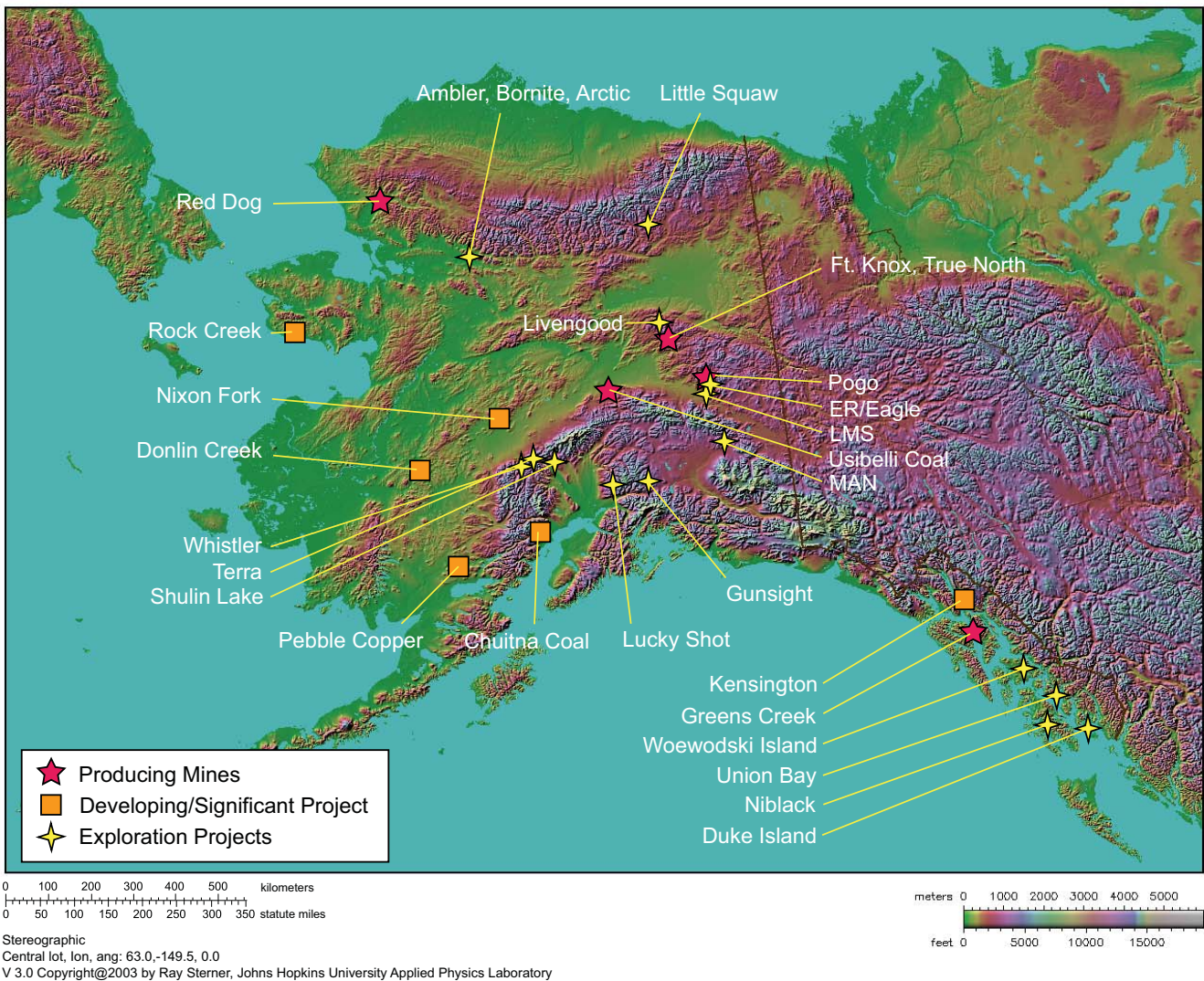




# ALASKA Mineral Industry

Mining is reemerging as a significant contributor to the Alaskan economy. Newly developed Alaskan metal and coal deposits are making positive contributions to the nation's balance of trade. Locally, these same mines are providing a significant economic base for Alaskan communities and sources of jobs for Alaskans. Additionally, new mining projects are providing the catalyst to improve and expand infrastructure throughout the state.

The following information summarizes the Alaska coal and minerals industries utilizing the most currently available data.



Map by Ray Sterner, John Hopkins Applied Physics Laboratory, licensed to North Star Science and Technology, LLC. Map showing current operating mines, significant or near-term development and on-going

## Alaska's Advantages

Alaska offers numerous advantages for energy development:

- Alaska is centrally located to serve the entire Pacific Rim.
- Alaska is well positioned to serve the Canadian and U. S. west coasts.
- Alaska is positioned to serve European markets by the Northern Sea Route. Specialty armored freighters are able to routinely transit the polar passage during the summer months.
- Alaska offers a stable political environment and a well-trained work force.
- Alaska has government participation through tax credits and the provision of infrastructure.

## Land Status

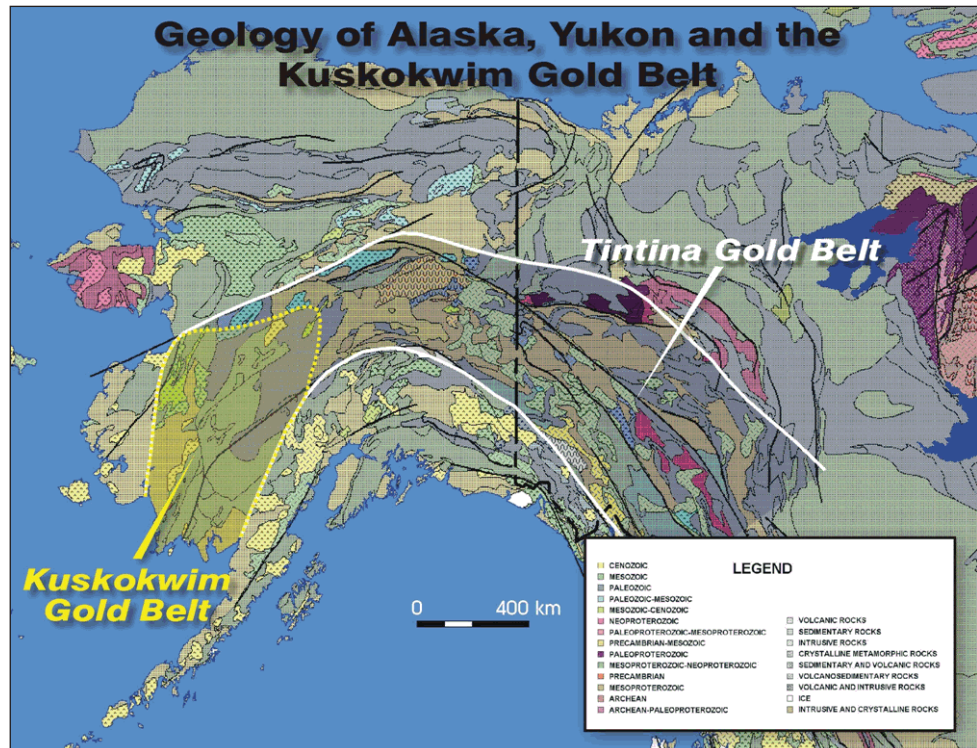
The total area of the state is 656,425 square miles; of this 571,094 is land area, the remaining is covered by water. The state has abundant, highly mineralized land open for mineral resource development. Lands status is as follows:

Management/Ownership	Total (sq. miles)	Open to Mineral Entry (sq. miles)
Federal Government	335,938	77,500
State owned	163,125	149,844
Private – Regional Corps	71,250	71,250
– Other	781	0
<b>TOTAL</b>	<b>571,094</b>	<b>298,594</b>

The area of land open to mineral entry equals the total area of the State of Texas (268,601 sq. miles) plus the State of Maine (30,865 sq. miles).

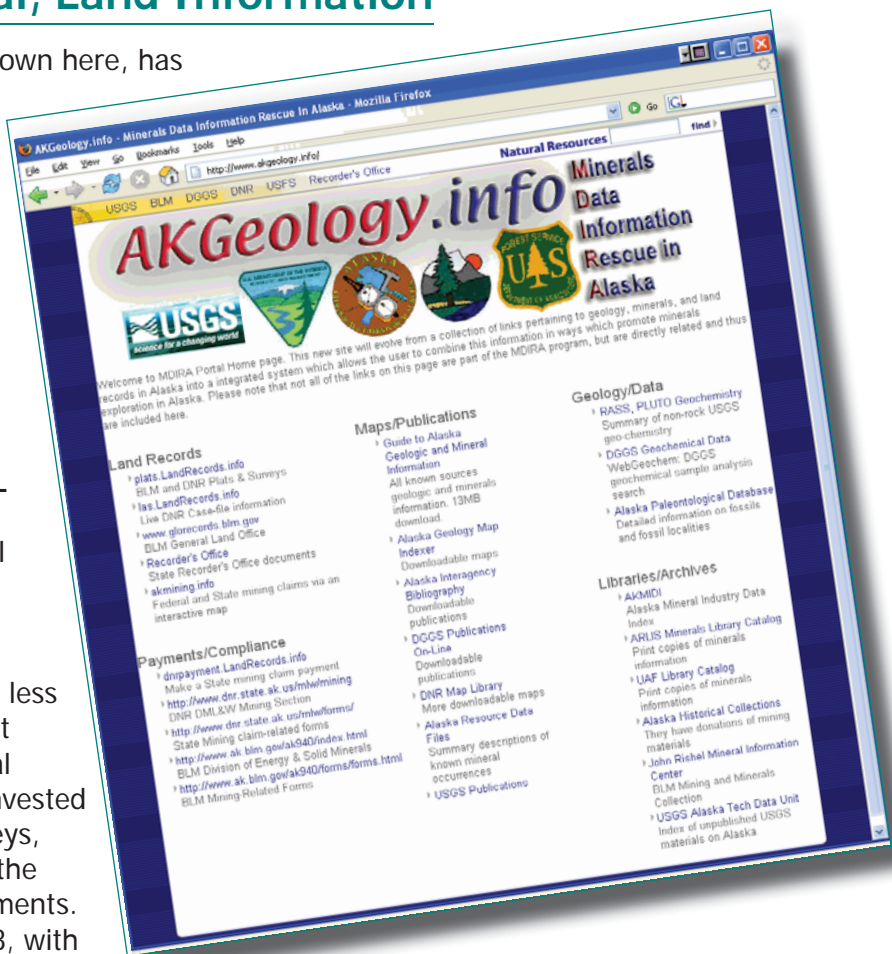
## Mineral Resource Opportunities

Alaska's mineral exploration and development opportunities are among the best in the world. Opportunities exist to discover large, high-grade, near-surface deposits. Over 7,000 hard rock mineral occurrences and 93 placer districts have been identified in the state. The Tintina Gold belt is defined by the exploration community as a major source of gold occurrence. The belt generally lies between the Tintina and the Denali faults and is receiving considerable exploration attention. The southeast polymetallic VMS province continues to attract exploration activity. The MAN copper-nickel-platinum area also continues to attract attention.



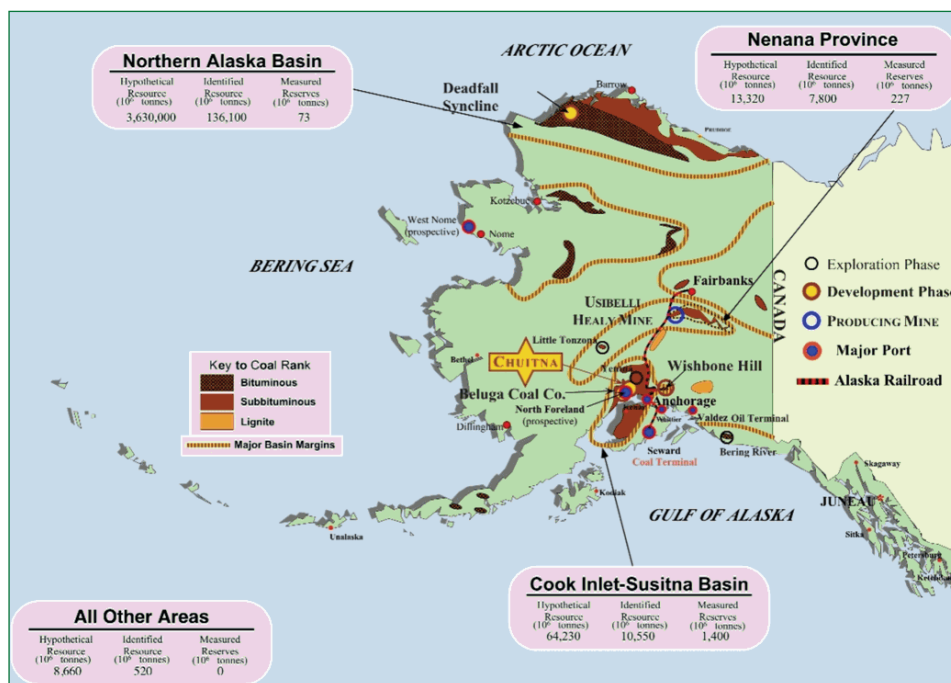
# Geological, Geophysical, Land Information

The [www.akgeology.info](http://www.akgeology.info) web site, shown here, has been created by the state to provide a single source of information for state and federal land status, mining claims, recording information, publications and other useful information. This web site is a tremendous resource to exploration geologists, operators and others interested in state land status and geologic information.



**GEOPHYSICAL AND GEOLOGICAL MAPPING.** For many years, the State of Alaska, Division of Geological and Geophysical Surveys (DGGGS) has provided detailed geological maps of some of the more highly mineralized areas to supplement the larger-scale, less detailed Mineral Resource Assessment maps produced by the U.S. Geological Survey. Since 1993, the DGGGS has invested in modern airborne geophysical surveys, using helicopters as the platform for the magnetic and electromagnetic instruments. This program continues through 2008, with over two dozen areas being flown to date. These surveys are very popular and have resulted in increased exploration activity. Survey results are available from the Alaska Division of Geological and Geophysical Surveys in Fairbanks, web site: <http://www.dggs.dnr.state.ak.us>, and email: [dggspubs@dnr.state.ak.us](mailto:dggspubs@dnr.state.ak.us).

Map showing Alaska coal resources by region. The State hosts over 5.5 trillion short tons of coal resources in 5 major provinces. The rank is bituminous to sub-bituminous with sulfur contents less than 0.6% and an average of much less than this. BTU ratings are from 7,800 to 13,200.



## State as an Equity Partner

The State of Alaska, through Alaska Industrial Development and Export Authority (AIDEA), is able to participate as an equity partner in minerals development. In recent years AIDEA has financed transportation systems, including the 52-mile road and upgrades to the port that serves the Red Dog Mine in northwest Alaska. AIDEA financed the remodeling and upgrading of the Skagway ore terminal that serves Yukon base metal mines through the Alaska port city of Skagway. Additionally, AIDEA has recently sold its equity interest in the only export coal terminal in Alaska at Seward to the Alaska Railroad.



## Reclamation and Bonding

Alaska's mining reclamation statute is logical and reasonable while still ensuring that a mined area is left in a stable condition that will provide for public safety and not pollute the environment. The statute requires bonding in the fairest possible way. A state bonding pool is available that provides access to bonding and limits the miner's cost to a payment into a refundable escrow account with a small annual service fee.

## Large Mine Permitting

The State of Alaska has developed a process to coordinate all State agency permitting for large projects. This process, which also integrates with federal and local government permitting, has significantly streamlined mine permitting for the benefit of both the industry and the public.

## Mineral Rights

State mining claims convertible to uplands leases provide exclusive rights to minerals on state lands-based minerals. The offshore-prospecting permit, convertible to a lease, provides offshore mineral rights within the 3-mile limit. Regional Corporations lease mineral rights and all are actively promoting mineral development. Acquisition to rights on Federal lands is by mining claim.

State mining claims do not convey extralateral rights. The claims are intended to conform to the public lands survey system and can be 40 or 160-acres in size. Location can be made with a GPS by placing stakes at MTRSC (meridian, township, range, section, claim) corners.

Uplands prospecting sites of 160 acres each can be staked to hold ground for up to 2 years with a holding fee of \$255/site. This provision is to provide for discovery.

## Tax Information

Alaska has no statewide personal income or sales tax, however, does have an annual permanent fund dividend program. A state corporate income tax is in effect on all net income; the rate is gradational beginning at 1% and peaking at 9.4% on a net income of \$90,000. Alaska has a 7% net profits mining license tax on all mineral production after a grace period of three and one-half years from the start of production, and a 3% net profits royalty on minerals produced and sold from state lands. Claim rental for state claims begins at \$0.88 per acre, increasing to \$1.75 per acre after 5 years, and to \$4.25 per acre after ten years.

An exploration investment incentive tax credit is available to provide for recovery of some of the exploration expenditures against given projects on state land. The incentive provides for recovery of up to \$20 million of expenditures in the first 15 years of operation, not to exceed one-half of the state tax obligation in any year.

**EXPLORATION INCENTIVE TAX CREDIT.** Alaska Exploration Incentives Act provides a deduction of up to \$20 million of qualified costs from taxes and royalties over a 15-year period for new mines. The exploration credits are site specific and may be assigned to successors in interest, and can continue to be earned up to receipt of the final operating permit. To facilitate record keeping the credits must be certified annually, with all relevant data submitted kept confidential for three years.

For a more comprehensive explanation go to Alaska Minerals-Related Taxes at the Office of Mineral Development web site - <http://www.commerce.state.ak.us/oed/minerals/mining.htm>.

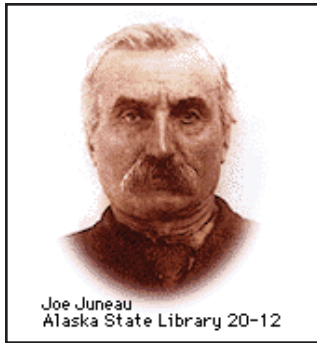
## Mining History

Alaska has a rich mining history. Placer gold exploration and mining began in the area with the Russian explorers in the early 1800s. After acquisition by the United States, exploration and mining continued and gradually increased for both hard rock and placer minerals. The discovery and development of the A-J and Treadwell gold deposits eventually led to the location of the State Capitol. This was followed by the discovery of the Fortymile, Central, Nome, Fairbanks, Iditarod, and many other significant placer gold districts.

A young mining engineer by the name of George Pilz, while exploring southeast Alaska, offered a reward to any local native chiefs who could show him a gold deposit. Chief Kowee of the Auk Tlingit arrived with ore samples from the Gastineau Channel and Pilz hired Joseph Juneau and Richard Harris to do additional prospecting. Juneau and Harris found a large gold deposit at the head of what was to be named Gold Creek. This became the A-J Mine. The Treadwell mine was also developed in the area. The Juneau mining district has produced 8.9 million ounces of gold up to 2008, including that from the rich Greens Creek mine.

Turnagain arm was experiencing a gold rush in 1895 and this led to the development of two towns, Hope and Sunrise. The Turnagain arm has experienced over 100 years of varying activity and has produced 135 K ounces of gold.





The Interior's first gold rush occurred in 1886, when gold was discovered on Franklin Bar of the Fortymile River, ten years before the 1896 discovery of gold in the Klondike. The Fortymile district has produced over 568 K ounces of placer gold.

In 1892, Pitka Pavaloff and Sergei Cherosky discovered gold at Pitka's Bar on Birch Creek, setting off a rush to what became known as the Circle Mining District. Over 1 million ounces of gold have been produced in the Circle district.

The Cape Nome district has produced 5 million ounces and sparked mining in the Council-Solomon district that has reached over 1 million ounces so far. The off-shore placer gold resource at Nome is known to be large; mining of this resource in the late 1980s was undertaken with a large bucket line dredge.

Felix Pedro discovered gold on Goldstream Creek near Fairbanks in 1902. By 1905 the Fairbanks district production had reached 6 million dollars a year. The Fairbanks district is the largest gold producer in the state with 12.86 million ounces to 2008. The Ft. Knox open pit (including True North) was commissioned in 1996 and has produced 4.0 million ounces of gold to 2008.

Gold was discovered at Valdez Creek in 1903 by J.C. Clarkson, John M. Johnson, James S. Smith, and Peter Monahan from Valdez, for which the creek was named. The Valdez Creek Mine operated on the tributary during 1984 - 1996 reaching peak annual production rates of 100K ounces. The district has produced a recorded 514K ounces of gold.

The Kennicott copper deposit was discovered by Clarence Warner and Jack Smith in the early 1900s. It eventually proved to contain the richest copper ore deposits ever found. This mine was commissioned in 1905 and operated 33 years producing 590K tons of copper and 9 million ounces of silver before closing.

The Hot Springs and Tolovana-Livengood districts, mined in the same era and adjacent to the Fairbanks District, have produced 589K and 530K ounces, respectively.

From 1908 to 1910 Iditarod joined the gold rush districts and produced over 1.5 million ounces of gold. This centrally located discovery led to others in the area including the Innoko-Tolstoi-Ophir district at 739K ounces and the Aniak-Tuluksak district at 602K ounces of production.

A high-grade gold deposit was discovered between the Matanuska and Susitna basins in 1886 and became the Independence Mine. The mine contributed almost 172K ounces to the Willow Creek Hatcher Pass district's production of 667K ounces.

The Goodnews Bay platinum placer deposit was discovered in 1938. Mining by a floating dredge produced over 500,000 ounces of platinum since that date.



Other important discoveries include:

- 1968 Red Dog The richest zinc deposit in the world
- 1974 Quartz Hill In southeast Alaska, a very large, high grade molybdenum deposit
- 1979 Greens Creek A rich polymetallic deposit mined for silver, gold, zinc, and lead
- 1984 Ft. Knox A large low grade intrusion-hosted gold deposit in the Fairbanks district
- 1987 Pebble Copper One of the largest gold, copper, molybdenum deposits in the world-contains 94.1 M ounces of gold, 72.2 B pounds of copper, 4.8 B pounds of molybdenum
- 1988 Donlin Creek Large refractory gold deposit in the Aniak mining district between the Kuskokwim and Yukon Rivers; contains 29.3 M ozs gold Reserves, 6.0 M ozs gold Measured and Indicated, and 4.0 M ozs gold Inferred
- 1994 Pogo Large high grade underground operation commissioned in 2006
- 1995 MAN Potentially large copper-nickel-platinum resource near Paxson
- 2005 LMS, Whistler, Terra Potentially large gold discoveries in the Interior
- 2007 Livengood The Money Knob deposit contains 4.04 M ozs gold Indicated and 3.59 M ozs gold Inferred

## Major Alaska Mines



### Red Dog

This is the largest zinc producer in the world. It is owned by NANA Regional Native Corporation and operated by Teck. Full production started in 1990. Five hundred sixty seven thousand nine hundred eleven (567,911) tons of zinc and 135,143 tons of lead were shipped during 2008 in the form of concentrates and the mine was credited with 7,498,024 ounces of silver production. Mill throughput was 3,306,934 tons. This mine employs approximately 475 persons (direct and contract), over 50% of whom are NANA shareholders.



### Fort Knox/True North Gold Mines

These mines are 100% owned by Kinross Gold Corporation. Ft. Knox construction was completed in 1996 with the first commercial gold produced in March 1997. The True North mine, commissioned in April 2001, is a small satellite operation (now being reclaimed) located about 6 miles northwest of Ft. Knox. Total Ft. Knox production in 2008 amounted to 329,105 ounces from 12.78 million tons of ore.



## Greens Creek

This mine is owned by Hecla Mining Company and operates as Greens Creek Mining Company. This mine was commissioned in 1989; it is a polymetallic mineral deposit near Juneau. Production in 2008 was 7,145,711 ounces silver, 67,269 ounces gold, 62,603 tons of zinc, and 50,887 tons of lead from 734,910 tons of ore. Employment is approximately 317.



## Usibelli Coal

This is Alaska's only operating coal mine and has been operated continuously since 1943. Over half of the 1.5 million tons of annual production is used in Alaska for electric power generation. The remainder is exported to South Korea and Chile through a year-round, cape-class export facility in Seward. Mining at the Two Bull ridge deposit, an eastward extension of the reserves, was commissioned in 2003. Employment is approximately 110 persons.



## Pogo Project

Construction of this very significant underground gold mine commenced in 2004. The mine was in startup in 2006 and not expected to achieve full production until mid-2007. Production in 2008 was 347,219 ounces of gold. The project is owned by Sumitomo Metal Mining Co. Ltd., 85%, and Sumitomo Corporation, 15%. Reserves are 6.5 M tons containing 3.0 M ounces of gold. Employment is approximately 290 direct employees

PRODUCTION QUANTITIES				VALUES				
Metals	2005	2006	2007	2008	2005	2006	2007	2008
Gold (ounces)	427,031	570,129	726,933	800,752	189,918,000	344,049,779	511,089,447	698,223,883
Silver (ounces)	11,700,000	16,489,394	20,203,985	14,643,735	85,382,000	190,415,907	270,402,055	219,496,408
Lead (tons)	131,366	157,128	167,181	153,705	115,230,000	183,629,254	389,532,215	287,428,350
Zinc (tons)	684,462	673,967	696,115	626,135	862,108,000	2,002,971,414	2,048,451,644	1,055,220,098
Sand & gravel (million tons)	16.6	9.3	14.2	12.4	76,537,000	63,351,089	76,119,390	72,438,792
Rock (million tons)	2.8	2.4	2.2	2.5	22,547,000	23,846,024	25,509,775	39,324,787
Coal (tons)	1,402,174	1,397,500	1,273,004	1,538,000	49,076,000	48,912,500	44,555,140	53,830,000
Peat (cubic yards)	62,532	66,500	68,367	83,789	810,000	1,057,500	1,085,500	1,159,502
TOTAL					1,401,608,000	2,858,233,468	3,366,745,166	2,427,121,820

Table showing production and values of mineral production 2005 – 2008.  
Source: Alaska Minerals Industry reports.

## Major Advanced Development and Exploration Projects

### Kensington

This project, located just north of Juneau, is owned by Coeur Alaska, Inc. a wholly owned subsidiary of Coeur d'Alene Mines Inc. It is fully permitted and construction efforts were started in 2005; production was forecasted to start in 2007 but was delayed due to a court challenge on the tailings disposal permits. In 2009, Coeur was successful in its Supreme Court appeal of the Ninth Circuit decision on the tailings permits, and Coeur resumed work on construction of the tailings facility. Annual production will be approximately 125,000 ounces of gold. Current expandable reserves are 1.35 million ounces contained in 4,419,000 tons of ore. Coeur expects to begin production in the second half of 2010.

### Donlin Creek

This major hard rock gold project is owned by Barrick Gold (operator), NovaGold Resources, and Calista Regional Corporation. This project is located near Aniak. The Donlin project includes 29.3 M ozs gold Reserves, 6.0 M ozs gold Measured and Indicated, and 4.0 M ozs gold Inferred with an average gold grade of 2.3 g/tonne or 0.07 oz/ton. When built, the project is expected to produce nearly 1.5 million ounces of gold annually for the first 12 years of a 20+ year mine life.

### Rock Creek/Big Hurrah

Rock Creek is located approximately 7 miles north of Nome; Big Hurrah is located about 45 miles east. These projects are owned by NovaGold Resources Inc. and in the construction stage at present; both are intended to be mined concurrently. Production at Rock Creek began on September 19, 2008 but was halted on November 24, 2008 due to problems with the production process, environmental permitting, and financing. The production rate is expected to be 100,000 ounces per year. Probable resources at Rock Creek are 320,000 ounces contained in 8.6 million tons; probable resources at Big Hurrah are 190,000 ounces contained in 1.3 million tons. The mine is currently in care and maintenance status.

### Pebble Copper

The Pebble Copper project is located approximately 15 miles northwest of the town of Iliamna. The project is a world class copper-gold-molybdenum property owned by Northern Dynasty Ltd. and Anglo American. Environmental baseline sampling, drilling for resource definition, and feasibility studies are in progress. The Pebble deposit is comprised of two distinct ore bodies, a near-surface portion called Pebble West, and a deep portion called Pebble East. The total Pebble mineral resource estimate as of November, 2008 was 10 billion tons, including 72.2 billion lbs copper, 94.1 million ozs gold, and 4.79 billion lbs molybdenum. In addition, the deposit contains quantities of silver, palladium, and rhenium.

### Nixon Fork

Nixon Fork is located 35 miles northeast of McGrath. The project was owned by St. Andrew Goldfields Ltd. as Mystery Creek Resources Inc. On October 10, 2007, the Company announced the temporary suspension of production at the Nixon Fork Gold Mine in order to better define the resource. 2007 gold production was 6,775 ounces. Pacific North West Capital Corp acquired an option to purchase Nixon Fork in December, 2008, and the property was then acquired by Fire River Gold Corporation in 2009. Fire River Gold Corporation expects to resume production at Nixon Fork in 2010.

## Contacts, Additional Information

DEPARTMENT OF COMMERCE, COMMUNITY AND ECONOMIC DEVELOPMENT  
OFFICE OF ECONOMIC DEVELOPMENT

### **ALASKA DEPARTMENT OF COMMERCE, COMMUNITY AND ECONOMIC DEVELOPMENT**

#### **Office of Economic Development Mineral Development**

Web site: <http://www.commerce.state.ak.us/oed/minerals/mining.htm>

#### Fairbanks:

Rich Hughes  
211 Cushman St., Fairbanks, AK 99701-4639  
(907) 451-2738 FAX (907) 451-2742  
Lisa Harbo  
(907) 451-2748 FAX (907) 451-2742

### **DEPARTMENT OF NATURAL RESOURCES**

Web site: <http://www.dnr.state.ak.us>

#### **Division of Geological and Geophysical Surveys**

3354 College Road, Fairbanks, AK 99709-3707  
(907) 451-5000 FAX (907) 451-5050  
Web site: <http://www.dggs.dnr.state.ak.us>

#### **Division of Mining**

##### Fairbanks (Northern Region)

3700 Airport Way, Fairbanks, AK 99709-4699  
(907) 451-2790 FAX (907) 451-2751

##### Anchorage (Southcentral Region)

550 W. 7th Ave., Ste. 900C  
Anchorage, AK 99501-3577  
(907) 269-8503 FAX (907) 269-8913  
Web site: <http://www.dnr.alaska.gov/mlw/mining>

### **ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY (AIDEA)**

813 W. Northern Lights Blvd.  
Anchorage, AK 99503  
(907) 269-3000 FAX (907) 269-3044

Web site: [www.aidea.org](http://www.aidea.org)

### **U.S. DEPARTMENT OF THE INTERIOR**

Web site: <http://www.doi.gov>

#### **Minerals Management Service Alaska Outer Continental Shelf Region**

3801 Center Point Dr., Ste. 500  
Anchorage, AK 99503-5820  
(907) 334-5200 FAX (907) 334-5202

#### **U.S. Bureau of Land Management**

##### Anchorage

222 W. 7th Ave., #13  
Anchorage, AK 99513-7599  
(907) 271-5477 FAX (907) 271-5479

##### Fairbanks

1150 University Avenue  
Fairbanks, AK 99709  
(907) 474-2223

### **MULTI-AGENCY INFORMATION WEBSITE:**

<http://www.akgeology.info>

This is an integrated geologic and mineral resource information and data portal to

- Alaska minerals industry data index
- DGGs publications online search and view reports and maps
- Alaska State mining claims online geographic information system
- Interagency bibliography, search and view reports and maps
- DGGs Geochemistry online search and tabular display
- Alaska geologic map index and geographic search engine.