) in the Juneau Quadrangle.

Governor Sarah Palin met with Cynthia Carroll, Anglo American PLC chief executive, to discuss issues surrounding the Pebble project. Anglo American executives also met with select state lawmakers. Ms. Carroll pledged that Anglo American would drop out of the deal on the Pebble project if the wild salmon fisheries of Bristol Bay could not be protected. Ms. Carroll promised to hire locally and set up various social and education programs in the Bristol Bay region. Anglo American set up a partnership with local residents, referred to as the Bristol Bay Sustainable Fisheries Fund, to enhance the Bristol Bay fishery.

Usibelli Coal Mine Inc. was named exporter of the year by Governor Sarah Palin for its work shipping coal to South Korea and Chile.



Figure 30. Geologists Melanie Werdon and Diana Solie discuss strategy while near Horn Mountain on the Macomb Plateau as part of the DGGS geologic studies for the Alaska Highway Corridor Project. Photo by Larry Freeman.

Alaska Industrial Development & Export Authority (AIDEA) signed a 7-year agreement with Sherwood Copper Corp. in January to use the Skagway ore terminal for copper-gold ore concentrates from Sherwood's Minto Mine in the Yukon Territory, Canada. The agreement allows additional users of the terminal. After the agreement was signed, AIDEA awarded a facilities rehabilitation contract to construct a new concentrate storage building and support structures to handle Sherwood's copper concentrates. The Skagway ore terminal began receiving truckloads of high-grade copper-gold concentrates in July.

The price of State of Alaska-owned sand and gravel on the North Slope and on the state road system will climb from \$1 to \$3 per cubic yard. The price of overburden will also increase. The price of riprap, larger rocks used for embankments, will climb to \$7.50 per cubic yard from \$2.50 per cubic yard. The Alaska Department of Natural Resources adjusted the prices, last adjusted

in 1999, to reflect the fair market value of the materials. North Slope oil companies are the largest consumer of state materials, followed by the Alaska Department of Transportation & Public Facilities.

Beginning in 2007, Mining Licenses will be issued by the Alaska Department of Revenue (DOR) instead of the Alaska Department of Natural Resources (DNR). Information from an Annual Placer Mining Application (APMA) will be forwarded from DNR to DOR for DOR to issue a license. A form applying for a Mining License

can also be submitted directly to DOR. A Mining License Tax return must be filed by previous owners of a Mining License before a new Mining License will be issued by DOR. The production royalty for mining on State of Alaska mining claims is calculated based on the Mining License Tax return. Royalties are due to the State even if no taxes are owed by a mining operation and the penalty for failure to pay the state royalty is claim forfeiture.

The Alaska Department of Natural Resources Water Section began requiring a temporary water permit use for

Table 27. Detailed state airborne geophysical surveys and follow-up geologic ground-truth mapping as of December 2007^a

Nome District western core area	494 sq. miles	Airborne geophysical/ground-truth geological map		
Nyac District core area	183 sq. miles	Airborne aeromagnetic mapping		
Circle District core area	338 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Valdez Creek District	78 sq. miles	Airborne geophysical mapping		
Fairbanks District	626 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Richardson District	137 sq. miles	Airborne geophysical mapping		
Rampart/Manley-Tofty	1,017 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Upper Chulitna District	364 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Petersville-Collinsville District	415 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Iron Creek District	689 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Ruby District	591 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Fortymile District	1,036 sq. miles	Airborne geophysical mapping/ground-truth geologic maps		
Livengood District	229 sq. miles	Airborne geophysical mapping/ground-truth geologic maps		
Salcha River/North Pogo	1,032 sq. miles	Airborne geophysical mapping/ground-truth geologic maps		
Southeast extension of Salcha River–Pogo	91 sq. miles	Airborne geophysical mapping		
Liberty Bell	276 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Broad Pass	304 sq. miles	Airborne geophysical mapping		
Council	618 sq. miles	Airborne geophysical mapping/ground-truth geologic map		
Goodpaster River	210 sq. miles	Airborne geophysical mapping		
Liscum ^b	67 sq. miles	Airborne geophysical mapping		
Black Mountain	222 sq. miles	Airborne geophysical mapping		
East Richardson	224 sq. miles	Airborne geophysical mapping		
Northeast Fairbanks	404 sq. miles	Airborne geophysical mapping/ground-truth geologic mapping		
Alaska Highway Corridor ^c	3,045 sq. miles	Airborne geophysical mapping/ground-truth geologic mapping		
Bonnifield District	602 sq. miles	Airborne geophysical mapping (released winter 2007)		
Styx River (eastern portion)	180 sq. miles	Airborne geophysical mapping (to be released winter 2008)		
Styx River (southern and western portions) ^d	535 sq. miles	Airborne geophysical mapping (to be released summer 2008)		
Total:	15 years	\$9.6 million	14,007 sq. miles	2.45% of Alaska's total area

^aProjects funded by the Alaska State Legislature. Projects concentrate on state, Native, state-selected, and Native-selected lands and are managed by DGGs.

^bProject funded through agreement with AngloGold Ashanti (USA) Exploration Inc.

^cProject funded by the Alaska State Legislature as a \$2 million Capital Improvement Project to assess the geologic hazards and resource potential along the proposed natural gas pipeline corridor.

^dProject partially funded through agreement with Anglo American Exploration (USA) Inc. under the DGGs Mineral Industry Sponsorship Program.

Note: Surveys listed above are complete except where noted. Additional areas will be scheduled for surveying at later dates contingent on future funding.

Table 28. Detailed federally funded airborne geophysical survey work as of December 2007^a

Wrangell/Stikine ^b	1,111 sq. miles	Airborne geophysical mapping
Koyukuk/Wiseman	533 sq. miles	Airborne geophysical mapping
Ketchikan ^c	605 sq. miles	Airborne geophysical mapping
Aniak	1,240 sq. miles	Airborne geophysical mapping
Delta River	603 sq. miles	Airborne geophysical mapping
Sleetmute	641 sq. miles	Airborne geophysical mapping
Howard Pass - Misheguk Mountain	1,447 sq. miles	Airborne geophysical mapping (released 2006)
Western Fortymile	250 sq. miles	Airborne geophysical mapping (to be released 2008)
Total	9 years	\$4.0 million
		6,430 sq. miles
		1.1% of Alaska's total area

^aProjects funded mainly by U.S. Bureau of Land Management with contributions by DGGGS, local and state governments, and private corporations. Projects concentrate mainly on federal land. Data are released through DGGGS.

^bMajor funding came from BLM and the City of Wrangell.

^cMajor funding came from BLM and Ketchikan Gateway Borough. Sealaska Corp., Alaska State Mental Health Land Trust Office, the City of Coffman Cove, and the City of Thorne Bay also contributed funds. Sealaska Corp. also contributed previously acquired geophysical data.

drilling in 2007. Drills using more than 500 gallons per day for more than 10 days, or more than 5,000 gallons per day are required by regulation to have a temporary use permit. Core drills typically have a supply pump operating at 5,000 to 12,000 gallons per day per drill and the use is considered “consumptive” even if the water spills unused from the supply tank. The temporary water use permit is triggered when DNR receives the APMA application. A temporary water use permit can use up to five sources (stream reach or waterbody) and last up to 5 years. For those conducting drilling as a generally allowed use (less than 300 foot depth) and therefore not requiring an APMA, the operator should apply directly to the DNR Water Section for the water-use permit.

The State of Alaska established clear ownership of two historic RS 2477 trails in northern Alaska under a settlement reached with the federal government and Doyon Ltd. The 65-mile Coldfoot–Chandalak Lake trail and the 85-mile Caro-to-Coldfoot trail are among many access routes that Alaska claims under RS 2477, a federal law by which the federal government granted rights-of-way across federal lands not otherwise reserved for public use.

The U.S. Environmental Protection Agency (EPA) withdrew the Red Dog Mine’s water discharge permit in October 2007. The EPA said its analysis for the permit issued in March 2007 was partially flawed because it used historical assumptions rather than current data on water use and dust emissions at the mine. The EPA will merge its review of the water permit with an environmental-impact analysis for the Red Dog Mine expansion to the Aqqaluk deposit.

The Alaska Railroad made \$16.3 million in net income during 2007 from total revenue of \$169.3 million. Freight amounted to \$91.8 million of the total, with mineral products (coal, sand, and gravel) revenue amounting to \$14.8 million, 16.3 percent of total rev-

enues for the year. Mineral products revenue was down in 2007 compared to 2006 at \$17.8 million, or 16.6 percent. Total freight tonnage, the railroad’s core business, was 6.1 million tons including 2.4 million tons of gravel. The railroad also developed a quarry in the Curry area of southcentral Alaska that provides ballast for its capital program.

The Ninth U.S. Circuit Court of Appeals ruled that the Kensington project wastewater discharge permit issued by U.S. Army Corps of Engineers violated the federal Clean Water Act. The court found that the Corps of Engineers did not have the jurisdiction to grant the permit, with that authority resting with the U.S. Environmental Protection Agency. The appeals court sent the case back to a lower court to vacate the tailings permit, as well as a permit to build a marine terminal to service the mine. The case will likely be petitioned to the U.S. Supreme Court.

Funding for the U.S. Bureau of Land Management’s (BLM) Alaska Minerals Program, which included the Juneau John Rishel Mineral Information Center (JRMIC) on Mayflower Island in Douglas, Alaska, was not included in the BLM budget for 2008. The doors to the JRMIC officially closed to the public July 20, 2007. The U.S. Coast Guard moved into the building. The JRMIC housed a specialized mining and geology library with a collection of more than 20,000 mineral-related items, including books, journals, maps, and state and federal government documents. Most office furniture and outdoor equipment was sent to the BLM’s Campbell Tract warehouse in Anchorage for processing. Mining artifacts were transferred to the Juneau–Douglas City Museum, and will be identified by a commemorative plaque recognizing the John Rishel collection. The world-class mineral collection was transferred to the University of Alaska Anchorage, one of the only facilities in the state with room to display the complete collection. Records

and books were transferred to the Alaska Resources Library and Information Services (ARLIS) in Anchorage and the Alaska Division of Geological & Geophysical Surveys (DGGS) in Fairbanks. Effort was made to keep information specific to southeastern Alaska available in Juneau libraries. The information will remain accessible to the public.

The Jack Wade Dredge at Mile 86 of the Taylor Highway in eastern Alaska was dismantled by a contractor for the U.S. BLM due to safety concerns. The dredge, a popular tourist photo stop and one of the few indications of the rich placer mining history of the Fortymile area, had deteriorated over the years since being abandoned in 1941. Several large pieces of the dredge, such as the boiler, gearing and winching machinery, trommel, hand-levels, and buckets, were saved and will be put on display with some interpretive signs near the Chicken post office to highlight the historical significance of the dredge and placer gold mining in the region. The rest of the dredge was hauled to a landfill in Tok.

The BLM announced final results from the Bay Area Resource Management Plan/Environmental Impact Statement (RMP/EIS) update review. The BLM plans to lift mining restrictions on roughly 1 million acres of land in the Bristol Bay region. Mining restrictions have been in place for more than 30 years due to the land selection process imposed by the 1971 Alaska Native Claims Settlement Act (ANILCA).

The University of Alaska's Mining and Petroleum Training Service (MAPTS) opened a new training facility at Kenai Peninsula College in Soldotna. MAPTS was established 28 years ago and currently has the largest enrollment of any such program in North America. MAPTS has trained more than 50,000 people in mining technology, process technology, industrial process instrumentation, and mechanical technology.

OUTLOOK

Exploration activity appears to remain as robust as or stronger than the 2007 activity. Exploration expenditures are projected to remain high, but decrease from the record 2007 value. The Pebble and Donlin Creek projects will account for a large portion of the expenditures, as these projects approach feasibility studies. Several projects across the state are expected to have significant exploration expenditures in 2008 to define discoveries made over the past several years. Many exploration projects that have lain dormant for years are being explored again and reconnaissance-level exploration programs have outlined new prospects across Alaska.

Development expenditures for 2008 will be lower than in 2007 due to completion of most of the initial

development of projects and delays in commissioning new projects. Construction at Rock Creek and Big Hurray should be completed during 2008; construction is in final stages and should be completed in the latter part of 2008. Coeur Alaska has completed construction of its underground development, mill, and surface facilities with the exception of the tailings facilities at Kensington. A Modified Plan of Operations to the U.S. Forest Service for an alternative tailings facility is on track to receive the necessary permits later this year. Additionally, on June 27, the U. S. Supreme Court granted the State of Alaska and Coeur Alaska's Petitions for a Writ of Certiorari to review a Ninth Circuit Court of Appeals decision relating to the Kensington 404 permit. The final Supreme Court decision or approval of alternative tailings permitting may allow for construction to take place next year, leading to potential production in the latter part of 2009. The only possible development expenditures here would be for tailings facility construction in 2008/09. Kinross is continuing development of its heap leach facility and undertaking advanced stripping at Fort Knox Mine. The Chuitna coal project should continue at the current rate of expenditure. Ongoing capital maintenance and development expenditures will continue at Greens Creek and Red Dog mines. This indicates that development expenditures will be on the order of \$200 million compared to \$319 million for 2007.

Production quantities should improve slightly for 2008 due to more efficient operations at Pogo Mine, commissioning of operations at Rock Creek Mine, and similar production from the other operating mines. The value of production should be less due to declining metal prices during the year. The value of production at Red Dog Mine, the most significant producer, will be about two-thirds to three-quarters of that for 2007. Production at Rock Creek Mine should be commissioned during the last quarter of 2008. Nixon Fork Mine will not operate. Commercial and recreational placer production will be about the same as in 2007 and no improvements are forecast in the industrial minerals sector. A 20 to 25 percent decrease in value of production should be experienced in 2008.

State revenue from the mining industry will drop again next year due to increasing costs of operation and to declining metal prices. That decrease is expected to be in the range of 25 to 30 percent of this year's total. The longer term future is expected to significantly improve state revenue as the industry matures and more of the current advanced exploration and developing projects are commissioned to producing mines.

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APPENDIX A

New claims staked in Alaska 2003-2007

Quad no.	Quadrangle name ^a	New federal mining claims					New state mining claims				
		2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
18	De Long Mountains	0	0	0	0	0	0	0	0	0	0
23	Phillip Smith Mountains	0	0	0	0	0	0	0	0	0	0
26	Noatak	0	0	0	0	0	0	0	0	0	0
27	Baird Mountains	0	0	0	0	0	0	60	20	260	4
28	Ambler River	0	0	0	0	0	0	0	313	15	57
29	Survey Pass	0	0	0	0	0	0	0	68	68	44
30	Wiseman	45	16	14	250	134	54	0	13	0	4
31	Chandalar	26	16	25	30	0	90	24	13	68	173
36	Selawik	0	0	0	0	0	0	0	0	0	0
38	Hughes	0	0	0	0	0	0	3	0	0	20
39	Bettles	15	0	12	7	0	0	0	0	0	0
43	Teller	0	0	0	0	0	2	0	36	80	111
44	Bendeleben	0	0	0	0	0	53	194	55	405	632
45	Candle	0	0	0	0	0	11	172	148	178	8
47	Melozitna	0	0	0	0	0	0	0	0	28	0
48	Tanana	1	0	0	0	0	32	53	45	46	52
49	Livengood	0	0	0	0	0	111	117	89	125	41
50	Circle	0	0	0	0	0	180	99	126	147	101
51	Charley River	0	0	0	0	0	0	0	0	2	2
52	Nome	0	0	0	0	0	13	9	7	57	31
53	Solomon	0	0	0	0	9	6	3	48	56	25
55	Nulato	0	0	0	0	0	40	0	69	0	0
56	Ruby	0	0	0	0	0	1	9	0	9	15
58	Fairbanks	0	0	0	0	0	114	102	70	96	61
59	Big Delta	0	0	0	0	0	478	631	988	2,218	153
60	Eagle	0	0	0	0	0	78	113	230	257	589
64	Ophir	0	0	0	0	0	14	42	1	0	61
65	Medfra	0	0	0	0	0	6	0	0	12	33
67	Healy	0	0	0	0	0	19	111	149	47	271
68	Mt. Hayes	21	24	253	0	4	471	156	84	429	127
69	Tanacross	0	0	0	0	0	20	33	0	34	410
73	Iditarod	0	0	0	0	0	13	213	1	589	302
74	McGrath	0	0	0	0	0	0	142	0	139	72
75	Talkeetna	0	0	0	0	0	171	166	178	383	62
76	Talkeetna Mountains	0	0	0	0	0	0	33	234	65	72
77	Gulkana	8	0	0	0	0	0	0	0	103	85
78	Nabesna	0	0	0	0	0	0	0	1	0	56
81	Russian Mission	0	0	0	0	0	0	0	0	160	0
82	Sleetmute	0	0	0	0	0	28	0	6	25	753
83	Lime Hills	0	0	0	0	0	5	32	271	122	281
84	Tyonek	0	0	0	0	0	57	597	113	125	81
85	Anchorage	0	0	0	0	0	104	75	80	72	66
86	Valdez	0	0	0	0	0	1	3	1	48	1
91	Bethel	0	0	0	0	0	0	0	8	154	516
92	Taylor Mountains	0	0	0	0	0	2	87	26	55	10
93	Lake Clark	0	0	0	0	0	501	267	866	87	831
95	Seward	21	10	18	13	29	6	18	7	12	18
96	Cordova	0	0	0	0	0	0	0	0	0	0
101	Goodnews Bay	0	0	0	0	0	0	12	0	0	0
102	Dillingham	0	0	0	0	0	34	5	147	0	99
103	Iliamna	0	0	0	0	0	720	944	318	26	171
104	Seldovia	0	0	0	0	0	0	3	0	0	0
105	Blying Sound	0	0	0	0	0	0	0	0	0	4
109	Skagway	0	0	0	0	0	1	0	4	20	100

Quad no.	Quadrangle name ^a	New federal mining claims					New state mining claims				
		2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
112	Juneau	68	0	0	1	67	6	6	2	7	0
114	Sitka	9	0	0	0	9	0	0	0	0	1
117	Petersburg	39	0	1	54	23	3	0	0	0	0
118	Bradfield Canal	0	0	0	0	0	0	0	0	0	0
119	Craig	380	0	83	94	365	3	0	2	0	0
120	Ketchikan	0	0	0	0	0	0	2	0	0	0
121	Dixon Entrance	0	0	13	8	293	0	0	0	0	0
122	Prince Rupert	30	0	0	0	0	0	0	0	0	0
128	Bristol Bay	0	0	0	0	0	0	0	10	0	0
129	Ugashik	0	0	0	0	0	0	0	0	16	0
130	Karluk	0	0	0	0	0	0	18	0	0	0
131	Kodiak	0	0	0	0	0	0	0	1	0	0
133	Chignik	0	0	0	0	0	0	41	6	0	0
135	Trinity Islands	0	0	0	0	0	11	8	383	13	1
136	Kaguyak	0	0	0	0	0	0	0	71	0	0
TOTALS		663	66	419	457	933	3,459	4,603	5,308	6,858	6,607

Source: Data provided by Alaska Department of Natural Resources Land Records Information Section and U.S. Bureau of Land Management.

^aUnlisted quadrangles did not have any staked mining claims between 2003 and 2007.

*Eight federal claims extend over two quadrangles.

Quad no.	Quadrangle name ^a	2001		2002		2003		2004		2005		2006		2007	
		New	Total	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
78	Nabesna	0	4	0	4	0	4	0	4	0	4	0	4	0	4
81	Russian Mission	0	46	0	46	0	46	0	46	0	46	0	46	0	46
82	Sleetmute	0	26	0	26	0	26	0	26	0	26	0	26	0	26
84	Tyonek	0	0	0	0	4	4	0	4	0	4	0	0	0	0
85	Anchorage	0	60	1	56	0	53	0	53	4	57	0	57	2	59
86	Valdez	0	41	0	41	0	26	0	26	0	26	0	26	0	26
91	Bethel	0	10	0	0	0	0	0	0	0	0	28	28	0	28
95	Seward	0	2	0	0	0	0	0	0	0	0	0	0	0	0
104	Seldovia	0	1	0	1	0	1	0	1	0	1	0	1	0	1
105	Blying Sound	0	0	0	0	0	0	0	0	0	0	0	0	2	2
117	Juneau	0	5	0	5	0	5	0	5	0	5	0	5	0	5
128	Trinity Islands	0	0	5	5	0	5	0	5	0	5	0	5	0	5
136	Craig	0	4	0	4	0	4	0	4	0	4	0	4	0	4
	TOTALS	27	3,091	61	2,138	101	1,857	59	1,484	128	1,612	103	1,646	57	1,642

^aUnlisted quadrangles did not have any prospect sites staked during 2001-2007.

Source: Data provided by Alaska Department of Natural Resources Land Records Information Section.

APPENDIX C

Selected significant mineral deposits and mineral districts in Alaska^a

The alphabetized list of mineral deposits and mineral districts is keyed to the list of explanatory paragraphs that follow. For example, The Lik deposit in the alphabetized list is "Lik, 1, (fig. C-1)." This says that the location of Lik is shown as number 1 in figure C-1.

- Alaska-Juneau, 100, (fig. C-3).
 Anderson Mountain, 54, (fig. C-1).
 Aniak district, 84, (fig. C-3).
 Apex-El Nido, 104, (fig. C-3).
 Apollo-Sitka mines, 86, (fig. C-3).
 Arctic, 9, (fig. C-1).
 Avan Hills, 12, (fig. C-3).
 Baultoff, 75, (fig. C-2).
 Bear Mountain, 21, (fig. C-2).
 Big Creek/Ladue, 58, (fig. C-1).
 Big Hurrah, 32, (fig. C-3).
 Binocular and other prospects, 72, (fig. C-1).
 Bohemia Basin, 103, (fig. C-3).
 Bokan Mountain, 122, (fig. C-3).
 Bonanza Creek, 45, (fig. C-2).
 Bond Creek, 73, (fig. C-2).
 Bonnifield district massive sulfide deposits, 54, (fig. C-1).
 Bornite, 8, (fig. C-1).
 Brady Glacier, 98, (fig. C-3).
 BT, 54, (fig. C-1).
 Buck Creek, 23, (fig. C-2).
 Calder Mine, 133, (fig. C-2).
 Canwell and Nikolai Complex, 140 (fig. C-3)
 Cape Creek, 22, (fig. C-2).
 Carl Creek, 74, (fig. C-2).
 Casca VABM, 53, (fig. C-1).
 Castle Island, 111, (fig. C-1).
 Chandalar mining district, 17, (fig. C-3).
 Chichagof, 101, (fig. C-3).
 Chistochina, 68, (figs. C-2, C-3).
 Circle mining district, 52, (fig. C-3).
 Claim Point, 82, (fig. C-3).
 Coal Creek, 63, (fig. C-2).
 Copper City, 119, (fig. C-1).
 Cornwallis Peninsula, 110, (fig. C-1).
 Council mining district, 33, (fig. C-3).
 Delta massive sulfide belt, 55, (fig. C-1).
 Denali prospect, 67, (fig. C-1).
 Dolphin, 49e, (fig. C-3).
 Donlin Creek, 137, (fig. C-3).
 Drenchwater, 3, (fig. C-1).
 Dry Creek, 54, (fig. C-1).
 Duke Island, 141 (fig. C-3)
 Eagle Creek, 34, (fig. C-3).
 Ear Mountain, 25, (fig. C-2).
 Ellamar, 78, (fig. C-1).
 Ernie Lake (Ann Creek), 15, (fig. C-1).
 Esotuk Glacier, 20, (fig. C-2).
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^aThis generalized summary does not describe all of the 7,000 known mineral occurrences in Alaska.

NOTE: In cooperation with DGGs and the Russian Academy of Sciences, the USGS published Open-File Report 93-339 (Nokleberg and others, 1993), *Metallogenesis of mainland Alaska and the Russian northeast*, which describes 273 lode deposits and 43 significant placer districts in Alaska.

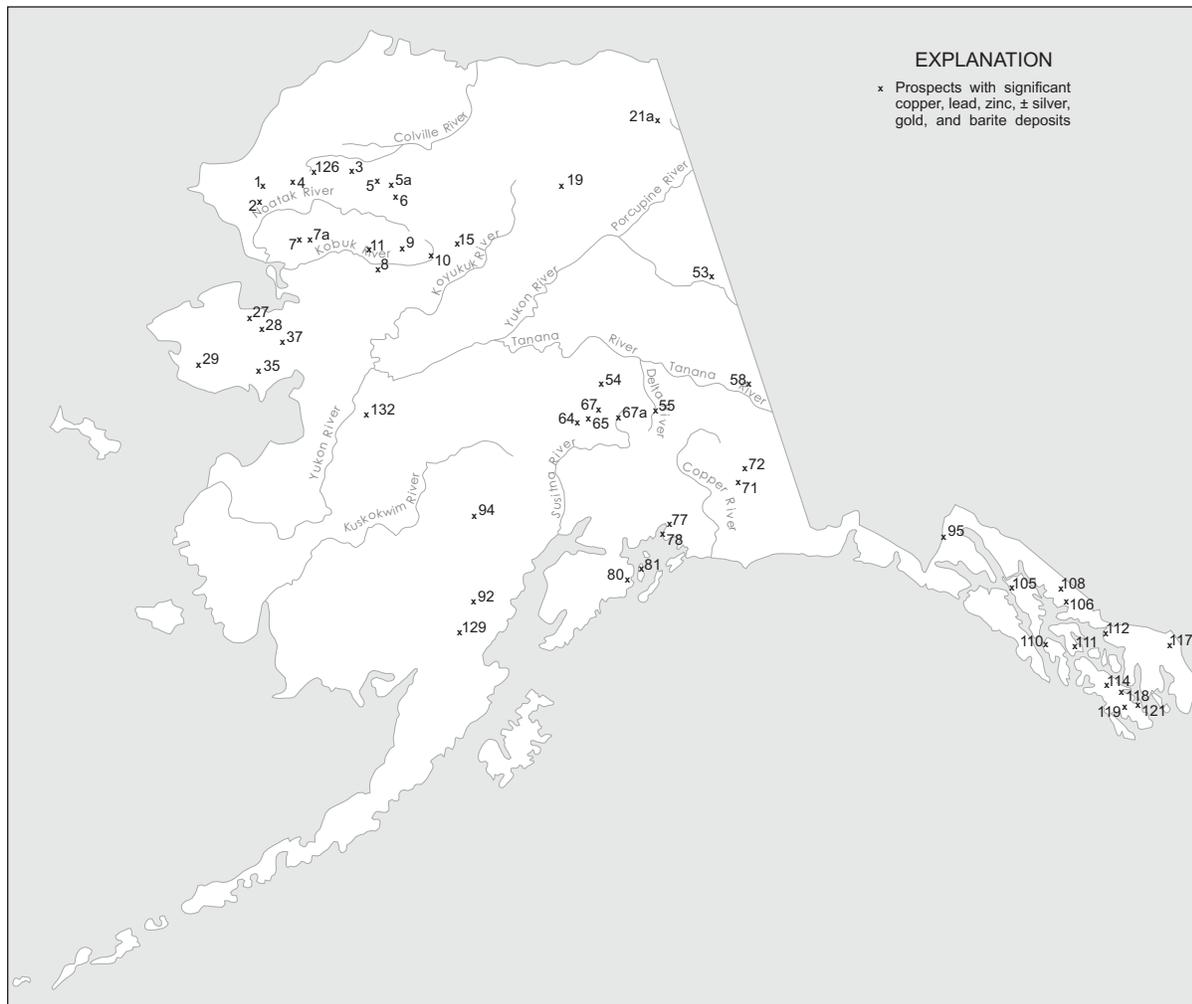


Figure C-1. Significant copper, lead, zinc with credits of silver, gold, and barite deposits in Alaska, 2007.

Map no.

- 1 **Lik**—Major stratabound massive sulfide (Zn–Pb–Ag–Ba) deposit in black shale and chert. Proven reserve (Lik) estimate of 24 million tons of 9% Zn, 3.1% Pb, and 1.4 oz/ton Ag (fig. C-1).
- 2 **Red Dog**—At least five major stratabound massive sulfide deposits hosted in Pennsylvanian or Mississippian shale; similar to locality 1. Mining from 1989 to 2006 produced 7.7 million tons of Zn, 1.35 million tons of Pb, and 74.4 million oz Ag. Deposits, with announced reserves from 2000, include: (a) The Main deposit at Red Dog contains 46.2 million tons of proven ore grading 19.2% Zn, 5.2% Pb, with 2.92 oz/ton Ag. (b) The Aqqaluk deposit contains probable, indicated, and inferred reserves of 73.0 million tons grading 15.2% Zn, 4.03% Pb, and 2.17 oz/ton Ag. (c) The Qanaiyaq (formerly named Hilltop) deposit with an indicated reserve is 10.6 million tons grading 17.8% Zn, 5.5% Pb, and 3.41 oz/ton Ag. (d) Inferred resource in the Paalaaq deposit is 14.3 million tons of 15.0% Zn, 4.0% Pb, and 2.63 oz/ton Ag. (e) Anarraq deposit discovered in 1999 has an inferred reserve

of 19.0 million tons of 15.8% Zn, 4.8% Pb, and 2.07 oz/ton Ag (fig. C-1).

- 3 **Drenchwater**—Mississippian and Pennsylvanian shales and cherts contain three stratabound base metal occurrences spatially related to acid volcanics. The lowest unit, a siliceous mudstone, contains a 2 ft layer with up to 23% Zn. An overlying gray chert contains up to 11% Zn and up to 5% Pb with some Ag in fracture fillings. At the top of the overlying tuffaceous layer, Ag-bearing Zn and Pb mineralization outcrops discontinuously for at least 6,500 ft, and contains up to 26% Zn and 51% Pb in grab samples (fig. C-1).
- 4 **Ginny Creek**—Epigenetic, disseminated Zn–Pb–Ag deposits with barite in sandstone and shale of Late Devonian through Early Mississippian Noatak Sandstone. Random grab samples of float contain 0.3% to 3.0% Zn and highly variable amounts of Pb and Ag (fig. C-1).
- 5 **Story Creek**—Epigenetic replacement deposits of Zn–Pb–Ag–Cu–Au hosted in brecciated zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Grab samples of high-

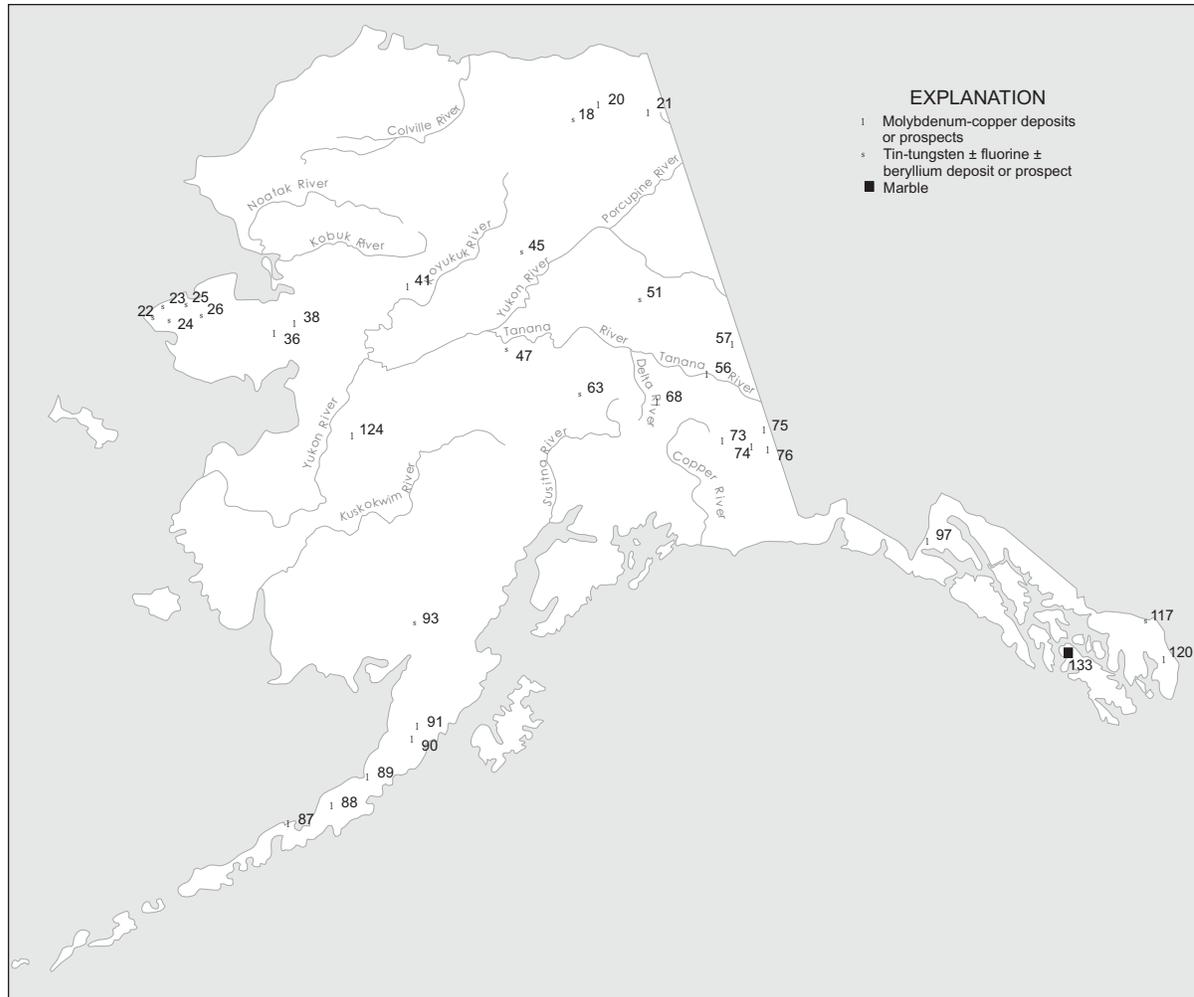


Figure C-2. Significant molybdenum-copper and tin-tungsten with credits of fluorite and beryllium deposits in Alaska, 2007.

grade material contain up to 0.43% Cu, 34% Pb, 28.8% Zn, 0.04 oz/ton Au, and 30 oz/ton Ag (fig. C-1).

- 5a **Kivliktort Mountain**—Mineralized float is widespread on the north flanks of the mountain, apparently spatially related to the contact between shales at the base of the hills and coarse-grained siliceous clastic rocks on the upper slopes. Rock samples containing up to 30% Zn have been reported (fig. C-1).
- 6 **Whoopie Creek**—Epigenetic replacement deposits of Zn–Pb–Cu–Ag–Au–Cd in breccia zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Random grab samples of mineralized material contain 0.24% Cu, 0.37% Cd, 46% Zn, 44% Pb, 0.14 oz/ton Au, and 14.8 oz/ton Ag (fig. C-1).
- 7 **Omar**—Epigenetic replacement deposits of Paleozoic age; include bedded barite occurrences. Grab samples contain 15.3% Cu, 0.15% Pb, 0.95% Zn, 0.05% Co, and 0.3 oz/ton Ag. BLM estimates 35 million tons of 4% Cu (fig. C-1).
- 7a **Frost**—Possible 9 million tons of barite in pods, lenses, and wavy-banded quartz-calcite-barite veins.

Chalcopyrite and galena occur in veins which cross cut Paleozoic limestone and dolomite for a minimum distance of 1 mi. Selected samples contain up to 13.2% Zn (fig. C-1).

- 8 **Bornite**—Major stratabound Cu–Zn deposit in brecciated carbonate rock of Devonian age; 5.0 million ton orebody contains 4.0% Cu and accessory Zn and Co. Larger reserve estimate of 40 million tons of about 2% Cu and undisclosed amount of Zn and Co. At grade of 1.2% Cu, reserves are 100 million tons (fig. C-1).
- 9 **Arctic**—Major volcanogenic (Cu–Zn) massive sulfide deposit hosted in sequence of metarhyolite, metatuff, and graphitic schist of Devonian age; indicated reserves of 40 million tons grade 4.0% Cu, 5.5% Zn, 0.8% Pb, 1.6 oz/ton Ag, and 0.02 oz/ton Au (fig. C-1).
- 10 **Sun**—Major (Cu–Pb–Zn–Ag) massive sulfide deposit in sequence of middle Paleozoic metarhyolite and metabasalt. Average grades are 1 to 4% Pb, 6 to 12% Zn, 0.5 to 7% Cu, 3 to 11 oz/ton Ag (fig. C-1).
- 11 **Smucker**—Middle Paleozoic volcanogenic massive sulfide deposit; 3,000 ft long and up to 190 ft wide;

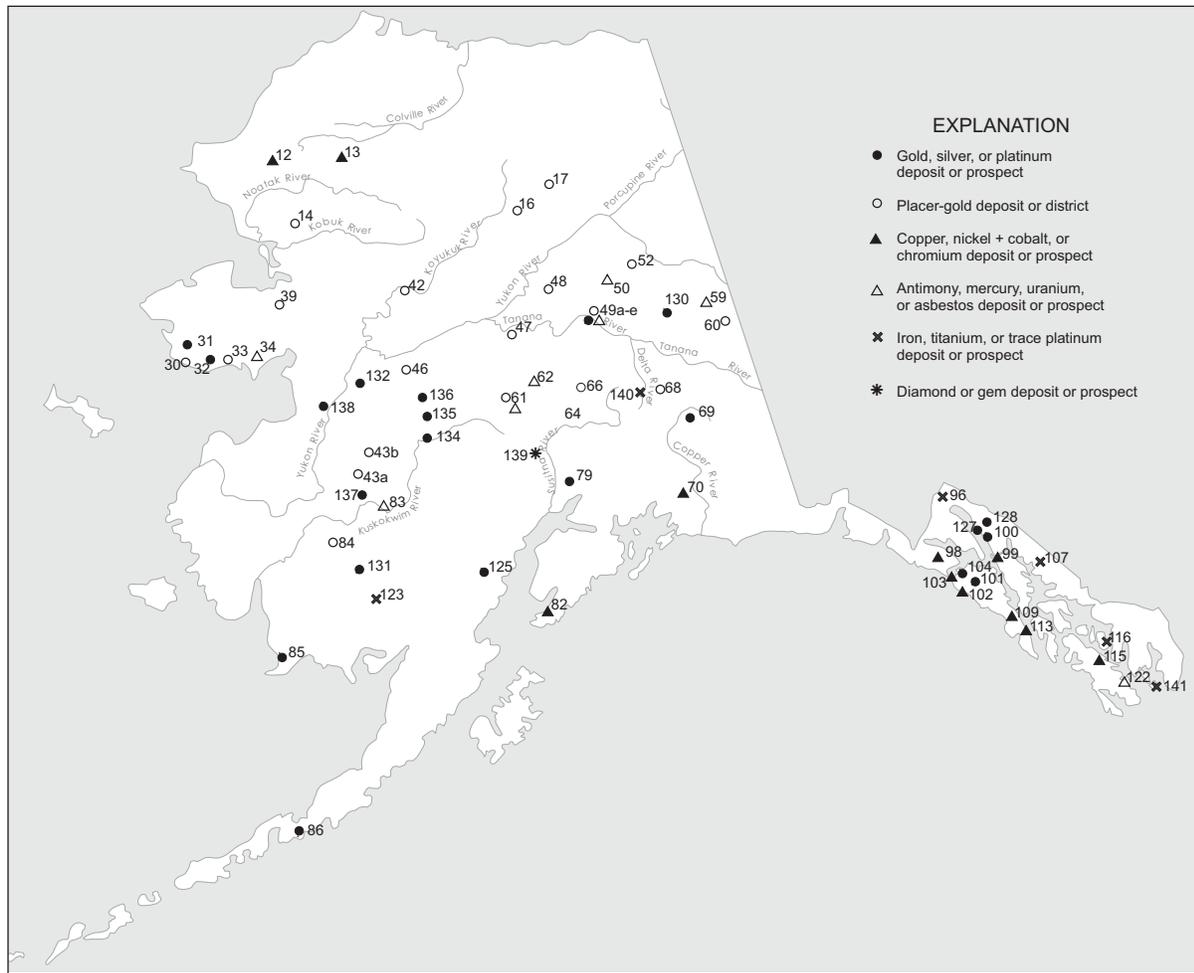


Figure C-3. Significant gold, silver, platinum, and strategic mineral deposits in Alaska, 2007.

contains significant tonnage of Cu–Pb–Zn ore that grades 1.5% Pb, 5 to 10% Zn, 3 to 10 oz/ton Ag, with minor Au (fig. C-1).

- 12 **Avan Hills**—Disseminated chromite in layered ultramafic rocks; grab samples contain up to 4.3% Cr with 0.015 oz/ton PGM (fig. C-3).
- 13 **Misheguk Mountain**—Chromite occurrences similar to those in the Avan Hills (fig. C-3).
- 14 **Klery Creek**—Lode and placer Au deposits worked intermittently from 1909 through 1930s. Total production through 1931, mostly from placer deposits, estimated at 31,320 oz Au (fig. C-3).
- 15 **Ernie Lake (Ann Creek)**—Stratabound massive sulfide occurrence in metarhyolite, metatuff, and marble. Gossan zones strongly anomalous in Cu–Pb–Zn and Ag (fig. C-1).
- 16 **Koyukuk mining district**—Major placer Au district; from 1893 to 2006 produced an estimated 347,661 oz Au. Gold placers in Nolan Creek mined on surface and underground, both sources of large gold nuggets. Significant deep placer reserves remain (fig. C-3).
- 17 **Chandalar mining district**—Major Au-producing district; substantial production in excess of 66,287 oz Au through 2006 from lode and placer sources; lode Au found in crosscutting quartz veins that intrude schist and greenstone. Active development of placer deposits and lodes in progress. Inferred lode reserves estimated to be 45,000 tons with grade of 2 oz/ton Au (fig. C-3).
- 18 **Porcupine Lake**—Stratiform fluorite occurrences and argentiferous enargite, tetrahedrite associated with felsic volcanic rocks of late Paleozoic age. Reported grades of up to 30% fluorite (CaF₂) reported, with grab samples of 4.8% Cu (fig. C-2).
- 19 **Wind River**—Stratabound Pb–Zn massive sulfide prospects; reported grades of up to 5% Pb (fig. C-1).
- 20 **Esotuk Glacier**—Disseminated Mo–Sn–W–Pb–Zn mineralization in skarns associated with Devonian(?) schistose quartz monzonite. Grab samples contain up to 0.08% Sn and 0.15% W (fig. C-2).
- 21 **Bear Mountain**—Major stockwork Mo–W–Sn occurrence in intrusive breccia. Rock samples containing up to 0.8% Mo and 0.6% W occur within a 35-acre area where soil samples average more than

- 0.2% MoS₂, and an adjacent 25-acre area where rubble contains wolframite has soils averaging greater than 0.12% WO₃. Rubble crop in this area indicates a Tertiary porphyry system as the source of the Mo and W (fig. C-2).
- 21a **Galena Creek**—Steeply dipping veins contain up to 21% Cu, 3.5% Zn, and 1.3% Pb with 5.5 oz/ton Ag on the east side of the creek, and on the ridge west of the creek a large area of disseminated mineralization and veinlets contains predominantly Zn (fig. C-1).
- 22 **Cape Creek**—Major placer Sn producer. More than 500 tons Sn produced from 1935 to 1941; from 1979 to 1990, produced 1,040 tons Sn. Derived from Cape Mountain in contact zone of Cretaceous granite and limestone (fig. C-2).
- 23 **Buck Creek**—Major placer Sn producer. More than 1,100 tons Sn produced from 1902 to 1953 (fig. C-2).
- 24 **Lost River**—Major Sn, fluorite, W, and Be deposit associated with Cretaceous Sn granite system. More than 350 tons Sn produced from skarn and greisen lode sources. Measured reserves amount to 24.6 million tons that grade 0.15% Sn, 16.3% CaF₂, and 0.03% WO₃, based on 45,000 ft of diamond drilling (fig. C-2).
- 25 **Ear Mountain**—Placer Sn district and Sn–Cu–Au–Ag–Pb–Zn skarn mineralization of Cretaceous age. Area also anomalous in U (fig. C-2).
- 26 **Kougarok Mountain**—Sn deposit hosted in quartz–tourmaline–topaz greisen of Cretaceous age. Grades may average 0.5% Sn and 0.01% Ta and Nb, but a high-grade resource of 150,000 tons grading 1% + Sn was identified, with incrementally higher tonnage at lower grades (fig. C-2).
- 27 **Hannum**—Stratiform, carbonate-hosted Pb–Zn–Ag massive sulfide deposit of mid-Paleozoic age in heavily oxidized zone that ranges from 30 to 150 ft thick. Mineralized zone reported to assay up to 10% Pb, 2.2% Zn, 0.04 oz/ton Au, and 1.76 oz/ton Ag (fig. C-1).
- 28 **Independence Creek**—Pb–Zn–Ag massive sulfide deposit; high-grade ore shipped in 1921 contained 30% Pb, 5% Zn, up to 150 oz/ton Ag. Mineralization restricted to shear zone in carbonates (fig. C-1).
- 29 **Sinuk River region**—Several Pb–Zn–Ag–Ba–F bearing massive sulfide deposits and layered Fe deposits in carbonate and metavolcanic rocks of Nome Group. Mineralized zones extend for over 8,000 ft along strike (fig. C-1).
- 30 **Nome mining district**—Major placer Au producer. Production from 1897–2006 in excess of 4,998,886 oz Au, all from placers. Past Sb and W production (fig. C-3).
- 31 **Rock Creek**—550,000 oz Au resource, with about 11.79 million tons grading 0.059 oz/ton Au in vein swarms and stringers in an area 1,500 ft long, 500 ft maximum width and 300 ft deep (fig. C-3).
- 32 **Big Hurrah**—Epigenetic vein deposit in black slate and metasedimentary rocks of the Solomon schist. Deposit contains some W mineralization and has produced over 27,000 oz Au from nearly 50,000 tons milled ore. Proven, inferred, and indicated reserves total 104,000 tons that grade 0.61 oz/ton Au, 0.55 oz/ton Ag, and credits of WO₃ (fig. C-3).
- 33 **Solomon and Council mining districts**—Major placer Au districts; produced over 1,046,522 oz through 2006. Three structurally controlled Au deposits in Bluff area—Daniels Creek, Saddle, and Koyana Creek—contain minimum inferred reserves of 6.5 million tons grading 0.1 oz/ton Au (fig. C-3).
- 34a **Eagle Creek**—U prospect in Cretaceous Kachauik alkalic intrusive rocks. Highly anomalous U concentrations up to 1,000 ppm reported (fig. C-3).
- 34b **Death Valley (Boulder Creek)**—Sandstone-type U prospect with predominantly epigenetic mineralization. Over 11,000 feet of drilling defined a minimum reserve of 1 million pounds of U₃O₈ with average grade of 0.27% U₃O₈ and 9.9 foot thickness within 200 feet of surface (fig. C-3).
- 35 **Omalik**—Vein-type Pb–Zn–Ag massive sulfide prospect in Paleozoic carbonate rocks; from 1881 to 1900, produced 400 tons of Pb–Zn ore that averaged about 10% Pb and 40 oz/ton Ag. Grades of oxidized Zn ore reported to be up to 34% Zn (fig. C-1).
- 36 **Windy Creek**—Disseminated Mo–Pb–Zn mineralization in quartz veins and skarn with reported values as high as 0.15% Mo (fig. C-2).
- 37 **Quartz Creek**—Significant Pb–Zn–Ag mineralization; reported grades of 15% combined Pb–Zn and 10 oz/ton Ag (fig. C-1).
- 38 **Placer River**—Significant Mo–F mineralization disseminated in intrusive rocks. Reported values of 0.2% Mo (fig. C-2).
- 39 **Fairhaven/Inmachuk district**—Placer deposits with 348,924 oz production from 1902–2006; significant reserves remaining in a large ancestral channel system. Large base metal sulfide concentrations and U values in concentrates (fig. C-3).
- 40 **Poovookpuk Mountain**—Porphyry Mo mineralization. Reported grades of up to 0.25% Mo (fig. C-2).
- 41 **Purcell Mountain**—Mo and Ag occurrences associated with Cretaceous alkalic igneous plutons, alaskite, and bostonite dikes (fig. C-2).
- 42 **Hughes mining district**—Production of 289,104 oz Au from 1930 to 2006, mainly from Alaska Gold Co. dredge at Hogatza; dredge reactivated in 1981, but deactivated in 1984, and reactivated again in 1990. Non-float mechanized operation on Utopia Creek produced significant amount of placer Au from 1930 to 1962 (fig. C-3).
- 43 **Iditarod district**—Major placer Au district; produced 1,563,459 oz Au through 2006. Significant reserves of lode Au and lode W at Golden Horn deposit Chicken Mountain, and other known lodes in region associated with shear zones and monzonite intrusive rocks of Late Cretaceous age (fig. C-3).
- 44 **Innoko–Tolstoi mining district**—Major placer Au district with significant lode Au–Sb–Hg potential; lode sources are Late Cretaceous volcanic-plutonic complexes and dike swarms that intrude Mesozoic

- flysch; mining district produced 732,353 oz Au through 2006, almost all from placer deposits (fig. C-3).
- 45 **Bonanza Creek**—Skarn-type W mineralization along intrusive contact; no published information available (fig. C-2).
- 46 **Ruby mining district**—Placer Au–Sn district; produced more than 477,976 oz Au from 1931 to 2006; mining district also contains Pb–Ag prospects with grades reportedly as high as 82 oz/ton Ag (fig. C-3).
- 47 **Hot Springs mining district**—Placer Au–Sn district; produced more than 582,620 oz Au and over 720,000 lb cassiterite through 2006. Includes Eureka and Tofty subdistricts. Magnetite-rich, niobium-bearing carbonatite sill in the Tofty area contains geochemically anomalous Nb, REE, P, and Y (figs. C-2, C-3).
- 48 **Tolovana mining district**—Placer Au district; produced more than 529,573 oz Au since discovery in 1914 to 2006. Substantial reserves remain mainly on Livengood Bench, a Pliocene ancestral channel (fig. C-3).
- 49 **Fairbanks mining district**—Nationally ranked Au-producing district; largest producer in Alaska. Produced about 8,197,458 oz Au from placer deposits (1902–2006). Major lode Au and lode Sb producer; produced more than 4,094,196 oz Au and over 2000 tons Sb from veins and shear zones through 2006. Production of W exceeded 4,000 short ton units since 1915, all derived from skarn near Cretaceous quartz monzonite (fig. C-3).
- 49a **Fort Knox**—Disseminated Au deposit within granodiorite/quartz monzonite pluton near Fairbanks. Proven and probable reserves as of December 31, 2006, open at depth, are 2,705,000 oz of Au in 176.0 million tons of rock at an average Au grade of 0.015 oz/ton. Measured and indicated resources are 70.69 million tons grading 0.018 oz/ton Au containing 1,289,000 ounces of gold, with 1,573,000 ounces of measured and indicated gold resources in the Fort Knox area. Fairbanks Gold Mining Inc. at Fort Knox and True North mines produced 3,676,284 oz of Au from 1996 to 2006 (fig. C-3).
- 49b **Ryan Lode**—Based on a 0.015 oz/ton cutoff, total reserves in the metasediment-hosted Ryan Lode and subparallel igneous-hosted Curlew Shear are 822,200 oz of Au in 14.6 million tons of rock. A geologic resource of about 2.4 million oz occurs within the total shear zone system (fig. C-3).
- 49c **Grant Mine**—Series of subparallel Au-bearing quartz veins in schist and quartzite of Ester Dome based on exploration in 1990. Indicated reserves one of the O’Dea vein system are 212,000 tons of 0.36 oz/ton Au. Other similar vein systems are found nearby (fig. C-3).
- 49d **True North**—Au occurs in siderite-quartz veins in carbonaceous quartzite and schist within a terrane containing eclogitic rocks. An indicated resource of 188,000 oz Au at grade of 0.040 oz/ton Au in 4,665,000 tons of rock as of December 31, 2006. 11.04 million tons of 0.04 oz/ton ore were processed at Fort Knox mill from 2001 through 2004 (fig. C-3).
- 49e **Dolphin**—Mineralized intermediate intrusion contains anomalous Au, As, Bi and Sb. Discovery hole in 1995 intercepted 330 ft of 0.049 oz/ton Au (fig. C-3).
- 49f **Gil Claims**—Gold occurs in two calc-silicate zones within Paleozoic schist units. Gold enrichment occurs along iron-stained shears and within quartz-calcite veinlets. Drilling identified an in-place Au resource of 433,000 oz at an average grade of 0.04 oz/ton Au (fig. C-3).
- 50 **Mt. Prindle**—Significant U-rare-earth mineralization in Mesozoic alkaline igneous rocks. Rock geochemical values of up to 0.7% U; up to 15% rare-earth elements reported (fig. C-3).
- 51 **Twin Mountain**—Significant W mineralization associated with skarn development along contact zone of quartz monzonite stock of Cretaceous age (fig. C-2).
- 52 **Circle mining district**—Currently one of Alaska’s largest producing placer Au districts; produced more than 1,068,860 oz Au since discovery in 1893 to 2006. Has significant potential for Sn, W, and Au mineralization from variety of lode sources (fig. C-3).
- 53 **Three Castle Mountain, Pleasant Creek, Casca VABM**—Stratabound Pb–Zn massive sulfide mineralization. Reported grades of up to 17% Zn and 2% Pb (fig. C-1).
- 54 **Bonnifield district massive sulfide deposits (Anderson Mountain, Dry Creek, Sheep Creek, Virginia Creek, BT, Liberty Bell)**—Significant volcanogenic Cu–Pb–Zn–Ag massive sulfide deposits of Devonian to Mississippian age. Potential for high-grade deposits reported. Includes Liberty Bell stratabound Au–B deposit and mineralization in Sheep Creek; latter contains Sn as well as base metals (fig. C-1).
- 55 **Delta massive sulfide belt**—Contains at least 30 known volcanogenic massive sulfide deposits and occurrences. Grades from 0.3 to 1.1% Cu, 1.7 to 5.7% Zn, 0.5 to 2.3% Pb, 0.7 to 2.0 oz/ton Ag, and 0.018 to 0.061 oz/ton Au; estimated potential reserve of 40 million tons for all deposits. Recent exploration has identified several gold prospects associated with silicified structures in the White Gold trend (fig. C-1).
- 56 **Mosquito, Peternie**—Porphyry Mo prospects of early Tertiary age; reported grades of up to 0.17% Mo (fig. C-2).
- 57 **Taurus**—Significant major porphyry Cu–Au prospect of Paleocene age. East Taurus Zone contains inferred reserves of 140 million tons grading about 0.30% Cu and 0.01 oz/ton Au, and 0.03% Mo (fig. C-2).
- 58 **Big Creek/Ladue**—Stratabound Pb–Zn–Ag massive sulfide prospects in metavolcanic rocks (fig. C-1).
- 59 **Slate Creek**—At least 55 million tons of 6.3%, high-quality chrysotile asbestos in serpentinized ultramafic rocks of Permian(?) age (fig. C-3).
- 60 **Fortymile mining district**—Major placer Au district. Produced over 561,646 oz placer and very minor

- lode Au since discovery in 1883 to 2006, the longest continuous production of Au (120 years) of any Alaskan mining district (fig. C-3).
- 61 **Kantishna mining district**—Major placer Au and lode Ag–Au–Pb–Zn–Sb–W district. Produced 99,307 oz placer and lode Au, about 307,000 oz lode Ag, and 2,500 tons Sb from shear zones and vein deposits hosted in metamorphic units of Yukon-Tanana terrane. Nearly 90 lode deposits have been identified; potential exists for significant Ag–Au–Pb–Zn resources. Metalliferous stratabound base metal deposits occur in schist and quartzite (fig. C-3).
- 62 **Stampede mine**—Major Sb deposit; produced more than 1,750 tons Sb from large shear zone in poly-metamorphic rocks of Yukon-Tanana terrane (fig. C-3).
- 63 **Coal Creek**—Greisen-hosted Sn–Cu–W deposit in “McKinley” age pluton (55 million years old). Reported reserves of 5 million tons of ore that grade 0.28% Sn and 0.3% Cu with credits of W, Ag, and Zn (fig. C-2).
- 64 **Golden Zone mine**—Major Au–Cu–Ag deposits in Late Cretaceous breccia pipe and skarn deposits. Produced more than 1,581 oz Au, 8,617 oz Ag, and 21 tons Cu. The Golden Zone deposit contains measured and indicated resources of approximately 2 million tons, grading 0.106 oz/ton Au, 0.47 oz/ton Ag and 0.12 % Cu (utilizing a 0.05 oz/ton Au cut-off grade), and contains approximately 214,800 ounces of gold, 948,000 ounces of silver and 24,000 pounds of copper. (figs. C-1, C-3).
- 65 **Nim Prospect**—Porphyry Cu–Ag–Au deposit of Late Cretaceous age. Reported grades of up to 5.0% Cu and 9 oz/ton Ag (fig. C-1).
- 66 **Valdez Creek district**—About 513,671 oz Au production through 2006. Cambior Alaska Inc., the largest placer mine in Alaska, operated in this district until September 1995 (fig. C-3).
- 67 **Caribou Dome (Denali)**—Ten identified stratabound Cu deposits in volcanic sedimentary rocks of Triassic age. Proven and probable ore is 700,000 tons grading 6% Cu with Ag credits, with indicated resources that may contain 2 million tons ore over strike length of 4,000 feet (fig. C-1).
- 67a **Zackly**—Disseminated Cu and Au in garnet-pyroxene skarn and marble. Reserves are estimated at 1.4 million tons grading 2.6 percent Cu and 0.175 oz/ton Au (fig. C-1).
- 68 **Chistochina**—Porphyry Cu prospects of Tertiary age and placer Au district; produced more than 182,719 oz Au and small amount Pt from placer deposits through 2006 (figs. C-2, C-3).
- 69 **Nabesna mine**—Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(?) age; produced over 66,500 oz Au from about 88,000 tons of ore from 1930 to 1941 (fig. C-3).
- 70 **Spirit Mountain**—Massive and disseminated Cu–Ni mineralization in mafic-ultramafic complex (fig. C-3).
- 71 **Kennecott deposits**—Major stratiform Cu–Ag massive sulfide deposits localized near contact between Chitstone Limestone and Nikolai Greenstone of Triassic age; contained some of highest grade Cu lodes mined in North America. From 1911 to 1938, produced more than 600,000 tons Cu and 10 million oz Ag from 4.8 million tons ore. Some reserves remain (fig. C-1).
- 72 **Binocular and other prospects**—Kennecott-type Cu–Ag massive sulfide deposits (fig. C-1).
- 73 **Bond Creek–Orange Hill**—Two major porphyry Cu–Mo deposits of Late Cretaceous age; reported inferred reserves of 850 million tons ore that grade 0.3 to 0.5% Cu and 0.03% Mo (fig. C-2).
- 74 **Carl Creek**—Porphyry Cu prospect in altered intrusive complex; similar to locality 73 (fig. C-2).
- 75 **Baultoff**—Porphyry Cu prospect in altered intrusive rocks; inferred reserves of 145 million tons of 0.20% Cu; similar to locality 73 (fig. C-2).
- 76 **Horsfeld**—Porphyry Cu prospect of Late Cretaceous age (fig. C-2).
- 77 **Midas mine**—Significant stratabound Cu (Ag–Au–Pb–Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Orca Group. Produced more than 1,650 tons Cu from 49,350 tons ore (fig. C-1).
- 78 **Ellamar**—Stratabound Cu–Zn–Au massive sulfide deposit in sediment of Eocene(?) Orca Group. Produced more than 8,000 tons Cu, 51,307 oz Au, and 191,615 oz Ag from about 301,835 tons ore (fig. C-1).
- 79 **Willow Creek, Independence, Lucky Shot, War Baby**—Major lode Au deposits (Ag–Cu–Pb–Zn–Mo) in veins cutting Mesozoic quartz diorite. Produced more than 606,400 oz Au from lode sources and about 55,600 oz Au from associated placer deposits (fig. C-3).
- 80 **Latouche, Beatson**—Major stratabound Cu–Zn–Ag massive sulfide deposits in Orca Group sedimentary rocks and mafic volcanic rocks. Produced more than 10,250 tons Cu from 6 million tons ore. Inferred reserves of 5 million tons ore that grade 1% Cu, 1.5% Pb+Zn (fig. C-1).
- 81 **Rua Cove**—Major stratabound Cu–Zn massive sulfide deposit in complex ore shoots enclosed in mafic volcanic rocks of Orca Group. Reported reserves of over 1.1 million tons ore that grade 1.25% Cu (fig. C-1).
- 82 **Red Mountain and Claim Point**—Significant Cr occurrences associated with Jurassic layered ultramafic complexes at Red Mountain near Seldovia. More than 39,951 tons of metallurgical-grade ore shipped through 1976; huge low-grade Cr resource may remain, of which 30 million tons grade 5.1% Cr₂O₃ (fig. C-3).
- 83 **Red Devil**—Major Hg–Sb deposit; high-grade epithermal Hg–Sb deposit hosted in shear zones in Kuskokwim Group sedimentary rocks. More than 35,000 flasks Hg produced from 75,000 tons ore (fig. C-3).
- 84 **Aniak district**—Significant placer Au district with 595,366 oz Au produced through 2006, mainly from the Nyac and Donlin Creek areas (fig. C-3).

- 85 **Goodnews Bay**—Major placer Pt district; estimated to have produced over 555,000 oz refined PGE metals from 1934 to 1976; one of the largest known PGE metal resources in United States. Possible resources of 60 million yd³ of deep, PGE-bearing gravels remain. Lode source believed to be Alaskan-type zoned ultramafic complex of Jurassic or Cretaceous age. Possible significant offshore placer potential (fig. C-3).
- 86 **Apollo–Sitka mines**—Major lode Au deposits; produced more than 107,600 oz Au from ore that averaged about 0.22 oz/ton Au. Inferred reserves are 748,000 tons grading 0.76 oz/ton Au, 2.16 oz/ton Ag, with base metal credits (fig. C-3).
- 87 **Pyramid**—Late Tertiary porphyry Cu–Mo deposit; inferred reserves of 125 million tons ore that grade 0.4% Cu and 0.03% Mo reported (fig. C-2).
- 88 **Ivanof**—Late Tertiary porphyry Cu prospect; grades of up to 0.72% Cu reported. Potential for large tonnages (fig. C-2).
- 89 **Weasel Mountain, Bee Creek**—Porphyry Cu–Mo prospect of late Tertiary to Quaternary age; grades of up to 0.48% Cu and 0.035% Mo reported. Potential for moderate tonnages of low-grade mineralization (fig. C-2).
- 90 **Mike deposit**—Porphyry Mo prospect of late Tertiary age; grades up to 0.21% Mo. Potential for large tonnages of low-grade Mo mineralization (fig. C-2).
- 91 **Rex deposit**—Porphyry Cu prospect similar to locality 90; grades up to 0.3% Cu. Potential for moderate reserves of low-grade mineralization (fig. C-2).
- 92 **Kasna Creek**—Major stratiform Cu–Pb–Zn and skarn-sulfide deposits of Mesozoic age in mafic, volcanic, and sedimentary rocks; reported reserves of over 10 million tons ore that grade more than 1% Cu (fig. C-1).
- 93 **Sleitat Mountain**—High-grade east-west-trending, Sn–W–Ag topaz–quartz greisen system hosted in 59-million-year-old granite and in hornfels. Zone up to 3,000 ft long and 500 ft wide. One drill-hole with 85 ft of 1.8% Sn, and 0.4% W. Inferred resources up to 106,000 tons Sn in 29 million tons ore (fig. C-2).
- 94 **Jimmy Lake**—Complex Cu–Ag–Sn mineralization of late Tertiary(?) age; reported grades of up to 105 oz/ton Ag and 3% Cu (fig. C-1).
- 95 **Haines Barite/Palmer**—Major stratiform Ba–Pb–Zn–Cu–Ag deposit in pillow basalt-dominated section of Paleozoic or Triassic age; consists of 48- to 60-ft-thick zone of 60% barite with upper zone (2 to 8 ft thick) of massive sulfides that contain 2% Pb, 3% Zn, 1% Cu, up to 4 oz/ton Ag, and 0.12 oz/ton Au. Estimated to contain 750,000 tons of 65% barite with Zn and Ag credits (fig. C-1).
- 96 **Klukwan**—Major Fe–Ti deposits in zoned ultramafic complex of Mesozoic age; reported to contain 3 billion tons of material grading 16.8% Fe and 1.6 to 3.0% Ti (fig. C-3).
- 97 **Nunatak**—Porphyry Mo deposit; reported reserves of 2.24 million tons ore grading 0.067% Mo, 0.16% Cu, and 129.5 million tons of 0.026% Mo, 0.18% Cu (fig. C-2).
- 98 **Brady Glacier**—Major Ni–Cu deposit in layered gabbro–pyroxenite complex of Tertiary age. Proven reserves of 100 million tons ore that grade 0.5% Ni, 0.3% Cu reported and about 0.03% Co; also contains PGE concentrations (fig. C-3).
- 99 **Mertie Lode and Funter Bay**—Contains substantial reserves of lode Au mineralization. Past production totaled about 15,000 oz Au. Deposits also contain significant Ni–Cu and Pb–Zn–Ag mineralization. Funter Bay deposit contains reported reserves of 560,000 tons that grade 0.34% Ni, 0.35% Cu, and 0.15% Co in gabbro-pipe system (fig. C-3).
- 100 **Alaska–Juneau**—Major lode Au deposit that consists of 100- to 300-ft-wide zone that contains an echelon, Au-bearing quartz veins in metamorphic rocks; produced more than 3.52 million oz Au from 88.5 million tons ore from 1893 to 1944. Reserves (all categories) of 105.7 million tons of 0.05 oz/ton Au (fig. C-3).
- 101 **Chichagof and Hirst Chichagof**—Major lode Au deposits in quartz veins that cut Mesozoic graywacke; produced more than 770,000 oz Au, most of which was produced at Chichagof Mine. Inferred leased reserves estimated to be 100,000 oz Au (fig. C-3).
- 102 **Mirror Harbor**—Ni–Cu mineralization in layered gabbro complex of Mesozoic age; reported proven reserves of 8,000 tons of 1.57% Ni and 0.88% Cu and reported inferred reserves of several million tons ore that grade 0.2% Ni and 0.1% Cu (fig. C-3).
- 103 **Bohemia Basin**—Major Ni–Cu–Co mineralization in layered mafic complex similar to locality 102; reported reserves of 22 million tons ore that grade 0.33 to 0.51% Ni, 0.21 to 0.27% Cu, and 0.02% Co, all of which are recoverable with standard flotation technology (fig. C-3).
- 104 **Apex–El Nido**—Significant lode Au–W deposits occurring as cross-cutting veins in graywacke; produced more than 50,000 oz Au (fig. C-3).
- 105 **Greens Creek**—Major sediment-hosted Pb–Zn–Cu–Ag–Au volcanogenic massive sulfide deposit of Devonian or Triassic age. Production from 1989 to 1993 and 1996 to 2006 is 989,769 tons of Zn, 302,493 tons of Pb, over 8,600 tons of Cu, 135.4 million oz of Ag, and 982,216 oz of Au. 2006 probable reserve estimate is 7.68 million tons grading 10.39% Zn, 3.98% Pb, 14.42 oz/ton Ag, and 0.113 oz/ton Au. Inferred resources are 5.07 million tons grading 10.4% Zn, 4.0% Pb, 0.113 oz/ton Au, and 14.42 oz/ton Ag. (fig. C-1).
- 106 **Sumdum**—Volcanogenic Cu–Pb–Zn massive sulfide deposit in Mesozoic metamorphic complex with potential strike length of over 10,000 ft. Inferred reserves of 26.7 million tons ore that grade 0.57% Cu, 0.37% Zn, and 0.3 oz/ton Ag reported (fig. C-1).
- 107 **Snettisham**—Fe–Ti deposit in mafic zoned intrusive complex; reported grades of about 18.9% Fe and 2.6% Ti (fig. C-3).
- 108 **Tracy Arm**—Stratabound Cu–Zn–Pb massive sulfide prospect in Mesozoic schist; over 1,100 ft long and up to 12 ft thick. Reported grades of 1.5% Cu, 3.9% Zn, 0.76 oz/ton Ag, and 0.013 oz/ton Au (fig. C-1).

- 109 **Red Bluff Bay**—Significant chrome mineralization in Mesozoic ultramafic complex (probably ophiolite); reported reserves of 570 tons of material that grade 40% Cr and 29,000 tons that grade 18 to 35% Cr (fig. C-3).
- 110 **Cornwallis Peninsula**—Volcanogenic Cu–Pb–Zn–Ag–Ba massive sulfide deposit of Triassic(?) age; reported grades of up to 20% Pb–Zn and 23 oz/ton Ag (fig. C-1).
- 111 **Castle Island**—Stratiform barite deposit of Triassic age hosted in carbonate and pillow basalt; about 856,000 tons of raw and refined barite produced from 1963 to 1980; also contains Zn, Pb, and Cu sulfides. Reported to be mined out (fig. C-1).
- 112 **Groundhog Basin**—Area with several massive sulfide prospects in Mesozoic schist and gneiss whose origins are possibly plutonic associated. Reported grades of up to 8% Pb, 29 oz/ton Ag, and 0.5 oz/ton Au. Sn has also been recently identified. Area also contains potential for porphyry Mo deposits (fig. C-1).
- 113 **Snipe Bay**—Ni–Cu deposit in zoned mafic-ultramafic complex; inferred reserves of 430,000 tons of 0.3% Ni, 0.3% Cu, and 0.13 oz/ton Ag reported (fig. C-3).
- 114 **Kasaan Peninsula**—Major skarn-type Cu–Fe–Au massive sulfide deposit of Jurassic age; area has produced over 14,000 tons Cu, and 55,000 oz Ag. Reported reserves of 4 million tons ore that grade 50% Fe and less than 2% Cu (fig. C-1).
- 115 **Salt Chuck**—Cu–PGM–Ag–Au deposit in contact zone between pyroxenite and gabbro within Alaskan-type zoned mafic-ultramafic pluton. From 1900 to 1941, 2,500 tons Cu, over 20,000 oz PGM, and Au and Ag credits were produced from 325,000 tons ore (fig. C-3).
- 116 **Union Bay**—Significant Fe–Ti–(V) mineralization in zoned, Ural-Alaska type ultramafic complex. At least 7 zones of PGE–magnetite hydrothermal mineralization associated with pyroxene veins that crosscut magmatic layering (fig. C-3).
- 117 **Hyder mining district**—Area produced more than 25,000 tons high-grade W–Cu–Pb–Zn–Ag ore from 1925 to 1951 from crosscutting ore shoots in Texas Creek granodiorite of Tertiary age. Area contains potential for porphyry Mo–W mineralization and massive sulfide–skarn Pb–Ag–Au–W deposits (figs. C-1, C-2).
- 118 **Jumbo**—Cu–Fe–Mo–Ag skarn deposit; produced more than 5,000 tons Cu, 280,000 oz Ag, and 7,000 oz Au from 125,000 tons ore. Zoned magnetite–Cu skarns are associated with epizonal granodiorite pluton of Cretaceous age. Reported reserves of 650,000 tons ore that grade 45.2% Fe, 0.75% Cu, 0.01 oz/ton Au, and 0.08 oz/ton Ag (fig. C-1).
- 119 **Copper City**—Stratiform Cu–Zn–Ag–Au massive sulfide deposit in late Precambrian or earliest Paleozoic Wales Group. Reported grades of up to 12.7% Cu, 2.7% Zn, 2.5 oz/ton Ag, and 0.2 oz/ton Au (fig. C-1).
- 120 **Quartz Hill**—A porphyry Mo deposit hosted in a 25-million-year-old composite felsic pluton. Probable reserves are 232 million tons with a grade of 0.22% MoS₂, and possible reserves are 1.2 billion tons with 0.12% MoS₂ (fig. C-2).
- 121 **Niblack**—Volcanogenic Cu–Pb–Au–Ag massive sulfide deposit hosted in Precambrian(?) Wales Group or Ordovician to Silurian Descob Formation; produced more than 700 tons Cu, 11,000 oz Au, and 15,000 oz Ag. Resource of 2.78 million tons at 3.22% Zn, 1.70% Cu, 0.93 oz/ton Ag and 0.081 oz/ton Au. (fig. C-1).
- 122 **Bokan Mountain**—Numerous U–Th prospects associated with Jurassic peralkaline intrusive complex; from 1955 to 1971, produced more than 120,000 tons ore that graded about 1% U₃O₈. Contains inferred reserves of about 40 million tons of 0.126% Nb and up to 1% REE metals (fig. C-3).
- 123 **Kemuk Mountain**—Magmatic Fe–Ti deposit hosted in Cretaceous(?) pyroxenite. Inferred reserves of 2.4 billion tons that average 15 to 17% Fe, 2 to 3% TiO₂, and 0.16% P₂O₅ (fig. C-3).
- 124 **McLeod**—Porphyry Mo deposit that contains quartz–molybdenite fissure veins in quartz–feldspar porphyry. Chip samples contain up to 0.09% Mo (fig. C-2).
- 125 **Johnson River**—Epigenetic(?) quartz–sulfide stockwork or massive sulfide deposit hosted in volcanoclastic, pyroclastic, and volcanic rocks of Jurassic Talkeetna Formation. Deposit has drilled-out reserves at a \$45/ton cutoff with no cut of high Au assays, 1,099,580 tons grading 0.32 oz/ton Au, 0.24 oz/ton Ag, 0.76% Cu, 1.17% Pb, and 8.37% Zn (fig. C-3).
- 126 **Nimiuktuk River**—Small hill of massive, high-grade barite estimated to contain at least 1.5 million tons barite. Widespread stream-sediment Ba anomalies in area indicate further barite potential (fig. C-1).
- 127 **Kensington**—Stockwork quartz veins in sheared and chloritized quartz diorite produced 10,900 tons grading 0.18 oz/ton Au prior to 1930. Recent estimates indicate at least 4.42 million tons grading 0.31 oz/ton Au for 1,352,140 oz Au of proven and probable reserves and 4.32 million tons of mineralized material grading 0.20 oz/ton Au (fig. C-3).
- 128 **Jualin**—Five quartz–fissure veins in Cretaceous quartz diorite, more than 15,000 ft of underground workings; produced 48,387 oz Au, mainly prior to 1930. Reserves included in the reserves of the Kensington property (fig. C-3).
- 129 **Pebble (Copper)**—One of the world's largest Cu–Au porphyry deposits with several known centers. The Pebble West deposit has a measured, indicated and inferred resource of 2.04 billion tons grading 0.34% Cu, 0.011 oz/ton Au and 0.018 % Mo at a 0.50% Cu equivalent cutoff. The new Pebble East deposit has an inferred resource of 3.75 billion tons grading 0.57% Cu, 0.011 oz/ton Au and 0.036 % Mo at a 0.60% Cu equivalent cutoff. The 2007 combined resource contains 67 billion pounds of copper, 82 million ounces of gold and 5.2 billion pounds of molybdenum. Mineralized system extends over 35 square mile area and includes other Cu–Au–Mo porphyry, Cu–Au skarn, and Au vein prospects (fig. C-1).

- 130 **Pogo**—Au hosted in at least three sub-parallel and tabular, gently dipping, quartz vein zones hosted by Paleozoic gneisses intruded by Cretaceous felsic plutonic rocks. Au in the 3 ft to 60 ft thick quartz bodies has a strong correlation with Bi. A mining reserve for the Liese L1 and L2 zones is 7.7 million tons at an average grade of 0.47 oz/ton, for a total of 3.63 million oz at a 0.1 oz/ton cut-off grade. Produced 113,364 ounces of gold in 2006. Other high-grade Au targets have been identified along an 8-mi-long trend southeast of the Liese zones (fig. C-3).
- 131 **Shotgun**—Quartz stockwork and breccia Au–Cu–As mineralization in a Late Cretaceous rhyolite (granite porphyry) stock. A preliminary, inferred Au resource of 980,000 oz (36.11 million tons at an average grade of 0.027 oz/ton Au) at a 0.016 oz/ton Au cut-off grade, with initial metallurgical tests indicating >90% Au recovery by cyanide leaching (fig. C-3).
- 132 **Illinois Creek**—Au–Ag–Cu–Pb–Zn–Bi–As-bearing, Fe–Mn oxide (gossan) shear zone crosscutting dolomitic quartzite localized near Cretaceous granitic pluton. Shear zone averaged 148 ft wide, with a drill-defined east-west strike length of 11,600 ft. Produced approximately 143,860 oz Au and 755,600 oz Ag from 1997 to 2004. Past ore grade of 0.076 oz/ton Au and 1.6 oz/ton Ag (figs. C-1, C-3).
- 133 **Calder Mine**—Seven recrystallized carbonate units exposed at the apex of a large regional antiform. Drilling has identified 13 million tons of chemically homogenous, high-brightness, high-whiteness marble with a purity of 98 to 99% calcium carbonate. Potential resource of 80 million tons of high-value calcium carbonate (fig. C-2).
- 134 **Vinasale Mountain**—Intrusion-hosted Au deposit. Au occurs as disseminated and veinlet mineralization, with arsenopyrite and pyrite in quartz-dolomite hydrothermal breccias, magmatic breccias, and zones of phyllic and silicic alteration hosted within a 69 Ma quartz monzonite stock. Inferred resource of 14.35 million tons grading 0.067 oz/ton Au, with an 0.03 oz/ton cut-off grade was for the Central zone (fig. C-3).
- 135 **Nixon Fork**—Au–Cu skarn deposits; Historic Nixon Fork mine produced 59,500 oz Au from Late Cretaceous skarns associated with quartz monzonite-Devonian limestone contact zones. Underground mining resumed in October 1995, with 137,748 oz of Au, 1,050 tons of Cu, and significant Ag produced through mine closure in 1999. 2006 ore resources and reserves are 25,787 tons grading 1.07 oz/ton Au (measured), 138,852 tons grading 0.63 oz/ton (indicated), and 102,486 tons grading 0.45 oz/ton (inferred), with proven reserves of 51,800 tons grading 0.993 oz/ton Au and probable reserves of 151,600 tons grading 0.54 oz/ton Au, for a total of 295,430 ounces of gold (fig. C-3).
- 136 **Von Frank Mountain**—Au and very weak Cu mineralization are associated with chalcopyrite, pyrite, and rare molybdenite within a zone of quartz stockwork veining hosted in a 69 Ma quartz-diorite stock. The stock is a cupola of the larger Von Frank Pluton. Drill intercepts include up to 429 ft wide with an average grade of 0.013 oz/ton Au. Higher-grade intercepts include 0.035 oz/ton Au up to 135 ft (fig. C-3).
- 137 **Donlin Creek**—Au mineralization associated with disseminated pyrite and arsenopyrite, sulfide veinlets, and quartz-carbonate-sulfide veinlets in sericite-altered Late Cretaceous to early Tertiary rhyodacitic porphyry dikes and sills. Au mineralization is structurally controlled, refractory, and occurs along a 4-mile long, 1-mile wide zone. 2006 measured and indicated resource estimated at 16.6 million oz of Au grading 0.070 oz/ton Au and an inferred resource of 17.1 million oz Au grading 0.068 oz/ton Au at a 0.022 oz/ton Au cut-off grade. Considered the 25th largest gold resource in the world (fig. C-3).
- 138 **Kaiyah**—Au–Ag epithermal prospect in silicified Koyukuk sedimentary rocks adjacent to Poison Creek caldera. Polymetallic sulfides in quartz veins, with some veins over 100 feet thick, and silicification are associated with pervasive advanced argillic, and sericite alteration (fig. C-3).
- 139 **Shulin Lake**—Micro- and macro-diamonds occur in interbedded volcanoclastic and tuffaceous rocks containing olivine and pyroxene. Discovered by tracing diamond indicator minerals in placer gravels. Possibly lamproitic intrusions with up to 1-mile diameter circular aeromagnetic anomalies (fig. C-3).
- 140 **Canwell and Nikolai Complex**—Ni–Cu–PGE semi-massive to massive sulfide prospects hosted in mafic and ultramafic rocks of the Nikolai intrusive/extrusive complex. Five mafic-ultramafic intrusions in the central Alaska Range are comagmatic with the Nikolai flood basalts (fig. C-3).
- 141 **Duke Island**—Cu–Ni–PGE disseminated, semi-massive, and massive sulfides associated with 2 zoned, Ural-Alaska type ultramafic bodies (fig. C-3).

APPENDIX D

Companies and individuals reported to be producing metal in Alaska, 2007

Operator	Creek	District	Type ^a
NORTHERN REGION			
Barry Lambeth	Jennie Creek	Koyukuk	S/D - Recreation
Bill Feses	Boulder Creek	Koyukuk	O/P Placer
Brian Yoder	Sheep Creek	Koyukuk	O/P Placer
Boreal Resources Inc.	Jim Pup, Wakeup Cr., California Cr., Lake Cr.	Koyukuk	O/P Placer
Chester Bell	Emery Creek	Koyukuk	S/D - Recreation
Compass Mining Inc.	Linda Creek	Koyukuk	O/P Placer
D.M.V.G. Ventures	Prospect Creek	Koyukuk	O/P Placer
Donald Korte	Clara Creek	Koyukuk	S/D - Recreation
Glen DeFord	Smally Creek	Koyukuk	S/D - Recreation
James Wicken	Gold Creek	Koyukuk	O/P Placer
Jay Armstrong	Hammond River	Koyukuk	S/D - Large
Jim Olmstead	Gold Creek	Koyukuk	O/P Placer
Larry Weisz	Hammond River	Koyukuk	O/P Placer
Lloyd Swenson	Slate Creek	Koyukuk	O/P Placer
Mike Dobson	Prospect Creek	Koyukuk	O/P Placer
O.J. Jiles	Bold Bottom Creek	Koyukuk	O/P Placer
Paradise Valley Inc.	Birch Creek	Koyukuk	S/D - Recreation
Richard Wright	Magnet Creek, Gold Creek	Koyukuk	O/P Placer
Silverado Gold Mines Ltd.	Nolan Creek	Koyukuk	O/P Placer
Slisco Inc.	Hammond River	Koyukuk	O/P Placer
Slisco Inc.	Hammond River	Koyukuk	O/P Placer
Slisco Inc.	Hammond River	Koyukuk	O/P Placer
Slisco Inc.	Marion Creek	Koyukuk	O/P Placer
Slisco Inc.	Nugget Creek	Koyukuk	O/P Placer
Stewart Brandon	Myrtle Creek	Koyukuk	O/P Placer
Teck Cominco Alaska Inc.	Red Dog Mine	Noatak	O/P H/R
William Nordeen	Emma Creek	Koyukuk	O/P Placer
WESTERN REGION			
Alaska Gold Company	Norton Sound	Nome	S/D - Large
Alamin Mining Company	Cripple Creek, Bear Creek	Innoko	O/P Placer
Barry Clay	Willow Lake, Swift Creek	Ruby	O/P Placer
Clifton McHenry	Norton Sound	Cape Nome	S/D - Large
Craig Coggins	Norton Sound	Cape Nome	S/D - Large
Daniel Plano	Anvil Creek, Innoko River	Innoko	O/P Placer
Danny Bowland	Norton Sound	Cape Nome	S/D - Large
David Powell	Norton Sound	Cape Nome	S/D - Large
Dean Race	Anvil Creek, Innoko River	Cape Nome	O/P Placer
Donald Mullikin	Noxapaga River, Boulder Creek	Kougarok	O/P Placer
Douglas Martinson	Dry Creek, Newton Creek	Cape Nome	O/P Placer
Frank McFarland	Norton Sound	Cape Nome	S/D - Large
Innoko Resources Group	Innoko River	Innoko	O/P Placer
Jan Kralik	Gold Run Creek	Point Clarence	S/D - Large
Jan Kralik	Norton Sound	Cape Nome	S/D - Recreation
Jerry Landgreba	Norton Sound	Cape Nome	S/D - Recreation
Jerry Pushcar	Benson Creek	Kougarok	O/P Placer
K & S Leasing	Norton Sound	Cape Nome	S/D - Large
Lawrence Essad	Norton Sound	Cape Nome	S/D - Large
Little Creek Mine	Ester Creek	Innoko	O/P Placer
Mark Gumaer	Dick Creek	Kougarok	O/P Placer
Mystery Creek Resources Ltd.	Nixon Fork Mine	McGrath	U/G HR

^aO/P = Open-pit; H/R = Hard-rock; U/G = Underground; S/D = Suction Dredge; Large - Greater than equal to 8" nozzle.

S/D - Recreation = small suction dredge and recreational operations. Prepared from list of permitted operations; not all produced during the year.

Operator	Creek	District	Type ^a
N.B. Tweet & Sons	Kougarok River	Kougarok	O/P Placer
Neil Rosander	Cripple Creek	Innoko	O/P Placer
Perry Massie	Arctic Creek	Cape Nome	S/D - Recreation
Ralph Anderson	Dry Creek	Cape Nome	O/P Placer
Randall Smith	Norton Sound	Cape Nome	S/D - Large
Robin Gumaer	Doree Creek	Cape Nome	O/P Placer
Roger Nordlum	Glacier Creek	Fairhaven	O/P Placer
Rosander Mining Co., Inc.	Colorado Creek	Innoko	O/P Placer
Samuel Thomas	Sweepstakes Creek	Koyuk	O/P Placer
Steve Pomrenke	Martin Creek	Cape Nome	O/P Placer
Taiga Mining Company, Inc.	Aloha Creek	Hughes	O/P Placer
Thomas Blake	Dome Creek	Nome	O/P Placer
Thomas Stamps	Norton Sound	Cape Nome	S/D - Recreation
Triple D Mining	Candle Creek	Fairhaven	O/P Placer
Tundra Services	Dexter Creek	Cape Nome	O/P Placer
Victor Loyer	Candle Creek	Fairhaven	O/P Placer
EASTERN INTERIOR			
Alaska Placer Development, Inc.	Livengood Creek	Tolovana	S/D - Recreation
Albert Oldham	Wilber Creek	Fairbanks	O/P Placer
Aurora Mining	North Fork Harrison Creek	Circle	O/P Placer
Big G Mining	Deadwood Creek	Circle	O/P Placer
Bill Bayless	Franklin Creek	Fortymile	O/P Placer
Bill Miller	Jack Wade	Fortymile	S/D - Recreation
Bill Rushing	Jack Wade	Fortymile	S/D - Recreation
C. J. Hill	Lost Chicken Creek	Fortymile	O/P Placer
Cascade Gold, LLC	Walker Fork	Fortymile	O/P Placer
Charles Hammond	45 Pup	Fortymile	O/P Placer
Charles Zimmerman	Killarney Creek	Hot Springs	O/P Placer
Chris Groppe	Tenderfoot Creek	Fairbanks	O/P Placer
Chuck Felzien	American Creek	Eagle	S/D - Large
Cy Bras	Canyon Creek	Fortymile	O/P Placer
D. Harvey Bickell	Walker Fork	Fortymile	O/P Placer
Daniel Jensen	McCumber Creek	Delta River	O/P Placer
David Eberhardt	Sullivan Creek	Fairbanks	O/P Placer
David Hatch	Dome Creek	Fortymile	S/D - Large
David Howland	Dry Channel	Chistochina	O/P Placer
David Jacobs	Moose Creek	Bonnifield	O/P Placer
David Jacobs	Eva Creek, Wilson Creek	Bonnifield	O/P Placer
David Newcomb	White Creek	Valdez Creek	O/P Placer
Dean Willis	Crooked Creek	Circle	O/P Placer
DEPEM	Gilmore Creek	Fairbanks	O/P Placer
Diversified Mining Ventures	Clifford Creek	Eagle	O/P Placer
Doug Baker	Cache Creek, Sullivan Creek, Idaho Creek	Hot Springs	O/P Placer
Don Kiehl	Gold King Creek	Bonnifield	O/P Placer
Donald Smithwick	Crooked Creek	Eagle	O/P Placer
Earl Schene	Uhler Creek	Fortymile	O/P Placer
Earl Vegoren	Rainy Creek	Delta River	O/P Placer
Earth Movers of Fairbanks	Fairbanks Creek	Fairbanks	O/P Placer
Earth Movers of Fairbanks	Chatham Creek	Fairbanks	O/P Placer
Eileen Crouse	Fox Gulch	Fairbanks	O/P Placer
Fairbanks Gold Mining Inc.	Fort Knox Mine	Fairbanks	O/P HR
Fairbanks Gold Mining Inc.	True North Mine	Fairbanks	O/P HR
40 Mile River Gold Mining Co.	Fortymile River	Fortymile	S/D - Large
Fred Cornelius	Fox Creek	Fairbanks	O/P Placer
Frontier Mining	Butte Creek	Circle	O/P Placer

^aO/P = Open-pit; H/R = Hard-rock; U/G = Underground; S/D = Suction Dredge; Large - Greater than equal to 8" nozzle.

S/D - Recreation = small suction dredge and recreational operations. Prepared from list of permitted operations; not all produced during the year.

Operator	Creek	District	Type ^a
George Seuffert, Jr.	Chicken Creek, Mosquito Fork	Fortymile	O/P Placer
George Seuffert, Jr.	Faith Creek	Fairbanks	O/P Placer
Gerald Pitcher	Deadwood Creek	Circle	S/D - Recreation
Gerald Standefer	Newman Creek	Bonnifield	O/P Placer
Gold Adventures LLC	Boulder Creek	Hot Springs	O/P Placer
Harold Mitchell	Mosquito Fork	Fortymile	O/P Placer
Herning Exploration & Mining	Palmer Creek	Fairbanks	S/D - Recreation
Jackson Mining Company	Totatlanika River	Bonnifield	O/P Placer
James Decker	Sheep Creek	Bonnifield	O/P Placer
James Kimbro	Fortymile River	Fortymile	S/D - Large
James Treesh	Cherry Creek	Fortymile	O/P Placer
Jean Turner	Fortymile River	Fortymile	O/P Placer
Jean Turner	Fox Creek	Fairbanks	O/P Placer
Jeff Owen	Davis Creek	Fortymile	O/P Placer
Jerry Gallagher	Slate Creek	Rampart	S/D - Recreation
John Lindholm	Any Creek	Fairbanks	O/P Placer
John McClain	Kokomo Creek	Fairbanks	O/P Placer
John Schwartz	Our Creek	Fortymile	O/P Placer
Judd Edgerton	Napoleon Creek	Fortymile	O/P Placer
Keith Webster	Cherry Creek	Fortymile	O/P Placer
Kelly Mining	North Fork Creek	Hot Springs	O/P Placer
Kenneth Hanson	Faith Creek	Fairbanks	O/P Placer
Kevin Bergman	Ester Creek	Fairbanks	O/P Placer
Kinross Gold Corp.	Fort Knox Mine	Fairbanks	O/P HR
KMM, Inc.	Hunter Creek	Rampart	O/P Placer
L & L Mining	Eagle Creek	Circle	O/P Placer
Leo Regner	Lilliwig Creek	Fortymile	O/P Placer
Linda Penfield	Slate Creek	Rampart	O/P Placer
Mark Brooks	Mosquito Fork	Fortymile	S/D - Recreation
Mammoth Mining	Porcupine Creek	Circle	O/P Placer
Melvin Montgomery	Gilliland Creek	Fortymile	O/P Placer
Melvin Montgomery	Jack Wade	Fortymile	O/P Placer
Michael Mulligan	Skoogy Gulch	Fairbanks	O/P Placer
Michael Patrick	Fortymile River	Fortymile	S/D - Large
Miller Creek Mining Co.	Ketchum Creek	Circle	O/P Placer
Olson Placers	Ketchum Creek	Circle	O/P Placer
Paul & Company	Porcupine Creek	Circle	O/P Placer
Peter Johnson	Fortymile River	Fortymile	S/D - Large
Polar Mining Inc.	Goldstream Creek	Fairbanks	O/P Placer
R & M Mining	Birch Creek	Circle	O/P Placer
Raleigh Cline	Eagle Creek	Fortymile	O/P Placer
Rampart Exploration LLC	American Creek	Hot Springs	O/P Placer
Ray Wolf	Greenhorn Creek	Circle	O/P Placer
Ray Wolf	Traverse Creek	Circle	O/P Placer
Ray Wolf	Bottom Dollar Creek	Circle	O/P Placer
Raymond Meder	Flume Creek	Fairbanks	O/P Placer
Red Olson Mining	Deadwood Creek	Circle	O/P Placer
Richard Farkas	Deadwood Creek	Circle	O/P Placer
Richard Loud	Harrison Creek, North Fork Harrison Creek	Circle	O/P Placer
Richard Ott	Omega Creek	Hot Springs	O/P Placer
Richard Swenson	Doric Creek	Hot Springs	O/P Placer
Richard Wilder	Little Boulder Creek	Hot Springs	O/P Placer
Richardson Shield LLC	No Grub Creek	Fairbanks	O/P Placer
Rob Keller	Thistle Creek	Bonnifield	O/P Placer
Robert Hare	Gold Dust Creek	Circle	O/P Placer
Robert Kirsch	Kal Creek	Fortymile	O/P Placer
Ron Wrede	Switch Creek	Circle	O/P Placer

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S/D - Recreation = small suction dredge and recreational operations. Prepared from list of permitted operations; not all produced during the year.

Operator	Creek	District	Type ^a
Ronald Tucker	Lillian Creek	Tolovana	O/P Placer
RU Mining LLC	Olive Creek	Tolovana	O/P Placer
Rudd Van Dyke	Fortymile River	Fortymile	S/D - Large
Scott Thomas	Deadwood Creek	Circle	O/P Placer
Schmidt Mining	Walker Fork	Fortymile	O/P Placer
Sheldon Maier	Montana Creek	Fortymile	O/P Placer
Sherlund Mining, LLC	Ketchum Creek	Circle	O/P Placer
Silver Jim Stroer	Confederate Creek	Fortymile	S/D - Recreation
Stephen Olson	Liberty Creek	Fortymile	O/P Placer
Steve Holmes	Gold King Creek	Bonnifield	O/P Placer
Steven Olson	Eagle Creek	Circle	O/P Placer
Teck Pogo, Inc.	Pogo Mine	Goodpaster	U/G HR
Terry Russell	Ready Money Creek	Hot Springs	O/P Placer
Terry Russell	Trail Creek	Hot Springs	O/P Placer
Theodore Payment	Fortymile River	Fortymile	O/P Placer
Timothy Ruppert	Little Moose Creek	Bonnifield	S/D - Recreation
Vernon Thurneau	Fortymile River	Fortymile	O/P Placer
Wanda Severson	Willow Creek	Fortymile	S/D - Recreation
Wesley Devore	North Fork Fortymile River	Fortymile	S/D - Recreation
William Aldridge	Poker Creek	Fortymile	O/P Placer
SOUTHCENTRAL REGION			
Carl Wilbur	Yacko Creek	Nelchina	O/P Placer
Daniel Hartman	Cache Creek	Yentna	S/D - Recreation
Dennis Boyce	Busch Creek	Valdez Creek	O/P Placer
Fred Wilkes	Bird Creek	Yentna	O/P Placer
Gerald Anderson	Yacko Creek	Nelchina	O/P Placer
Girdwood Mining Co.	Crow Creek	Anchorage	O/P Placer
Gorden Bartel	Mills Creek	Yentna	O/P Placer
Gordon Richmond	Buchia Creek	Valdez Creek	O/P Placer
James Werner	Canyon Creek	Hope	S/D - Recreation
John Deacon	Canyon Creek	Hope	S/D - Recreation
John Werner	Cache Creek	Hope	S/D - Recreation
Herman Mrak	Willow Creek, Grubstake Creek	Willow Creek	O/P Placer
Kenneth Lee	Cache Creek	Yentna	O/P Placer
Mark Richard	Caribou Creek	Willow Creek	O/P Placer
Mike Spain	Homestake Creek, Grubstake Creek	Willow Creek	S/D - Recreation
New Recovery Systems, Inc.	Alfred Creek	Willow Creek	O/P Placer
Richard Peterson	Willow Creek	Nelchina	O/P Placer
Sean Toohey	Crow Creek	Anchorage	S/D - Recreation
Tom Bates	Long Creek	Yentna	S/D - Recreation
Tom Sternberg	Quartz Creek	Hope	S/D - Recreation
SOUTHWESTERN REGION			
Ben Porterfield	Fish Creek	McGrath-McKinley	O/P HR
Clark-Wiltz Mining	Ganes Creek	Innoko	O/P Placer
Hanson Industries Inc.	Salmon River	Goodnews	O/P Placer
Harry Faulkner	Ophir Creek	Aniak	O/P Placer
L. E. Wyrick	Granite Creek	Aniak	O/P Placer
Larry Wilmarth	George River	Aniak	S/D - Recreation
Lyman Resources Alaska Inc.	Crooked Creek, Donlin Creek	Iditarod	O/P Placer
Mark Matter	Marvel Creek	Aniak	O/P Placer
Max Agoff	Prince Creek	Iditarod	O/P Placer
Moore Creek Mining	Moore Creek	Innoko	O/P Placer
NYAC Mining Company	N/A - Old Dredge Tailings	Aniak	O/P Placer
NYAC Mining Company	Sahula Creek	Aniak	O/P Placer
NYAC Mining Company	Shamrock Creek	Aniak	O/P Placer

^aO/P = Open-pit; H/R = Hard-rock; U/G = Underground; S/D = Suction Dredge; Large - Greater than equal to 8" nozzle.

S/D - Recreation = small suction dredge and recreational operations. Prepared from list of permitted operations; not all produced during the year.

Operator	Creek	District	Type^a
NYAC Mining Company	California Creek, Rock Creek	Aniak	O/P Placer
Richard Busk	Syneeva Creek	Aniak	S/D - Recreation
ALASKA PENINSULA			
Alex Ameson	Beach sands	Kodiak	S/D - Recreation
SOUTHEASTERN REGION			
Chilkat Mining LLC	Porcupine Creek	Juneau	O/P Placer
Earle Foster	Porcupine Creek	Juneau	O/P Placer
John Schnabel	Porcupine Creek	Juneau	O/P Placer
Kennecott Greens Creek	Greens Creek Mine	Admiralty	U/G HR
Snow Lion II Ltd. Partnership	Porcupine Creek	Juneau	O/P Placer

^aO/P = Open-pit; H/R = Hard-rock; U/G = Underground; S/D = Suction Dredge; Large - Greater than equal to 8" nozzle.

S/D - Recreation = small suction dredge and recreational operations. Prepared from list of permitted operations; not all produced during the year.

APPENDIX E

State and federal agencies and private interest groups involved in mineral development activities, 2007

(The *Alaska Miners Association Directory* lists technical and professional consultants and companies available for work in Alaska. The report is published annually and is free to AMA members. The cost for non members is \$15 plus shipping and handling.)

STATE OF ALASKA AGENCIES

OFFICE OF THE GOVERNOR

Office of International Trade
550 West 7th Ave., Ste. 1700
Anchorage, AK 99501
(907) 269-7450
(907) 269-7461 (fax)

Function: Primary state office for promotion of exports. Maintains overseas offices to increase Alaska's visibility in key markets.

DEPARTMENT OF COMMERCE, COMMUNITY & ECONOMIC DEVELOPMENT

State Office Building, 9th Fl.
P.O. Box 110801
Juneau, AK 99811-0801
<http://www.commerce.state.ak.us>
(907) 465-2500
(907) 465-5442 (fax)

Function: Promotes economic development in Alaska.

Office of Economic Development

550 W. 7th Ave., Ste. 1770
Anchorage, AK 99501
(907) 269-8112
(907) 269-8125 (fax)

Office of Mineral Development
211 Cushman St.
Fairbanks, AK 99701-4639
(907) 451-2738
(907) 451-2742 (fax)
email: rich.hughes@alaska.gov
<http://www.commerce.state.ak.us/oed/minerals/mining.htm>

Function: Primary state government advocacy agency for economic growth. Researches and publishes economic data on Alaska's mining industry. Attracts capital investment by advertising Alaska's resource potential. Provides research staff aid for the Alaska Minerals Commission. In cooperation with the Office of International Trade, OED also encourages the development of new markets for Alaska resources, increases the visibility of Alaska and its products in the international marketplace, and makes referrals and provides technical assistance to those interested in developing export markets for Alaska-produced or value-added goods and services.

Alaska Industrial Development & Export Authority (AIDEA)

813 W. Northern Lights Blvd.
Anchorage, AK 99503
(907) 269-3000
(907) 269-3044 (fax)
<http://www.aidea.org>

Function: AIDEA provides capital to finance economic growth throughout Alaska—from multi-million-dollar mining projects to small, family-owned businesses; from urban centers to small

towns and rural villages. Regardless of project size, location, or business type, all AIDEA-financed projects must enhance the state's economy and provide or maintain jobs for Alaskans. AIDEA's financing assistance programs—the Credit Program and the Development Finance Program—have played an important role in Alaska's mineral development. The Credit Program includes the Loan Participation, Business and Export Assistance loan guarantee, and the Tax-Exempt Revenue Bond programs. AIDEA's Development Finance Program allows AIDEA to develop, own, and operate facilities within Alaska such as roads, ports, and utilities which are essential to the economic well-being of an area; are financially feasible; and are supported by the community in which they are located.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

P.O. Box 111800
Juneau, AK 99811-1800
(907) 465-5070 (fax)
(907) 465-5065 Commissioner's Office
<http://www.dec.state.ak.us>

Function: Issues permits for activities (including mining) that affect air or water quality or involve land disposal of wastes. Sets air- and water-quality standards. Inspects, monitors, and enforces environmental quality statutes, regulations, and permits. Reviews all federal permits.

Department of Environmental Conservation

Anchorage Office
555 Cordova St.
Anchorage, AK 99501-2617
(907) 269-7500
(907) 269-7600 (fax)
1-800-510-2332 (inside Alaska only)
<http://www.dec.state.ak.us>

Department of Environmental Conservation

Fairbanks Office
610 University Ave.
Fairbanks, AK 99709-3643
(907) 451-2100
(907) 451-5120 (fax)
(907) 451-2184 TTY
<http://www.dec.state.ak.us>

DEPARTMENT OF FISH AND GAME

P.O. Box 115526
Juneau, AK 99811-5526
(907) 465-4100
(907) 465-2332
<http://www.state.ak.us/adfg>

Division of Habitat

Headquarters
P.O. Box 115526
Juneau, AK 99811-5526
(907) 465-1852
(907) 465-2066 (fax)
<http://www.habitat.adfg.alaska.gov>

Function: The Division of Habitat fulfills specific statutory responsibilities for (1) protecting freshwater and anadromous fish habitat under the Anadromous Fish Act (AS 41.14.870) and (2) providing free passage of anadromous and resident fish in fresh waterbodies (AS 41.14.840). It requires prior written authorizations for any work affecting the free movement of fish, for any use or activity that may affect designated anadromous fish waters, and for any disturbance-producing or habitat-altering activity.

Operations Manager & Fairbanks Area Office
1300 College Rd.
Fairbanks, AK 99701-1551
(907) 459-7289
(907) 459-7303 (fax)

Anchorage Area Office
333 Raspberry Rd.
Anchorage, AK 99518-1565
(907) 267-2342
(907) 267-2499 (fax)

Juneau Office
P.O. Box 110024
Juneau, AK 99811-0024
(907) 465-4105
(907) 465-4759 (fax)

Kenai Area Office
514 Funny River Rd.
Soldotna, AK 99669-8255
(907) 260-4882 ext. 222
(907) 260-5992 (fax)

Mat-Su Area Office
1800 Glenn Highway, Ste. 12
Palmer, AK 99645-6736
(907) 761-3855
(907) 745-7369 (fax)

Petersburg Area Office
P.O. Box 667
Petersburg, AK 99833-0667
(907) 772-5224
(907) 772-9336 (fax)

Prince of Wales Area Office
P.O. Box 668
Craig, AK 99921-0668
(907) 826-2560
(907) 826-2562 (fax)

Division of Forestry
550 W. 7th Ave., Ste. 1450
Anchorage, AK 99501-3566
(907) 269-8463
<http://www.dnr.state.ak.us/forestry>

Function: Establishes guidelines to manage mining in state forests.

Northern Region Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2660

Coastal Region Office
101 Airport Rd.
Palmer, AK 99645
(907) 761-6200

**DEPARTMENT OF NATURAL RESOURCES
Office of the Commissioner**

550 W. 7th Ave., Ste. 1400
Anchorage, AK 99501
(907) 269-8431
<http://www.dnr.state.ak.us>

Alaska Coastal Management Program

302 Gold St., Ste. 202
Juneau, AK 99801
(907) 465-3562
(907) 465-3075 (fax)

Function: Conducts coordinated State reviews of mining projects within the coastal zone, while coordinating with Federal mining permitting agencies. Assists applicants in shaping mining projects to be consistent with the ACMP. Coordinates State response to Federal development activities and permitting actions (including proposed regulations) that affect Alaska's mining industry.

Southcentral Regional Office
550 W. 7th Ave., Ste. 1660
Anchorage, AK 99501-3568
(907) 269-7470
(907) 269-3981 (fax)

Alaska Mental Health Trust Land Office

718 L St., Ste. 202
Anchorage, AK 99501
(907) 269-8658
(907) 269-8905 (fax)
<http://www.mhtrustland.org>

Function: The Trust Land Office (TLO) manages the approximately 1 million acres of land that are included in the Alaska Mental Health Land Trust, which was created by Congress in 1956. Lands in the Trust are located throughout the state and are used to generate revenues to meet the expenses of mental health programs in Alaska. Management activities include all aspects of land use and resource development, including mineral and oil and gas leasing, exploration, and development; material sales (including gravel, sand, and rock); timber sales; surface leasing; land sales; and issuance of easements across Trust land.

Division of Geological & Geophysical Surveys

3354 College Rd.
Fairbanks, AK 99709-3707
(907) 451-5010
(907) 451-5050 (fax)
email: dggs@dnr.state.ak.us
<http://www.dggs.dnr.state.ak.us>

Function: Conducts geological and geophysical surveys to determine the potential of Alaska land for production of metal, mineral, fuel, and energy resources; locations and supplies of construction materials; potential geologic hazards to buildings, roads, bridges, and other installations and structures; and other surveys and investigations as will advance knowledge of the geology of Alaska (from AS 41.08.020). Publishes a variety of reports and maintains a web site that contain the results of these investigations. Advises the public and government agencies on geologic issues. Maintains a library of geologic bulletins, reports, and periodicals. Maintains a Geologic Materials Center storage facility at Eagle River.

Geologic Materials Center
P.O. Box 772805
Eagle River, AK 99577-2805
(907) 696-0079
(907) 696-0078 (fax)
John_Reeder@dnr.state.ak.us

Division of Mining, Land & Water

550 W. 7th Ave., Ste. 1070
Anchorage, AK 99501
(907) 269-8600
(907) 269-8904 (fax)
<http://www.dnr.state.ak.us/mlw>

A. Mining

Function: Principal agency for management of mining and reclamation on state land in Alaska. Maintains offices in Anchorage and Fairbanks. Issues property rights to leasable minerals; manages locatable mineral filings. Also issues millsite leases and permits for hard rock and placer mining activity. Maintains records of mineral locations, permits and leases. Provides technical, legal, and land-status information. Administers the Alaska Surface Mining Control and Reclamation Act (ASMCRA), which includes permitting and inspection of coal mining activity and reclamation of abandoned mines.

B. Land

Function: Manages surface estate and resources, including materials (gravel, sand, and rock). Handles statewide and regional land-use planning. Issues leases, material-sale contracts, land-use permits, and easements for temporary use of State land and access roads. Administers land sales program.

C. Water Management

Function: Manages water resources of the State; issues water-rights permits and certificates; responsible for safety of all dams in Alaska.

Mining Information:

Anchorage (907) 269-8642
Fairbanks (907) 451-2793

All other Land & Water Information:

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2740
(907) 451-2751 (fax)

Southcentral Regional Office
550 W. 7th Ave., Ste. 900C
Anchorage, AK 99501
(907) 269-8503
(907) 269-8913 (fax)

Southeast Regional Office
400 Willoughby Ave., Ste. 400
Juneau, AK 99801-1724
(907) 465-3400
(907) 586-2954 (fax)
E-mail: sero@dnr.state.ak.us

Division of Parks and Outdoor Recreation

550 W. 7th Ave., Ste. 1310
Anchorage, AK 99501-3565
(907) 269-8700

Function: Manages approximately 3,000,000 acres of state park lands primarily for recreational uses, preservation of scenic val-

ues, and watershed. Responsible for overseeing mining access, recreational mining activity, and valid mining-claim holdings within state park lands. The Office of History and Archaeology reviews mining permit applications on all lands within the state for impacts to historic resources.

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2695

Southeast Area Office
400 Willoughby Ave., 5th Fl.
P.O. Box 111071
Juneau, AK 99811-1071
(907) 465-4563
(907) 586-3113 (fax)

Office of History and Archaeology
550 W. 7th Ave., Ste. 1310
Anchorage, AK 99501-3565
(907) 269-8721
(907) 269-8908 (fax)
email: stefaniel@dnr.state.ak.us
<http://www/parks/oha>

DEPARTMENT OF PUBLIC SAFETY

Public Safety Headquarters
Office of the Commissioner
5700 East Tudor Rd.
Anchorage, AK 99507-1225
(907) 269-5086
(907) 269-4543 (fax)
<http://www.dps.state.ak.us>

Alaska Bureau of Wildlife Enforcement

5700 East Tudor Rd.
Anchorage, AK 99507-1225
(907) 269-5509

Function: Enforces state laws, in particular AS Title 16. Protects Alaska's fish and wildlife resources through enforcement of laws and regulations governing use of natural resources within Alaska. These laws are in Alaska Statutes 8, 16, 46, and Alaska Administrative Codes 5, 12, and 20.

DEPARTMENT OF REVENUE

State Office Bldg.
11th Fl., Entrance A
P.O. Box 110400 (mailing)
Juneau, AK 99811-0400
(907) 465-2300
<http://www.revenue.state.ak.us>

Tax Division

550 W 7th Ave., Ste. 500
Anchorage, AK 99501-3555
(907) 269-6620
(907) 269-6444 (fax)
email: dor.tax.mining@alaska.gov
<http://www.tax.alaska.gov/>

Function: Issues licenses for sand and gravel operations. Administers mining-license tax based on net income, including royalties. New mining operations—except sand and gravel mining—can apply for and receive certificates of tax exemption for the first 3½ years of operation. (Tax returns must be filed annually.)

UNIVERSITY OF ALASKA**College of Natural Science and Mathematics**

Department of Geology & Geophysics
 P.O. Box 755780
 Natural Sciences Building, Room 308
 University of Alaska Fairbanks
 Fairbanks, AK 99775-5780
 (907) 474-7565
 (907) 474-5163 (fax)
 email: geology@uaf.edu
 http://www.uaf.edu/geology

Function: Provides undergraduate and graduate education in geology and geophysics and conducts basic and applied research in geologic sciences. For undergraduate studies, the department offers a B.A. program in Earth Science and a B.S. program in Geology (with emphasis options in general geology, economic geology, and petroleum geology). For graduate studies, the department offers M.S. and Ph.D. programs in Geology and Geophysics, with concentrations in: General geology; economic geology; petroleum geology; Quaternary geology; remote sensing; volcanology; solid-earth geophysics; and snow, ice, and permafrost geophysics.

College of Engineering and Mines

P.O. Box 755960
 Duckering Building, Room 357
 University of Alaska Fairbanks
 Fairbanks, AK 99775-5960
 (907) 474-7730
 (907) 474-6994 (fax)
 email: fycem@uaf.edu
 http://www.uaf.edu/cem

Function: Provides undergraduate and graduate education programs in geological engineering, mining engineering, mineral preparation engineering, civil engineering, mechanical engineering, and electrical engineering. Through research programs, conducts laboratory and field studies to promote mineral and energy development.

Mineral Industry Research Laboratory (MIRL)

College of Engineering and Mines
 P.O. Box 757240
 Duckering Building, Room 403
 University of Alaska Fairbanks
 Fairbanks, AK 99775-7240
 (907) 474-6746
 (907) 474-5400 (fax)
 email: ffdew1@uaf.edu

Function: Conducts applied and basic research in exploration, development, and utilization of Alaska's mineral and coal resources with emphasis on coal characterization, coal utilization, coal upgrading, coal preparation, mineral beneficiation, fine gold recovery, hydrometallurgy, and environmental concerns. Publishes reports on research results and provides general information and assistance to the mineral industry.

Dept. of Mining and Geological Engineering

College of Engineering and Mines
 P.O. Box 755800
 Duckering Building, Room 301
 University of Alaska Fairbanks
 Fairbanks, AK 99775-5800
 (907) 474-7388
 (907) 474-6635 (fax)
 email: fyminge@uaf.edu
 http://www.uaf.edu/cem

Function: Provides undergraduate and graduate education programs in geological engineering, mining engineering, and mineral preparation engineering. Through research programs, conducts laboratory and field studies to promote mineral and energy development.

Mining and Petroleum Training Service

162 College Rd.
 University of Alaska
 Soldotna, AK 99669
 (907) 262-2788
 (907) 262-2812 (fax)
 email: mapts@alaska.net
 www.mapts.alaska.edu

Function: Provides direct training and assistance to mine operators, service and support companies, and governmental agencies in mine safety and health, mining extension, vocational mine training, and technical transfer. Specialized training services in hazardous materials, first aid and CPR, and industrial hygiene. Professional safety education and consulting are available on demand.

FEDERAL AGENCIES**U.S. DEPARTMENT OF THE INTERIOR**

Office of the Secretary
 1689 C St., Ste. 100
 Anchorage, AK 99501-5151
 (907) 271-5485
 (907) 271-4102

Function: Coordinates the Department of the Interior's policy and stewardship with DOI bureaus for the management of more than 200 million acres of public land in Alaska.

U.S. Bureau of Land Management

Alaska State Office
 Division of Lands, Minerals, and Resources
 222 West 7th Ave., Ste. 13
 Anchorage, AK 99513-7599

Public Information Center (907) 271-5960
 Northern Field Office (907) 474-2252
 Public Information Center
 http://www.ak.blm.gov/

Energy Branch (907) 271-5049
 Solid Minerals Branch (907) 271-5049

Division Functions:

BLM is the surface manager of federal public lands (except national parks, wildlife refuges, national monuments, national forests, and military withdrawals). The Division is responsible for developing and coordinating statewide and regional program management policies and strategies related to federal onshore energy and non-energy leasable minerals, mineral assessments, and locatable minerals. It provides technical assistance and coordinates activities relating to ANILCA 1010 mineral assessments. The Division provides the basis for economic analysis relating to energy and mineral development in the state. It also provides leadership and technical assistance on abandoned mine lands inventories and impacts on public lands.

Energy Branch Functions:

The Branch is responsible for the federal onshore mineral leasing programs and functions; including oil and gas, geothermal resources, coal, and other energy and non-energy minerals. The

Branch prepares and conducts oil and gas lease sales and is responsible for preparing pre- and post-lease sale fair market value evaluations for National Petroleum Reserve–Alaska leasing, and issuing leases; adjudicates oil and gas leases, transfers, and bonds; approves oil and gas industry operations for federal onshore oil and gas leases; protects federal lands from drainage of oil and gas resources, and inspects industry operations for compliance; and coordinates with other federal surface management agencies for the leasing and monitoring of minerals operations under their jurisdictions.

Solid Minerals Branch Functions:

The Branch maintains mining claim and mineral patent case files and electronic public minerals records related to those files. It adjudicates federal mining claim recordation filings, annual assessment affidavits, and timely payment of annual claim holding fees. It also adjudicates mineral survey and patent applications, and serves contest complaints for all federal lands in Alaska.

Anchorage Field Office
6881 Abbott Loop Rd.
Anchorage, AK 99507-2599
(907) 267-1246
(907) 267-1267 (fax)

Glennallen Field Office
P.O. Box 147
Glennallen, AK 99588
(907) 822-3217
(907) 822-3120 (fax)
<http://www.glennallen.ak.blm.gov>

Kotzebue Field Station
P.O. Box 1049
Kotzebue, AK 99752-1049
(907) 442-3430
(907) 442-2720 (fax)

Nome Field Station
P.O. Box 925
Nome, AK 99762-0925
(907) 443-2177
(907) 443-3611 (fax)

Northern Field Office
1150 University Ave.
Fairbanks, AK 99709-3899
(907) 474-2200
(907) 474-2251 Public Room
(907) 474-2282 (fax)
1-800-437-7021

Tok Field Station
P.O. Box 309
Tok, AK 99780
(907) 883-5121
(907) 883-5123 (fax)

U.S. Fish and Wildlife Service

Region 7 Office
Mail Stop 361
1011 East Tudor Rd.
Anchorage, AK 99503
(907) 786-3542
<http://alaska.fws.gov/>

Function: Administers the federal public lands in national wildlife refuges, issues special-use permits for activities on refuges,

reviews permits and applications for various mining activities on all private and public lands and waters, and provides information to regulatory agencies on fish and wildlife and their habitat. Makes recommendations to regulatory agencies to mitigate adverse environmental impacts.

U.S. Fish and Wildlife Service
Fairbanks Fish and Wildlife Field Office
101 12th Ave., Room 110
Fairbanks, AK 99701
(907) 456-0203
(907) 456-0208 (fax)

U.S. Fish and Wildlife Service
Juneau Fish and Wildlife Field Office
3000 Vintage Blvd., Ste. 201
Juneau, AK 99801-7100
(907) 780-1160
(907) 586- 7154 (fax)

U.S. Fish and Wildlife Service
Anchorage Fish and Wildlife Field Office
605 West 4th Ave., Rm. G-61
Anchorage, AK 99501
(907) 271-2888
(907) 271-2786 (fax)

U.S. Geological Survey
Alaska Science Center
Geological Science Office
4200 University Dr.
Anchorage, AK 99508-4667
(907) 786-7479

The mission of the USGS Alaska Science Center (ASC) is to provide scientific leadership and accurate, objective, and timely data, information, and research findings about the earth and its flora and fauna to Federal and State resource managers and policy makers, local government, and the public to support sound decision making regarding natural resources, natural hazards, and ecosystems in Alaska and circumpolar regions.

Geologic Discipline programs in the ASC are based on insight-ful monitoring, assessments, and research activities that address natural hazards, earth resources, and geologic processes. The Geologic Discipline provides comprehensive, high quality, and timely scientific information to decision makers at Federal, State, and local government levels, as well as the private sector. The Minerals Program investigates and reports on the occurrence, quality, quantity, and environmental characteristics of mineral resources in Alaska, the processes that create and modify them, models for assessing mineral endowment, and the potential impacts of mineral development.

U.S. Geological Survey
Alaska Science Center
National Geospatial Program Office
4230 University Dr., Ste. 101
Anchorage, AK 99508-4664
(907) 786-7011

Function: Publishes and distributes all available topographic maps of Alaska, digital products, and aerial photography.

National Park Service
Alaska Regional Office
Natural Resources Science Team
240 W. 5th Ave.

Anchorage, AK 99501
(907) 644-3571
(907) 644-3809 (fax)

Function: Administers lands within the national park system in Alaska. Manages oil and gas operations and pre-existing valid mining claims in parklands through plans of operation under Mining in Parks Act, National Park Service regulations, and other applicable federal and state laws and regulations.

**U.S. DEPARTMENT OF LABOR
Mine Safety and Health Administration
Physical Address:**

222 W. 8th Ave A-35
Anchorage, AK 99513
(907) 271-1250
(907) 271-1252 (fax)
email: bowen.ayers@dol.gov

Mailing Address:

Anchorage Federal Building
US Courthouse - Rm. A-35
222 West 7th Ave., Box 30
Anchorage, AK 99513
(907) 271-1250
(907) 271-1252 (fax)
email: bowen.ayers@dol.gov

Function: Administers health and safety standards to protect the health and safety of metal, nonmetal, and coal miners. Cooperates with the State to develop health and safety programs and develops training programs to help prevent mine accidents and occupationally caused diseases. Under agreement with the Coal Mine Safety and Health Office, the MSHA metal/nonmetal section has assumed responsibility for enforcement and training activities at coal mines in Alaska.

Mine Safety and Health Administration

Coal Mine Safety and Health, District 9
P.O. Box 25367
Denver, CO 80225
(303) 231-5458
(303) 231-5553 (fax)
<http://www.msha.gov>

Function: Administers health and safety standards according to the Code of Federal Regulations to protect the health and safety of coal miners; requires that each operator of a coal mine comply with these standards. Cooperates with the State to develop health and safety programs and develops training programs to help prevent coal or other mine accidents and occupationally caused diseases in the industry.

U.S. DEPARTMENT OF AGRICULTURE

Forest Service

Regional Office, R.L.M.
Attn: John Kato
Assistant Director for Minerals and Geology Programs
P.O. Box 21628
Juneau, AK 99802-1628
(907) 586-7869
(907) 586-7866 (fax)
email: jkato@fs.fed.us
<http://www.fs.fed.us/>
<http://www.fs.fed.us/r10earth/>

Function: With the Bureau of Land Management, provides joint administration of general mining laws on national forest system lands. Cooperates with Department of Interior agencies in the review and issuance of mineral leases. Issues permits for

disposal of sand, gravel, and stone.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Region 10 Regional Office
1200 6th Ave., MS OW-130
Seattle, WA 98101
(206) 553-1200
(206) 553-1746 (NPDES permits)
<http://www.epa.gov/r10earth/>

Function: Issues National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act to regulate effluent discharges. Implements a compliance enforcement program. Maintains regulatory and review authority over wetland and NEPA/EIS-related issues.

Alaska Operations Office
222 West 7th Ave., Rm. 537
222 W. 7th Ave., Box 19 (mailing)
Anchorage, AK 99513-7588
(907) 271-5083

Alaska Operations Office
709 W 9th St., Rm. 223A
Box 20370 (mailing)
Juneau, AK 99802-0370
(907) 586-7619

U.S. DEPARTMENT OF THE ARMY

Corps of Engineers

Regulatory Division
2204 3rd St.
P.O. Box 6898
Elmendorf Air Force Base, AK 99506-0898
(907) 753-2712
(907) 753-5567 (fax)
(800) 478-2712 (in Alaska only)
<http://www.poa.usace.army.mil/reg>

Function: Regulates structures or work in navigable waters of the U.S. and discharge of dredged or fill material into U.S. waters, including wetlands. Under Section 404 of the Clean Water Act, the Corps of Engineers issues dredge and fill permits for certain mining activities in waters of the United States. Examples of regulated mining activities include construction of berms, dikes, diversions, ponds, overburden stripping, stockpiling, and reclamation activities.

COOPERATIVE STATE–FEDERAL AGENCIES

Alaska Public Lands Information Center

101 Dunkel St., Ste 110
Fairbanks, AK 99701
(907) 459-3730
(907) 459-3729 (fax)

Function: Clearinghouse for general information on outdoor recreation in Alaska. Information sources include U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, U.S. Geological Survey, National Park Service, Alaska Departments of Natural Resources, Fish and Game, and Community and Economic Development.

BOARDS AND COMMISSIONS

Alaska Minerals Commission

Irene Anderson, Chair
c/o Bering Straits Native Corp.
P.O. Box 1008

Nome, AK 99762
 (907) 443-5252
 (907) 443-4317
 (907) 443-2985 (fax)
 email: irene@beringstraits.com

Function: The Minerals Commission was created by the Alaska State Legislature in 1986 to make recommendations to the Governor and the Legislature on ways to mitigate constraints on the development of minerals in Alaska. The Commission has published annual reports since 1987.

CHAMBERS OF COMMERCE

Alaska State Chamber of Commerce
 217 Second St., Ste. 201
 Juneau, AK 99801
 (907) 586-2323
 (907) 463-5515 (fax)
 email: info@alaskachamber.com
 http://www.alaskachamber.com

Function: The State Chamber of Commerce researches and formulates positions on Alaskan resource development. Recommendations for consideration are submitted to the State Chamber of Commerce board of directors.

Anchorage Chamber of Commerce
 1016 W. 6th Ave., Ste. 303
 Anchorage, AK 99501
 (907) 272-2401
 email: info@anchoragechamber.org
 http://www.anchoragechamber.org

Function: To be effective as a business leader by supporting and focusing its broad-based membership in their efforts to grow Anchorage into a premier American city.

Greater Fairbanks Chamber of Commerce
 100 Cushman St., Ste. 102
 Fairbanks, AK 99701
 (907) 452-1105
 (907) 456-6968 (fax)
 email: info@fairbankschamber.org
 http://www.fairbankschamber.org

Juneau Chamber of Commerce
 3100 Channel Dr., Ste. 300
 Juneau, AK 99801
 (907) 463-3488
 (907) 463-3489 (fax)
 email: juneauchamber@gci.net
 http://www.juneauchamber.org

PUBLIC INTEREST GROUPS AND ASSOCIATIONS

Alaska Miners Association Inc.
 Statewide Office
 Steven C. Borell, P.E., Executive Director
 3305 Arctic Blvd., Ste. 105
 Anchorage, AK 99503
 (907) 563-9229
 (907) 563-9225 (fax)
 email: ama@alaskaminers.org
 http://www.alaskaminers.org

AMA BRANCHES

Anchorage	Juneau
Denali	Kenai
Fairbanks	Nome

Please contact AMA for current contacts

Alaskans for Responsible Mining
 810 N St.
 Anchorage, AK 99501
 (907) 277-0005
 (907) 277-0990 (fax)
 email: vanessa@reformakmines.org
 http://www.reformakmines.org

American Institute of Professional Geologists
 1400 W. 122nd Ave., Ste. 250
 Westminster, CO 80234
 (303) 412-6205
 (303) 253-9220 (fax)
 email: aipg@aipg.org
 http://www.aipg.org

Earthjustice
 325 Fourth St.
 Juneau, AK 99801
 (907) 586-2751
 (907) 463-5891 (fax)
 email: eajusak@earthjustice.org
 http://www.earthjustice.org

National Wildlife Federation
 750 W. Second Ave., Ste. 200
 Anchorage, AK 99501
 (907) 339-3900
 (907) 339-3980 (fax)

Northern Alaska Environmental Center
 830 College Rd.
 Fairbanks, AK 99701-1535
 (907) 452-5021
 (907) 452-3100 (fax)
 email: info@northern.org
 http://www.northern.org

Northwest Mining Association
 10 North Post St., Ste. 220
 Spokane, WA 99201
 (509) 624-1158
 (509) 623-1241 (fax)
 email: nwma_info@nwma.org
 http://www.nwma.org

Resource Development Council for Alaska, Inc.
 121 W. Fireweed Ln., Ste. 250
 Anchorage, AK 99503
 (907) 276-0700
 (907) 276-3887 (fax)
 email: Resources@akrdc.org
 http://www.akrdc.org

Society for Mining, Metallurgy, and Exploration Inc.
 8307 Shaffer Parkway
 Littleton, CO 80127
 (303) 973-9550
 (303) 973-3845 (fax)
 email: sme@smenet.org
 http://www.smenet.org

Southeast Alaska Conservation Council (SEACC)
 419 6th St., Ste. 200
 Juneau, AK 99801
 (907) 586-6942
 (907) 463-3312 (fax)
 email: info@seacc.org
 http://www.seacc.org

Trustees for Alaska
 1026 W. 4th Ave., # 201
 Anchorage, AK 99501-1980
 (907) 276-4244
 email: ecolaw@trustees.org
 http://www.trustees.org

ORGANIZED MINING DISTRICTS

Circle Mining District
 P.O. Box 30181
 Central, AK 99730-0181
 (907) 520-5419 (message)

Fairbanks Mining District
 105 Dunbar
 Fairbanks, AK 99701
 (907) 456-7642

Haines Mining District
 P.O. Box 149
 Haines, AK 99827
 (907) 766-2821

Iditarod Mining District
 John A. Miscovich
 1320 K St.
 Anchorage, AK 99501-4327

Yentna Mining District
 Carol Young
 P.O. Box 211
 Talkeetna, AK 99676
 (907) 733-2351

MINERAL EDUCATION PROGRAMS

ALASKA MINERAL AND ENERGY RESOURCE EDUCATION FUND (AMEREF)

4141 B Street, Suite 402
Anchorage, AK 99503
(907) 276-5487
(907) 276-5488 (fax)
email: kits@ameref.org
http://www.ameref.org

Function: A 501c(3) educational non-profit whose mission is to provide Alaska's students with the knowledge to make informed decisions relating to mineral, energy, and forest resources.

NATIVE REGIONAL CORPORATIONS

AHTNA INC.

Kathryn Martin
VP Land and Resources
P.O. Box 649
Glennallen, AK 99588-0649
(907) 822-3476
(907) 822-3495 (fax)
email: kmartin@ahtna-inc.com
http://www.ahtna-inc.com/

Anchorage Office
406 W. Fireweed, Ste. 201
Anchorage, AK 99503
(907) 868-8202
(907) 868-8284 (fax)
email: brebne@ahtna-inc.com
http://www.ahtna-inc.com/

THE ALEUT CORP.

4000 Old Seward Hwy., Ste. 300
Anchorage, AK 99503-6087
(907) 561-4300
(907) 563-4328 (fax)
email: MSmith@aleutcorp.com
http://www.aleutcorp.com

ARCTIC SLOPE REGIONAL CORP.

P.O. Box 129
Barrow, AK 99723-0129
(907) 852-8633
(907) 852-5733 (fax)
http://www.asrc.com/

Anchorage Office
3900 C St., Ste. 801
Anchorage, AK 99503-5963
(907) 339-6000
(907) 339-6028 (fax)

BERING STRAITS NATIVE CORP.

Irene Anderson
Land Manager
P.O. Box 1008
Nome, AK 99762-1008
(907) 443-4317
(907) 443-2985 (fax)
email: irene@beringstraits.com
http://www.beringstraits.com/

Anchorage Office
Matt Ganley
4600 DeBarr Rd., Ste 200
Anchorage, AK 99508-3126
(907) 344-7212
(907) 563-2742 (fax)
email: matt@beringstraits.com

BRISTOL BAY NATIVE CORP.

111 West 16th Ave., Ste. 400
Anchorage, AK 99501-5109
(907) 278-3602
(907) 276-3924 (fax)
http://www.bbnc.net

CALISTA CORP.

301 Calista Court, Ste. A
Anchorage, AK 99518-3028
(907) 279-5516
(907) 272-5060 (fax)
http://www.calistacorp.com/

CHUGACH ALASKA CORP.

3800 Centerpoint Dr.
Anchorage, AK 99503-4196
(907) 563-8866
(907) 261-0373 (fax)
email: rrogers@chugach-ak.com
http://www.chugach-ak.com/

COOK INLET REGION INC.

and its subsidiary North Pacific Mining Corporation
2525 C St., Ste. 500
Anchorage, AK 99503
(907) 274-8638
(907) 263-5190 (fax)
email: kcunningham@ciri.com
http://www.ciri.com/

DOYON LTD.

1 Doyon Place, Ste. 300
Fairbanks, AK 99701-2941
(907) 459-2030
(907) 459-2062 (fax)
email: lands@doyon.com
http://www.doyon.com

KONIAG INC.

104 Center Ave., Ste. 205
Kodiak, AK 99615
(907) 4862530
(907) 486-3325 (fax)
http://www.koniag.com/

NANA REGIONAL CORP.

P.O. Box 49
Kotzebue, AK 99752
(907) 442-3301
(907) 442-2866 (fax)
http://www.nana.com

Anchorage Office
Nana Development Corp.
1001 E. Benson Blvd.
Anchorage, AK 99508
(907) 265-4100
(907) 265-4311 (fax)

SEALASKA CORP.

One Sealaska Plaza, Ste. 400
Juneau, AK 99801
(907) 586-1512
(907) 463-3897 (fax)
http://www.sealaska.com/

APPENDIX F

Alaska Mining Websites

Mining and Exploration Companies

Alaska Earth Sciences Inc.	http://www.aes.alaska.com
Alix Resources Corp.	http://www.alixresources.com/
Altair Ventures Inc.	http://www.altairventuresinc.com/
Anchorage Sand and Gravel Co. Inc.	http://www.anchsand.com
Andover Ventures Inc.	http://www.andoverventures.com/
Anglo American plc	http://www.angloamerican.co.uk/
Avalon Development Corp.	http://www.avalonalaska.com
Barrick Gold Corp.	http://www.barrick.com/
BHP Billiton Ltd.	http://www.bhpbilliton.com/
Bravo Venture Group Inc.	http://www.bravoventuregroup.com/en/index.php?page=home
Browns Hill Quarry	http://bricecompanies.com/quarry/quarry.html
Century Mining Corp.	http://www.centurymining.com
Chuitna Coal Project	http://www.chuitnaseis.com/default.htm
Clark–Wiltz Mining	http://www.clark-wiltz.com/
Coeur d'Alene Mines Corp. (Coeur Alaska Inc.)	http://www.coeur.com
Constantine Metal Resources Inc.	http://www.constantinemetals.com/
Copper Ridge Explorations Inc.	http://www.copper-ridge.com
Freegold Ventures Ltd.	http://www.freegoldventures.com
Full Metal Minerals Ltd.	http://www.fullmetalminerals.com
Geocom Resources Inc.	http://www.geocom-resources.com
Geoinformatics Exploration Inc	http://www.geoinformex.com
Gold Crest Mines Inc.	http://www.goldcrestminesinc.com/
Grayd Resource Corp.	http://www.grayd.com
Great Basin Gold Ltd.	http://www.greatbasingold.com/
Great Northwest Inc.	http://www.grtnw.com/
Greens Creek Mining Co.	http://www.greenscreek.com/
Hecla Mining Co.	http://www.hecla-mining.com
Hemis Corp.	http://www.hemiscorporation.com/
Hidefield Gold Plc.	http://www.hidefield.co.uk/s/Home.asp
International Tower Hill Mines Ltd. (Talon Gold (US) LLC)	http://www.ithmines.com/s/home.asp
Kennecott Minerals Co.	http://www.kennecottminerals.com
Kinross Gold Corp. (Fairbanks Gold Mining Inc.)	http://www.kinross.com
Lafarge North America Inc.	http://www.lafargenorthamerica.com/wps/portal/
Liberty Star Gold Corp.	http://www.libertystargold.com
Linux Gold Corp.	http://www.linuxgoldcorp.com
Little Squaw Gold Mining Co.	http://www.littlesquawgold.com
Max Resource Corp.	http://www.maxresource.com/s/Home.asp
Metallica Resources Inc.	http://www.metal-res.com/
Midas Resources Ltd.	http://www.midasresources.com.au/
Moore Creek Mining LLC	http://www.moorecreek.com/index.html
Niblack Mining Corp.	http://www.niblackmining.com/s/Home.asp
Northern Associates Inc.	http://www.alaskaexploration.com
Northern Dynasty Minerals Ltd.	http://www.northerndynastyminerals.com
NovaGold Resources Inc.	http://www.novagold.net
Pacific North West Capital Corp.	http://www.pfncapital.com
Paradise Valley Inc.	http://www.akpub.com/akttt/parad.html
Pure Nickel Inc.	http://www.purenickel.com/s/Home.asp
Quaterra Resources Inc.	http://www.quaterraresources.com/
Rimfire Minerals Corp.	http://www.rimfire.bc.ca
Rio Tinto Ltd.	http://www.riotinto.com/
Rubicon Minerals Corp.	http://www.rubiconminerals.com
Santoy Resources Ltd.	http://www.santoy.ca
Select Resources Corp. (Tri-Valley Corp.)	http://www.tri-valleycorp.com

Shear Minerals Ltd.	http://www.shearminerals.com
Silverado Gold Mines Ltd.	http://www.silverado.com
Sisyphus Consulting	http://www.sisyphus-consulting.com
St. Andrew Goldfields Ltd.	http://www.standrewgoldfields.com
Stillwater Mining Co.	http://www.stillwatermining.com/
Sumitomo Metal Mining Co. Ltd	http://www.sumitomocorp.co.jp/english/section_e/shigen/index.shtml
Teck Cominco Ltd.	http://www.teckcominco.com
Teryl Resources Corp.	http://www.terylresources.com
TNR Gold Corp.	http://www.tnrgoldcorp.com
Tonogold Resources Inc.	http://www.tonogold.com/s/Home.asp
Triex Minerals Corp.	http://www.triexminerals.com/s/Home.asp
Ucore Uranium Inc.	http://www.ucoreuranium.com/
Usibelli Coal Mine Inc.	http://www.usibelli.com
Western Warrior Resources Inc.	http://www.westernwarrior.ca
WGM Inc.	http://www.wgm.com
Zazu Metals Corp.	http://www.zazumetals.com/main/

Alaska Native Corporations

Ahtna Inc.	http://www.ahtna-inc.com
Aleut Corp.	http://www.aleutcorp.com
Arctic Slope Regional Corp.	http://www.asrc.com
Bering Straits Native Corp.	http://www.beringstraits.com
Bristol Bay Native Corp.	http://www.bbnc.net
Calista Corp.	http://www.calistacorp.com
Chugach Alaska Corp.	http://www.chugach-ak.com
Cook Inlet Region Inc.	http://www.ciri.com
Doyon Ltd.	http://www.doyon.com
Koniag Inc.	http://www.koniag.com
NANA Regional Corp.	http://www.nana.com
Sealaska Corp.	http://www.sealaska.com

General

Alaska Miners Association	http://www.alaskaminers.org
Alaska Division of Geological & Geophysical Surveys	http://www.dggs.dnr.state.ak.us
Alaska Division of Community & Business Development	http://www.commerce.state.ak.us/oed/home.htm

Alaska's Minerals Data and Information Rescue in Alaska (MDIRA) Project Websites

MDIRA Portal Home Page	http://akgeology.info
Alaska Geology Map Indexer	http://maps.akgeology.info
Alaska Mining Claims Information System	http://akmining.info
Alaska Resource Data Files	http://ardf.wr.usgs.gov
DGGS Publications On-Line	http://www.dggs.dnr.state.ak.us/pubs/pubs
DNR Sites Related to Mining Applications and Forms	http://www.dnr.state.ak.us/mlw/forms
DOR Mining License Tax Forms	http://www.tax.alaska.gov/programs/programs/forms/index.aspx?60610
Guide to Alaska Geologic and Mineral Information	http://www.dggs.dnr.state.ak.us/webpubs/dggs/ic/text/ic044ed2004.PDF
Land Records Web Application	http://plats.landrecords.info/index.html
NURE Data	http://pubs.usgs.gov/of/1997/ofr-97-0492/quad_ak/q_iditar.htm
On-Line Annual Payments	https://www.dnr.state.ak.us/cc_payment/LAS_Form.cfm
RASS, PLUTO Geochemistry Data	http://geopubs.wr.usgs.gov/open-file/of99-433
State Map Library	http://www.dnr.state.ak.us/Iris/gis_maplib/maplib_start.cfm
State Recorder's Office Search	http://www.dnr.state.ak.us/ssd/recoff/search.cfm
State Uniform Commercial Code (UCC) Documents Search	http://www.dnr.state.ak.us/ssd/ucc/search.cfm

APPENDIX G

U.S. Customary Units/Metric Units Conversion Chart

To convert from:	To:	Multiply by:
Weight/Mass/Ore Content		
ounces (avoirdupois)	grams	28.350
ounces (troy)	grams	31.1035
pounds	kilograms	0.4536
short tons	metric tons	0.9072
grams	ounces (avoirdupois)	0.03527
	ounces (troy)	0.03215
kilograms	pounds	2.2046
metric tons	short tons	1.1023
parts per million (ppm)	parts per billion (ppb)	1,000
parts per million (ppm)	ounces per ton	0.0292
parts per million (ppm)	grams/metric tons (tonnes)	1.00
Length		
miles	kilometers	1.6093
yards	meters	0.9144
feet	meters	0.3048
	centimeters	30.48
	millimeters	304.80
inches	centimeters	2.54
	millimeters	25.4
kilometers	miles	0.6214
meters	yards	1.0936
	feet	3.2808
millimeters	feet	0.00328
	inches	0.03937
centimeters	inches	0.3937
Area		
square miles	square kilometers	2.590
acres	square meters	4,046.873
	hectares	0.4047
square yards	square meters	0.8361
square feet	square meters	0.0929
square inches	square centimeters	6.4516
	square millimeters	645.16
square kilometers	square miles	0.3861
square meters	acres	
0.000247	square feet	10.764
	square yards	1.196
hectares	acres	2.471
	square meters	10,000.00
square centimeters	square inches	0.155
square millimeters	square inches	0.00155
Volume		
cubic yards	cubic meters	0.7646
cubic feet	cubic meters	0.02832
cubic inches	cubic centimeter	16.3871
cubic meters	cubic yards	1.3079
	cubic feet	35.3145
cubic centimeters	cubic inches	0.06102
gallons (U.S.)	liters	3.7854
liters	gallons (U.S.)	0.2642
milliliters	ounces (fluid)	0.03381
ounces (fluid)	milliliters	29.5735

Temperature conversions:

From degrees Fahrenheit to degrees Celsius, subtract 32 and multiply by 5/9.

From degrees Celsius to degrees Fahrenheit, multiply by 9/5 and add 32.

APPENDIX H
Primary metals production in Alaska, 1880-2007^a

Year	Gold ^b (oz)	Gold ^b (m\$)	Silver (oz)	Silver (t\$)	Mercury (flask ^c)	Mercury (t\$)	Antimony (lb)	Antimony (t\$)	Tin (lb)	Tin (t\$)	Lead (tons)	Lead (t\$)	Zinc (tons)	Zinc (t\$)	Platinum ^d (oz)	Platinum ^d (t\$)	Copper (lb)	Copper (m\$)	Chromium (tons)	Chromium (t\$)	
1880-																					
1899	1,153,889	23.85	496,101	329	--	--	--	--	--	--	250	17	--	--	--	--	--	--	--	--	--
1900	395,030	8.17	73,300	45.5	--	--	--	--	--	--	40	3.4	--	--	--	--	--	--	--	--	--
1901	335,369	6.93	47,900	28.6	--	--	--	--	--	--	40	3.4	--	--	--	--	250,000	0.04	--	--	--
1902	400,709	8.28	92,000	48.5	--	--	--	--	30,000	8	30	2.5	--	--	--	--	360,000	0.04	--	--	--
1903	420,069	8.68	143,600	77.8	--	--	--	--	50,000	14	30	2.5	--	--	--	--	1,200,000	0.16	--	--	--
1904	443,115	9.16	198,700	114.9	--	--	--	--	28,000	8	30	2.5	--	--	--	--	2,043,586	0.28	--	--	--
1905	756,101	15.63	132,174	80.2	--	--	--	--	12,000	4	30	2.6	--	--	--	--	4,805,236	0.75	--	--	--
1906	1,066,030	22.04	203,500	136.4	--	--	--	--	68,000	38.6	30	3.4	--	--	--	--	5,871,811	1.13	--	--	--
1907	936,043	19.35	149,784	98.8	--	--	--	--	44,000	16.8	30	3.2	--	--	--	--	6,308,786	1.26	--	--	--
1908	933,290	19.29	135,672	71.9	--	--	--	--	50,000	15.2	40	3.4	--	--	--	--	4,585,362	0.61	--	--	--
1909	987,417	20.41	147,950	76.9	--	--	--	--	22,000	7.6	69	5.9	--	--	--	--	4,124,705	0.54	--	--	--
1910	780,131	16.13	157,850	85.2	--	--	--	--	20,000	8.3	75	6.6	--	--	--	--	4,241,689	0.54	--	--	--
1911	815,276	16.85	460,231	243.9	--	--	--	--	122,000	52.8	51	4.5	--	--	--	--	27,267,778	3.4	--	--	--
1912	829,436	17.14	515,186	316.8	--	--	--	--	260,000	119.6	45	4.1	--	--	--	--	29,230,491	4.82	--	--	--
1913	755,947	15.63	362,563	218.9	--	--	--	--	100,000 ^d	44.1 ^d	6	0.6	--	--	--	--	21,659,958	3.35	--	--	--
1914	762,596	15.76	394,805	218.3	--	--	--	--	208,000	66.6	28	1.3	--	--	--	--	21,450,628	2.85	--	--	--
1915	807,966	16.7	1,071,782	543.3	--	--	--	--	204,000	78.8	437	41.1	--	--	--	--	86,509,312	15.14	--	--	--
1916	834,068	17.24	1,379,171	907.4	--	--	--	--	278,000	121	820	113.2	--	--	--	--	119,654,839	29.5	--	--	--
1917	709,049	14.66	1,239,150	1,020.60	--	--	--	--	200,000	123.3	852	146.6	--	--	--	--	88,793,400	24.4	1,100	W	--
1918	458,641	9.48	847,789	847.8	--	--	--	--	136,000	118	564	80.1	--	--	--	--	69,224,951	17.1	1,100	W	--
1919	455,984	9.42	629,708	705.3	--	--	--	--	112,000	73.4	687	72.1	--	--	--	--	47,220,771	8.8	--	--	--
1920	404,683	8.37	953,546	1,039.70	--	--	--	--	32,000	16.1	140	16.1	--	--	--	--	70,435,363	13	--	--	--
1921	390,558	8.07	761,085	761.1	45	1.5	--	--	8,000	2.4	759	68.3	--	--	--	--	57,011,597	7.4	--	--	--
1922	359,057	7.42	729,945	729.9	--	--	--	--	2,800	0.9	377	41.5	--	--	--	--	77,967,819	10.5	--	--	--
1923	289,539	5.98	814,649	668.1	--	--	--	--	3,800	1.6	410	57.4	--	--	--	--	88,920,645	12.6	--	--	--
1924	304,072	6.29	669,641	448.6	2	0.3	--	--	14,000	7.1	631	100.9	--	--	--	--	74,074,207	9.7	--	--	--
1925	307,679	6.36	698,259	482.4	44	3.6	W	W	28,600	15.4	789	140.6	--	--	--	--	73,055,298	10.3	--	--	--
1926	324,450	6.7	605,190	377	22	1.7	W	W	16,000	10.4	778	124.4	--	--	--	--	67,778,000	9.49	--	--	--
1927	286,720	5.97	350,430	215	--	--	--	--	53,400	34	1,008	127	--	--	--	--	55,343,000	7.25	--	--	--
1928	331,140	6.85	351,730	187	--	--	--	--	82,000	41	1,019	118	--	--	--	--	41,421,000	5.96	--	--	--
1929	378,438	7.76	472,900	252	4	0.5	--	--	77,200	35	1,315	166	--	--	--	--	40,570,000	7.13	--	--	--
1930	408,983	8.47	408,570	157.3	--	--	--	--	29,400	9.3	1,365	136.5	--	--	--	--	32,651,000	4.24	--	--	--
1931	459,000	9.51	352,000	102	15	1.2	--	--	8,200	2	1,660	126	--	--	--	--	22,614,000	1.88	--	--	--
1932	493,860	10.2	234,050	66	8	0.5	--	--	--	--	1,260	75.6	--	--	--	--	8,738,500	0.55	--	--	--
1933	469,286	9.7	154,700	55	--	--	--	--	5,800	2.3	1,157	85.6	--	--	--	--	29,000	0.02	--	--	--
1934	537,281	8.78	154,700	100	--	--	--	--	8,200 ^d	4.3 ^d	839	62.1	--	--	--	--	121,000	0.06	--	--	--
1935	469,495	16.43	286,600	206	--	--	--	--	98,800	49.8	815	65.2	--	--	--	--	15,056,000	1.25	--	--	--
1936	540,580	18.92	484,306	375	--	--	--	--	226,000	105	941	86.6	--	--	--	--	39,267,000	3.72	--	--	--
1937	627,940	21.98	494,340	382	--	--	--	--	372,000 ^d	202.3 ^d	823	97.1	--	--	--	--	36,007,000	4.74	--	--	--
1938	662,000	23.17	479,853	310	8	0.6	--	--	210,000	89.1	994	91.5	--	--	--	--	29,760,000	2.98	--	--	--
1939	676,780	23.68	201,054	136.5	--	--	--	--	66,000	38	937	88.1	--	--	--	--	278,500	0.04	--	--	--
1940	755,000	26.45	191,679	136.3	156 ^d	130.9	--	--	92,000	52	840	72	--	--	--	--	110,000	0.02	--	--	--
1941	692,314	24.23	199,700	142	W	W	774,000	87.3	95,600 ^d	61.0 ^d	742	58	--	--	--	--	144,000	0.02	--	--	--
1942	487,657	17.07	135,200	96	W	W	316,000	41	5,600	2.5	523	44	--	--	--	--	48,000	0.01	--	--	--
1943	99,583	3.49	31,700	22	786	153.4	368,000	33.3	2,000 ^d	1.0 ^d	200	22	--	--	--	--	54,000	0.01	5,564	186.3	--
1944	49,296	1.73	15,240	10.8	841	165	70,080	30	--	--	44	5.8	--	--	--	--	4,000	0.01	1,845	64.6	--

Year	Gold ^b		Silver		Mercury		Antimony		Tin		Lead		Zinc		Platinum ^d		Copper		Chromium		
	(oz)	(ms)	(oz)	(ms)	(flask ^c)	(lb)	(lb)	(lb)	(lb)	(lb)	(oz)	(t\$)	(t\$)	(t\$)	(oz)	(t\$)	(lb)	(ms)	(t\$)	(t\$)	
1945	68,117	2.38	9,983	6.2	275	180	W	W	W	W	11	1.8	--	--	22,949	1,377.00	10,000	0.01	--	--	
1946	226,781	7.93	41,793	26.3	699	68.7	W	W	W	W	115	25	--	--	22,882	1,418.70	4,000	0.01	--	--	
1947	279,988	9.79	66,150	46.3	127	10.6	52,000	16.1	2,000	2.2	255	76.5	226	0.15	13,512	1,351.20	24,000	0.06	--	--	
1948	248,395	8.69	67,341	58.7	108	7.8	88,000	29.3	10,000	10.8	317	88.9	226	0.15	13,741	1,209.20	28,000	0.07	--	--	
1949	229,416	8.03	36,056	32.4	102	7.9	88,000	31.3	114,000	100.8	49	11.2	226	0.15	17,169	1,545.20	7,700	0.02	--	--	
1950	289,285	10.13	52,638	48	W	W	W	W	188,000	170.3	144	27.5	--	--	W	W	12,000	0.03	--	--	
1951	239,628	8.38	32,870	29.8	28	W	1,718,000	2,061.60	138,000	198	21	7.2	--	--	W	W	2,000	0.01	--	--	
1952	240,571	8.42	31,825	28.7	40	W	740,000	1,406.00	180,000	243.9	1	0.3	--	--	W	W	--	--	W	W	
1953	253,771	8.88	35,387	32.1	1,023	270	W	W	98,000	105.9	--	--	--	--	17,489	1,696.40	--	--	W	W	
1954	248,511	8.7	33,694	31.8	1,046	276	--	--	398,000	409.9	--	--	--	--	18,790	1,615.90	8,000	0.02	2,953	208	
1955	249,294	8.73	33,693	30.4	43	12	--	--	172,000	182.5	1	0.3	--	--	17,253	1,466.50	2,000	0.01	7,082	625.3	
1956	204,300	7.33	26,700	24.1	3,414	837	134,400	150	--	--	1	0.3	--	--	17,934	1,829.30	--	--	7,200	711.5	
1957	215,467	7.54	28,862	26	5,461	1,349.00	71,120	80	--	--	9	3	--	--	15,479	1,377.60	--	--	4,207	431	
1958	186,000	6.53	24,000	22	3,380	774	--	--	--	--	--	--	--	--	10,284	647.9	10,000	0.03	--	--	
1959	171,000	5.99	22,000	20	3,750	852	--	--	--	--	--	--	--	--	10,698	770.3	72,000	0.04	--	--	
1960	180,000	6.3	23,000	21	4,450	938	W	W	--	--	--	--	--	--	13,352	1,054.80	82,000	0.04	--	--	
1961	114,228	3.99	--	--	4,080	816	--	--	--	--	--	--	--	--	16,133	1,274.50	184,000	0.06	--	--	
1962	165,142	5.78	--	--	3,843	711	--	--	--	--	--	--	--	--	12,520	951.5	--	--	--	--	
1963	99,000	3.48	6,100	9	400	76	W	W	--	--	5	1.1	--	--	12,322	961.1	--	--	--	--	
1964	58,000	2.05	7,200	6	303	95	46,400	60.3	--	--	--	--	--	--	13,010	1,522.20	22,000	0.01	--	--	
1965	43,000	1.51	5,000	6	180	104	46,400	60.3	--	--	14	4	--	--	10,365	1,368.20	64,000	0.03	--	--	
1966	27,325	0.96	7,000	9	185	101	16,000	19.2	--	--	19	4.3	--	--	9,033	1,273.70	--	--	--	--	
1967	22,948	0.8	6,000	9	161	79	20,000	22	--	--	--	--	--	--	7,888	1,238.40	W	W	--	--	
1968	21,000	0.81	3,000	6.5	156	78	6,000	6	--	--	--	--	--	--	8,433	1,652.90	--	--	--	--	
1969	21,227	0.88	2,000	4.2	238	100	94,000	100	--	--	2	0.5	--	--	8,500	2,321.20	--	--	--	--	
1970	38,400	1.38	4,000	7	3,100	1,260.00	365,000	410	--	--	--	--	--	--	6,015	925.1	W	W	--	--	
1971	34,000	1.36	2,000	4	675	285	68,000	74	34,000	47	--	--	--	--	5,407	625.6	--	--	--	--	
1972	8,639	0.56	1,000	2	125	44	160,000	185	W	W	--	--	--	--	6,478	985.5	--	--	--	--	
1973	15,000	1.86	13,200	22	70	52.5	420,000	515	10,000	12	6	2	--	--	5,524	964.5	--	--	--	--	
1974	16,000	2.56	1,500	3.5	70	52.5	80,000	95	W	W	--	--	--	--	4,351	1,067.00	--	--	--	--	
1975	14,980	3.35	6,000	25	--	--	120,000	145	22,000	60	--	--	--	--	3,726	623.3	--	--	--	--	
1976	22,887	6.9	6,500	24	--	--	160,000	165	W	W	14	6	--	--	3,212	515.2	--	--	8,000 ^d	1,200.0 ^d	
1977	50,000	7.8	8,000	20	--	--	W	W	W	W	--	--	--	--	6,891	1,119.80	--	--	--	--	
1978	60,000	12	6,000	50	--	--	W	W	W	W	--	--	--	--	--	--	--	--	--	--	
1979	65,000	18	6,500	93	--	--	100,000	125	100,000	830	--	--	--	--	--	--	--	--	--	--	
1980	75,000	32	7,500	111	--	--	--	--	120,000	984	31	29	--	--	--	--	--	--	--	--	--
1981	134,200	55.2	13,420	111.3	W	W	--	--	106,000	700	--	--	--	--	900	200	--	--	--	--	--
1982	175,000	69.9	22,000	198	--	--	--	--	198,000	1,365.00	--	--	--	--	W	W	--	--	--	--	--
1983	169,000	67.6	33,200	332	--	--	22,400	45	215,000	1,100.00	--	--	--	--	W	W	--	--	--	--	--
1984	175,000	62.13	20,000	159	5	1.5	135,000	225.8	225,000	400	--	--	--	--	W	W	--	--	--	--	--
1985	190,000	61.18	28,500	171	27	10	65,000	98	300,000	650	--	--	--	--	W	W	--	--	--	--	--
1986	160,000	60.8	24,000	134.4	12	2.8	45,000	67.5	340,000	890	--	--	--	--	W	W	--	--	--	--	--
1987	229,707	104.51	54,300	391	--	--	--	--	288,000	460	--	--	--	--	W	W	--	--	--	--	--
1988	265,500	112.84	47,790	282	W	W	--	--	300,000	950	--	--	--	--	25	13.8	--	--	--	--	--
1989	284,617	108.7	5,211,591	27,300.00	--	--	5,211,591	NR	194,000	672	9,585	7,700.00	19,843	29,400.00	--	--	--	--	--	--	--
1990	231,700	89.2	10,135,000	50,675.00	--	--	--	--	57,000	200	44,220	30,954.00	181,200	255,680.00	--	--	--	--	--	--	--
1991	243,900	88.29	9,076,854	39,110.00	--	--	--	--	6,800	22.1	69,591	33,403.70	278,221	278,221.00	15	5.3	--	--	--	--	--
1992	262,530	88.46	9,115,755	34,913.00	--	--	--	--	1,500	5.9	68,664	31,585.00	274,507	301,957.70	--	--	--	--	--	--	--
1993	191,265	68.64	5,658,958	24,333.00	--	--	--	--	21,000	50.6	38,221	13,759.60	268,769	236,516.70	3	1.2	--	--	--	--	--
1994	182,100	70.29	1,968,000	10,391.00	--	--	--	--	--	--	36,447	25,512.90	329,003	296,102.70	5	2.1	--	--	--	--	--
1995	141,882	56.04	1,225,730	6,655.00	--	--	--	--	--	--	58,098	34,428.60	359,950	345,552.00	1	0.4	--	--	--	--	--
1996	161,565	62.62	3,676,000	19,078.00	--	--	--	--	--	--	70,086	52,284.00	366,780	361,646.00	2	0.8	780,000	0.8	--	--	--
1997	590,516	207.29	14,401,165	70,710.00	--	--	--	--	--	--	88,560	49,593.00	419,097	494,888.00	--	--	3,440,000	3.54	--	--	--

Year	Gold ^b (oz)	Gold ^b (m\$)	Silver (oz)	Silver (t\$)	Mercury (flask ^c)	Mercury (t\$)	Antimony (lb)	Antimony (t\$)	Tin (lb)	Tin (t\$)	Lead (tons)	Lead (t\$)	Zinc (tons)	Zinc (t\$)	Platinum ^d (oz)	Platinum ^d (t\$)	Copper (lb)	Copper (m\$)	Chromium (tons)	Chromium (t\$)
1998	594,191	174.62	14,856,000	82,154.00	--	--	--	--	--	--	102,887	49,386.00	549,348	506,400.00	--	--	3,800,000	2.85	--	--
1999	517,890	144.26	16,467,000	85,628.00	--	--	--	--	--	--	125,208	57,596.00	643,642	630,769.00	--	--	4,200,000	3	--	--
2000	546,000	152.39	18,226,615	90,404.00	--	--	--	--	--	--	123,224	51,754.00	669,112	682,494.00	--	--	2,800,000	2.3	--	--
2001	550,644	149.25	16,798,000	73,408.00	--	--	--	--	--	--	127,385	56,049.00	634,883	507,907.00	--	--	2,800,000	1.99	--	--
2002	562,094	174.28	17,838,183	82,326.00	--	--	--	--	--	--	--	--	--	--	--	--	3,200,000	2.27	--	--
2003	528,191	191.93	18,589,100	95.3	--	--	--	--	--	--	162,479	64,279.00	714,769	536,348.00	--	--	--	--	--	--
2004	456,508	192.34	16,947,270	113.1	--	--	--	--	--	--	150,796	120,636.80	680,015	651,432.20	--	--	--	--	--	--
2005	427,031	189.92	11,670,000	85.4	--	--	--	--	--	--	131,366	115,230.40	684,462	862,108.00	--	--	--	--	--	--
2006	570,129	344.05	16,489,394	190.4	--	--	--	--	--	--	157,128	185,629.30	673,967	2,002,971.40	--	--	--	--	--	--
2007	726,933	511.09	20,203,985	270.4	--	--	--	--	--	--	167,181	389,532.21	696,115	2,048,452.64	--	--	87,627	0.28	--	--
Other ^e	--	--	--	--	1,438	--	--	--	--	--	--	--	--	--	71,946	17,091.9	--	--	--	--
TOTAL	40,105,552	4,466	248,592,295	714,187	42,392	9,911	11,070,800	6,655	7,287,700	12,524	1,903,888	1,431,837	9,162,467	11,529	740,494	82,908	1,395,015,532	245	39,051	3,427

^aFrom published and unpublished state and federal documents.

^bGold production adjusted to be consistent with mining district production totals.

^c76-lb flask.

^dCrude platinum; total production of refined metal is about 575,000 oz.

^eNot traceable by year.

W = withheld

-- = Not reported

t\$ = Thousand dollars

m\$ = Million dollars

APPENDIX I

Production of industrial minerals, coal, and other commodities in Alaska, 1880-2007

Year	Coal		Sand and gravel		Rock ^a		Barite		Other ^b \$
	s. tons	m\$	s. tons	m\$	s. tons	m\$	s. tons	t\$	
1880-1899 ^c	19,429	0.14	--	--	7,510	0.04	--	--	--
1900	1,200	0.02 ^d	--	--	510	0.01	--	--	--
1901	1,300	0.02 ^d	--	--	700	0.01	--	--	500
1902	2,212 ^d	0.02 ^d	--	--	800	0.01	--	--	255
1903	1,447	0.01	--	--	920	0.01	--	--	389
1904	1,694	0.01	--	--	1,080	0.02	--	--	2,710
1905	3,774	0.02	--	--	970	0.02	--	--	740
1906	5,541	0.02	--	--	2,863	0.03	--	--	19,965
1907	10,139	0.05	--	--	3,899	0.03	--	--	54,512
1908	3,107 ^d	0.01 ^d	--	--	2,176	0.03	--	--	81,305
1909	2,800	0.02	--	--	1,400	0.01	--	--	86,027
1910	1,000 ^d	0.01 ^d	--	--	W	W	--	--	96,408
1911	900 ^d	0.01 ^d	--	--	W	W	--	--	145,739
1912	355 ^d	0.01 ^d	--	--	W	W	--	--	165,342
1913	2,300	0.01	--	--	W	W	--	--	286,277
1914	1,190	0.01	--	--	W	W	--	--	199,767
1915	1,400	0.03	--	--	W	W	--	--	205,061
1916	12,676	0.05	--	--	W	W	--	--	326,731
1917	54,275	0.27	--	--	W	W	--	--	203,971
1918	75,816	0.41	--	--	W	W	--	--	171,452
1919	60,894	0.35	--	--	50,014	0.29	--	--	214,040
1920	61,111	0.36	--	--	37,044	0.27	--	--	372,599
1921	76,817	0.49	--	--	59,229	0.31	--	--	235,438
1922	79,275	0.43	--	--	54,251	0.30	--	--	266,296
1923	119,826	0.76	--	--	83,586	0.41	--	--	229,486
1924	99,663	0.56	--	--	35,294	0.26	--	--	348,728
1925	82,868	0.40	--	--	32,193	0.19	--	--	454,207
1926	87,300	0.46	--	--	33,283	0.20	--	--	423,000
1927	104,300	0.55	--	--	41,424	0.22	--	--	--
1928	126,100	0.66	--	--	63,347	0.31	--	--	--
1929	100,600	0.53	--	--	54,766	0.26	--	--	194,000
1930	120,100	0.63	--	--	66,234	0.33	--	--	157,300
1931	105,900	0.56	--	--	59,175	0.29	--	--	108,000
1932	102,700	0.53	--	--	54,167	0.27	--	--	223,400
1933	96,200	0.48	--	--	56,291	0.28	--	--	--
1934	107,500	0.45	--	--	64,234	0.36	--	--	46,155
1935	119,425	0.50	--	--	74,049	0.38	--	--	46,755
1936	136,593	0.57	--	--	76,379	0.38	--	--	45,807
1937	131,600	0.55	--	--	50,057	0.25	--	--	147,048
1938	159,230	0.62	--	--	189,090	0.21	--	--	125,302
1939	143,549	0.60	42,332	0.02	--	--	--	--	--
1940	170,174	0.88	515,011	0.10	--	--	--	--	--
1941	241,250	0.97	530,997	0.09	--	--	--	--	1,367,000
1942	246,600	0.99	W	W	--	--	--	--	1,124,000
1943	289,232	1.84	W	W	--	--	--	--	--
1944	352,000	2.37	712,496	0.50	--	--	--	--	2,350,309
1945	297,644	1.87	W	W	--	--	--	--	5,910,704
1946	368,000	2.36	W	W	--	--	--	--	2,005,241
1947	361,220	2.55	W	W	219,000	1.00	--	--	5,927,319
1948	407,906	2.79	W	W	67,341	0.33	--	--	1,257,699
1949	455,000	3.60	W	W	W	W	--	--	7,181,886
1950	421,455	3.03	3,050,020	2.38	W	W	--	--	2,100,000
1951	494,333	3.77	6,818,000	3.54	W	W	--	--	3,600,000
1952	648,000	5.77	6,817,800	3.54	W	W	--	--	9,052,000
1953	861,471	8.45	7,689,014	5.08	47,086	0.17	--	--	1,231,350
1954	666,618	6.44	6,639,638	6.30	283,734	0.47	--	--	1,572,150
1955	639,696	5.76	9,739,214	8.24	265,740	0.29	--	--	1,552,427
1956	697,730	6.37	9,100,000	8.30	50,000	0.02	--	--	1,551,500
1957	842,338	7.30	6,096,000	8.79	528,000	1.95	--	--	2,751,000

Year	Coal		Sand and gravel		Rock ^a		Barite		Other ^b \$
	s. tons	m\$	s. tons	m\$	s. tons	m\$	s. tons	t\$	
1958	759,000	6.93	4,255,000	3.87	615,000	2.07	--	--	695,000
1959	602,000	5.88	5,600,000	5.10	54,000	0.20	--	--	1,338,000
1960	669,000 ^d	5.95 ^d	5,892,000	5.35	80,000	0.30	--	--	975,000
1961	650,000 ^d	5.87 ^d	5,241,000	4.19	--	--	--	--	--
1962	675,000 ^d	6.41 ^d	5,731,000	5.36	--	--	--	--	--
1963	853,000	5.91	16,926,000	22.01	W	W	W	W	2,589,000
1964	745,000	5.01	26,089,000	18.49	W	W	W	W	4,912,000
1965	860,000 ^d	5.88 ^d	29,959,000	33.93	W	W	W	W	5,296,000
1966	927,000	6.95	17,457,000	21.79	W	W	44,000	350	6,167,000
1967	930,000	7.18	22,300,000	26.25	W	W	W	W	4,924,000
1968	812,000 ^d	5.03 ^d	17,515,000	20.73	W	W	91,000	W	4,117,000
1969	728,000 ^d	4.65 ^d	16,205,000	18.62	1,954,000	3.90	90,000	850	5,163,000
1970	786,000 ^d	5.28 ^d	20,375,000 ^d	26.07 ^d	6,470,000	10.01	134,000	1,875.00	7,994,000
1971	748,000 ^d	5.05 ^d	26,391,000	41.99	2,658,000	5.07	102,000	1,075.00	--
1972	720,000 ^d	6.26 ^d	14,187,000	15.21	652,000	3.01	W	W	--
1973	700,000 ^d	6.23 ^d	19,350,000	19.01	5,967,000	12.00	112,000	1,792.00	12,846,000
1974	700,000	7.34	118,740,000 ^d	240.94 ^d	5,484,000	12.95	110,000	1,895.00	14,495,000
1975	766,000	7.81	48,145,000	95.78	8,877,000	26.65	2,000	30	12,731,000
1976	705,000	8.00	74,208,000 ^d	204.73 ^d	6,727,000	20.09	W	W	14,019,000
1977	780,000 ^d	12.00 ^d	66,126,000	134.25	4,008,000	17.47	--	--	14,486,000
1978	750,000	15.00	51,100,000	122.00	3,437,000	14.65	22,000	750	--
1979	750,000	16.00	50,900,000	104.90	3,650,000	15.45	20,000	800	930,000
1980	800,000	16.00	40,000,000	86.00	3,700,000	15.40	50,000	2,000.00	97,500
1981	800,000	17.60	46,000,000	88.20	4,200,000	19.30	--	--	256,000
1982	830,000	18.00	45,000,000	91.00	3,400,000	15.60	--	--	150,000
1983	830,000	18.00	50,000,000	105.00	5,270,000	25.00	--	--	242,000
1984	849,161	23.75	27,000,000	95.00	2,700,000	16.00	--	--	875,875
1985	1,370,000	39.73	28,184,080	112.06	2,500,000	12.00	--	--	559,000
1986	1,492,707	40.10	20,873,110	75.76	4,200,000	20.32	--	--	384,800
1987	1,508,927	42.35	16,696,374	42.66	1,805,000	11.62	--	--	388,400
1988	1,551,162	44.30	17,264,500	48.75	3,600,000	24.65	--	--	389,000
1989	1,452,353	41.46	14,418,000	39.88	2,914,000	20.34	--	--	1,492,000
1990	1,576,000	44.99	15,013,500	40.82	3,200,000	22.1	--	--	400,000
1991	1,540,000	39.00	14,160,011	45.45	3,000,000	22.5	--	--	462,000
1992	1,531,800	38.30	14,599,746	42.2	2,900,000	22.97	--	--	430,000
1993	1,586,545	38.10	13,162,402	40.64	3,561,324	26.21	--	--	465,000
1994	1,490,000	36.75	13,518,321	40.95	3,843,953	27.04	--	--	459,500
1995	1,640,000	41.30	9,847,550	30.89	2,811,152	22.13	--	--	182,500
1996	1,481,000	38.00	9,890,463	32.2	3,000,045	23.56	--	--	200,000
1997	1,446,000	38.05	13,800,000	51.91	3,200,000	20.00	--	--	217,000
1998	1,339,000	35.23	12,363,450	57.28	1,636,200	14.04	--	--	215,000
1999	1,560,000	41.05	10,600,000	52.42	1,640,000	18.01	--	--	--
2000	1,473,355	38.77	10,600,000	49.86	5,200,000	36.59	--	--	--
2001	1,537,000	48.11	10,360,000	55.22	3,091,000	27.18	--	--	--
2002	1,158,000	37.40	22,412,000	120.7	3,152,000	31.44	--	--	--
2003	1,088,000	38.08	11,868,001	64.14	861,382	10.41	--	--	175,000
2004	1,450,000	50.75	19,576,092	101.51	7,312,050	106.21	--	--	2,732,554
2005	1,402,174	49.08	16,620,009	76.54	2,803,172	22.55	--	--	809,642
2006	1,397,500	48.91	13,953,465	63.35	2,369,738	23.85	--	--	1,057,500
2007	1,273,004	44.56	14,163,676	76.12	2,211,954	25.51	--	--	7,500
Other ^d	--	--	--	--	2,300,000 ^e	W	79,000	W	--
TOTAL^f	64,953,013	1,288	1,272,387,242	3,064	145,734,296	837	856,000	11,417	182,544,068

^aBuilding-stone production figures for 1880-1937 are for the southcentral and interior regions of Alaska only.

^bIncludes 2.4 million lb U3O8 (1955-71); 505,000 tons gypsum (1905-26); 286,000 lb WO3 (intermittently 1916-80); 94,000 lb asbestos (1942-44); 540,000 lb graphite (1917-18 and 1942-50); and undistributed amounts of zinc, jade, peat, clay, soapstone, miscellaneous gemstones, and other commodities (1880-1993).

^cProduction not traceable by year.

^dWhen state (territorial) and federal figures differ significantly, state figures are used. Figures for sand and gravel production in 1974 show state estimates (118,740,000 s. tons; 240.94 m\$) and federal (42,614,000 s. tons; 88.96 m\$). The federal estimate was not added to total production.

^eMarble quarried on Prince of Wales Island, southeastern Alaska (1900-41).

^fRounded to nearest 1,000 ton.

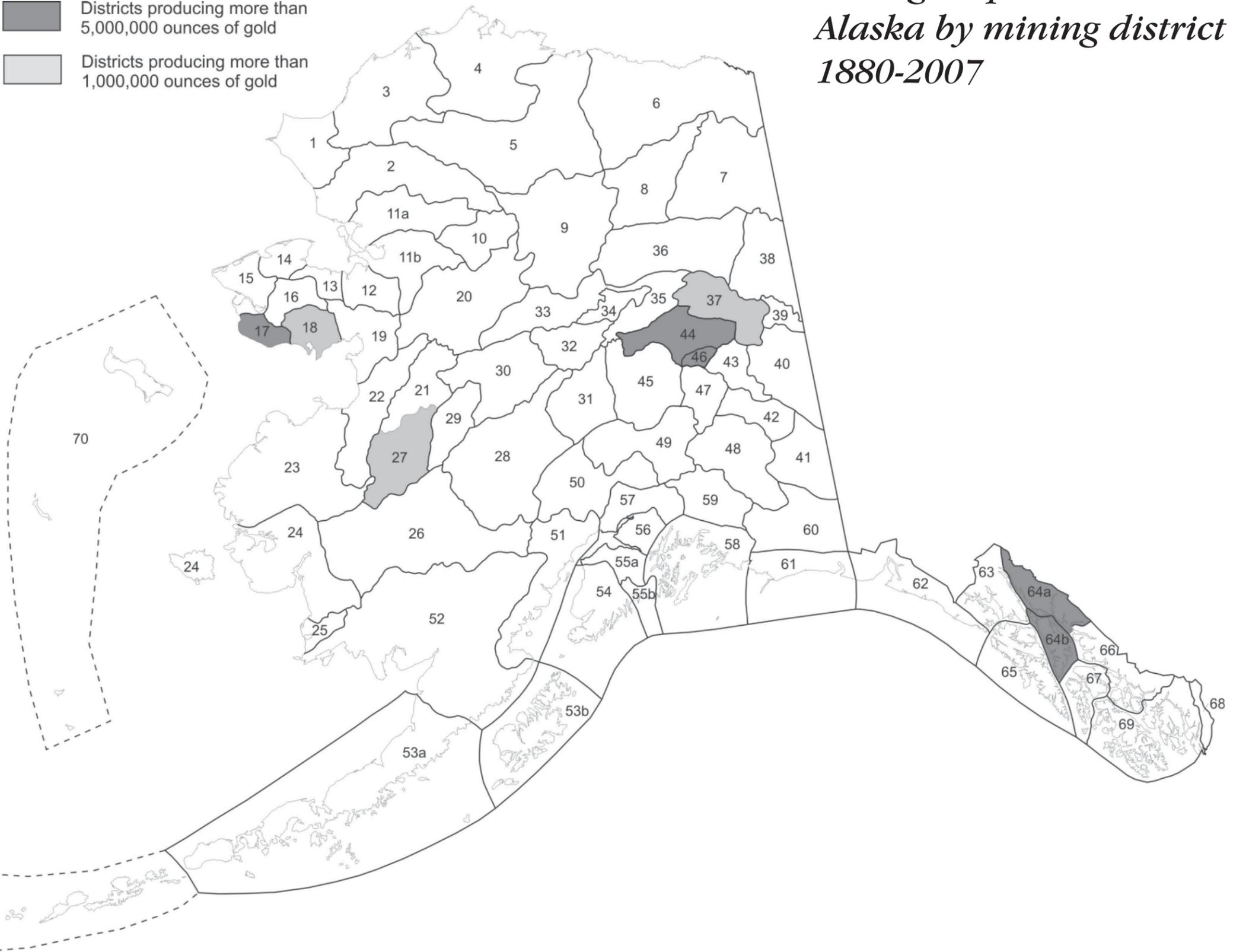
m\$ = Million dollars; t\$ = Thousand dollars; -- = Not reported.

W = withheld.

Total gold production in Alaska by mining district 1880-2007

Mining districts ^a	Production (in refined troy ounces)		
	Total production	Placer	Lode
1 Lisburne district			
2 Noatak district	7,800	7,800	0
3 Wainwright district	0	0	0
4 Barrow district	0	0	0
5 Colville district	0	0	0
6 Canning district	0	0	0
7 Sheenjek district	0	0	0
8 Chandalar district	66,287	48,887	17,400
9 Koyukuk district	356,216	356,216	0
10 Shungnak district	15,000	15,000	0
11 Kiana & Selawik districts	40,600	40,600	0
12 Fairhaven district (Candle subdistrict)	253,720	253,720	0
13 Fairhaven district (Inmachuk subdistrict)	348,924	348,924	0
14 Serpentine district	4,220	4,220	0
15 Port Clarence district	42,358	42,358	0
16 Kougarok district	180,806	180,806	0
17 Nome (Cape Nome) district	5,004,046	5,004,046	0
18 Council district	1,046,522	1,019,522	27,000
19 Koyuk district	84,322	84,322	0
20 Hughes district	296,104	296,104	0
21 Kaiyuh district	149,703	5,400	144,303
22 Anvik district ^b	7	7	0
23 Marshall district	124,506	124,506	0
24 Bethel district	42,945	42,945	0
25 Goodnews Bay district	31,200	31,200	0
26 Aniak district	598,184	598,184	0
27 Iditarod district	1,563,682	1,560,752	2,930
28 McGrath district	337,005	133,306	203,699
29 Innoko district	734,041	733,885	156
30 Ruby district	477,976	477,976	0
31 Kantishna district	99,307	91,401	7,906
32 Hot Springs district	585,754	585,754	0
33 Melozitna district	12,854	12,854	0
34 Rampart district	199,166	199,166	0
35 Tolovana district	530,121	530,121	0
36 Yukon Flats district	0	0	0
37 Circle district	1,084,035	1,084,035	0
38 Black district	2	2	0
39 Eagle district	52,045	52,045	0
40 Fortymile district	564,631	564,631	0
41 Chisana district	144,500	78,000	66,500
42 Tok district	280	280	0
43 Goodpaster district	2,350	2,050	300
44 Fairbanks district	12,893,582	8,201,106	4,692,476
45 Bonfield district	88,461	81,761	6,700
46 Richardson subdistrict of Fairbanks district ^c	120,940	118,640	2,300
47 Delta River district	8,270	8,270	0
48 Chistochina district	183,259	183,259	0
49 Valdez Creek district	513,746	512,165	1,581
50 Yentna district	199,433	199,433	0
51 Redoubt district	105	105	0
52 Bristol Bay Region	1,570	1,570	0
53 Kodiak district (53b)-Alaska Peninsula Region (53a)	112,405	4,805	107,600
54 Homer district	16	16	0
55 Hope & Seward districts	134,936	69,936	65,000
56 Anchorage district ^d	210	210	0
57 Willow Creek district	666,821	57,821	609,000
58 Prince William Sound district	137,790	90	137,700
59 Nelchina district	14,370	14,370	0
60 Nizina district	148,500	148,500	0
61 Yakataga district	18,040	18,040	0
62 Yakutat district ^e	13,200	2,200	11,000
63 Juneau district (partial)	82,064	82,064	0
64 Juneau (64a) & Admiralty (64b) districts	8,839,302	81,041	8,758,261
65 Chichagof district	770,000	0	770,000
66 Petersburg district	15,000	15,000	0
67 Kupreanof district	0	0	0
68 Hyder district	219	219	0
69 Ketchikan district	62,001	4,001	58,000
70 Bering Sea Region	0	0	0
71 Aleutian Islands Region	0	0	0
Unknown (undistributed) ^f	29	29	0
TOTAL	40,105,488	24,415,676	15,689,812
	(1,247.4 tonnes)		

 Districts producing more than 5,000,000 ounces of gold
 Districts producing more than 1,000,000 ounces of gold



^aMining district names and boundaries revised slightly from those defined by Ransome and Kerns (1954) and Cobb (1973). Sources of data: U.S. Geological Survey, U.S. Bureau of Mines, and Alaska Territorial Department of Mines records 1880-1930; U.S. Mint records 1930-1969; State of Alaska production records 1970-2006. Entries of "0" generally mean no specific records are available.
^bIncluded in Marshall district.
^cNot included in total for Fairbanks district.
^dMost placer gold production included in Willow Creek district.
^eIncludes lode production from Glacier Bay area and placer production from Lituya Bay area.
^fProduction that cannot be credited to individual districts due to lack of specific records or for reasons of confidentiality.



Above. Aerial view of the main Red Dog Mine on left and Aqqaluk deposit on upper right. Teck Cominco conducted in-fill drilling at Aqqaluk during 2007, with plans to begin stripping waste by 2010. Photo provided by Teck Cominco Alaska.

Right. Gold bar produced at the Pogo Mine. Photo courtesy of Teck Cominco Ltd.

Bottom right. Pouring concrete footings for mill facilities at NovaGold Resources Inc.'s Rock Creek gold project near Nome. Photo provided by NovaGold Resources Inc.

Below. Full Metal Minerals Ltd. geologist Cullan Lester holding massive sulfide drilled at Full Metal's 40 Mile project. Photo provided by Full Metal Minerals Ltd.

