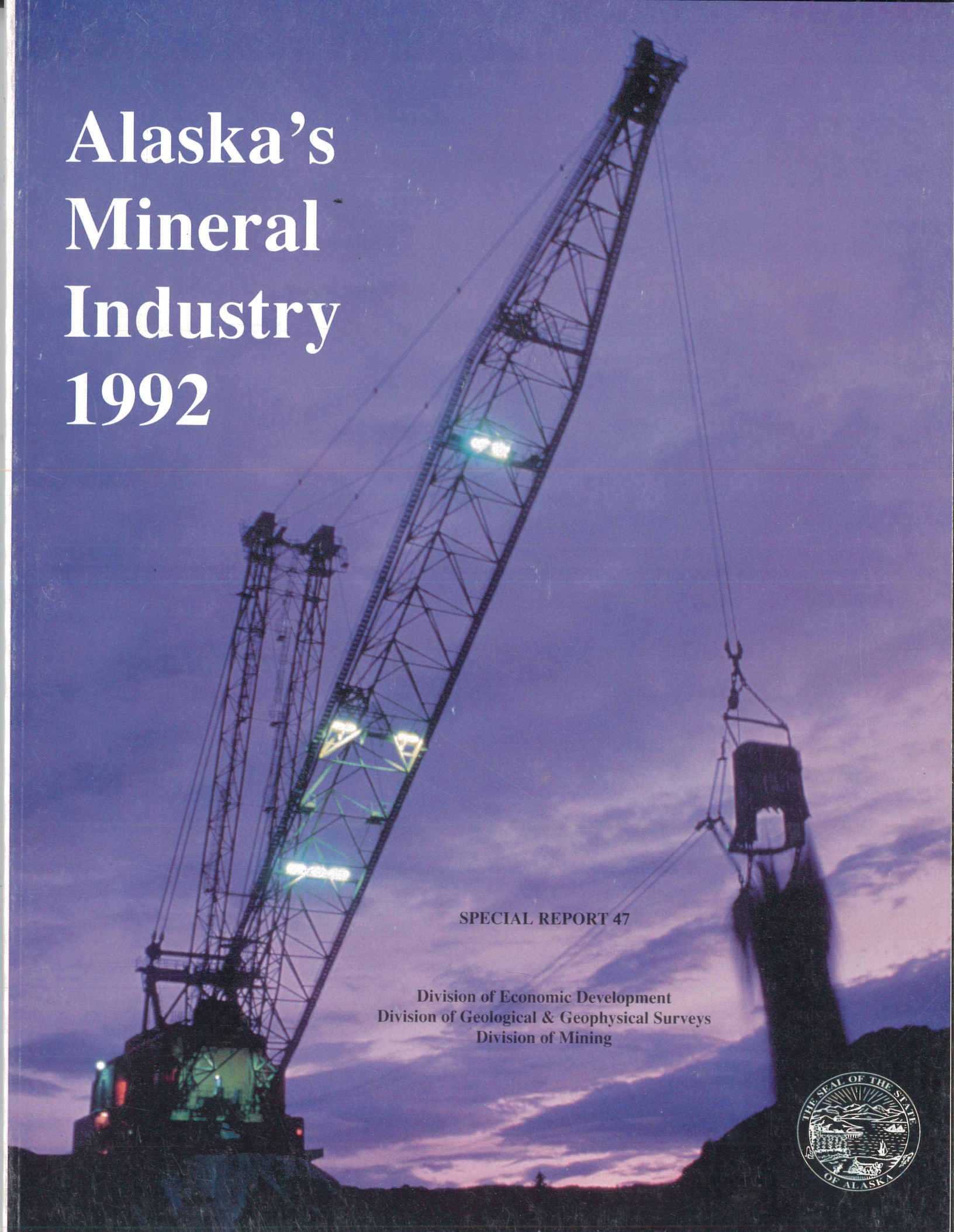
Alaska's Mineral Industry 1992



SPECIAL REPORT 47

Division of Economic Development
Division of Geological & Geophysical Surveys
Division of Mining

FRONT COVER PHOTO

A wintry sky provides a dramatic backdrop for the 325-foot boom of Usibelli Coal Mine's 2,100-ton walking drag line. (Photo by Chris Arend)

BACK COVER PHOTOS

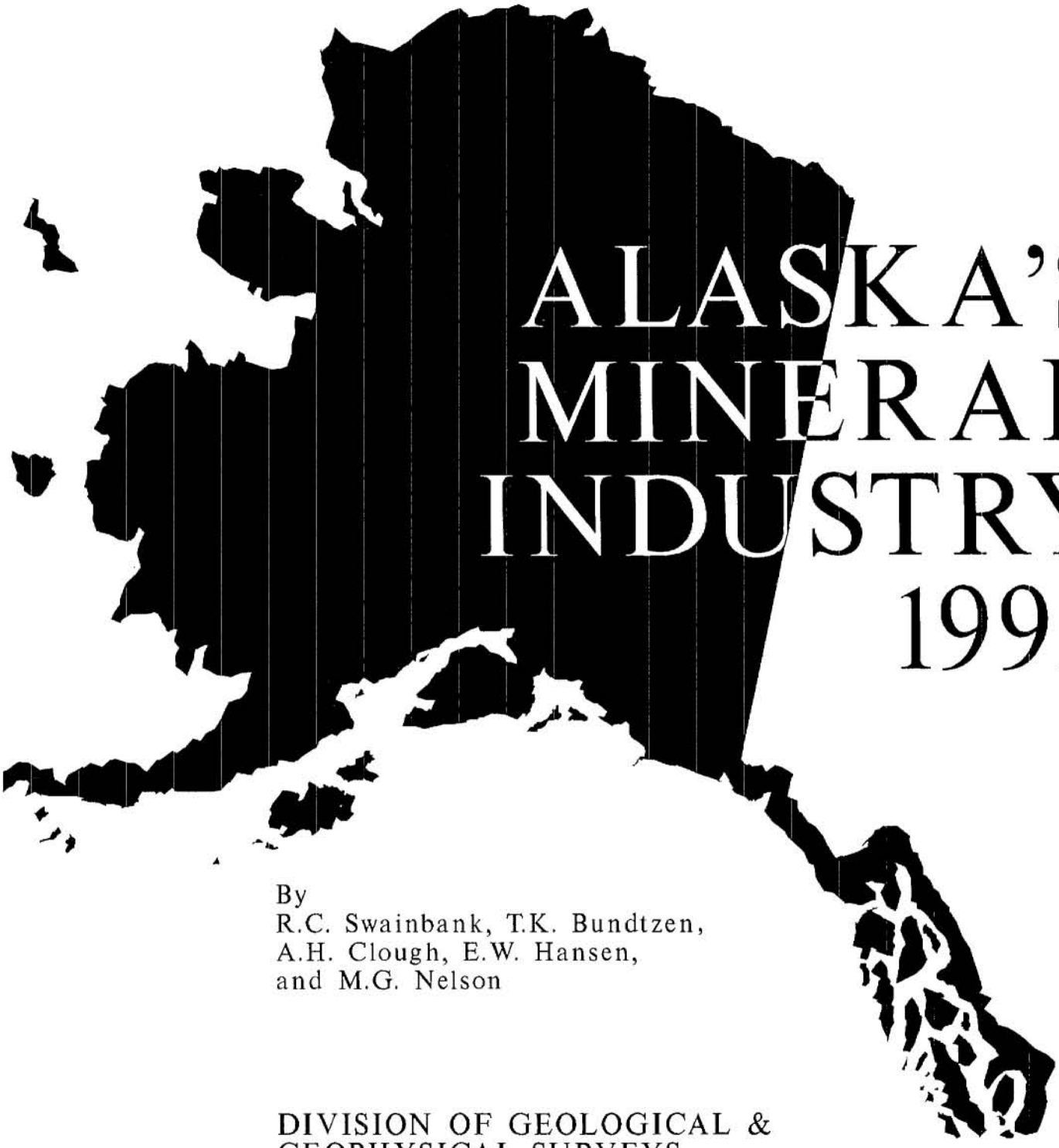
Top: *John Barnett explores the massive sulfide deposit in the Chilkat Mountains between Juneau and Haines. (Photo by Al Clough)*

Center left: *Mine workers at Arctic Slope Native Corporation's operation at the Deadfall Syncline, northwest Alaska. (Photo by Chris Arend)*

Center right: *Sphinx America's recently reclaimed land (background) borders the current mining operation on Monument Creek, near Ruby. (Photo by John Wood)*

Bottom left: *Reclaimed land at Jack Neubauer's mine on Fox Gulch, Fairbanks district. (Photo courtesy of Division of Mining)*

Bottom right: *Inside-Out mining crew in front of the portal to the Dionne mine on Nolan Creek Bench. Left to right, Ray Rotter, Tom Barton, Paul Dionne, and George Tikner. (Photo by Sue Dionne)*



ALASKA'S MINERAL INDUSTRY 1992

By
R.C. Swainbank, T.K. Bundtzen,
A.H. Clough, E.W. Hansen,
and M.G. Nelson

DIVISION OF GEOLOGICAL &
GEOPHYSICAL SURVEYS

SPECIAL REPORT 47

Alaska's mineral industry is tightly woven into our past and, as demonstrated in this report, will be a vital part of the economic fabric of our future. We have vast resources here that are needed by mankind. We have a dedicated mining community. And, we have a determination that mining in Alaska will be a model for the world. Governor Walter J. Hickel.

Much of our economic development is built on our natural resource wealth. Active and developing mines across the state provide high-paying, year-round local jobs, as well as a local tax base. Infrastructure developed to serve these mines will endure for the benefit of all, long after the individual ore deposits are exhausted. The Department considers a vibrant mining industry an essential element of the economic well-being and future of Alaska. Paul Fuhs, Commissioner of the Department of Commerce and Economic Development.

It is important for the Department of Natural Resources to support and facilitate the mineral industry in these difficult economic times. The mineral industry can play a meaningful role in revitalizing Alaska's economy. This report is representative of the state's strong commitment. Harry A. Noah, Commissioner of the Department of Natural Resources.

Alaska is the only state in the Union which has established by Constitution the obligation to manage its natural resources for the benefit of the people. The present state of technology permits us to develop these resources with full environmental and human sensitivity. I am delighted to pass the baton to my successor Harry Noah on July 1, 1993. He is known as a major player in putting together several of our most important mineral developments. He knows how to integrate environmental and developmental concerns to serve the needs of Alaska's people and future. I look forward to exciting developments under his leadership. Glenn A. Olds, Commissioner of the Department of Natural Resources, 1992-93.

EXECUTIVE SUMMARY

Total expenditures for exploration and development and the value of production were $620.6 million in 1992, up slightly from $612.0 million reported in 1991. The value of metal production was $457 million, or 81 percent of total production. Base metal production, at $333 million, represented 73 percent of all metal production, a reflection of the fact that Alaska produced 52 percent of the nation's zinc and 12 percent of the nation's lead in 1992. Gold production was up 8 percent over 1991, at 8,163 kilograms (262,530 ounces), due mainly to a record production at Cambior Alaska's Valdez Creek Mine. Although low metal prices continued to adversely effect the economics of most Alaskan placer and hardrock mines, improvements were made in concentrate quality and overall mine costs at many properties in Alaska. Development expenditures were up slightly from 1991, but exploration expenditures and employment both declined slightly from the 1991 figure.

Alaska's Mineral Industry 1992, Special Report 47, is the twelfth annual report produced by the Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), the Division of Mining (DOM), and the Division of Economic Development (DED) of the Department of Commerce and Economic Development.

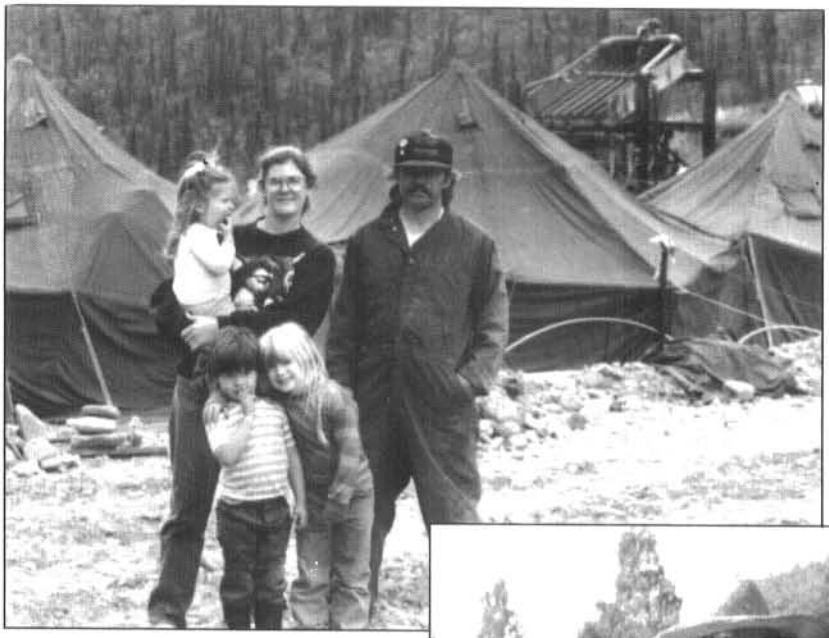
The report is designed to provide current, accurate, and technically reliable information about Alaska's mineral industry. Its publication is made possible by cooperation of individuals, private industry, and government agencies that provide information on their mining projects and activities.

Where appropriate, a new classification of deposit (polymetallic) has been introduced in tables and text to recognize the increasing importance of mines such as Greens Creek and prospects such as Pebble Copper, where both base metals and precious metals contribute to the overall value per ton of ore. Metric (International) units are primary throughout this report, with English units in parentheses.

We suggest the reader may want to become familiar with the content of the appendixes to the report.

Mining in Alaska is not a faceless industry of big machines and broad landscapes. It is a way of life as well as a way to make a living for some of Alaska's finest people. This year we want to pay tribute to the people in mining through the following two pages showing some of the faces and families in the Circle and Fairbanks mining districts. ⚒

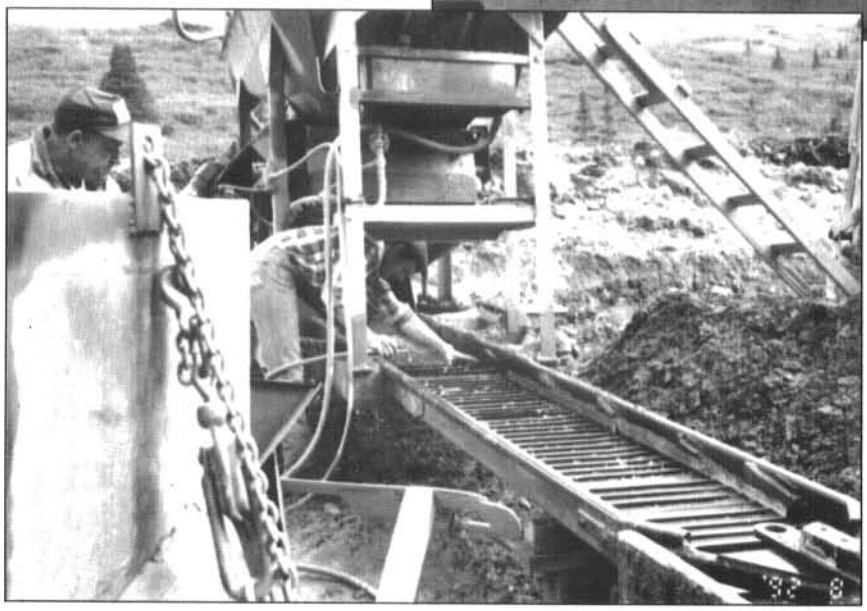
PEOPLE IN MINING



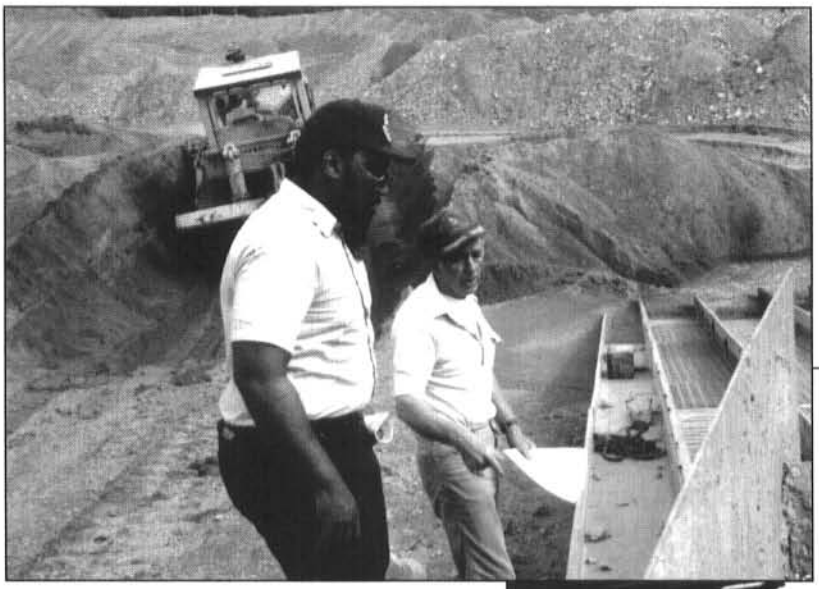
Above: Circle district miner Ken Hanson (K-C Mining) and family with camp and jig plant in the background.

Right: Mother cleans up. Ellen E. Roberts, mother of Mike Roberts (Roberts Mining) on Dome Creek, Fairbanks district.

The littlest miner in the summer of '92, Jacob Hendrickson, age 11, an important part of the family mining crew.



Left: Father and son team. Ed and Clayton Lapp at Upper Mastodon Fork in the Circle district.



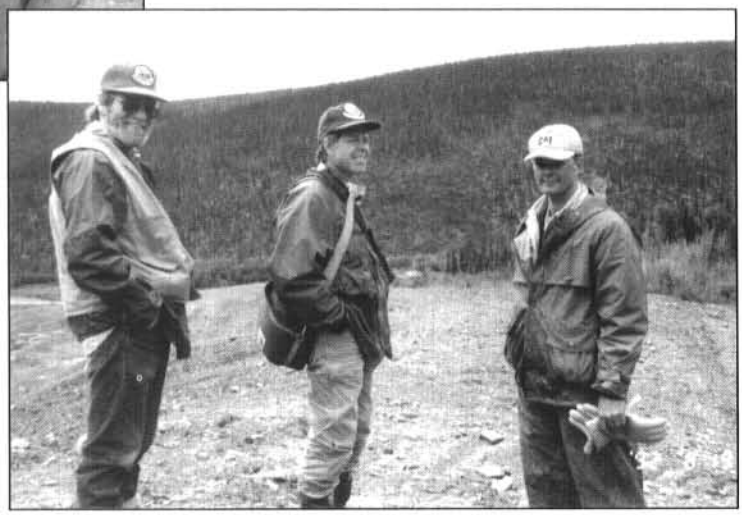
Circle and Fairbanks districts, summer 1992

Photos by Kathy Charlie, Division of Mining

Above: *Fred Lee, Division of Mining data processor, in "Placer Mining 101" class with Don Stein, Fairbanks district miner.*

Above: *Stan Gelvin, long-time Circle district miner, and his good friend, at Ketchum Creek.*

Above: *Vern Stepp (right) and his son Grant discuss welding repairs on their Grant Stepp claims on the Bottom Dollar Creek in the Circle district.*



Right: *Reclamation inspection on Too Much Gold Creek in the Fairbanks district. John Cook, Too Much Gold; John Wood, former northern regional manager, Jerry Fogg, Division of Mining engineer.*

STATE OF ALASKA
Walter J. Hickel, Governor

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT
Paul Fuhs, Commissioner

DIVISION OF ECONOMIC DEVELOPMENT
Chris Gates, Director

DEPARTMENT OF NATURAL RESOURCES
Harry A. Noah, Commissioner

DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
Thomas E. Smith, State Geologist

DIVISION OF MINING
Gerald Gallagher, Director

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Fairbanks, AK 99709-3645

Alaska Department of Natural Resources
Public Information Office
3601 C Street, Suite 200
Anchorage, AK 99510

This publication released by the Division of Geological & Geophysical Surveys, was printed in Anchorage, Alaska, at a cost of $2.90 per copy. Publication of this report is required by Alaska Statute 41, "to determine the potential of Alaska land for production of metals, minerals, fuels, and geothermal resources; the location and supplies of groundwater and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct such other surveys and investigations as will advance knowledge of the geology of Alaska."

CONTENTS

CONTENTS continued

CONTENTS continued

FIGURES

CONTENTS continued

TABLES

ALASKA'S MINERAL INDUSTRY 1992

by
R.C. Swainbank,[1] T.K. Bundtzen,[2] A.H. Clough,[3] E.W. Hansen,[4] and M.G. Nelson[5]

INTRODUCTION

As measured by the value of mineral production and the sum of exploration and development expenditures, the total value of the 1992 Alaska mineral industry was $620.6 million, up slightly from the $612.0 million reported in 1991 (fig. 1, table1).

The final estimate of mineral production in 1992 is $560.8 million, compared with $546.5 million in 1991. Alaska produced about 52 percent of the nation's zinc, 12 percent of the lead, and 17 percent of the silver from the Red Dog and Greens Creek mines in 1992. Gold production from the Valdez Creek placer mine was a record 3,049 kilograms (101,279 raw ounces), up substantially from the previous record of 2,201 kilograms (73,100 raw ounces) produced in 1989.

Mineral development expenditures in 1992 were reported to be $29.6 million, up from $25.6 million reported in 1991. This 16 percent increase was more than offset by a decline of 24 percent in reported exploration expenditures of $30.2 million in 1992 compared with the $39.9 million reported in 1991. Several major projects are in the permit process, and development decisions are expected within the next two years.

Anticipating that polymetallic deposits such as the volcanogenic Greens Creek or the porphyry Pebble Copper might become increasingly important in the future, this category has been added where appropriate in the tables.

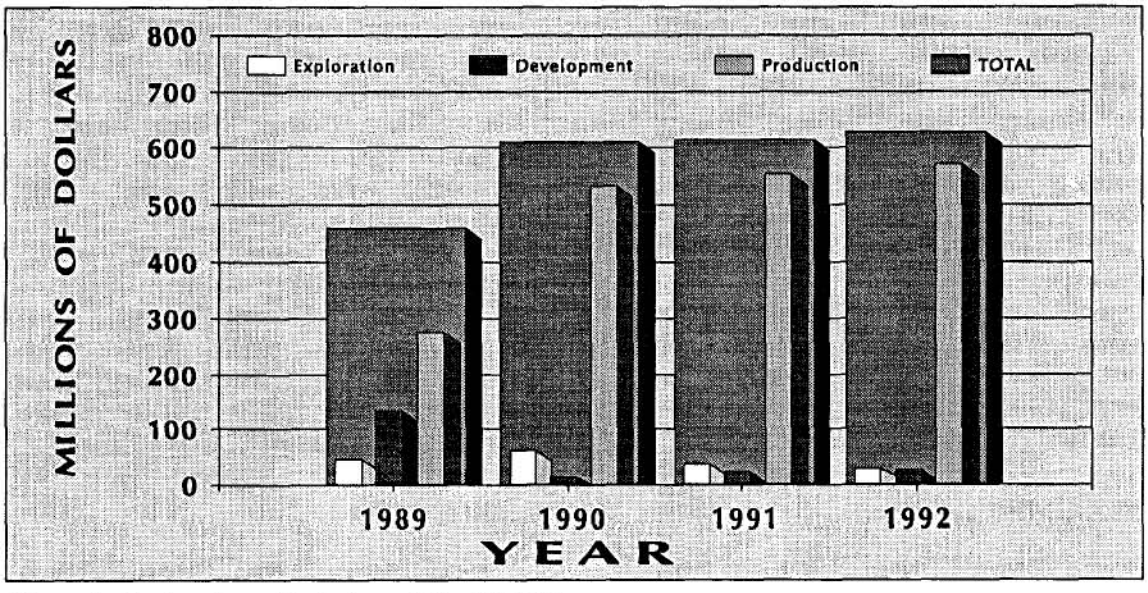


Figure 1. *Alaska mineral industry activity, 1989-92.*

[1]Alaska Division of Economic Development, 1001 Noble Street, Ste. 360, Fairbanks, AK 99701.
[2]Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Ste. 200, Fairbanks, AK 99709-3645.
[3]Alaska Division of Economic Development, 9th Floor, State Office Bldg., Juneau, AK 99811.
[4]Alaska Division of Mining, 3700 Airport Way, Fairbanks, AK 99709.
[5]School of Mineral Engineering, University of Alaska, Fairbanks, AK 99775-1170.

EMPLOYMENT

In 1992 the mineral industry provided 3,492 year-round-equivalent jobs down slightly from the 3,646 in the previous year (table 2). The decline was most noticeable in mineral exploration, due in part to major projects such as Fort Knox moving forward from advanced exploration to development. Placer mines employed by far the largest segment of the industry, and even increased employment in 1992.

Table 1. *Total value of mineral industry in Alaska, 1989-92*

	1989	1990	1991	1992
Exploration	$ 47,762,596	$ 63,255,594	$ 39,908,539	$ 30,200,000
Development	134,272,350	14,326,500	25,574,350	29,590,300
Production	276,983,741	533,024,500	546,468,907	560,826,400
TOTAL	**$459,018,687**	**$610,606,594**	**$611,951,796**	**$620,616,700**

Table 2. *Alaskan mine employment, 1989-92*[a]

	1989	1990	1991	1992
Gold/silver/mining				
Placer	1,316	1,151	1,240	1,251
Lode	--	--	--	--
Polymetallic	161	265	235	240
Base metals	407	425	415	415
Recreational	325	315	320	325
Sand & gravel	625	645	685	640
Building stone	148	160	165	145
Coal	120	115	115	115
Peat	--	--	45	40
Tin, jade, soap-stone, ceramics, platinum	40	40	25	20
Mineral development	785	95	133	164
Mineral exploration	350	374	268	137
TOTAL	**4,277**	**3,585**	**3,646**	**3,492**

[a]Calculated on a 260-day work year.
-- = Information not available.

EXPLORATION

Exploration expenditures in Alaska during 1992 were reported to be $30.2 million, down 24 percent from the $39.9 million for 1991. However, several new exploration targets were identified, and areas inactive since the early 1980s were revisited. The largest investments in 1992 were in southeast Alaska ($14.9 million) and in the eastern interior ($8.6 million), although with the exception of the Alaska Peninsula region, all areas of the state had active exploration programs.

Two companies reported new discoveries in the area between Livengood and Manley. A new joint-venture was formed to explore the area near the head of the Salcha River about 160 kilometers (100 miles) east of Fairbanks. The Taurus copper-gold porphyry prospect north of Tok was being re-evaluated during 1992, following intense activity on the similar Casino porphyry prospect in the adjacent Yukon Territory.

Another copper-gold porphyry, at Pebble Copper near Lake Illiamna on the Alaska Peninsula, was drilled in 1992. This work confirmed the resource data generated in prior years.

Precious-metal prospects and deposits received the most attention in 1992. There were major programs near Rock Creek at Nome, at the Kensington Mine near Juneau, at Illinois Creek near Kaltag, and near Ester Dome and Pedro Dome in the Fairbanks area.

DEVELOPMENT

Mineral development expenditures increased 16 percent from $25.5 million in 1991 to $29.6 million in 1992. Much of the increase was due to extensive mine-site work at the Fort Knox deposit and geotechnical work at the Greens Creek mill. About $12 million was invested in development in both the eastern interior and southeastern Alaska, and $2 million on the Seward Peninsula.

Cambior Alaska Inc. reported major development expenditures at its Valdez Creek Mine, where another diversion of the creek is necessary to allow the mine pit to progress upstream. Alaska Gold Co. reported a historic decision to phase out its dredging operations at Nome and to begin using open-pit drill and blast methods similar to those used by Cambior Alaska, Polar Mining Inc., and other operators.

Coal development was reported in northwest Alaska by the Arctic Slope Consulting Group and in southcentral Alaska by Idemitsu-Alaska Inc. Low prices for steam-coal and the still unresolved Mental Health Trust Lands issue had a dampening effect on coal activity in 1992, though the Healy Clean Coal project remained on track at the end of the year.

PRODUCTION

Metal production accounted for 81 percent of the total mineral industry value in 1992. Base metals (lead and zinc) comprised 73 percent of the value of all metals produced. Base metal value was $333 million, total metal production value was $457 million, and the total value of all mineral production was $560.8 million. Metal prices

were still depressed, leading to the decision to temporarily close the Greens Creek Mine in 1993. Average realized prices in 1992 were: gold, $337 per ounce; silver, $3.83 per ounce; lead, $0.23 per pound; and zinc, $0.55 per pound.

The Greens Creek Mine produced 36,734 tonnes (40,500 tons) of zinc; 14,966 tonnes (16,500 tons) of lead; 22,810 kilograms (7,100,000 ounces) of silver; and 1,008 kilograms (32,400 ounces) of gold in 103,241 tonnes (113,827 tons) of concentrate.

Red Dog reportedly shipped 368,200 tonnes (405,950 tons) of zinc concentrate, 25,400 tonnes (28,000 tons) of lead concentrate, and 37,200 tonnes (41,014 tons) of bulk ISF concentrate. According to Halbauer (1993), many (but not all) concentration problems associated with mixed ores at Red Dog have been solved, resulting in generally cleaner concentrates being shipped to the smelters.

About 7,103 kilograms (228,400 ounces) of gold were produced from placer mines in Alaska in 1992, or 87 percent of the total gold production. Two lode mines produced the remaining 13 percent. The Valdez Creek Mine produced a record amount, 3,150 kilograms (101,279 ounces) of raw gold; the top 10 gold mines produced 4,879 kilograms (156,892 ounces) of gold, or 60 percent of the statewide total.

The Usibelli Coal Mine at Healy produced 1,389,340 tonnes, (1,531,000 tons) of coal. About half was exported to Korea, and half used in interior Alaska power plants. About 725 tonnes (800 tons) were mined for local testing at the Deadfall Syncline Coal Mine of the Arctic Slope Regional Corporation.

Production of sand, gravel, and building stone in Alaska in was about the same as in the past six years.

GOVERNMENT ACTIONS

After debating the matter for two years, in May 1992 the Alaska Legislature passed SB330 which provides a permanent exemption from municipal taxation of in-place mineral resources. The taxation exemption indicates that all parties encourage responsible mineral exploration and development.

For several years the state has been compiling a register of the trails that may qualify as access corridors under the Revised Statute 2477 (RS2477). During 1992, the state defined a procedure whereby an individual can nominate to the state a trail for consideration as an RS2477 route.

The year saw no resolution to the problem of recreating the Mental Health Land Trust. However, an escrow mechanism was designed so that no project was unduly delayed by the lawsuit between the state and the Mental Health Trust plaintiffs.

After two seasons of field-checking the mineral resources of available federal land by DGGS, in late 1992 the Alaska State Land Selection Committee, with input from a variety of state agencies, submitted land selections of the remaining statehood land entitlement of about 8.1 million hectares (20 million acres). When finally transferred, the state will own about 42.1 million hectares (104 million acres) to be administered by the Department of Natural Resources.

Because the State of Alaska intends to complete its land selection by January 1994, those individuals or companies who hold federal claims and want to convert to state ownership should do so as soon as possible.

(See "How to Convert Federal Mining Claims to State Claims," page 40 of this report.)

ACKNOWLEDGMENTS

This report is designed, produced, and distributed by the Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS); Division of Mining (DOM); and the Department of Commerce and Economic Development, Division of Economic Development (DED). Since Statehood (1959), DGGS and predecessor agencies published annual summaries of mining activity in the agency's annual report series. Beginning in 1982, DGGS adopted a more comprehensive format to provide more in-depth coverage of the industry, thanks to a healthy funding boost provided by the newly created Office of Mineral Development (now DED), which became a permanent partner in the project. The Division of Mining joined the team in 1984. The current annual *Alaska's Mineral Industry Report* is published in the DGGS Special Report series and is available from the three participating agencies.

T.K. Bundtzen and E.E. Harris of DGGS mailed 1,027 questionnaires on mining activity in Alaska to mineral exploration firms, Native corporations, mine production companies and partnerships, and government agencies involved in overseeing or regulating mining. Bundtzen and Harris received 160 completed questionnaires. We thank all those who have given us information by phone and questionnaire. Such information is essential to the continuing usefulness and success of *Alaska's Mineral Industry Report*. We especially thank Shari Howard of the Department of Transportation and Public Facilities and Don Keihl of the U.S. Bureau of Land Management for providing detailed material use information for the northern, western, and eastern interior regions.

Dick Swainbank, with the help of Al Clough, wrote the Introduction, Exploration, and Drilling sections of the report and reviewed appendixes C and D.

Tom Bundtzen wrote the Development, Production, and Metal Recycling Sections, reviewed appendix E, and updated appendixes F and G. Erik Hansen wrote the Claim Conversion section, and updated appendixes A, B, and E. Michael Nelson wrote the section on the University of Alaska, Fairbanks' School of Mineral Engineering.

The production team included Ann-Lillian Schell for cover design, Greg Laird for computer graphics, Fran Tannian for editing and publication design, and Joni Robinson for desktop publishing. Special thanks go to Kathy Charlie (DOM) for providing pictures from placer mines.

EXPLORATION

Exploration expenditures in Alaska during 1992 are estimated to have been $30.2 million. This figure was reported by 82 companies that responded to a questionnaire mailed by the State Division of Geological & Geophysical Surveys late in 1992. This decline of 24 percent from the previous year follows a nationwide trend that was caused in part by low metal prices and in part by uncertainty created by proposed changes to the federal Mining Law of 1872.

Tables 3 and 4 compare the exploration expenditures in 1992 with those in previous years, and show the type of commodity sought and the regional distribution of projects. Figure 2 shows the locations of selected exploration programs. It is encouraging to note that there was activity in some areas that have been ignored in recent years. Note that in this year's report in tables 3 and 4 we have added a new classification, polymetallic deposits.

Table 5 shows the number of new mining claims staked in recent years. The number of active claims, both state and federal, have been decreasing steadily since 1988, as have the numbers of new claims staked, and, therefore, the total number of claims. In light of the general recession in the industry due to low metal prices, it is difficult to discern a definite result from the imposition of rents and royalties on state land in 1990, or from uncertainties engendered by proposed changes to the federal mining law.

NORTHERN REGION

Exploration expenditures in the remote northern region of the state were $0.6 million, down 39 percent from 1991 expenditures. Most of this activity was coal exploration by the Arctic Slope Consulting Group at the Deadfall Syncline on behalf of the owners, the Arctic Slope Regional Corporation.

METALS

The only reported base metal exploration activity was at the Lik base metal prospect. GCO Minerals Company managed the program and did several hundred feet of drilling assessment work.

Several small placer gold exploration programs were reported from the Koyukuk district. Tramway Bar Mine reported some trenching activity. Robert Pelkey reported limited pitting and mapping activity at Ironside Bar. Other prospecting was done by Inside Out Mining on Nolan Creek and by George and Jim Lounsbury at Union Gulch near Wiseman. Silverado Mines Ltd. did limited exploration while developing its Nolan Creek placer mine.

COAL

On behalf of the Arctic Slope Regional Corporation, the Arctic Slope Consulting Group (ASCG) drilled 1,921 meters (6,300 feet) of reverse-circulation hole at the Deadfall Syncline coal property. Further, ASCG mined 725 tonnes (800 tons) of high-rank coal for test burning in northwest Alaska villages.

INDUSTRIAL MINERALS

No activity was reported in this region in 1992.

WESTERN REGION

Western region exploration expenditures were reported to be $1.9 million, only 80 percent of the $2.4 million reported for 1991. Most of the activity was at North Pacific Mining's Illinois Creek deposit near Kaltag and at several hard-rock projects near Nome on the Seward Peninsula.

METALS

In March 1992, Golden Glacier Inc., a wholly owned subsidiary of the Bering Straits Native Corporation

(BSNC), entered into a joint-venture agreement with Newmont Exploration Limited and Aspen Exploration to further explore the Rock Creek Deposit north of Nome. Extensive exploration in the Rock Creek area had taken place during the previous five years by Placer Dome and Tenneco Minerals. Newmont's exploration focused on lands outside of the known Rock Creek deposit. Step-out drilling, trenching, and soil geochemistry at Banner Peak, Bonanza Hill, Nekula, Lindblom, and other identified zones of mineralization were completed in 1992. Newmont excavated 19 trenches totaling 2,388 meters (7,833 feet) and completed 30 reverse-circulation (RC) holes totaling 2,660 meters (8,725 feet) and 17 core holes totaling 1,688 meters (5,536 feet) (fig. 3).

Kennecott Exploration, in partnership with BSNC and Hawley Resource Group, continued exploration on BSNC-held lands north of Nome. In 1991, the partnership examined a stratiform zinc deposit in the Aurora Creek area and core drilled a gold system west of Rock Creek at Gold Hill (fig. 4). The 1992 exploration concentrated on several anomalous areas on and

Table 3. *Reported exploration expenditures in Alaska by commodity, 1982-92*

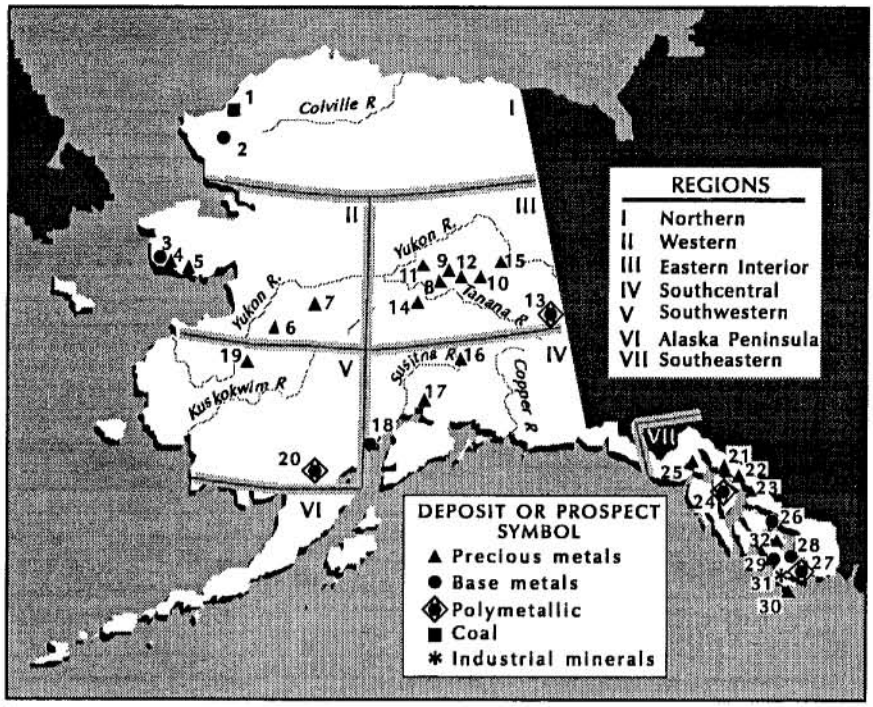
	Base metals	Polymetallic[a]	Precious metals	Industrial minerals	Coal and peat	Other	YEARS TOTAL
1982	$31,757,900	N/A	$ 10,944,100	$ --	$ 2,900,000	$ 15,300	**$ 45,617,300**
1983	9,758,760	N/A	20,897,555	2,068,300	1,338,454	70,000	**34,133,069**
1984	4,720,596	N/A	14,948,554	270,000	2,065,000	279,500	**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**
TOTAL	**$68,904,566**	**$3,560,000**	**$272,389,737**	**$3,566,500**	**$13,516,750**	**$499,800**	**$362,437,353**

[a]Note. Polymetallic deposits considered as a separate category for the first time.
-- = No expenditures reported.

Table 4. *Reported exploration expenditures and employment in Alaska by commodity and region, 1992*

	Northern	Western	Eastern interior	South-western	South-central	Alaska Peninsula	South-eastern	TOTAL
				Exploration expenditures				
Base metals	$ 80,000	$ 125,000	--	--	$ 18,000	--	$ 893,000	$ 1,116,000
Polymetallic[a]	--	110,000	$ 100,000	$2,600,000	750,000	--	--	3,560,000
Precious metals								
Placer	105,000	128,000	112,000	34,500	363,500	--	25,000	768,000
Lode	--	1,500,000	8,358,350	175,000	328,000	$ 8,650	13,945,000	24,315,000
Coal and peat	400,000	--	25,000	--	--	--	--	425,000
Industrial minerals	--	25,000	--	--	--	--	--	25,000
Other	--	--	--	--	--	--	--	--
TOTAL	**$585,000**	**$1,888,000**	**$8,595,350**	**$2,809,500**	**$1,459,500**	**$8,650**	**$14,863,000**	**$30,209,000**
				Exploration employment				
Employment								
Workdays	2,120	3,393	13,636	5,206	2,180	270	9,472	36,277
Workyears[b]	8	18	53	20	8	1	36	140[c]
Number of companies reporting	8	8	25	11	18	2	10	82

-- = No expenditures reported.
[a]Jade, platinum, gemstones.
[b]Based on 260-day workyear.
[c]Small discrepancy on total due to rounding.



I NORTHERN REGION
1. Arctic Slope Consulting Gr. (Deadfall Syncline)
2. GCO Minerals (Lik)

II WESTERN REGION
3. Kennecott Exploration (Aurora Creek, Gold Hill)
4. Aspen Exploration/Newmont (Sophie Gulch, Rock Creek)
5. Bering Straits Native Corp. (Bluff area, Mt. Distin)
6. North Pacific Mining Co. (Illinois Creek)
7. Flat Creek Mining Co. (Timber and Flat Creeks)

III EASTERN INTERIOR REGION
8. Citigold/LaTeko Resources (Ryan Lode)
9. American Copper and Nickel Co. (Fairbanks district)
10. Tri-Valley Mining (Richardson district)
11. ASA/Placer Dome (Sawtooth Mtn.)
12. Freegold Recovery (Fairbanks district)
13. Lodestar Exploration (Taurus)
14. Amax Gold (Liberty Bell)
15. WGM (Stoneboy Creek)

IV SOUTHCENTRAL REGION
16. Rowallan Mine Partnership (Valdez Creek)
17. North Pacific Mining (Toklat)
18. Hunt Ware & Proffett (Johnson River)

V SOUTHWESTERN REGION
19. Placer Dome U.S. (Golden Horn)
20. Cominco Alaska (Pebble Copper)

VI ALASKA PENINSULA REGION

VII SOUTHEASTERN REGION
21. Echo Bay Alaska Inc./ Coeur Alaska Inc. (Kensington Joint Venture)
22. Curator American/Hyak (Jualin)
23. Echo Bay Alaska (Alaska-Juneau Mine)
24. Kennecott Greens Creek Mining Co. (Greens Creek)
25. Dale Henkins/Roger Eichman (Dream)
26. Kennecott Exploration (Gold Fork)
27. Red Dodson (Bokan Mountain)
28. Salisbury and Associates/ ACNC (Dolomi)
29. Cominco Alaska (Big Harbor-Trocadero)
30. Boomer & Company (Dall Island)
31. Ashgrove Cement West (View Cove)
32. Sealaska Corp (7-mile gold)

Figure 2. *Selected exploration projects, 1992.*

adjacent to Boulder, Last Chance, and Bangor Creeks. Exploration included trenching of anomalous soil samples, expanding a detailed soil geochemistry grid, and geologic mapping. Large belts of anomalous gold, arsenic, and zinc were located and will be followed up with trenching and possibly drilling in 1993.

In the area adjacent to BSNC's Mt. Distin deposit, thrust fault-controlled gold, arsenic, and antimony values occur over a strike length of 6 kilometers (4 miles) and widths of up to 610 meters (2,000 feet). State mining claims in the area were assessed by geochemical soil samples. As a result of this work, BSNC reduced its state claim block to 20 claims, centering on Jensen's Camp, a historic lode milling operation. In-house exploration continued at Bluff, where three structurally-controlled mineralized areas—Daniels Creek, Saddle Prospect, and Koyanna Creek—potentially contain at least 5.9 million tonnes (6.53 million tons) grading 3.4 grams per tonne (0.099 ounces per ton) gold.

North Pacific Mining Co. (NPMC), a subsidiary of the Cook Inlet Regional Corporation, had a small exploration project at the Big Bar polymetallic prospect in the Bendeleben area. NANA Regional Corporation also explored polymetallic targets in the Candle and Inmachuk areas of the Seward Peninsula.

NPMC operated a large program at the Illinois Creek gold-silver deposit, with 1,530 meters (5,020 feet) of trenching and 1,529 meters (5,016 feet) of diamond drilling which was completed in 1992. Near-surface geologic

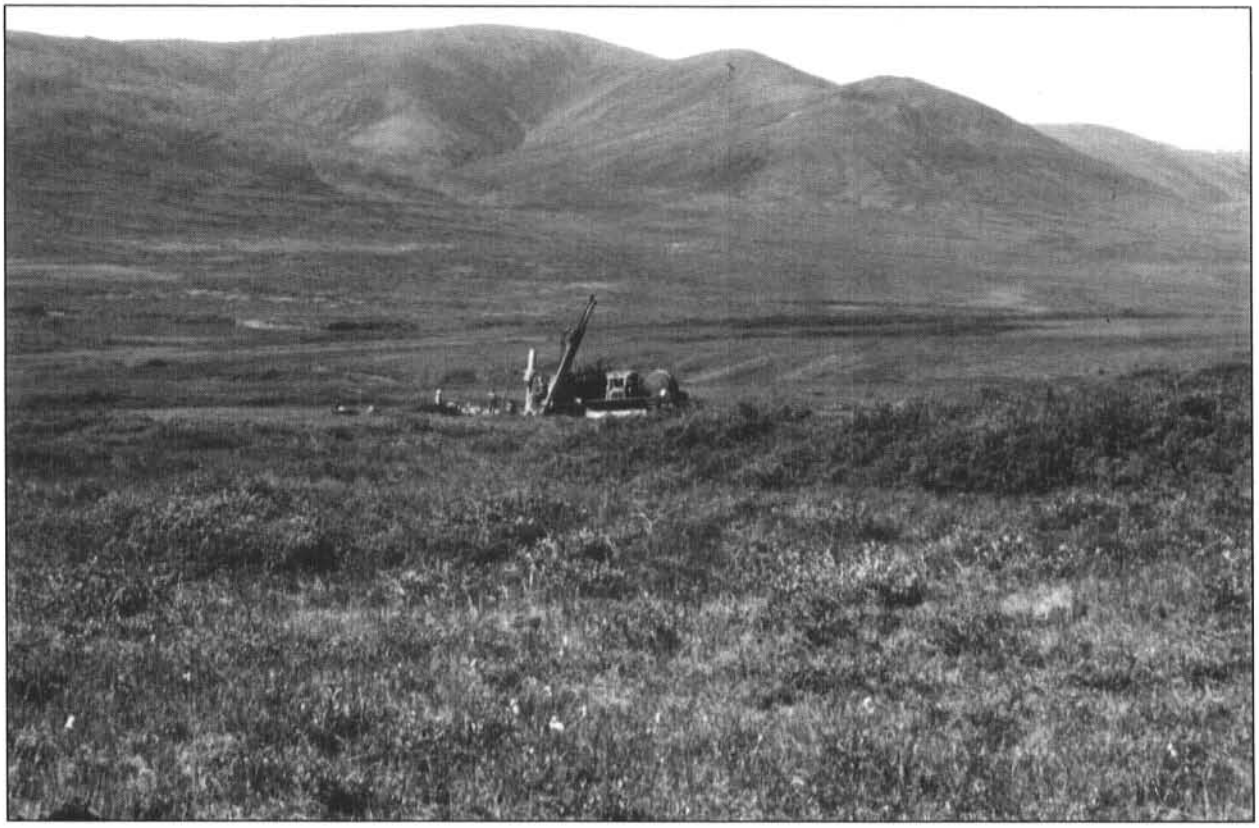


Figure 3. *Newmont Exploration Ltd. drilling near Rock Creek, north of Nome. (Photo by Randy Vance)*

resources at Illinois Creek were reported to be 3.7 million tonnes (4.1 million tons) at 2.4 grams per tonne (0.071 ounces per ton) gold and 50 grams per tonne (1.47 ounces per ton) silver.

Illinois Creek is one of several gold-bearing polymetallic gossans within the 14 kilometer (9 mile) mineralized belt in the Kaiyuh Hills. Late in 1992, Echo Bay Alaska opted to form a joint-venture with NPMC for 1993 exploration.

Berg and Wetlesen in partnership with Bullock Gold Mining drilled at the Independence Mine near the confluence of Independence Creek and the Kugruk River south of Candle. The mine contains massive lead-zinc-silver mineralization with some gold (Appendix D).

Only three placer gold operations reported exploration activity in western Alaska in 1992. Flat Creek Mining Co. Inc. had a substantial reverse-circulation drilling program on Timber and Flat Creeks in the Ruby district. Andy Hehnlin spent most of the summer prospecting the Nome Beach and testing new equipment for gold recovery in ancestral river beds.

Table 5. *Summary of claim activity, 1988-92*

Year	1988	1989	1990	1991	1992
New claims					
State	8,062	3,928	2,573	3,391	2,501
Federal	3,786	1,562	1,888	1,299	679
Subtotal	**11,848**	**5,490**	**4,461**	**4,690**	**3,180**
Active claim assessment					
State			32,275	29,754	26,615
Federal			25,792	23,222	20,254
Subtotal	**63,694**	**64,225**	**58,067**	**52,976**	**46,869**
Total state			34,848	33,145	29,116
Total federal			27,680	24,521	20,933
TOTAL	**75,542**	**69,715**	**62,528**	**57,666**	**50,049**

Coal

No activity was reported in this region in 1992.

Industrial Minerals

Two companies reported exploration for

Figure 4. *Kennecott Exploration core-drilling on Gold Hill, west of Rock Creek near Nome. (Photo courtesy of Bering Straits Native Corp.)*

industrial minerals in 1992: Lakloey Inc. at its Hastings Creek operation near Nome and Tidemark Corporation on the western tip of the Seward Peninsula at Tin City.

EASTERN INTERIOR REGION

Following the pattern of the last few years, the eastern Interior region of Alaska was again the second most active area for exploration: the southeastern region was first. Exploration expenditures and employment in this region were up by 60 percent and 73 percent respectively, with $8.6 million invested and 13,636 workdays reported in 1992.

Several encouraging signs indicated that exploration was beginning to diversify, with some new grassroots programs and renewed interest in known mineral deposits and districts. Some projects in this region are in advanced exploration, and could shift to development within the next two years.

METALS

As in 1991, investment was greatest for igneous-hosted and epithermal deposits in 1992, accounting for most of the $8.6 million reported exploration expenditure. Copper-gold porphyries and volcanogenic massive sulphide polymetallic targets were investigated in the central and eastern Yukon-Tanana Uplands.

Much of the reported activity was on Ester Dome 16 kilometers (10 miles) west of Fairbanks and around Cleary Summit and Pedro Dome about 24 kilometers (15 miles) north of Fairbanks.

There were two major exploration programs on Ester Dome. Citigold/La Teko continued drilling on the Ryan Lode and associated shears, and American Copper and Nickel Co. had a major geophysical and drilling program.

At the end of 1992 LaTeko Resources Ltd. and its wholly-owned subsidiary Citigold Alaska Inc. announced the results of an independent ore-resource study on the Ryan Lode system by Mine Development Associates of Reno, Nevada. By early 1993, current reserves at various cutoffs were 7.5 million tonnes (8.3 million tons) averaging 2.64 grams per tonne (0.077 ounces per ton) containing 19,781 kilograms (636,000 ounces) of gold. A high-grade core of this ore contains 3.88 million tonnes (3.5 million tons) with a grade of 4.77 grams per tonne (0.139 ounces per ton) containing 15,147 kilograms (487,000 ounces) of gold.

A geologic resource of approximately 62,206 kilograms (2 million ounces) of gold has been identified in addition to the approximately 31,100 kilograms (1 million ounces) of gold resource which contains a 19,781 kilogram (636,000 ounce) measured reserve.

Until recently most of the known resource was contained in the Ryan Lode, which cuts through pelitic

schist, quartzite and calcareous variants, and which is present to at least 305 meters (1,000 feet) below surface. This vein stockwork trends towards the O'Dea and Irishman veins of the Grant Mine about 3.1 kilometers (2 miles) to the northeast. During 1991 and 1992, drilling 38,415 meters (126,000 feet) of reverse circulation holes and 2,896 meters (9,500 feet) of core on 30.5 meters (100 feet) centers or less defined a subparallel series of gold-bearing veins hosted in an altered quartz monzonite located to the southwest of the southwest-dipping Ryan Lode. This new system, the Curlew, greatly expanded the reserves, and encouraged optimism that the Ryan Lode itself may intercept the pluton at depth, providing a new target for further exploration. Plans for 1993 include additional development drilling to further define reserves. This follows successful renegotiation of a more favorable lease on the property in 1992.

American Copper and Nickel Co. (ACNC) in a joint-venture with Silverado Mines (US) Ltd. continued systematic exploration of the remaining part of the 36 square kilometers (13 square miles) of Ester Dome during 1992. ACNC completed several line miles of ground geophysical surveys to complement earlier airborne surveys, and drilled 430 meters (1,410 feet) of reverse circulation hole and 3,391 meters (11,121 feet) of diamond drill hole in 1992. In addition to many gold-bearing quartz veins in the schist, the company reported some igneous-hosted gold.

ACNC also conducted geophysical, geochemical, and geological surveys and completed 833 meters (2,733 feet) of diamond drilling at the Eagle Creek prospect off Murphy Dome Road, where gold-bearing veins are hosted in granite porphyry igneous bodies.

Further east, on the ridge between Dome and Little Eldorado Creeks west of Pedro Dome, AMAX Gold Exploration drilled 1,626 meters (5,332 feet) of reverse-circulation hole at the old Hindenberg prospect, based on a mapping and soil sampling program. A similar program was conducted by AMAX at the NERCO-owned Liberty Bell property west of Healy in the Bonnifield mining district, where AMAX completed 1,782 meters (5,845 feet) of reverse-circulation drilling.

Freegold Recovery Inc. had a substantial sampling, mapping, geophysical, trenching, and reverse-circulation drilling program on its Golden Summit joint venture with Fairbanks Exploration Co. east of Pedro Dome, about 32 kilometers (20 miles) north of Fairbanks. Drilling totaled 521 meters (1,710 feet) and trenching totaled 3,963 meters (13,000 feet) during 1992 on the Too Much Gold Zone (fig. 5). Late in 1992, Freegold announced negotiations with AMAX Gold Inc. for continued work on this project. At the western end of the Golden Summit project on the east flank of Pedro Dome, almost 15,250 linemeters (50,00 line-feet) of geochemical sampling and

Figure 5. *October drilling by Freegold Recovery Inc., Too Much Gold Prospect, Fairbanks district. (Photo by Curt Freeman)*

trenching was completed by Carlin Gold Co., Freegold's joint-venture partner.

Grateful Dog Mining Co. continued exploration along Murphy Dome Ridge north of Fairbanks. Windy Hill Mining Co. had a program in the Roughtop Mountain area near Tofty and on Chena Hot Springs Road.

Tri-Valley Corporation, in joint-venture with the Russian TsNIGRI group, continued evaluation of its 179 square kilometer (70 square mile) land base in the Richardson district, about 113 kilometers (70 miles) east of Fairbanks. The 1992 program consisted of mapping and geophysical and geochemical surveys, including biogeochemical sampling of moss (fig. 6).

In the Circle district, 160 kilometers (100 miles) north of Fairbanks, Points North/Portage Creek Sand and Gravel drilled 152 meters (500 feet) of auger hole seeking copper-gold-lead-zinc mineralization.

Also in the Circle mining district several groups are prospecting high-grade gold veins and an igneous-hosted gold prospect in the Portage Creek drainage. Late in 1992, Verdstone Gold Corp. optioned claims near Crooked Creek where two diamonds were recovered during a placer gold mining in the mid-1980s.

Montague Gold NL, in a joint-venture with ASA Inc., an Alaskan company with Australian and Scottish involvement, has been exploring several blocks of land owned by Doyon Inc., a Fairbanks-based Native corporation. Late in 1992, the joint-venture acquired some state land at Sawtooth Mountain west of Livengood, where vein samples with 51 grams per tonne (1.49 ounces per ton) gold occur, and where veined pyrite-bearing monzonite crops out with gold values up to 13.0 grams per tonne (0.38 ounces per ton). Placer Dome (US) Inc. has an adjacent land holding where 1,220 meters (4,000 feet) of diamond drilling was completed after 1,830 meters (6,000 feet) of trenching following mapping and geophysical surveys.

Recent activity at the Casino porphyry copper-gold deposit in the Yukon Territory created new interest in several similar targets in Alaska. Noranda Exploration Inc., operating on behalf of Hemlo Gold Mines Inc., commissioned a 460-line-kilometer (300-line-mile) airborne magnetic-electromagnetic-radiometric and VLF-EM geophysical surveys on the Taurus property in 1992. The survey identified several "blind" targets beneath the extensive overburden. One of these targets was drilled in February 1993 and added a new south zone to the East and West Taurus zones which were the focus of exploration during the early 1970s.

Noranda/Hemlo is also a partner in a joint-venture with Watts, Griffis and McQuat Inc. (WGM), Conroy Petroleum and Natural Resources Plc. of Ireland, and the American subsidiary of Sumitomo Metal Mining of Japan. The purpose of this joint-venture, announced in late 1992, is to explore a large area around WGM's Stone Boy Creek Project about 160 kilometer (100 mile) east of Fairbanks. Following 4,000 line-kilometer (2,500 line-mile) of airborne magnetic/EM survey flown in 1991 and 1992, several igneous-hosted gold and sedimentary-exhalative targets have been identified for further evaluation, mainly on state-owned lands.

Exploration expenditures for gold placer deposits continued to decline, with only $112,000 reported in 1992, 28 percent less than in 1991, which was in turn down 50 percent from 1990. In the Fairbanks mining district James Fogarty reported exploration on Walker Creek, RCL Mining continued exploration on Dome Creek, and Herning Exploration and Mining dug backhoe test pits on Palmer Creek in the East Fork of the Chena River.

In the Manley Hot Springs district, Thanksgiving Mining Co. ran a bulk sampling program. In the Bonnifield district only one company, Totat Mine, reported any exploration activity.

The Circle district was active. KLK Inc. reported magnetic surveys on Faith and Hope Creeks, Steve and Lyle Colledge worked on Bottom Dollar Creek, and Doxamco Inc. explored for gold on the North Fork of Twelvemile Creek and for gold and diamonds on Crooked Creek. Magic Circle Inc. reported a small testing program on Ketchem Creek.

Placer exploration was widespread in the Fortymile and Seventymile area. Aurum Philosophorum Mining and Exploration Inc. reported a small mapping project, and a lease from Alaska Gold Co. on Chicken Creek. Mike Busby and Alice Bayless drilled 244 meters (800 feet) of 15-centimeter (6-inch) churn holes to test their lease. Doyon Ltd. investigated placer gold potential of the Seventymile area west of Eagle and Northern Resources Recovery actively explored the Mosquito Fork of the Fortymile River.

Coal

Usibelli Coal Mine near Healy reported no exploration in 1992. Doyon Ltd. extracted a bulk sample from its Little Tonzona holdings 136 kilometers (85 miles) southeast of McGrath, where 24 meter (80 foot) seams of subituminous coal are layered within a 72-meter (240-foot) subvertical section. Doyon also sampled the flat-lying Tertiary coals on Washington Creek, 64 kilometers (40 miles) west of Eagle.

Industrial Minerals

No activity was reported in the eastern interior region in 1992.

Figure 6. *Dr. Tom Wilson, vice-president (minerals) of Tri-Valley Corporation, inspects a trench on Buck Ridge Prospect, Richardson camp east of Fairbanks. (Photo by Curt Freeman)*

SOUTHCENTRAL REGION

Reported exploration expenditures of $1.46 million dropped dramatically from $6.2 million in 1991.

METALS

Hunt, Ware & Proffett drilled 2,652 meters (8,700 feet) of diamond drill hole to investigate the faulted section of the Johnson River polymetallic deposit in the southern Alaska Range, 200 km (125 miles) west of Anchorage. The deposit is leased by Howard Keck from Cook Inlet Regional Inc. (CIRI), and consists of a stockwork of quartz-sulphide veins in Talkeetna Formation sedimentary and volcanic rocks. Appendix D provides the most recent reserve/resource information.

AHTNA Inc., the Native regional corporation with land holdings throughout the southcentral region, explored for precious metals in the Wrangell Mountains and in the Cantwell area.

CanAlaska Resources Ltd. USA reported mapping and sampling of its Rainbow Hill prospect in the Valdez Creek (fig. 7) area where more than $1.5 million has been spent in past programs for trenching and drilling gold veins hosted in metasedimentary rocks and granodioritic intrusions. Like many other companies, CanAlaska is concerned that the new federal holding fees may necessitate allowing some claims to lapse.

Dan Renshaw of Gold Cord Mine continued drilling at his operation in the Willow Creek/Hatcher Pass area and Chuck Hawley with Mines Trust Company worked to extend known ore zones at the Golden Zone Mine in the Upper Chulitna district. This formerly producing mine has a core of mineralization in and around a late Cretaceous intrusive breccia pipe, and several peripheral high-grade veins. Estimated reserves are about 7,150 kg (230,000 ounces) of gold in about 1.7 million tonnes (2 million tons) of rock in the pipe.

Dennis Garrett of Empire Exploration Inc. had an active exploration program at the Blue Ribbon Mine in the Cache Creek district, where an area 1,677 by 762 meters (5,500 by 2,500 feet) reportedly contains many samples with assays in excess of 10.3 grams per tonne (0.3 ounces per ton) gold.

North Pacific Mining Co. (NPMC) had a small exploration project on the Toklat polymetallic prospect in the Talkeetna Mountains. The company also collected a bulk sample for metallurgical testing from the Red Mountain chromite deposit near Seldovia.

Paraclete Resources, an Australian exploration firm, explored gold-magnetite-ilmenite strandline deposits near Cape Yakataga. The objective of the project was to delineate a resource of placer gold with byproduct industrial minerals such as ilmenite and magnetite.

Cambior Alaska Inc. reported minor placer exploration activity in 1992 in cooperation with Valdez Gold Company on Valdez Creek. Further up the valley at the confluence with White Creek, Rowallen Mine Partnership collected bulk samples from Caprock Corporation's holdings.

Several operators were exploring placer ground in the Yentna district. Frank Couch and partners worked on Crescent and Stetson Creeks with suction dredges. Bell Placer cut backhoe pits on Lake Creek in the Kahiltna drainage near Collinsville. H & H Exploration and Mining explored for gold and silver in placers at Meadow Lake near Collinsville.

In the Talkeetna area, T.C. Mining Co. sought gold on Thunder Creek. Dan Creek Partners continued to develop patented ground as a tourist attraction on Dan Creek in the Wrangell-St. Elias area. Arne Murto of Finnbear Mining and Exploration Co. Inc. reported dewatering of the Number 12 placer pit in the Tyonek Quadrangle west of Skwentna.

Coal

No exploration activity for coal was reported in the southcentral region in 1992.

Industrial Minerals

Hopkins Brothers Construction Company investigated riprap sources by test blasting near Seldovia. No other exploration was reported.

SOUTHWESTERN REGION

Expenditures for exploration in southwestern Alaska for 1992 were $2.8 million, an increase of 50 percent from 1991. The region recorded a 32 percent increase in workdays. This area (fig. 2) extends from Cook Inlet and includes several historic placer districts of the lower Yukon and Kuskokwim Rivers, as well as recent base metal and polymetallic deposits within the influence of the Alaska Range igneous activity.

Metals

All 1992 exploration investment was in metals. The major investor, Cominco Alaska Exploration Inc., explored its Pebble Copper deposit, where 2,014 meters (6,606 feet) of diamond drilling further defined the higher grade core of the deposit. Drilling in 1992 confirmed a resource of 60 million tonnes (66 million tons) averaging 0.5 percent copper with 0.5 grams per tonne (0.015 ounces per ton) gold within the overall probable resource of 420 million tonnes (462 million tons) grading 0.4 percent copper and 0.4 grams per tonne (0.012 ounces per ton) gold. The deposit remains open at depth.

Calista Native Corporation reported limited exploration in the Aniak area and at Stuyahok in the Marshall district. As in past years, Placer Dome (US) Inc. excavated backhoe trenches to explore Misco-Walsh Mining Co.'s Golden Horn prospect at Flat in the Iditarod district.

Several placer mining operations reported some exploration activity in 1992. Innoko River Enterprises were active on the north and west fork of the Innoko River with dredges, trommels, sluices, and portable equipment. Jualin Creek Mining cut trenches on Jualin Creek and the George River. Little Creek Mining did the same on the Namesake Creek in the Ophir district. Magnuson Mining Co. trenched on Ganes Creek near McGrath, Dave Penz drilled churn holes on his claims on Kako Creek in the Marshall district; James Wylie reports sampling on the North Fork of the Kuskokwim. The Williams family prospected near Flat.

ASA Inc. searched for bulk mineable gold prospects in the Kuskokwim mineral belt and found anomalous gold in stream sediments.

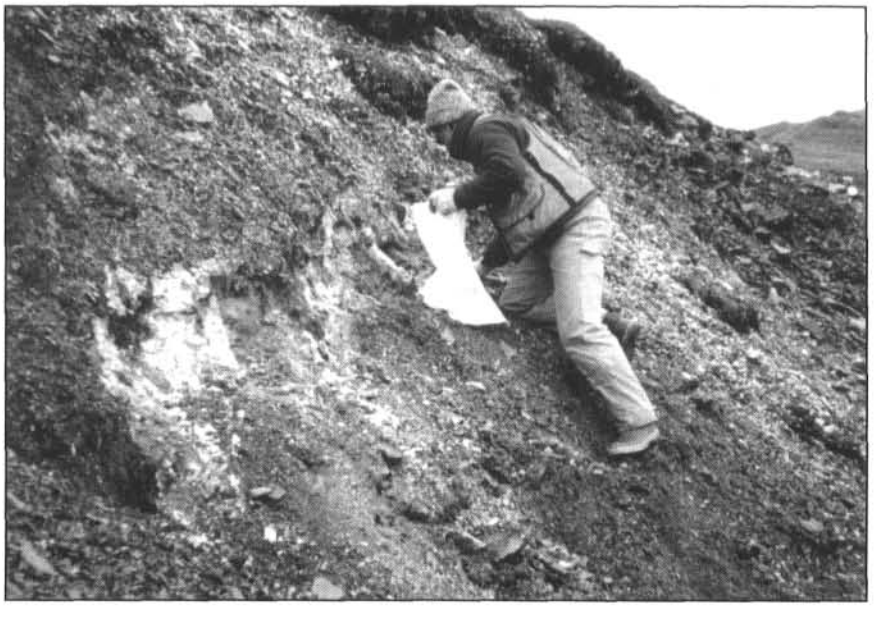


Figure 7. *Dan Wietchy collects samples for bottle-roll testing at the discovery outcrop, TMC zone of CanAlaska Resources' Rainbow Hill Project in the Valdez Creek mining district. (Photo by Curt Freeman)*

Coal and Industrial Minerals

No exploration activity was reported for the southcentral region in 1992.

ALASKA PENINSULA REGION

Only $8,650 in exploration expenditures were reported for the Alaska Peninsula in 1992, a fraction of the $327,000 reported in 1991. The drop was almost entirely the result of Battle Mountain Exploration Company's decision to leave the state at the end of 1991.

Metals

American Copper and Nickel Co. (ACNC) ran a small exploration effort near Kamishak pending clarification of the McNeil River Game Refuge land situation. Alaska Apollo Resources Inc. had a maintenance program at its Shumagin Project on Unga Island.

Coal and Industrial Minerals

No exploration activity was reported for the Alaska Peninsula region in 1992.

SOUTHEASTERN REGION

Exploration expenditures for 1992 were $14.9 million in southeastern Alaska, down 30 percent from the $22.8 million reported in 1991. Most of the decrease occurred because the A-J Mine is now in the permitting stage and conducted only limited exploration during the year.

Metals

In southeastern Alaska, Curator International conducted target evaluation at its Jualin prospect, about 80 kilometers (50 miles) north of Juneau, adjacent to Echo Bay's Kensington Mine.

Work continued at the Kensington Mine, a joint venture of Echo Bay and Coeur d'Alene Mines, with Echo Bay acting as operator. The joint venture spent over $80 million on the project through 1992. Reserves for the Kensington Mine through 1991 are 10.4 million tonnes (11.5 million tons) at 4.9 grams per tonne (0.143 ounces per ton) gold. The Horrible Vein mineralized zone, which is intersected by the Kensington main adit, contains an additional 3.56 million tonnes (3.9 million tons) of 3.8 grams per tonne (0.11 ounces per ton) gold.

The final Environmental Impact Statement (EIS) for the project was released in the spring of 1992. The document estimates a $205 million capital cost with a production cash-cost of $6.8 per gram ($213 per ounce) gold. The mine would be a rotational camp operation staged from Juneau. Since the mine is in the Greater Juneau Borough, the mine operation falls under the city and borough mining ordinance. In October 1992, the City and Borough of Juneau (CBJ) Planning Commission approved the conditional use permit (equivalent to a final EIS) for the project. The joint venture continues to move forward with permitting details of the project and will undertake additional underground exploration in 1993 in an effort to expand the ore reserve.

Echo Bay continues its six-year effort to reopen the Alaska-Juneau (A-J) mine, one of Alaska's premier gold producers. Between 1886 and mine closure in 1944, the mine produced 105,750 kilograms (3.4 million ounces) of gold, 68,420 kilograms (2.2 million ounces) of silver, and 20 million kilograms (44 million pounds) of lead. The mine closed because of wartime shortages in labor and material and not as a result of ore depletion.

Reserves in all categories for the A-J mine approach 90.7 million tonnes (100 million tons) grading about 1.75 grams per tonne (0.05 ounces per ton) gold. These reserves exceed the production threshold of Echo Bay, therefore only limited underground work was conducted in 1992.

During 1992, the final EIS was released for the A-J mine project. In addition, Echo Bay purchased the 15 percent interest in the project which was held by WGM Inc. Thus, Echo Bay now has complete interest in both the A-J and Treadwell gold deposits, although CBJ retains a royalty interest. As with the Kensington mine, the A-J also needed to obtain a conditional-use permit under the Juneau Mining Ordinance. (The CBJ Planning Commission awarded the conditional core permit to the A-J mine in May 1993.) Echo Bay is conducting a major underground exploration and predevelopment program at the A-J mine during 1993.

Elsewhere in southeast American Copper and Nickel Co. (ACNC) contracted for an aerial geophysical survey, and mapped and sampled its prospects at Hetta Inlet on Prince of Wales Island. Consultants Boomer & Co. Inc. worked on Cominco's Big Harbor and Lac's Niblack prospects. Also, on Prince of Wales Island, Sealaska continued exploration of its holdings. Farther north, Hyak Mining Co. reported exploration around Freshwater Bay on Chichagof Island and near Berners Bay in the Juneau area.

The only gold placer exploration reported in southeast was by Jerry Fabrizio of Snow Lion Mining Co. in the Porcupine Creek drainage near Haines.

Coal and Industrial Minerals

No exploration activity was reported for the southeastern region in 1992.

DEVELOPMENT

Alaska mineral development expenditures increased 16 percent from $25.5 million in 1991 to $29.6 million in 1992. Most of this increase can be attributed to mine site work by Fairbanks Gold Mining Inc. at the Fort Knox deposit near Fairbanks and to geotechnical improvements at the Greens Creek polymetallic mine near Juneau (fig. 8).

NORTHERN REGION

Metals

Five placer mining companies reported development expenditures for a variety of activities in the Koyukuk-Nolan and Shungnak-Kobuk districts of northern Alaska (table 6). Inside-Out Mining Company conducted road reclamation and other unspecified mine site work at its Nolan Creek underground drift operation near Wiseman. Tramway Bar Mining Company stripped overburden and completed equipment repairs at Chapman Creek west of the Dalton Highway and south of the Brooks Range. Myrtle Creek Mining (Mitch Flemming) mechanically stripped overburden and constructed mine camp facilities at its Myrtle Creek mine near Coldfoot. The Lounsbury brothers stripped their Union Gulch placer property along the Dalton Highway, in the Wiseman district. Timber Creek Mining stripped overburden and excavated pay for metallurgical testing on Weiss Creek in the Squirrel River drainage of the western Brooks Range.

Although their expenditures for mine development are not reflected in table 7, Cominco Alaska Inc. completed a sophisticated dust control program that reduced particulate matter in the air around the Red Dog mine northwest of Kotzebue. The dust control program was designed to reduce air pollution originating from ore conveyor belts, ore stockpiles, and truck loading stations. The company also constructed a mine drainage diversion ditch that succeeded in keeping Red Dog Creek as pollution-free as pre-mining conditions. During 1992, the Alaska Department of Fish and Game discovered Dolly Varden char in stream habitat near the Red Dog mine site that historically was not known to contain fish populations because of naturally occurring toxic levels of metals.

Coal and Peat

Arctic Slope Consulting Group Inc. (ASCG) started development work on its Western Arctic Coal Project in northwest Alaska. The company estimates that the Deadfall Syncline coal deposits contain measured reserves of 54.4 million tonnes (60 million tons) of coal that can be mined with opencut and shallow underground mining methods. During 1992, ASCG constructed mine pits, harbor facilities, and camp infrastructure, surveyed borehole locations and permit boundaries, and installed weather stations at Point Lay and at the mine harbor site. The engineering firm of Arthur T. Little Inc. began a port feasibility study and performed ice core tests to obtain geotechnical and environmental baseline data.

ASCG has applied to the U.S. Bureau of Mines for a 1993 federal matching grant to (1) develop greater expertise in construction in permafrost and in mine reclamation, and (2) to study the economic and social impact of development in northwest Alaska.

WESTERN REGION

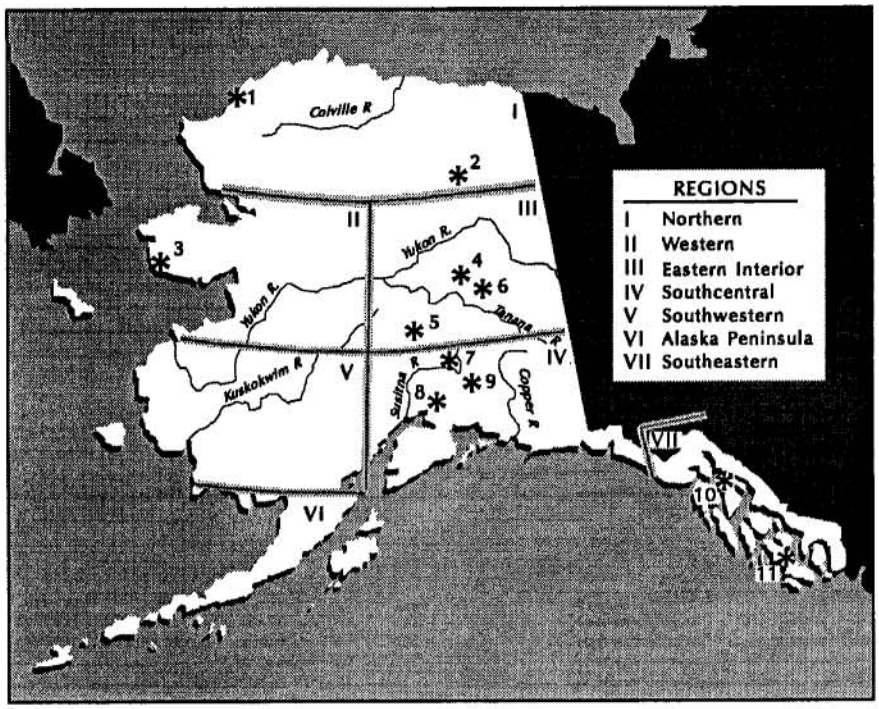
Metals

In the Nome district of western Seward Peninsula Alaska Gold Company continued strip mining and thaw-field development work in order to continue operations of two bucketline stacker dredges. The company may phase out traditional stacker dredging that uses a floating bucket-line dredge (fig. 9). Alaska Gold will adopt a new system of year-round opencut mining that is patterned after operations previously or presently in operation in the Nome, Fairbanks, and the Valdez Creek districts. New mining methods include winter removal of overburden (stripping) using explosives and rippers and year-round processing of pay gravels. These new mine practices will eliminate the expensive thaw-field technologies currently used by the company and should reduce mine costs significantly. Employment levels will drop from seasonal highs of about 90 that exist today to around 50-60; however, year round employment opportunities will increase.

Smaller placer mining firms also reported development expenditures in the western region. The

Berg-Wetlesen partnership conducted stripping and development drilling with a churn drill on separate placer properties on Lime, Independence, and Candle Creeks of the Candle district of northeast Seward Peninsula. Flat Creek Mining (Jim Haggland) stripped overburden and completed 549 meters (1,800 feet) of blasthole drilling in overburden on Flat Creek in the Ruby-Poorman district of the central Yukon River region.

Andy Hehnlin completed a testing program with hydro jigs on his beach placer deposit at Nome. The testing program demonstrated that hydro-pulse jigs significantly increased recovery of fine gold when compared with conventional sluice box recovery.



I NORTHERN REGION
1. Arctic Slope Consulting Gr. Deadfall syncline—coal marketing studies, fire testing
2. Placer development (5 miles; various locations)

II WESTERN REGION
3. Alaska Gold Co. Nome district—placers, thaw-field drilling

III EASTERN INTERIOR REGION
4. Fairbanks Gold Mining Ltd. Fort Knox deposit—geotechnical and condemnation drilling
5. Usibelli Coal Mine Inc. Healy Clean Coal Project
6. Eleven placer mining firms; various locations

IV SOUTHCENTRAL REGION
7. Cambior Alaska Valdez Creek—stream diversion project
8. Idemitsu Alaska Wishbone Hill—engineering design, environmental studies
9. Six placer firms; various locations

V SOUTHWESTERN REGION

VI ALASKA PENINSULA REGION

VII SOUTHEASTERN REGION
10. Kennecott Greens Creek Mining Company Greens Creek—mill studies, reserve development
11. High Drive Drilling & Blasting Inc.—quarry site development

Figure 8. *Selected development projects, 1992.*

EASTERN INTERIOR REGION

Metals

Fairbanks Gold Mining Inc. (FGMI) conducted the state's largest mineral development program at the Fort Knox gold deposit 24 kilometers (15 miles) northeast of Fairbanks. The 1992 development work included resource, geotechnical, and hydrological drilling, and extensive environmental baseline data collection.

In August 1992, FGMI submitted a source document to the state that describes in fair detail an overview of the proposed Fort Knox Mine (Fairbanks Gold Mining Inc. 1992). CH2M Hill prepared a two-volume environmental assessment report for FGMI that presents environmental baseline data collected from 1989 to 1992, summarizes an air quality monitoring program, and outlines an extensive water quality monitoring program for the life of the mine.

Fort Knox deposit is located in the Fairbanks and Fish Creek drainages of the eastern Fairbanks mining district. FGMI has proposed to develop an open-pit mine using conventional mining and milling technologies. The mine would operate year-round at a rate of 31,750-45,350 tonnes (35,000 to 50,000 tons) per day and produce an estimated 9,330 kilograms (300,000 ounces) of gold annually with a workforce of 200-250. The orebody is located entirely on lands owned and managed by the State of Alaska although some private lands are included in the development package. Development drilling conducted in 1992 increased the proven and probable reserves at Fort Knox from 110 million tonnes (122 million tons) grading

Table 6. *Reported mineral development expenditures in Alaska by commodity, 1982-92*

	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**
TOTAL	**$378,601,300**	**$141,812,000**	**$176,632,730**	**$15,668,000**	**$47,520,000**	**$760,234,030**

N/A = Figures not available prior to 1986.
-- = No expenditures reported.

Table 7. *Reported mineral development expenditures and employment in Alaska, 1992*

	Northern	Western	Eastern interior	South-central	Alaska Peninsula	South-western	South-eastern	TOTAL
				Exploration expenditures				
Base metals	--	--	--	$ 75,000	--	$ 5,000	--	**$ 80,000**
Polymetallic	--	--	--	--	--	--	$ 4,300,000	**4,300,000**
Precious metals								
Placer	$ 63,000	$2,230,000	$ 1,634,300	1,464,000	--	30,000	300,000	**5,721,300**
Lode	--	--	11,000,000	--	--	--	6,430,000	**17,430,000**
Coal and peat	400,000	--	--	1,255,000	--	--	--	**1,655,000**
Industrial minerals	--	--	--	70,000	--	--	334,000	**404,000**
TOTAL	**$463,000**	**$2,230,000**	**$12,634,300**	**$2,864,000**	**--**	**$35,000**	**$11,364,000**	**$29,590,300**
				Exploration employment				
Exploration employment								
Workdays	1,780	2,341	12,748	5,904	--	540	19,241	42,554
Workyears[a]	7	9	49	23	--	2	74	164
Number of companies reporting[b]	6	4	12	11	--	4	6	43

-- = No expenditures reported.
[a]Based on a 260-day workyear.
[b]Some companies were active in several areas.

0.89 grams per tonne (0.026 ounces per ton) gold to 158 million tonnes (174 million tons) grading 0.82 grams per tonne (0.024 ounces per ton) gold, or a proven updated resource of 128,051 kilograms (4,117,000 ounces) of gold.

Mine components will include a large open pit, shop facility, mill, development-rock disposal sites, tailings basin, water dam and spillway, and water reservoir. The entire project will affect an estimated 2,030 hectares (5,017 acres) of land. The mine process method will involve primary rock crushing, a SAG (semi-autogenous grinding) mill, secondary ball milling, carbon-in-leach gold absorbtion recovery, conventional carbon stripping recovery, and flotation recovery technologies. Golden Valley Electric Association (GVEA) is currently designing the transmission line that will supply 35 megawatts of electric power to the mine site.

The mine will disturb five major areas: (1) a 138 hectare (340 acre) ore body covering most of the hillslope between Melba and Monte Cristo Creeks; (2) a tailings impoundment facility on upper Fish Creek; (3) development-rock dumps on Barnes, Yellow Pup, and Pearl Creeks; (4) a fresh-water reservoir on lower Fish Creek; and (5) an electric transmission line routed from the west to service the power needs of the

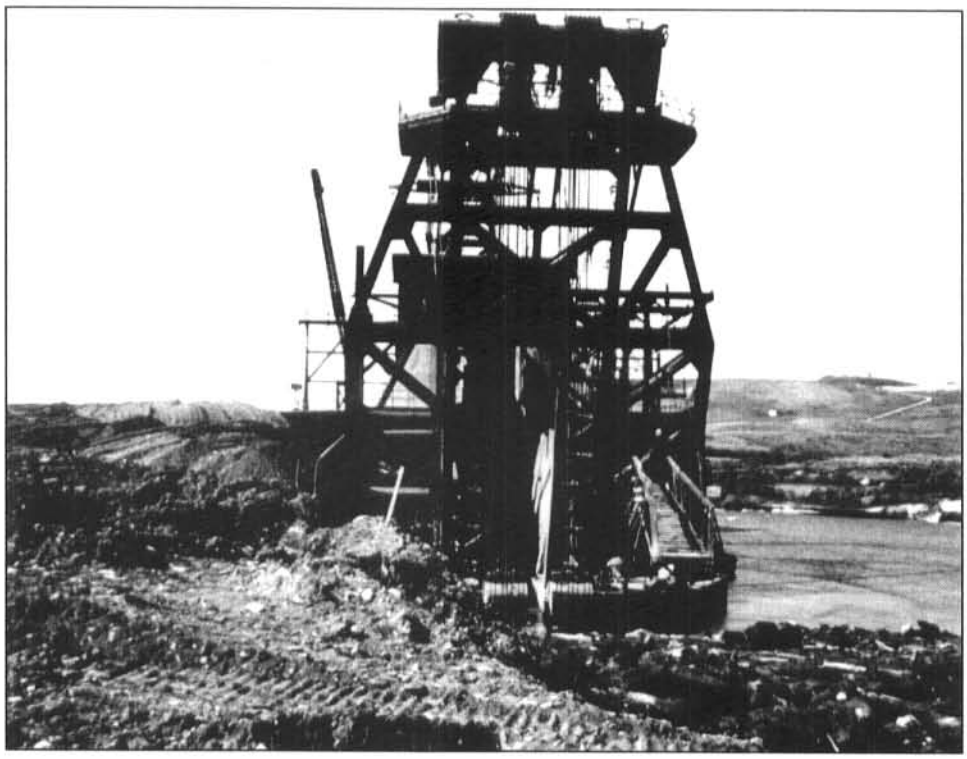


Figure 9. *Alaska Gold's Dredge 5 at the Third Beach in Nome. (Photo by John Wood)*

mine (fig. 10). In order to comply with state and federal regulatory requirements, FGMI has developed a permanent closure and reclamation plan in anticipation of ore exhaustion 16 to 20 years after the mine initiates production. This plan is designed to mitigate potential degradation of Alaska's land and water resources. A secondary objective would be to leave the land in such a condition that would foster post-mine uses for wildlife and recreation.

Eleven placer mines of various sizes reported mine development work throughout the eastern interior region. Those companies reporting drilling and overburden removal programs include: Polar Mining on Fish Creek (Fairbanks district); RCL Mining on Dome Creek (Fairbanks district); Magic Circle Inc. on Ketchum Creek (Circle district); KLK Inc. on Faith and Hope Creeks (Circle district); 45 Pup Mining on 45 Pup (Fortymile district); Arnold Echola on Gold Creek (Fortymile district); Miller Creek Mining Company on Crooked Creek (Circle district); Mike Buzby and Alice Bayless on Chicken Creek (Fortymile district); and Ken Weise on Mosquito Fork (Fortymile district).

Heflinger Mining and Equipment Company developed 9,175 cubic meters (12,000 cubic yards) of pay by stripping 15,292 cubic meters (20,000 cubic yards) of overburden on Livengood Creek in anticipation of the 1993 production season. The company estimates that 47,660 cubic meters (62,333 cubic yards) of pay gravels underlie 91,752 cubic meters (120,000 cubic yards) of overburden on the two patented mining claims currently under development.

GHD Resources reacquired the Tofty tin-gold placer property in the Hot Springs district, west of Manley. Beginning in mid-June, 1992, development work consisted mainly of hydraulically stripping 152,920 cubic meters (200,000 cubic yards) of overburden and mechanically stripping 95,575 cubic meters (125,000 cubic yards) of both overburden and auriferous gravel. The gravel will be processed in 1993.

Coal and Peat

Design work and permitting activities continued on the Healy Clean Coal Project (HCCP). HCCP was the outgrowth of a nationwide competition sponsored by the U.S. Department of Energy (DOE) to test new technologies that will mitigate worldwide problems thought to be associated with acid rain. HCCP was one of 13 projects selected in 1989 by DOE under the auspices of the congressionally mandated Clean Coal Technology Program.

According to Green (1992), the HCCP proposal was submitted by the Alaska Industrial Development and Export Authority (AIDEA), the plant owner. Under current plans a 50-megawatt power plant will be constructed adjacent to Golden Valley Electric Association's (GVEA) existing 25 megawatt No. 1 power plant, which was built in 1967 at Healy (fig. 11). The HCCP plant will burn approximately 272,100 tonnes

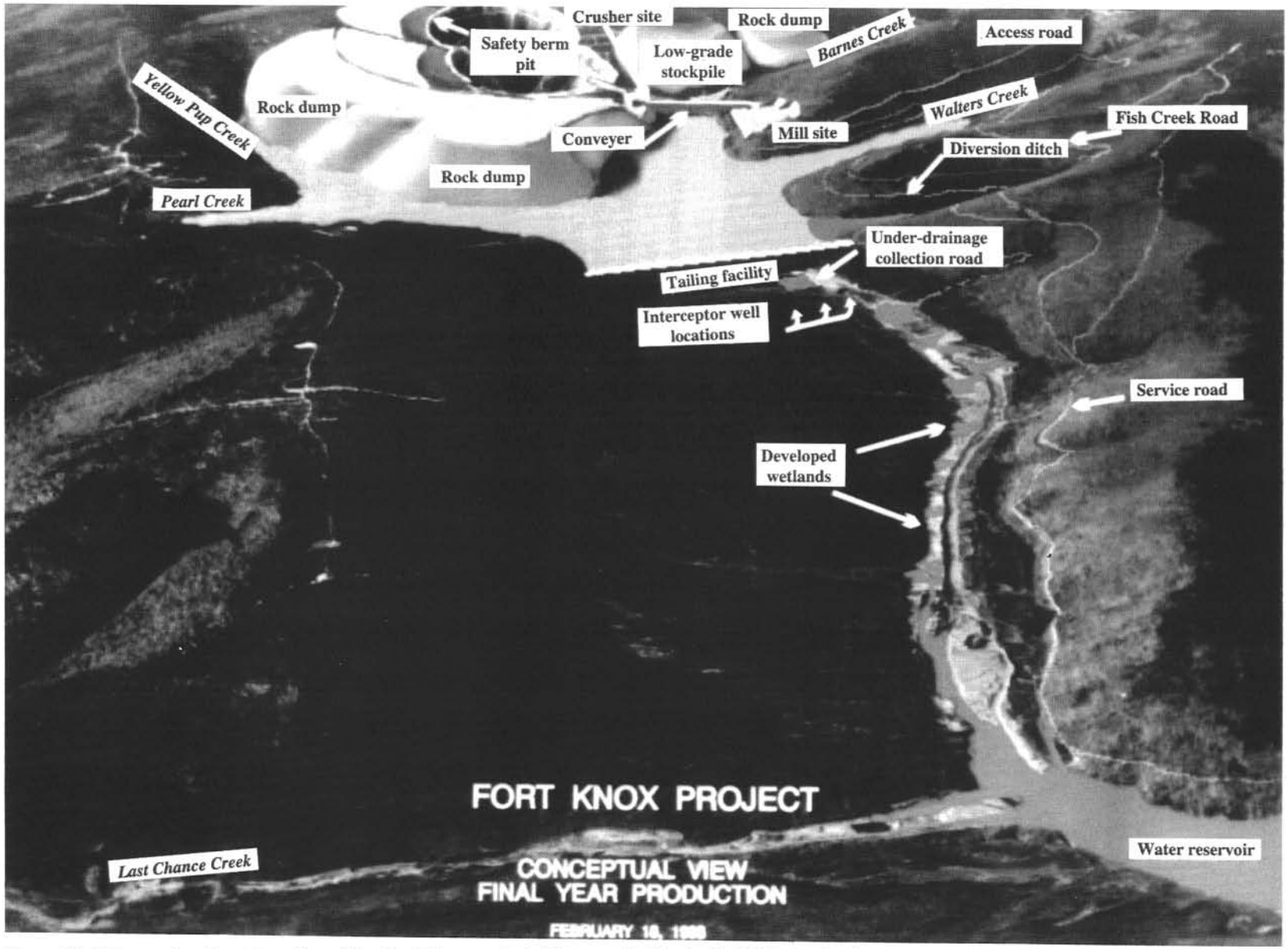


Figure 10. M*ine and reclamation plan of the Fort Knox project. (Source: Fairbanks Gold Mining Inc.)*

(300,000 tons) of low-sulfur coal mined and supplied by Usibelli Coal Mine Inc. (UCM) (fig.12). The plant will utilize advanced coal combustion, heat recovery, and emission controls developed by Joy Technologies Inc. and TRW Combustion Business Unit Inc. If implementation of these new technologies is successful, Usibelli and participating companies might market the new systems to Asian buyers who are also sensitive to air pollution issues. (Bradner and Bradner, 1992).

During 1992 cold-flow modeling tests were completed on both the boiler and combuster, and final design work for these components was started. In late fall, 1992, a full scale precombustion unit was tested in California. Baseline environmental studies were completed during the year, and the project's Draft Environmental Impact Statement was released in September. The Alaska Public Utilities Commission (APUC) approved in September the Certificate of Public Convenience filed by AIDEA and the Power Sales Agreement that had been filed with APUC in 1991. The Alaska Department of Environmental Conservation accepted the project's Prevention of Significant Deterioration Permit (PSDP) despite strenuous objections raised by the National Park Service.

The latest estimate of project cost is $208 million, of which $103.7 million will

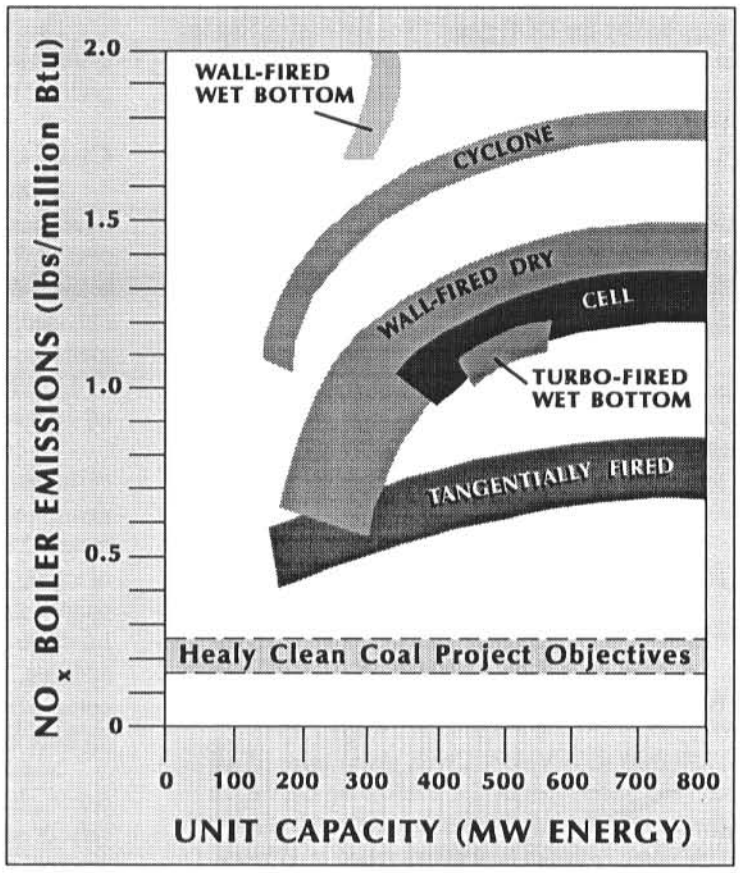


Figure 11. *Relative comparison of nitrous oxide emissions (NO_x) of conventional boiler technologies with project objectives for the Healy Clean Coal Project (HCCP). (Source: Usibelli Coal Mine Inc.)*

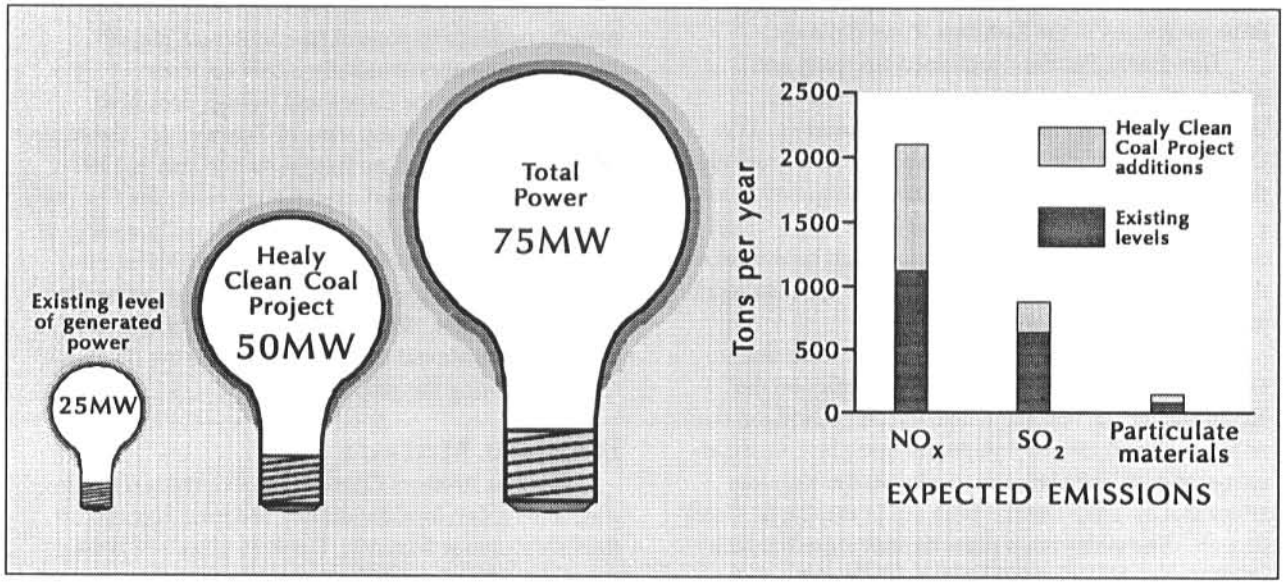


Figure 12. *Expected emissions reductions using HCCP technologies. (Source: Usibelli Coal Mine Inc.)*

be supplied by the DOE grant. The remaining funding sources are: $25 million from the Alaska Railbelt Energy Fund; $60.1 million in advance funding by AIDEA; $14.3 million in interest earnings; and $11.9 million in GVEA power revenues.

Site construction could begin as early as mid-1993 with test operations starting in early 1996 and full-scale operation commencing in early 1997.

Industrial Minerals

Alaska Lime Company (Jim Caswell) continued to upgrade its agricultural-limestone quarry operation and processing plant 8 kilometers (5 miles) north of Cantwell along the Parks Highway. The 1992 work included constructing concrete reinforcement and moving the mill to a new foundation.

SOUTHCENTRAL REGION

Metals

Cambior Alaska Inc., operator of Alaska's largest gold mine, conducted a large scale reverse circulation, development drilling program of 14,707 meters (48,250 feet) at its Valdez Creek placer mine 88 kilometers (55 miles) east of Cantwell along the Denali Highway. Cambior indicated that the processing plant and ancillary facilities will be relocated in 1993 to reduce the hauling distance from pit to plant.

Six small placer mining firms reported development activities to prepare for production. Empire Exploration Inc. constructed roads, a mine camp, and settling pond at its Blue Ribbon mine site in the Cache Creek district west of Talkeetna. Finnbear Mining and Exploration (Arne and Ingrid Murto) dewatered placer pits and planned a winter heavy-equipment haul to its mine properties in the Kahiltna River drainage.

Dan Creek Partners continued stripping and construction at their Dan Creek placer mine in Wrangell-St.Elias National Park and Preserve. Dan Creek Partners is developing the patented, private mine site primarily as a tourist attraction in conjunction with a commercial placer mine located in the upper creek drainage. The auriferous benches, which hold most of the known gold resources, will be developed for recreational mine opportunities.

Frank Couch developed pay on Crescent and Stetson Creeks in the Hope-Sunrise district on the Kenai Peninsula. William Bell and Jerry Holland built an ice road and moved equipment into place in preparation of gold and platinum mining in the Kahiltna River and on Lake Creek: both are in the Cache Creek district. The partnership plans to start a mechanized mining operation on the Kahiltna River and recreational dredging activity on Lake Creek.

Dan Renshaw continued adit improvements at his Gold Cord Mine in the historic Willow Creek district north of Palmer.

Coal and Peat

Idemitsu Alaska Inc. (Idemitsu) continued to develop a program to produce high quality bituminous coal at Wishbone Hill northeast of Palmer. The project is located on eight State of Alaska leases and one lease obtained from Cook Inlet Region Inc., a Native regional corporation. The leases are 100-percent owned by Idemitsu Kosan Ltd., a large Japanese independent oil company.

To date, about $10 million has been spent to define the coal resource at Wishbone Hill and complete permitting and mine engineering studies. Approximately 250 drill holes have outlined a reserve capable of supplying 680,250 tonnes (750,000 tons) of high quality steam coal annually for about 20 years. In 1992 Idemitsu completed detailed engineering studies. In addition, all environmental baseline studies have been completed, and all permits and approvals for mine start-up have been acquired.

Negotiations for transportation of coal from mine site to port continued throughout 1992. Present plans call for mining coal from two surface pits using conventional truck-and-shovel methods. Coal will be transported to a washing plant to remove clay and other impurities. Since the mine area is in the Mantanuska Valley Moose Range, state reclamation policy requires moose habitat enhancement during and after mine operation. Because steam-coal prices have declined on world markets, costs for the proposed Wishbone Hill mine have been reduced through mine redesign.

Diamond Alaska Coal Mining Company (Diamond) continues to control five state coal leases encompassing approximately 8,096 hectares (20,000 acres) in the Capps and Beluga coal field 85 kilometers (53 miles) west of Anchorage. However, the company pursued no field development in 1992. Based on extensive past exploratory work, the five state leases contain 892 million tonnes (988 million tons) of proven reserves and 280 million tonnes (309 million tons) of indicated reserves capable of being mined by open-pit methods. Market opportunities and resolution of the Alaska Mental Health Lands issue are the major factors affecting the project.

Industrial Minerals

Hopkins Brothers Construction Company (Hopkins) conducted a development drilling program to outline a riprap resource at Seldovia. Hopkins intends to produce riprap from the site in 1993 for repairs to the Homer Spit, which has been damaged by seasonal storm activity.

SOUTHWESTERN REGION

METALS

Several small mining firms working in the southwestern region reported various development activties. Little Creek Mine (Paul Sayer) stripped overburden on Little Creek in the Innoko district west of McGrath. Over the hill from Sayer's operation are the operations of Magnuson Mining Company on Ganes Creek and Anderson and Son Mining on Yankee Creek. Both operators reported stripping of overburden and construction of bedrock drains in preparation for the 1993 mine season.

Lyman Resources of Alaska (Spencer and Carolyn Lyman) redesigned its jig plant and trommel screens for the washing plant on Snow Gulch in the Donlin district north of Crooked Creek. The company indicated that gold recovery substantially improved, based on a pilot test conducted late in the 1992 season.

Jim Wylie cut development trenches at his Mountain Top mercury mine southwest of Sleetmute, Alaska.

SOUTHEASTERN REGION

METALS

Kennecott-Greens Creek Mining Company completed a regrind flotation expansion project, installed a state-of-the-art waste-water treatment plant, and installed two tower mills and three additional column flotation cells for the Greens Creek zinc-silver-gold-lead mine on Admiralty Island west of Juneau. Lakefield Research participated in the metallurgical modifications. Kennecott carried out these expensive and extensive modifications and improvements to the mill complex despite large financial losses incurred during operation of the Greens Creek mine.

Snow Lion Mining Company completed stripping and site preparation on placer deposits in Porcupine Creek northwest of Haines, Alaska. A 213 meter (700 foot) dike was constructed to prevent flooding, which is a frequent problem on Porcupine Creek.

INDUSTRIAL MINERALS

High Drive Drilling and Blasting Inc. prepared quarry sites with development drill programs on several Prince of Wales Island mine sites. Materials are expected to be mined in 1993 for roads, ditches, and harbor facilities.

Red Samm Construction Company conducted unspecified development activities at its Lemon Creek gravel pit north of Juneau. ⚒

PRODUCTION

The 1992 estimated value of Alaskan mineral production was $560.8 million, an increase of about 4 percent from the $546.5 million produced in 1991. Estimated percentages of the total gross value of mineral production of each commodity are zinc, 54 percent; gold, 16 percent; sand and gravel, 8 percent; coal, 7 percent; silver, 6 percent; lead, 6 percent; and all other commodities, 3 percent (table 8; fig. 5). Mineral production statistics summarized in table 8 originate from approximately 264 coal, placer gold, and lode metal mines and sand and gravel and stone quarries that operated in all seven reporting regions of the state (fig. 13). Mineral production estimates for 1992 are based on data compiled from 160 questionnaires returned by companies, individuals, Native corporations, and government agencies; phone conversations with about 20 industrial mineral producers; regional useage summaries provided by the Alaska Department of Transportation and Public Facilities, U.S. Bureau of Land Management, and U.S. Forest Service; and gold bullion market flow-through volume provided by two Alaskan precious metal refiners. Figures 14, 15, and 16 illustrate the historical value and volume by year for gold, sand and gravel, and coal. Annual production estimates for 10 metals and four nonmetallic and undifferentiated commodities are summarized in appendixes F and G. These tables illustrate that a variety of minerals have been produced in Alaska for more than a century.

Metals again dominated overall mineral production, and accounted for 81 percent of total mineral product value. Several metals including zinc, lead, and silver were nationally ranked because of the quantity of concentrates shipped from the Red Dog Mine in northwest Alaska and the Greens Creek Mine near the capital city of Juneau. These two mines accounted for

Table 8. *Estimated mineral production in Alaska, 1990-92*[a]

	Quantity			Estimated values[b]		
Metals	**1990**	**1991**	**1992**	**1990**	**1991**	**1992**
Gold (ounces)	231,700	243,900	262,530	$ 89,204,000	$ 88,291,800	$ 88,463,000
(kilograms)	7,206	7,585	8,163			
Silver (ounces)	10,135,000	9,076,854	9,115,755	50,675,000	39,114,490	34,913,341
(kilograms)	315,199	281,382	283,500			
Platinum (ounces)	--	15	W	--	5,325	W
(grams)	--	465	W	--	--	W
Lead (tons)	44,220	69,591	68,664	30,954,000	33,403,680	31,585,440
(tonnes)	40,106	63,119	62,278			
Zinc (tons)	181,200	278,221	274,507	253,680,000	278,221,000	301,957,700
(tonnes)	164,350	252,346	248,978			
Tin (pounds)	57,000	6,800	1,500	200,000	22,100	5,910
(kilograms)	25,855	3,084	680			
Subtotal				**$424,713,000**	**$439,058,395**	**$456,925,391**
Industrial minerals						
Jade and soapstone (tons)	W	16.0	1.5	$ W	$ 12,000	$ 30,000
(tonnes)	W	14.5	1.4			
Sand and gravel (million tons)	15.0	14.2	14.6	40,821,500	45,448,512	42,200,000
(million tonnes)	13.6	12.8	13.2			
Building stone (million tons)	3.2	3.0	2.9	22,100,000	22,500,000	22,971,000
(million tonnes)	2.9	2.7	2.6			
Subtotal				**$ 62,921,500**	**$ 67,960,512**	**$ 65,201,000**
Energy minerals						
Coal (tons)	1,576,000	1,540,000	1,531,800	$ 44,990,000	$ 39,000,000	$ 38,300,000
(tonnes)	1,429,000	1,396,780	1,389,340			
Peat (cubic yards)	65,000	75,000	70,000	400,000	450,000	400,000
(cubic meters)	49,699	57,345	53,552			
Subtotal				**$ 45,024,500**	**$ 39,450,000**	**$ 38,700,000**
TOTAL				**$533,024,500**	**$546,468,907**	**$560,826,391**

[a]Production data from DGGS questionnaires, U.S. Bureau of Mines file data, phone interviews with mine operators, Alaska Department of Transportation and Public Facilities, and other sources.

[b]Values calculated from 1992 average prices of gold ($337/oz), zinc ($0.55/lb), lead ($0.23/lb), silver ($3.83/oz), and tin ($3.94/lb); all other values provided by mine operators.

-- = Not reported.

W = Withheld.

approximately 52 percent of the U.S. mine production of zinc, about 12 percent of the lead, and about 17 percent of the silver during the 1992 calendar year.

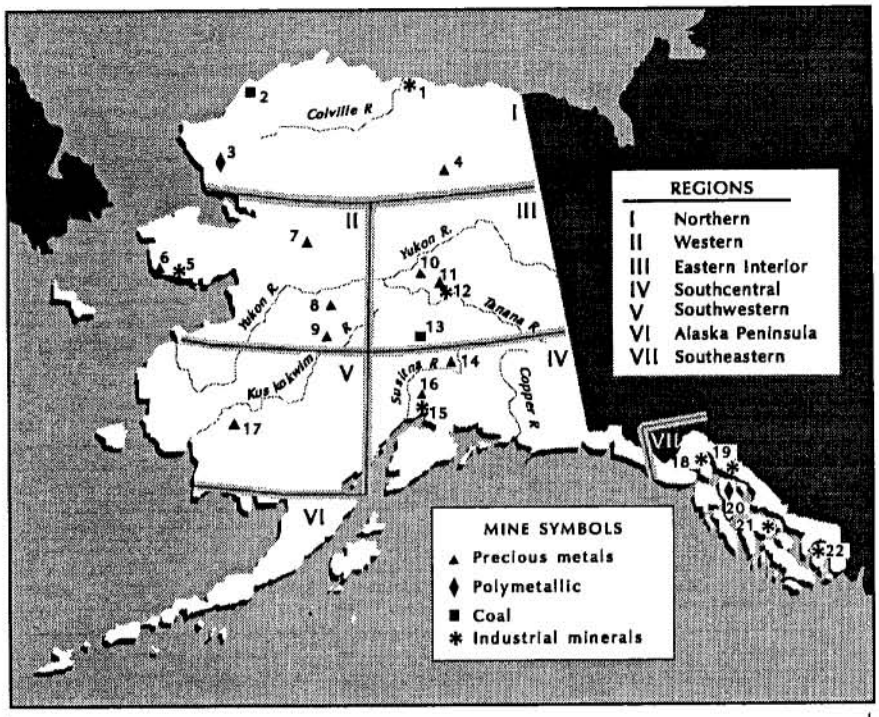
Gold production increased from 7,585 kilograms (243,900 ounces) in 1991 to 8,163 kilograms (262,530 ounces) in 1992, an increase of 8 percent. The increase in quantity was spearheaded by a record production year at the Valdez Creek Mine east of Cantwell. Cambior Alaska Inc. produced an estimated 2,676 kilograms (86,052 ounces) of refined gold making it Alaska's largest gold mine for seven of the last eight years. Rounding out the top 10 gold mines (not necessarily in order) were: Greens Creek Mine, southeast Alaska; Polar Mining, Fairbanks district; Dredges 5 and 6 of the Alaska Gold Company, Nome district; Alaska Placer Development, Livengood district; Taiga Mining (the Hog River dredge), Hogatza district; NYAC Mining, Aniak district; Cooks Mining, Fairbanks district; Sphinx America, Ruby district; and Paul and Company, Circle district. These 10 operations accounted for 4,879 kilograms (156,892 ounces) gold or 60 percent of the statewide total. In previous years, the 10 top producers accounted for 57 percent (1991), 49 percent (1990), 61 percent (1989), 59 percent (1988), and 58 percent (1987) of total gold output.

A late spring and extemely early winter throughout Alaska's interior caused many seasonal placer mining firms to lose up to 25 percent of annual production; in Fairbanks, only 115 days separated the last snow of spring (May 16) and the first snow of winter

(September 9). The 1992 gold production estimates were derived from 197 placer mines and two lode mines (table 9).

In 1992 placer gold accounted for 87 percent of total gold production, whereas two lode mines—Greens Creek Mine near Juneau and Alaska Hardrock Mining in Hatcher Pass—accounted for the remaining 13 percent. Unit cost estimates from selected placer mine producers for 1990-92 are summarized in table 9. These figures are derived from individual company data that indicate the cost (in U.S. dollars) to produce an ounce of gold. All the data are from placer mining operations. The 1992 estimates represent 17 percent of the total placer mines and 61 percent of total placer gold production, which suggests that the larger operations dominate the data set. The results are encouraging because they show that the average unit-costs decreased from $11.76 per gram ($366 per ounce) in 1991 to $10.19 per gram ($318 per ounce) in 1992, an improvement of 13 percent.

We interpret these results in several ways. With declining gold prices, mining companies were forced to trim costs in order to stay in business. At the same time, the relatively new technological apparatus installed to comply with stricter EPA water regulations implemented in 1988 have been paid off or made more efficient. In addition, two larger mines had a good year and managed to share use of their mine equipment and significantly reduce costs. The result of these efforts was that



I NORTHERN REGION
1. Kuparuk-Deadarm Mine (gravel)
2. Aluaq Mine (coal)
3. Red Dog Mine (lead-zinc-silver)
4. Chandalar Development Inc. (gold)

Metallic mines 13
Industrial mineral producers 3

II WESTERN REGION
5. Cape Nome Quarry
6. Alaska Gold Co. (gold)
7. Taiga Mining/Hogatza (gold)
8. Sphinx America (gold)
9. Rosander Mining (gold)

Metallic mines 33
Industrial mineral producers 3

III EASTERN INTERIOR REGION
10. Alaska Placer Development (gold)
11. Polar Mining Co. (gold)
12. Fairbanks Sand and Gravel, H&H Contractors, and Earthmovers (gravel)
13. Usibelli Coal Mine Inc. (coal)

Metallic mines 106
Industrial mineral producers 14

IV SOUTHCENTRAL REGION
14. Valdez Creek Mine (gold)
15. Palmer/Wasilla area (gravel pits)
16. Alaska Hardrock Mining (lode gold)

Metallic mines 24
Industrial mineral producers 13

V SOUTHWESTERN REGION
17. NYAC Mining Co. (gold)

Metallic mines 26
Industrial mineral producers 3

VI ALASKA PENINSULA REGION

VII SOUTHEASTERN REGION
18. Red Samm Construction (gravel)
19. Hildre Sand and Gravel (gravel)
20. Greens Creek Mine (zinc, silver, gold, lead)
21. U.S. Forest Service (rock, sand and gravel)
22. Ketchikan Gateway Borough (rock)

Metallic mines 3
Industrial mineral producers 12

Figure 13. *Selected production projects, 1992.*

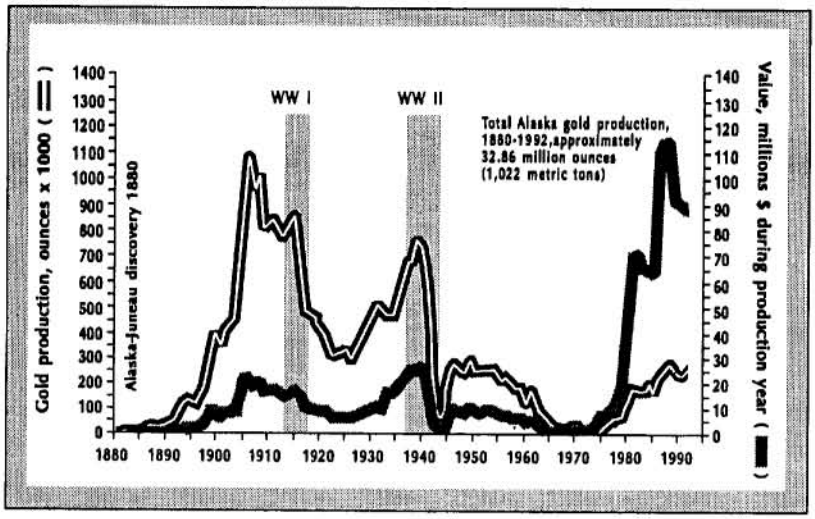


Figure 14. *Gold production in Alaska, 1880-1992.*

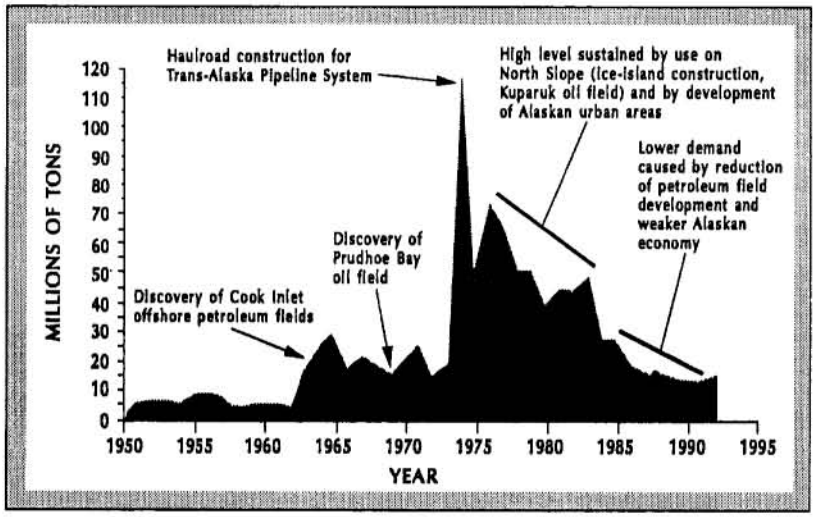


Figure 15. *Sand and gravel production in Alaska, 1950-92.*

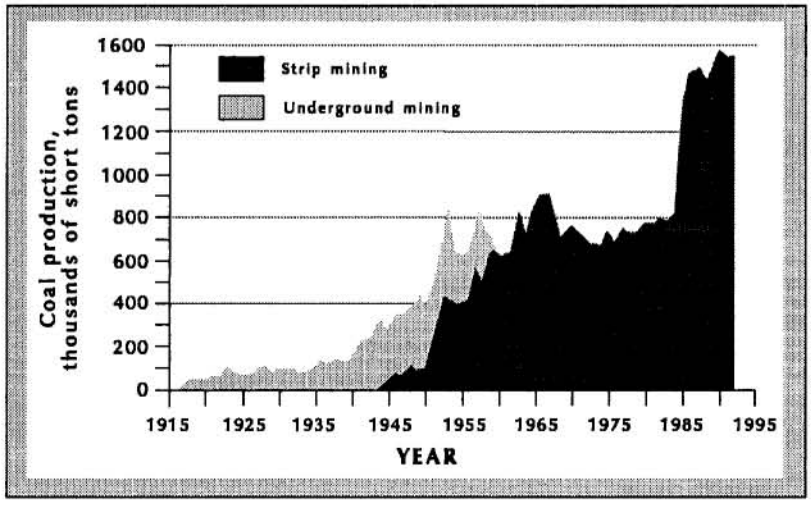


Figure 16. *Coal production in Alaska, 1915-92.*

the placer mining community managed to improve overall mine efficiency (table 10).

Most metal prices continued to decline from the already weak prices established in 1991. Although the average zinc price increased from 55 cents per pound in 1991 to 61 cents per pound in 1992, the price dropped precipitously to 47 cents per pound in the fourth quarter of 1992, which hurt profitability at both the Greens Creek and Red Dog mines. The average prices of silver, lead, and gold dropped 6, 4, and 7 percent respectively, which predictably caused consternation for most Alaskan metal mines. Kennecott-Greens Creek Mining Company announced in early 1993 that they would cease production by the end of April. Exploration and underground development continue with a greatly reduced work force.

Both coal and industrial mineral prices also softened during the year. The Alaska sand and gravel industry quarried an estimated 13.2 million tonnes (14.6 million tons) worth $42.2 million for private, state, and federally funded road construction and infrastructure development in all regions of Alaska. However, even though the commodity volume improved 3 percent, the average unit price declined 9 percent (table 11).

Coal production remained about the same as in 1991—an estimated 1,389,340 tonnes (1,531,800 tons) worth about $38.3 million. During the year, Usibelli Coal Mining Inc., which produced almost all Alaska's coal, had to absorb most of the $4.75 per ton price reduction demanded by the Korean Electric Power Company for the 640,000 to 800,000 tonnes (705,622 to 882,030 tons) exported annually to South Korea. More price reductions are anticipated in

1993, and, if coal prices continue to decline, its difficult to predict how long the already greatly reduced prices for the export agreement can be maintained.

NORTHERN REGION

METALS

During the 1992 shipping season (August to October), Cominco Alaska Inc. shipped 430,829 tonnes (474,900 tons) of zinc, lead, and ISF composite concentrates from the Red Dog Mine to customers in Canada, Japan, Korea, and Europe. The 1992 tonnage represents a reduction of 9 percent from the 473,014 tonnes (521,400 tons) shipped from the mine site in 1991 (table 12).

The Red Dog zinc-lead-silver-barium, stratiform, SEDEX (sedimentary exhalative) deposit is hosted in shale, chert, and silica exhalite of the Mississippian to Pennsylvanian Kuna Formation (Moore and others, 1986). The deposit contains measured and indicated reserves of 57.6 million tonnes (63.5 million tons) grading 18.5 percent zinc, 5.4 percent lead, and 82 grams per tonne (2.4 ounces per ton) silver, and an additional inferred reserve amounting to 14.5 million tonnes (16 million tons) grading 10 percent zinc, 2.7 percent lead, and 41 grams per tonne (1.2 ounces per ton) silver. Table 12 summarizes Red Dog production figures for the last four years. These figures were derived from the Cominco Ltd. annual reports.

During 1992, Cominco mined and shipped 1,435,200 tonnes (1,582,360 tons) of rock that was milled into 368,200 tonnes (405,950 tons) of zinc concentrate, 25,400 tonnes (28,000 tons) of lead concentrate, and 37,200 tonnes (41,014 tons) of bulk (ISF) concentrate. Efforts continued to improve overall zinc recovery from

Table 9. *Reported refined gold production, number of operators, and industry employment in Alaska, 1991-92*

Region	Number of operators		Production in ounces of gold		Number of employees	
	1991	1992	1991	1992	1991	1992
Northern	13	12	5,900 (183 kg)	4,500 (140 kg)	55	50
Western	35	33	56,100 (1,744 kg)	49,500 (1,633 kg)	295	290
Eastern interior	105	106	73,600 (2,288 kg)	72,500 (2,255 kg)	490	498
Southcentral	22	21	55,070 (1,712 kg)	92,880 (2,888 kg)	265	305
Southwestern	25	24	15,650 (487 kg)	13,500 (451 kg)	105	103
Southeastern	4	3	37,560 (1,168 kg)	32,650 (1,015 kg)	170	175[a]
TOTAL	**204**	**199**	**243,880 (7,585 kg)**	**262,530 (8,163 kg)**	**1,380**	**1,421**

[a]Derived from polymetallic employment category (table 2, p. 2).

Table 10. *Production costs for selected Alaskan placer gold mines, 1990-92*

Mine size	1990	1991	1992	1990	1991	1992
	Number of mines			Production in ounces		
Small[a]	8	21	23	1,856	3,582	3,842
Medium[b]	11	8	6	12,132	8,431	5,759
Large[c]	5	5	5	54,497	84,539	128,992
TOTAL	**24**	**34**	**34**	**68,485 (2,124 kg)**	**96,552 (3,002 kg)**	**138,593 (4,310 kg)**
	Unit cost/ounce			Total reported mine cost in millions of $		
Small[a]	$302	$284	$245	$ 0.56	$ 1.02	$ 0.94
Medium[b]	273	298	255	3.31	2.52	1.46
Large[c]	348	376	322	18.99	31.86	41.65
TOTAL	**$334**	**$366**	**$318**	**$22.86**	**$35.40**	**$44.05**
				Total percent of placer gold		
				36	46	61

[a]10-650 oz gold/yr
[b]650-2,500 oz gold/yr
[c]>2,500 oz gold/yr

Table 11. *Reported sand and gravel production and industry employment in Alaska by region, 1992*

Region	Companies reporting	Tons	Estimated unit value ($/ton)	Total value	Number of employees
Northern	3	784,006	$4.20	$ 3,292,825	80
Western	4	628,000	2.76	1,733,280	55
Eastern Interior	12	4,100,000	3.15	12,915,000	165
Southcentral	9	4,930,000	3.00	14,790,000	170
Southwestern	1	20,000	4.50	90,000	4
Alaska Peninsula	2	482,740	0.82	397,890	8
Southeastern	12	3,655,000	2.45	8,981,600	158
TOTAL	**43**	**14,599,746 (13,253,649 tonnes)**	--	**$42,200,595**	**640**

Red Dog's complex ores and metal recovery from the various ore types. However, difficult ore mineralogy continued to adversely affect metal recovery, and the quality of the lead and ISF bulk concentrates continued to be unsatisfactory. According to company officials (Halbauer, 1993), the overall performance of the mine was disappointing, mainly because of poor metal prices and lower sales volumes.

During 1992, Cominco employed 349 workers at the mine and port, half of them shareholders of the NANA Regional Corporation, owner of the deposit. Additionally, Cominco continues to train local people for mine employment. Extensive research and development aimed at improving overall metal recovery will continue into 1993.

Table 12. *Production from Red Dog Mine, 1989-92*

	1989	1990	1991	1992
Ore milled (tons)	33,305	996,695	1,599,276	1,582,000
(tonnes)	30,214	904,201	1,450,863	1,435,190
Ore grade				
Zinc	20.4%	26.5%	22.5%	19.9%
Lead	7.6%	8.5%	6.6%	6.0%
Silver				
(oz/ton)	3.6	3.6	2.8	2.9
(g/tonne)	123.4	123.4	96.0	99.4
Concentrate				
Zinc (tons)	N/A	334,100	410,700	405,900
(tonnes)		303,095	372,587	368,232
(grade)		56.9%	57.1%	57.0%
Lead (tons)	N/A	55,800	76,600	28,000
(tonnes)		50,621	69,491	25,401
(grade)		55.1%	57.2%	57.0%
Bulk concentrate (tons)	8,532	47,300	34,100	41,000
(tonnes)		42,911	30,935	37,195
Bulk concentrate (grade)				
Zinc	40.3%	31.7%	32.8%	23%
Lead	16.5%	22.9%	20.9%	27%
Total concentrate (tons)	8,532	442,000	521,400	474,900
(tonnes)	7,740	400,982	473,014	430,829
Employees	228	350	331	349

SOURCE: Halbauer, 1993.

An estimated 12 placer mines in the Chandalar, Wiseman, and Shungnak districts of the southern Brooks Range produced an estimated 140 kilograms (4,500 ounces) gold in 1992, a 23 percent reduction from the 183 kilograms (5,900 ounces) gold produced in 1991 (table 9). Most of the reduction is attributed to the early winter, which curtailed mine activities by at least one month. Chandalar Mines was again the largest placer mine in the northern region. The company worked pay on Little Squaw Creek in the Chandalar district, and operated a sophisticated jig plant (fig. 17). Myrtle Creek Mining used hydraulic methods and sluiced on a bench of Myrtle Creek near Wiseman. Inside Out Mining worked in an underground drift mine exploiting the Nolan Creek Bench, which is also in the historic Wiseman district. Inside Out Mining mines underground in the winter and sluices during summer months. Tramway Bar Mine worked pay on Chapman Creek south of the Brooks Range and west of the Dalton Highway but reported troubles with heavy equipment breakdowns and a short season.

Other placer mines active in the northern region include Frank Baldwin on the Squirrel River, Shungnak district; Wally Gordon on Wild Lake, Wiseman district; Batty on Jay Creek, Wiseman district; Paradise Valley Inc. on Flat Creek east of Wild Lake, Wiseman district; Mascot Mining on Vermont Creek, Wiseman district; Bill Nordeen on Emma Creek, Wiseman district, Tri-Con Mining on Archibald Creek, Wiseman district; and Light Mining on Nolan Creek, Wiseman district.

Coal and Peat

Arctic Slope Consulting Group mined approximately 726 tonnes (800 tons) of bituminous coal in the Deadfall Syncline, which was used in nearly a dozen North Slope villages for home-heating tests (Grinage, 1992). The company also planned to haul coal to Omalik Lagoon early in 1993.

Industrial Minerals

An estimated 711,093 tonnes (784,006 tons) of sand and gravel were used by two operations on the North Slope and by Cominco Alaska at the Red Dog Mine northeast of Kotzebue. Alyeska Pipeline Service Company reported about 235,820 tonnes (260,000 tons) of gravel was used for unspecified uses north of Atigun Canyon. BP Exploration mined gravel from the Duck Island Mine No. 1, the Put 23 quarry, and the Kuparuk Deadarm Mine site for various North Slope construction needs. As part of a long-term recycling project, BP also recycled that about 45,000 tonnes (50,000 tons) of sand and gravel from cuttings and worn out drill pads. Cominco Alaska used sand and gravel, riprap,

Figure 17. *Chandalar Mine's I.H.C. jig plant on Little Squaw Creek, Chandalar district. (Photo by John Wood)*

and shotrock for dam construction and road maintenance along the De Long Mountains Transportation system, which provides access to the Red Dog Mine (table 12). DOTPF records show that work was completed on airports at Kiana and Selawik. The U.S. Bureau of Land Management reported that approximately 430,273 tonnes (474,390 tons) materials were used in the northern region.

WESTERN REGION

Metals

Gold production in the western region continued to decrease from previous years. In 1992, 33 mines produced an estimated 1,633 kilograms (49,500 ounces) gold, down from the 1,744 kilograms (56,100 ounces) gold produced in 1991. The dredges of the Alaska Gold Company continued to dominate production activities and produced about 560 kilograms (18,000 ounces) gold or 36 percent of the region's total. Dredges 5 and 6 worked from mid-May to early November for a total of about 160 days of production. In 1993 Alaska Gold plans to initiate a tour program to both dredges. The planned tours would include descriptions of dredge technology and the history of dredging in the Nome district. Money from the tour will be donated to the Alaska Miners Association. The company employed 95 workers during the year.

In the Candle district of northeastern Seward Peninsula, the Berg-Wetlesen Partnership (Rhiney Berg) worked the equivalent of 210 workdays on Mud Creek and of 320 workdays on Candle Creek. For both opencut placer mining operations, the abnormally short season coupled with needed mine plant modifications resulted in disappointing production levels.

Andy Hehnlin mined auriferous strandline (beach) placer deposits along the shoreline of Nome in much the same way early argonauts worked pay during the turn-of-the-century gold rush. Hehnlin successfully tested hydro jigs and plans to upgrade his program in 1993 (fig. 18).

Other Seward Peninsula operators active in 1992 include: in the Port Clarence district, Janas Kralik on Adler and Golden Creeks, tributaries to the Bluestone River; in the Kougarok district, Guemar and Redmond on Macklin and Dick Creeks, Cheryl Jong on Washington Creek, N.B. Tweet and Sons on the Kougarok River; in the Fairhaven district, Roger Nordlum on Candle Creek, AU Mining (Mike Vial) on Candle Creek; in the Koyuk district, Hansen on Bear Creek, Swanson on Dime Creek, Layne Gardner on Quartz Creek; in the Nome distirct, Mullikin on Boulder Creek, Clara Bea Mining (just behind Vial's operation) on Candle Creek, Global Resources American Creek Dredge on Cripple Creek, Engstrom Dredging Company on Basin Creek; Gillette Mining on Anvil Creek, Bob Cohan and Jeff Keener on Anvil Creek, Bart and Carla Pettigrew on Anvil Mountain, and Betty Krutzch in Specimen Gulch; in the Council district, Dave Gerke on the Solomon River.

Long-time underground placer miner Jack Hoogendorn passed away in October 1992 at the age of 79 at his Lava Creek Camp in the Inmachuk River area near Deering. Hoogendorn was well known to the placer mining industry of the Seward Peninsula for his diligent attempts to mine bench gravels under basalt flows of Pliocene age in the Inmachuk district. During the late 1940s, Hoogendorn also helped guide early geologists and archeologists to the famous Trail Creek Caves, now in Bering Land Bridge National Monument, where a near continuous record of human occupancy for 8,500 years documents some of the earliest Native cultures in Alaska (Larsen, 1968).

East of the Seward Peninsula in the Yukon River basin, placer mining activities continued at about the same level as established in the last five years. Taiga Mining Company again operated the Alaska Gold Company Hogatza dredge in the Bear Creek drainage of the Middle Koyukuk River area. The 170 liter (6 cubic foot) bucketline stacker dredge worked the Bear Creek pay streak continuously from 1957 to 1975 and again from 1981 to 1984. In past years this operation has provided jobs for residents of Huslia, Selawik, and other remote villages in western and northern Alaska.

Sphinx America again operated the largest placer mine on Monument Creek in the Ruby district. During the year, this company reduced the work force in order to combat reduced gold prices. Flat Creek Mining Company mined placer gold using opencut mining methods for 120 days on Flat Creek, in the Ruby-Poorman area. According to company president Pete Haggland, poor weather considerably shortened the mining season. Rosander Mining Company continued its steady placer mining operation on Colorado Creek in the Tolstoi district, north of McGrath. This company is exploiting the shallow upper pay streak of the drainage rather than the deeper, buried pay zones worked in previous years.

Other operators in the Yukon River basin of the western region include Phil Ramsted in the Melozitna-Tozimoran district; Kangas on Long Creek, Ruby district (two operations); and Keith Tryck on Shorty Creek, Ruby district.

Industrial Minerals

An estimated 569,600 tonnes (628,000 tons) of sand and gravel worth $1.7 million was mined or quarried from the western region, an increase of 47 percent from 1991. Increased road reconstruction and intensive maintanence of the Seward Peninsula road network funded by the Alaska Department of Transportation and Public Facilities (DOTPF) was responsible for all of the increase.

DOTPF construction projects that used sand, gravel, and riprap include the Nome-Taylor road resurfacing, White Mountain airport improvements, Nome airport upgrade and expansion, and access road construction near Nulato.

Tidemark Corporation mined gravel from its Wales-Tin City quarry site on the extreme western end of the Seward Peninsula for federally sponsored construction work.

Bering Straits Native Corporation and Solomon Native Corporation entered into an agreement with Southcoast Contruction Inc. to extract gravel to upgrade

Figure 18. *Andy Hehnlin's operation on Nome Beach, 1992. (Photo by Andy Hehnlin)*

the Nome-Council road from mile 32 to 42. About 362,800 tonnes (400,000 tons) of material was removed from three pits. Significant reserves remain in the Manilia Creek pit.

Board of Trade Inc. mined crushed rock from the Cape Nome quarry about 15 kilometers (10 miles) east of Nome for state road and infrastructure needs. This company is currently seeking to improve and expand market opportunities for a variety of potential stone products produced at the Cape Nome quarry site.

EASTERN INTERIOR REGION

Metals

The eastern interior region includes the following historic and currently active mining ditricts: Fairbanks, Circle, Hot Springs, Fortymile, Tolovana, Rampart, Richardson, and Bonnifield. Since the late 19th century, 353,716 kilograms (11.37 million ounces) gold, or 35 percent of Alaska's total production, has come from the eastern interior. The region ranked second to the southcentral region in gold output in 1992 with an estimated 2,255 kilograms (72,500 ounces) gold mined from 106 placer mines that employed 498 seasonal workers.

The Fairbanks district was again the largest producing area in the eastern interior region and ranked second statewide behind the Valdez Creek district. An estimated 1,135 kilograms (36,500 ounces) gold was mined by 23 district mines or 50 percent of the regional total. Increased levels of production continue to be based on the activities of Polar Mining Inc., which was again the largest producing gold mining firm in the eastern interior region. Polar Mining operated opencut placer mines on lower Goldstream Creek immediately north of Ester Dome (fig. 19) and on Fish Creek downstream from the proposed Fort Knox mine. The company completed nearly 73,150 meters (240,000 feet) of blasthole drilling and about 1.1 million kilograms (2.4 million pounds) of AN-FO explosives (a combination of ammonium nitrate and fuel-oil) were used to remove extensive overburden deposits in preparation for mining. Polar Mining employed 55 workers during the 1992 calendar year.

Goldstream Mining operated a placer gold mine for 98 days on Gilmore Creek before the early winter shut them down. The company operated a mine for 100 days on Ester Creek and reported that early ice and snow shut down the operation on September 11, nearly a month before normal closing schedule. Al Hopen worked an Alaska Gold Company lease on Little Eldorado Creek. Hopen reported satisfactory results in mining, but expressed frustration with the complex permitting process, which includes historic preservation issues, U.S. Army Corps of Engineers permitting, and endangered species laws. During 1992 Hopen began to develop a new placer deposit on Cleary Creek for future mining.

Cooks Mining (John Cook) worked a crew of five for approximately four-and-a-half months in Patricia Franklin's placer property on upper Fairbanks Creek, also in the Fairbanks district. This showcase mine uses a mechanized mine plan that includes dragline-dozer-loader operations integrated for overburden removal and post-mine reclamation and revegetation concurrent with active mining. Cooks Mining is the modern

Figure 19. *Two of the authors of this report, Tom Bundtzen and Dick Swainbank, dwarfed by Polar Mining's 11-cubic-yard hydraulic excavator. (Photo by Don May)*

representative of three generations of mining families that date back to the turn-of-the-century Fairbanks gold rush.

Other opencut placer mines that produced gold in the Fairbanks district in 1992 include Andy Miscovich (Chatham Creek), Don Stein (Twin Creek), Cassiterite Placers (Fox Creek), Lucky Seven Mining (Fish Creek), F. Cornelius (Fox Creek), Layne Gardner (Dome Creek), R.C. Emerson (Eva Creek), Vince Monzuella (Virginia Creek), and Carson Holt (Ester Creek).

Drift miners continued to search for and mine pay beneath frozen muck in the Fairbanks district. Roberts Mining worked its Dome Creek drift mine for the fifth consecutive year. This operation features low-profile, mechanized mine equipment that is used to extract about 11,470 cubic meters (15,000 cubic yards) of pay during winter months. Ray A. Vogt (RCL Mining) worked both an underground drift mine and washed old drift tailings on Dome Creek below the Roberts Mining operation. RCL reported that a lack of water was the major engineering obstacle encountered during the season.

Circle mining district reported production levels about the same as 1991. About 25 placer mines produced 295 kilograms (9,500 ounces) gold and employed about 90 people in 1992, compared with 24 active mines that produced 367 kilograms (11,800 ounces) gold and had 95 employees in 1991. Steve Weber (Magic Circle Inc.) worked Ketchem Creek for 65 days and processed 17,230 tonnes (19,000 tons) of pay gravels during the season. Weber indicated that lease problems forced the company to leave the property mid-season; Magic Circle Inc. will be mining on another creek in 1993. Fred Wilkinson (Miller Creek Mining Company) also worked placer pay on Ketchem Creek, but will relocate to a new creek—probably Crooked Creek—(in 1993) to improve mine profitability.

Paul and Company (Paul and Joni Manuel) operated the largest placer mine in the Circle district. The company worked on its Porcupine Creek property from April 1 to October 25 on various activities such as stripping, heavy equipment repair, exploration, sluicing, and reclamation. Paul and Company has developed a DEC-approved method for recycling waste oil at the mine site. This method has eliminated potentially hazardous wastes produced by the operation. Paul and Company reclaimed 9 hectares (22 acres) of tailings during 1992.

Greenhorn Mining (Stan Gelvin) processed 7,646 cubic meters (10,000 cubic yards) of auriferous pay on Ketchum Creek with a work crew of two. Points North (Bob Cacy) again worked auriferous pay on Portage Creek, but indicated that most of the gold was locked up in "frozen assets"—concentrates remaining in the sluice box when the September 11 winter storm hit the Circle district.

Switch Creek Mines (Jim Wilde) worked pay on Switch Creek near Central and plans to increase production in 1993.

Other operators in the Circle district were Sam Koppenberg (Faith Creek), Ed Lapp (Eagle Creek), the Ziegler Operation (Portage Creek), Von Derrick and Grabney (Crooked Creek), George Seuffert (Butte Creek), Byrd (Flat Creek), Knutson (Mammoth Creek), Ritter (Bonanza Creek), Stone (Porcupine Creek), Miller (Bonanza Creek), Fullton (Switch Creek), Vern Stepp (Bottom Dollar Creek), Lacy (Portage Creek), Wrede (Deadwood Creek), and Mike Dugger (North Fork, Harrison Creek) (fig. 20).

The Fortymile district was again an active placer mining area, but the number of operators decreased by two from 1991 to 1992. Nevertheless, production was estimated to be 159 kilograms (5,100 ounces) of gold in 1992, about the same as 1991. Bayless Mining (Mike Buzby and Alice Bayless) leased ground on Chicken Creek from the Alaska Gold Company and processed 30,580 cubic meters (40,000 cubic yards) on Chicken Creek using opencut mining methods. Athough this operation continues to be the most successful placer mine in the Fortymile district, the company indicated that production was off by nearly 40 percent, due to a combination of the early winter, equipment breakdowns, and lower reserve values. In addition, Buzby and Bayless reported that the Fortymile district overall experienced a poor year—especially for the suction dredgers—as a result of fluctuations in the water levels of the Fortymile River and tributaries. Nevertheless, the Buzby-Bayless partnership plans to increase exploration efforts to expand reserves but anticipates slightly lower production in 1993.

For 45 Pup Mining (Charles Hammond), the 1992 season was a poor year, mainly because of the late spring and early winter. Only 1,146 cubic meters (1,500 cubic yards) of pay were processed through the trommel from a single 3,048 square meters (10,000 square feet) cut mined before snow fell. However, Hammond predicts a better year for 1993 as he has a 2,323 square meter (25,000 square foot) area stripped and ready for production.

Other mechanized operations in the Fortymile and Seventymile country include Hank and Sons (Napoleon Creek), Harold Nevers Operation (American Creek), Johnson (Alder Creek, Seventymile area), Domier (Hutchison Creek), Leo Regner (Ingle Creek), Eich (Chicken Creek), and O'Donnell (Mosquito Fork, Fortymile River), Schene (Uhler Creek), Trudeau (Jack

Figure 20. *Mike Dugger sluicing on Mastadon Creek, Circle district. (Photo by Kathy Charlie)*

Wade Fork), Inner Earth Resources (Cherry Creek), Forest Hayden (Squaw Creek), Kile (Canyon Creek), Burns, Wolff, and McGrath (Walker Fork), and Turner, Weston, Robinson, and Montgomery (Fortymile River).

The following suction dredges operated in the Fortymile district: Conklin (North Fork, Fortymile River), Wise (Dennison Fork), and Junge, George, Boulange, Ebeck, Goodson, Roop, and Cox (main Fortymile River).

The Rampart district and Eureka-Tofty area saw the same early winter effect on the productivity of placer mines. About 218 kilograms (7,000 ounces) of gold was produced from 10 area mines. GHD Resources reacquired the Tofty property in mid-June 1992 and spent much of the summer preparing for 1993 production. In mid-September the company sluiced for 163 hours and processed 11,470 cubic meters (15,000 cubic yards) of pay that contained 4,043 grams (130 ounces) of gold, and 680 kilograms (1,500 pounds) of cassiterite, before early freeze-up curtailed operations. Thanksgiving Mining (John Shilling) again worked Thanksgiving Creek in the Hot Springs district and will be at it again in 1993. Richard Swenson and partner Ross Novak won gold from opencut mining operations on Doric Creek during a 110-day season.

Other producing Rampart, Eureka, and Tofty mining companies include Schroder (Boulder Creek), Don Delima (American Creek), Schafer (Boulder Creek), Ed Salter (Busch Creek), Earthmovers (Glenn Creek), and Dale (Hoosier Creek).

Alaska Placer Development (APD) continued large-scale opencut mining of placer deposits on the Livengood Bench in the Livengood district. APD sluiced about 89,075 cubic meters (116,500 cubic yards) of auriferous gravel after extensive stripping operations on the deeply buried ancestral channel systems of the Livengood Creek drainage. This company seasonally employs as many as 10 workers and was the eastern interior's second largest gold producer, behind Polar Mining of Fairbanks. Heflinger Mining and Equipment Company sluiced about 9,175 cubic meters (12,000 cubic yards) on Livengood Creek, and prepared additional ground for 1993 production.

The Bonnifield mining district of the northcentral Alaska Range recorded the same level of mining activity as 1991. Tachick Mining Company (Wayne Tachick) spent 100 days on Moose Creek near Ferry, but complained that the season was too short. Totat Mine (Bob and Susan Keller) worked in the Totatlanika River drainage using a crew of three, and also noted that the 1992 season was too short.

The remaining crews that worked pay in the Bonnifield district included the Kiehl and Southworth operations on Gold King Creek (Southworth exhausted its pay streak in 1992), Traxler on the Totatlanika River, the Roland and FAA operations on Moose Creek, and Fogarty on Walker Creek.

Placer mining operations active in the Richardson or Tenderfoot district included John Rubel, Chris Groppel, and Earl Voytilla—all in either the Tenderfoot or Democrat Creek drainages.

Coal and Peat

Usibelli Coal Mine Inc. mined 1,388,620 tonnes (1,531,000 tons) of subituminous coal from the Miocene Suntrana Formation of the Healy Coal-Bearing Group at Healy, Alaska. The bulk of the coal was mined from the Poker Flats mine site and from an opencut operation at the Gold Run Pass mine site. The company operates both mines on state coal leases. As in past years about half of the total production is shipped to the Korean Electric Power Company (KEPCO) power plant in South Korea, and the rest fuels five interior Alaska power plants. The year saw difficult contract negotiations between KEPCO, the Suneel Shipping Company, Usibelli, and the Alaska Railroad, because the Korean power concerns insisted on further price reductions for the exported coal. Usibelli absorbed most of the $4.75 per ton price reduction worked out in the negotiations, with Suneel and the Alaska Railroad taking incrementally smaller price cuts. The State of Alaska agreed to a 25 cent per ton royalty reduction on coal exported to Korea; Usibelli paid the state an average about 90 cents per ton for coal mined at Healy. Because of the Korean coal royalty reductions, power concerns in Fairbanks told the state that they also want to see lower state coal royalties extended to domestically used coal as well. Currently Alaska State coal royalties are 5 percent of the adjusted gross value of the coal.

Peat production continues to be dominated by Great Northwest Inc., which leases peat bogs from the University of Alaska along College Road in Fairbanks.

Industrial Minerals

During 1992 the eastern interior region produced 3,719,000 tonnes (4,100,000 tons) of sand and gravel, 28 percent of the statewide total. As in past years, the majority of the construction projects that used sand and gravel resources were funded by federal and state grants administered by the Alaska Department of Transportation and Public Facilities (DOTPF). Of the approximately 2,704,675 tonnes (2,982,000 tons) used by DOTPF-administered projects, 76 percent or 2,055,550 tonnes (2,266,320 tons) was dug from contractor-furnished pits, and 24 percent or 649,122 tonnes (715,680 tons) came from state pits. Active projects in the eastern interior region include various Geist Road extension construction additions, Peger Road widening work, Airport Road improvements, Dalton Highway bridge reinforcements, Farmers Loop Road west rebuilding work, Ballaine Road rehabilitation, Fort Yukon runway resurfacing, and improvements at 86 mile on the Elliott Highway. BLM reported that about 109,513 tonnes (120,742 tons) of materials were used in the Steese/White Mountains reporting district for unspecified uses.

The good news from the region was that longtime sand and gravel and concrete block manufacturer Fairbanks Sand and Gravel (FSG) was purchased from Sealaska Corporation by Fairbanks-based Aggregate Products Inc. The former owner, Sealaska, announced in 1991 that in the absence of a buyer, they would shut down the FSG operation. Aggregate Products Inc. also purchased the Anchorage concrete manufacturer Alaska Aggregate Corporation from Sealaska Corporation for an undisclosed price. The purchases saved about 20 jobs in Fairbanks and nearly 50 jobs in Anchorage. Using a floating clamshell dredge, FSG mined and sold about 55,327 tonnes (61,000 tons) of sand and gravel from their openpit operation on state and federally leased deposits on the Tanana floodplain. After getting off to a late start in the 1992 season because of the sale of the company, FSG then lost a month to mine and equipment repair. FSG expects to improve production in 1993.

Other large industrial minerals firms that operated in the Fairbanks area included Earthmovers (Aurora pits), H & H Contractors (Chena River-Hansen road pits), and ACE General Contractors (Fox tailings mine sites).

Rolling Stone Inc. (Mitch Loveless) baled pit-run gravel from his 30 Mile Richardson Highway operation for local North Pole-Eielson Air Force Base private construction projects. The company reported that mine activity was limited by the number of days between spring and fall snowfalls.

SOUTHCENTRAL REGION

Metals

Southcentral region became the primary producer of gold in Alaska in 1992, edging out the eastern interior and western regions which have dominated gold production during the last 10 years. The region saw a record production of 2,888 kilograms (92,880 ounces) of gold in 1992, an increase of 69 percent from the 1,712 kilograms (55,070 ounces) gold produced in 1991. The increase is entirely due to the success of the Cambior Inc. placer mine at Valdez Creek, North America's largest producer of placer gold. During the year, Cambior recovered approximately 3,150 kilograms (101,300 ounces) raw gold or 2,676 kilograms (86,052 ounces) refined gold from approximately 783,715 cubic meters (1,025,000 cubic

yards) of auriferous gravel from pit A-7 in the Valdez Creek valley. Cambior began the second phase of the Valdez Creek diversion project in November 1992, and will begin mining the first sections of Pit A-8 in January 1993. The estimated lifetime of the A-8 pit is approximately 30 months at current mining rates. Mineable reserves remaining for the entire project are currently estimated to be 8,014 kilograms (257,715 ounces) gold. The mine's processing plant and ancillary facilities will be relocated in 1993 to reduce the haul distance from the new pit.

Russell Hoffman continued his successful Middle Fork Mine on the middle fork of the Chistochina River in the eastern Alaska Range. Hoffman processed 34,400 cubic meters (45,000 cubic yards) of pay and indicated that at least five years of measured reserves remain. Like other mining companies Middle Fork Mine experienced the same late spring and early fall that interior mines suffered through, but the short mining season itself went smoothly.

MRAK Placer Mine (Willy Mrak) continued his longtime placer operation in the Willow Creek district north of Palmer, and produced placer gold from both state claims and patented mining claims.

Alaska Hardrock Mining Company refurbished the old Enserch mill at Hatcher Pass and milled several thousand tonnes of stockpiled Independence Mine gold-quartz ore during the summer and fall of 1992. The company used a crew of eight to operate the mill and continue underground mining and exploration of the Independence Mine and nearby lode properties.

Longtime suction-dredge operator Gene Granath worked pools, riffled meanders, and waterfalls on Falls Creek in the Moose Pass area of the Kenai Peninsula spending some 130 days on the creek during the season.

Jack Lacross mined on Lynx Creek in the Collinsville area of the old Yentna district but encountered difficult weather and disappointing results in the pay section. Martin Hertzog worked pay zones on Cache Creek as he has for many years.

Industrial Minerals

Southcentral Alaska recorded the largest use of sand and gravel in the state. During 1992 an estimated 4,471,500 tonnes (4,930,000 tons) of mixed sand, aggregate, and gravel, 34 percent of total statewide use, was extracted from pits and quarries throughout the region. Most was activity concentrated in the Mantanuska-Palmer area, where extensive glaciofluvial outwash gravels of Pleistocene age occur. The Alaska Railroad hauled about 1,904,000 tonnes (2,100,000 tons) of pit-run aggregates to Anchorage-area markets for projects including road reconstruction and repair in south Anchorage and for port improvements. The largest single construction project was the rebuilding of about 32 kilometers (20 miles) of the Glenn Highway, from Palmer to Peters Creek, north of Anchorage. In total, DOTPF estimated that about 2,721,000 tonnes (3,000,000 tons) were used on the federal- and state-funded highway projects in the Anchorage bowl and nearby areas.

DOTPF also administered road and infrastructure projects in the Valdez-Glennallen area. These projects included improvement of the Chitina airport, maintenance and repair of the Glenn Highway from mile 118 to 127, the Gulkana runway extension, rehabilitation of the Richardson Highway from mile 79 to 100 and reinforcement of the Copper Highway bridge number 342. An estimated 408,150 tonnes (450,000 tons) of gravel was used on these jobs.

SAFAR Construction (Yvan Safar) mined 15,292 cubic meters (20,000 cubic yards) of gravel in its Portage Creek valley properties near Anchorage. Klatt Aggregate Inc. specialized in mining and marketing 30,840 tonnes (34,000 tons) of D-1 gravel for road metal and surfacing applications from its pit near Palmer. N-R Enterprizes of Glennallen mined 6,802 tonnes (7,500 tons) of aggregate and gravel from its pit at Mile 111 on the Glenn Highway.

Alaska Aggregate Corporation, which specializes in concrete block construction, purchased materials from other sources rather than producing their own as they have done in past years.

SOUTHWESTERN REGION

Metals

Placer gold production in the southwestern region declined by about 7 percent from the previous year. In 1992, we estimate that 451 kilograms (13,500 ounces) of gold was won from 24 mines compared with about 487 kilograms (15,650 ounces) of gold produced in 25 mines in 1991. Questionnaire respondents attributed the slight production decrease to inclement weather and to reserve problems at two mines.

NYAC Mining Company, using a crew of 15 in joint-venture with Calista Corporation, continued to operate the largest placer mine in southwestern Alaska on Bear Creek in the old Nyac district. Mark Matter continued production testing of pay gravels on Marvel Creek east of the main Tuluksak River placer workings in the same district. Lyman Resources of Alaska (Caroline and Spencer Lyman) mined on Snow Gulch and Quartz Creek in the Donlin subdistrict of the Nyac district. The family placer mining venture benefited from an improved jig plant and trommel screen, which seemed to improve overall recovery of fine gold.

In the Iditarod district, Misco-Walsh Mining Company continued production testing of both the Golden Horn residual placers and modern stream-derived placers in Otter Creek. Tad and John Fullerton mined upper Flat Creek again and plan more work in 1993. Richard Wilmarth continued production tests and exploration on Chicken Creek with a small washing plant and limited equipment. Alvin Agoff took out another small cut on Prince Creek. He was investigating ancestral bench level gravels east of the main creek valley.

In the George River subdistrict of the Iditarod district, Julian Creek Mining Company (Larry Wilmarth) again mined a seemingly inexhaustable pay streak on Jualin Creek, where pay was forecast to be exhausted years ago. The company expects further production in 1993 along with 20 days or so of reclamation activities. Farther upstream and to the east of Julian Creek is the Wyrick placer mine, operated by L.E. and Marylyn Wyrick. These placer miners have found pay extending farther than expected down the Granite Creek drainage.

The historic Innoko district, which centers on the old mining town of Ophir, saw more action in 1992 than in 1991. Magnuson Mining Company (Warren Magnuson) mined for 100 days on Ganes Creek with a crew of two and processed 16,820 cubic meters (22,000 cubic yards) of pay derived from both ancestral bench gravels along Ganes Creek as well as recent stream gravels. This long time mining company has actively mined Ganes Creek for 28 years and has many years of placer gold reserves remaining.

East of Ganes Creek, Anderson and Son Mining mined from June to September, and reported that the early freezeup knocked off about three weeks of sluicing at the end of the season. Little Creek Mine (Paul Sayer) also mined for about 100 days on Little Creek west of Ganes Creek and expects a similar season in 1993. Manzie Magnuson took out two cuts on Madison Creek north of Ophir and expects to increase production if the price of gold increases in 1993.

Dave Penz continued his diligent efforts on Buster Creek, tributary to Kako Creek in the old Marshall mining district of the lower Yukon River. The 1992 results were disappointing because the September snows caused a six-week loss of production and trapped gold in frozen concentrates in his recovery plant. Ernie Chase took out a small cut along Stuyahok River northeast of the Kako Creek drainage also in the Marshall district.

Industrial Minerals

Calista Corporation used about 18,140 tonnes (20,000 tons) of industrial minerals for unspecified projects throughout its region.

ALASKA PENINSULA REGION

Industrial Minerals

Koniag Inc. mined about 190,470 tonnes (210,000 tons) of crushed graywacke and gravel for road construction on Kodiak and Afognak Islands. Sources for these materials included the Womens Bay pit on Kodiak Island and numerous unspecified pits on Afognak Island. About 80 percent of the materials were used to build logging roads in both areas.

DOTPF and the city of Kodiak used about 280,000 tons (253,960 tonnes) of mixed sand, gravel and crushed bedrock for unspecified maintenance and repair on the island's road system and within the city limits of Kodiak.

SOUTHEASTERN REGION

Metals

Kennecott-Greens Creek Mining Company (KGCMC) mined about 331,055 tonnes (365,000 tons) of massive sulfide ore at the Greens Creek Mine on Admiralty Island, about 32 kilometers (20 miles) west of Juneau. The mill yielded 103,241 tonnes (113,827 tons) of concentrates that contained 36,734 tonnes (40,500 tons) zinc, 14,966 tonnes (16,500 tons) lead, 220,810 kilograms (7,100,000 ounces) silver, and 1,008 kilograms (32,400 ounces) gold. Despite this high production, the mine reported large financial losses for the year, mainly attributable to low metal prices. KGCMC ceased production in April 1993. A workforce of approximately 25 remain at the mine conducting underground exploration and development along with maintenance of the facility. KGCMC has indicated the mine will reopen when metal prices improve and stabilize (fig. 21).

In the summer of 1988, KGCMC tested a vertical ore structure in the north zone of the mineral deposit. Three wildcat test holes discovered a new ore body known as the West Deposit. This new ore body is much thicker and larger than those previously developed at the mine. The West Deposit contains 50 percent lower silver values but 14 percent more zinc than the producing sections of the mine. Overall the West Deposit contains 9,977,000 tonnes (11 million tons) of 4.49 gram per tonne (0.131 ounce per ton) gold, 405 gram per tonne (11.83 ounce per ton) silver, 3.99 percent lead, and 13.42 percent zinc. Importantly, mercury, which is one of the deleterious elements in Greens Creek ores, is over 50 percent lower in the West Deposit and easier to remove than in existing concentrates. In addition, increasing copper-gold contents in portions of the West Deposit suggest proximity to a classic Kuroko-type feeder system for the Greens Creek ores. Larger, easier-to-mine tonnages coupled with the lower

mercury values should decrease mine costs as well as lower smelter penalties for the mine, when improved metal prices lead to its reopening.

Two small placer mining firms reported production from southeastern Alaska. Big Nugget Mine (John Schnabel) worked with a crew of three at production tests on Porcupine Creek near Haines. However, the mine suffered from a 3 meter (10 foot) snowfall that destroyed the mine camp. Big Nugget Mine spent most of the season repairing equipment and buildings damaged by the snow.

Using hand-mining methods, Snow Lion Mining Company recovered modest amounts of placer gold while testing ground upstream from Big Nugget Mine on Porcupine Creek.

Figure 21. *Surface facilities of the Greens Creek Mine, the largest silver producer in the U.S. in 1992, closed in April 1993, await higher metal prices before reopening. (Photo by Al Clough)*

Industrial Minerals

The southeastern region reported the largest increase of sand, gravel and stone use in the state. Records show that 3,315,010 tonnes (3,655,000 tons) of sand and gravel and about 1,090,000 tonnes (1,200,000 tons) of stone were produced throughout the region, nearly 100 percent increase from the previous year. The major reason for the increase was infrastructure development associated with logging in both the Tongass National Forest and on private lands. During 1992, the Stikine area of the Tongass Nationl Forest developed and placed 1,361,660 tonnes (1,501,279 tons) of shot rock and aggregate, mainly for road building. Also during 1992 the state issued a permit for a new sand and gravel quarry at Thomas Bay across from Petersburg. This crushing, washing, and concrete-aggregate facility operates on state land, but utilizes the national forest for barge-loading facilities. A dragline and barge operation continued to operate on the Stikine River near Wrangell.

The state contracted for about 350,000 tons (317,450 tonnes) to resurface the Mitkof Highway, also within the Stikine area of Tongass National Forest.

Sitka, Ketchikan, and Juneau districts of Tongass National forest estimated using roughly 1,451,200 tonnes (1,600,000 tons) of combined sand and gravel, aggregate, and crushed stone for road maintenance and new logging-road construction.

Red Samm Construction mined 45,350 tonnes (50,000 tons) of gravel from its Lemon Creek pit near Juneau. Red Samm also quarried 45,350 tonnes (50,000 tons) of shot rock worth $465,000 from the Lena Point quarry. Nearby, Hildre Sand and Gravel (Scott Lafavour) mined 27,210 tonnes (30,000 tons) of sand, gravel and sized D-1 surface materials worth $106,500 from the Acme Pit near Juneau. The City of Thorne Bay leased about 5,895 tonnes (6,500 tons) of shot rock to an undisclosed contractor for unspecified work in the city limits. The City of Skagway both

leased and mined about 22,675 tonnes (25,000 tons) of river gravel for road maintenance and port facility work in the Skagway townsite. Southcoast Construction bought most of the leased material.

Further to the south, the City of Ketchikan mined about 6,076 tonnes (6,700 tons) of gravel from Granite Basin almost wholly for road repairs necessitated by summer flooding. ⚒

DRILLING ACTIVITY

Total drilling in Alaska in 1992 was 135,468 meters (444,449 feet), compared with 157,909 meters (514,796 feet) reported in 1991. Total reported hard-rock diamond-drilling and reverse-circulation drilling was 109,677 meters (359,834 feet), up substantially from the 1991 level of 96,516 meters (316,655 feet). Although total drilling was down from 1991, the greatest difference was in the amount of thaw-field drilling by Alaska Gold Co. at Nome.

Projects reporting major drilling programs include the Rock Creek area north of Nome; Illinois Creek in the Kaltag area; Pebble Copper and Johnson River programs near Cook Inlet; Ryan Lode, Ester Dome, Pedro Dome, and Fort Knox programs in the Fairbanks area; and Kensington and Greens Creek Mines in southeast Alaska.

Tables 13 and 14 show the drill footage reported in Alaska over the past decade and the regional distribution of drilling. In both tables a distinction is made between placer drilling, hard-rock drilling, and coalfield evaluation or exploratory drilling.

Some trends have become apparent over the last five years. Although blasthole drilling for overburden removal in gold placer operations has increased, thaw-field drilling has decreased markedly, and very little is expected in 1993 when Alaska Gold Co. converts to open-pit mining. The amount of placer exploration drilling has also fallen dramatically since the large projects at Valdez Creek and in the Nome area were completed in the late 1980s.

Total hard-rock drilling has been fairly constant during the last five years, with a marked peak in 1990

Table 13. *Drilling footage reported in Alaska, 1984-92*[a]

	1984	1985	1986	1987	1988	1989	1990	1991	1992
Placer exploration	31,000	46,000	32,400	50,250	152,000	97,250	78,930	51,247	6,740
Placer thawfield	98,000	34,000	227,000	130,000	300,000	210,000	105,000	130,000	65,000
Placer subtotal	**129,000**	**80,000**	**259,400**	**180,250**	**452,000**	**307,250**	**183,930**	**181,247**	**71,740**
Coal subtotal	**25,700**	**8,700**	**28,800**	**19,900**	**26,150**	**38,670**	**18,195**	**16,894**	**12,875**
Hardrock (core)	--	--	--	95,600	223,630	242,440	648,600	205,805	211,812
Hardrock (rotary)	--	--	--	19,500	130,220	89,790	112,355	110,850	148,022
Hardrock subtotal	**176,000**	**131,700**	**50,200**	**115,100**	**353,850**	**332,230**	**760,955**	**316,655**	**359,834**
TOTAL (feet)	**330,700**	**220,400**	**338,400**	**315,250**	**832,000**	**678,170**	**963,080**	**514,796**	**444,449**
TOTAL (meters)	**100,797**	**67,177**	**103,144**	**96,088**	**253,593**	**206,700**	**293,547**	**156,910**	**135,502**

[a]Does not included 1,053,000 feet of blast-hole drilling in 1992.
-- = Not specifically reported.

Table 14. *Drilling footage by region in Alaska, 1992*

Type of drilling	Northern	Western	Eastern interior	South-central	South-western	Alaska Peninsula	South-eastern	TOTAL
Placer exploration	--	4,740	2,000	--	--	--	--	6,740
Placer thawfield	--	65,000	--	--	--	--	--	65,000
Placer subtotal	--	**69,740**	**2,000**	--	--	--	--	**71,740**
Coal subtotal	**6,300**	--	--	**6,575**	--	--	--	**12,875**
Hardrock core	600	10,552	23,354	9,200	6,606	--	161,500	211,812
Hardrock rotary	--	8,725	139,297	--	--	--	--	148,022
Hardrock subtotal	**600**	**19,277**	**162,651**	**9,200**	**6,606**	--	**161,500**	**359,834**
TOTAL (feet)	**6,900**	**89,017**	**164,651**	**15,775**	**6,606**	--	**161,500**	**444,449**
TOTAL (meters)	**2,104**	**27,139**	**50,198**	**4,809**	**2,014**	--	**49,238**	**135,502**

-- = No activity reported.

when the Jualin, A-J, Kensington, Fort Knox, Ester Dome and Greens Creek projects were all being evaluated or explored. Hard-rock drilling in 1992 was up 14 percent from 1991, whereas coal exploratory drilling continued the decline which started in 1990.

Companies reporting significant drilling projects in 1992 are listed in table 15.

PLACER DRILLING

Thaw-field drilling in 1992 was only half of the 19,800 meters (130,000 feet) reported in 1991. Further, with the shift from dredging to open-pit mining by the Alaska Gold Co., thaw-field drilling is likely to decrease significantly in the near future.

Of the seven placer drilling projects reported for 1992, six were exploratory and one was developmental. Most of the drilling was done by Cambior Alaska Inc. at its Valdez Creek Mine, in conjunction with development of the new pit to be opened in 1993.

COAL DRILLING

Only two coal drilling projects were reported in 1992, and, as in 1991 most of the footage was drilled by the Arctic Slope Consulting Group for the Arctic Slope Regional Corporation at its Deadfall Syncline exploration program in northwest Alaska. Idemitsu-Alaska Inc. continued developmental drilling at its Wishbone Hill Mine site near Palmer in southcentral Alaska.

HARDROCK DRILLING

Except for a modest drill program at the Lik base-metal prospect near the Red Dog Mine, no drilling activity was reported in the northern district in 1992.

Table 15. *Companies reporting significant drilling projects in Alaska in 1992*

Alaska Gold Co.	Freegold Recovery Ltd.
AMAX Gold Exploration	Hunt, Ware & Proffett
American Copper and Nickel Co.	Idemitsu-Alaska Inc.
Arctic Slope Consulting Group	Kennecott Greens Creek
Cambrior Alaska Inc.	Kensington Joint Venture
Citigold Alaska	Newmont Exploration Ltd.
Cominco Alaska Exploration	North Pacific Mining Co.
Fairbanks Gold Mining Inc.	Placer Dome U.S. Inc.
Flat Creek Mining Co.	Polar Mining Inc.

In the western region, North Pacific Mining Co. continued exploratory drilling at its Illinois Creek project near Nulato on the Yukon River. Newmont Exploration Ltd. reported drilling several holes in the vicinity of Nome on behalf of a joint-venture with the Bering Straits Native Corporation and Aspen Exploration.

In the eastern interior region slightly more drill footage was reported than in the next most active area, southeast Alaska. Placer Dome U.S. Inc. operated a diamond-drill program in the Rampart area and AMAX Gold Exploration reported drilling at the Liberty Bell prospect in the Bonnifield district. Otherwise most of the drilling activity in 1992 was in the immediate vicinity of Fairbanks.

Citigold Alaska Inc. continued the intensive exploratory program begun the previous year, drilling 1,677 meters (5,500 feet) of core and 17,683 meters (58,000 feet) of reverse circulation holes on the Ryan Lode and Curlew Zone on Ester Dome, west of Fairbanks. American Copper and Nickel Co. drilled more than 3,354 meters (11,000 feet) of core on its

extensive holdings on the same mountain, and an additional 840 meters (2,750 feet) on a similar target at Eagle Creek north of Fairbanks. AMAX Gold Exploration reported drilling a prospect at Dome Creek, also north of Fairbanks. Freegold Recovery Ltd. started a reverse-circulation drill program on the ridge north of Fairbanks Creek before freeze-up. All of the 20,426 meters (67,000 feet) of drilling at the Fort Knox Property by Fairbanks Gold Mining Inc. was considered development rather than exploration.

Hardrock drilling in southcentral Alaska in 1992 was done mainly at the Johnson River prospect, where exploration drilling for extension of the known deposit was hampered by talus deposits. In southwest Alaska Cominco Exploration continued definition-drilling of its Pebble Copper deposit near Lake Illiamna.

The Kensington Joint Venture reported a large drilling program at its Kensington Mine north of Juneau, and some developmental and production drilling was done at Greens Creek Mine on Admiralty Island.

METAL RECYCLING

Low base-metal prices continue to adversely affect the Alaskan metal recycling industry. Low prices for aluminum, copper, and brass limited the amount of metal prepared for shipment from Anchorage, Fairbanks, and Juneau collection centers. Because ferrous scrap prices and activity improved, total value of recycled metals increased from $2.63 million in 1991 to $3.05 million in 1992, up 16 percent (table 16).

Some small independent operators have announced that their recycling efforts would be discontinued until market conditions improved. However, two mainstays of the industry, K and K Recycling in Fairbanks and Anchorage Recycling Center in Anchorage, continued to bale and ship aluminum, copper, brass, stainless steel, magnesium, zinc, and radiator scrap.

In August 1992 the *Mulpha Sibu*, a Malaysian ship, set sail from the Port of Anchorage with 19,955 tonnes (22,000 tons) of ferrous scrap collected in Alaska by Alaska Metal Recycling of Anchorage. The scrap was purchased by a steel mill in Thailand. Texas scrap dealer Newell Recycling initiated the transaction, which was worth about $2 million to the company. The scrap bound for Thailand consisted of junk cars, pipe, discarded appliances, and 75 railroad tank cars from Fort Richardson, a military installation near Anchorage.

Ferrous scrap prices, unlike the base metals, continue to climb, and 1993 should be an even better year for Alaskan ferrous scrap dealers. ⚒

Table 16. *Reported scrap metal exports from Alaska, 1991-92*[a]

	1991 Quantity			1992 Quantity		
Commodity	**pounds**	**kilograms**	**Estimated[b] value**	**pound**	**kilograms**	**Estimated value**
Aluminum	1,340,000	607,824	$ 536,000	444,186	201,480	$ 235,418
Copper	482,100	218,680	520,650	260,237	118,043	239,420
Brass	49,012	22,230	85,000	16,803	7,621	35,280
Radiators	17,393	7,889	35,000	24,300	11,022	72,900
Stainless steel	851	386	8,000	53,162	23,660	312,900
Lead	3,000,000	1,306,800	750,000	--	--	--
Magnesium	--	--	--	7,314	3,317	6,500
Zinc	--	--	--	892	405	490
Ferrous scrap	4,630,860	2,100,560	700,000	47,284,590	21,448,290	2,150,000
TOTAL			**$2,634,650**			**$3,052,908**

[a]All volume production in 1992 provided by K and K Recycling Inc. of Fairbanks and Alaska Metal Recycling of Anchorage.
[b]Value estimates determined from average commodity price levels of refined metals or scrap as reported in *Mining Journal*: they do not reflect prices received by Alaskan metal recyclers.

GOVERNMENT ACTION

For several years the state has been compiling a register of the trails that may qualify as access corridors under the Revised Statute 2477 (RS2477). During 1992, the state defined a procedure whereby an individual can nominate to the state a trail for consideration as an RS2477 route.

Municipal taxation of in-place mineral resources within municipality borders in Alaska has been possible since statehood. In May 1992, the Alaska Legislature passed SB330 that provides a permanent exemption from municipal taxation of in-place mineral resources.

In 1992 there was no resolution to the problem of re-creating the Mental Health Land Trust, but an escrow mechanism was designed so that no project was unduly delayed by the lawsuit between the state and the Mental Health Trust plaintiffs.

After two seasons of field-checking the mineral resources of available federal land by the Division of Geological & Geophysical Surveys, the State Land Selection Committee submitted land selections of the remaining statehood land entitlement of about 8.1 million hectares (20 million acres). When finally transferred, the state will own about 42.1 million hectares (104 million acres), administered by the Department of Natural Resources.

Because the State of Alaska intends to complete its land selection by January 1994, those individuals or companies holding federal claims wanting to convert to state ownership should do so as soon as possible. "How to Convert Federal Mining Claims to State Claims," page 40 of this report provides guidelines for the conversion process.

NEW RENTAL FEE ON FEDERAL MINING CLAIMS

On October 5, 1992, the Department of the Interior Appropriation Act for Fiscal Year 1993 was signed into law. This new law pertains only to federal mining claims and does not affect state mining claims in any way. Following are the highlights of the act:

New Mining Claims

(a) Owners of new mining claims located on or after October 6, 1992, will be charged a new rental fee of $100 in addition to the existing service charge of $10. This payment must be made when filing the mining claim notice with Bureau of Land Management (BLM) within 90 days of staking the new claim. The rental payment is for the assessment year ending September 1, 1993.

(b) A rental payment of $100 for the 1994 assessment year (beginning September 1, 1993) must be paid to BLM no later than August 31, 1993. Assessment work is not required to be performed for the 1993 and 1994 assessment years.

Claimants With More Than 10 Claims

Owners of more than 10 federal mining claims located on or before October 5, 1992, must pay BLM a rental of $200 per claim no later than August 31, 1993. These are the rental payments for the 1993 and 1994 assessment years. Assessment work is not required to be performed for the 1993 and 1994 assessment years.

Claimants With 10 Claims or Fewer

The "Small Miner Exemption" of the Act provides two choices for claim owners of 10 claims or fewer.

CHOICE 1: The owner of mining claims located on or before October 5, 1992, may pay BLM a rental of $200 per claim no later than August 31, 1993. These are the rental payments for the 1993 and 1994 assessment years. If the payment is made, assessment work is not required to be performed for the 1993 and 1994 assessment years.

CHOICE 2: The owner of mining claims located on or before October 5, 1992, is exempt from paying the $200 rental fee for any of the following reasons:

(a) The claimant is mining under a valid notice or plan of operations and producing not less than $1,500 and not more than $800,000 in gross revenues per year.

(b) The claimant is exploring the claims under a valid notice or plan of operation.

(c) The claimant must have less than 10 acres of unreclaimed surface disturbance from such mining activity or exploration work.

(d) In addition, all claimants exempted from paying the $200 rental fee must file two newly-required certifications by August 31, 1993. (1) A certificate showing that the claimant qualifies for the exemption. (2) A certificate stating that performance of the 1993 assessment work has been done and that the 1994 assessment work will be performed between September 1, 1993, and September 1, 1994.

Please note: The final ruling was issued by BLM 15 July 1993. Interested miners are urged to contact BLM for further details regarding the Interior Appropriations Act.

HOW TO CONVERT FEDERAL MINING CLAIMS TO STATE CLAIMS

With the Interior Appropriations Act recently signed into law, several owners of federal mining claims have inquired about the possibility and procedure for converting a federal mining claim to a state mining claim. In some cases it is possible to do this, but only if a number of land status conditions are met.

Check the Land Status

The following checklist is for owners of unsurveyed federal mining claims who are considering converting their claims to state claims:

(1) Are your federal claims surrounded by land already conveyed to the state? If not, keep your federal claims.

(2) Is mining permitted on the state land surrounding your claims? If not, keep your federal claims.

(3) Are there state or federal claims located in conflict with your federal claims? If yes, you should resolve those conflicts before you proceed.

Procedure

If your answers to questions (1) and (2) are yes, and your answer to question (3) is no, then this is what you have to do:

(a) Record a Notice of Abandonment with the appropriate District Recorder and deliver a copy to the Bureau of Land Management (BLM).

(b) Immediately locate and record state mining claims to cover the abandoned claims.

(c) Since your new claims are on state-selected land, you will not be permitted to do any mining until BLM conveys the land to state ownership. Likewise, you are not required to make the $20 claim-rental payment to the state, but you must make this payment within 90 days of the date the land is conveyed to state ownership. Therefore, you are well advised to make a $20 rental deposit now. This nonrefundable deposit will be applied to the first rental year when the land is conveyed to the state.

(d) Submit a Priority Tentative Approval (T.A.) request to the Alaska Division of Mining. This will notify the state of your need to have the land conveyed as soon as possible.

(e) There is no way of knowing how long it will take BLM to process a specific Priority T.A. request. If the abandonment of the federal claims is made near the end of the mining season, the government will have all winter to process the conveyance to the state.

(f) The miner should be aware that there is no guarantee that the land will be conveyed to the state by the beginning of the following mining season, nor can the state guarantee the claim owner that the land eventually will be conveyed.

Changing the underlying ownership of mining ground from the federal to the state government is not a simple process nor without risk. It involves abandoning the federal mining claim with its grandfather rights and patent rights and locating new state mining claims in place of the federal claim.

Please note: At the time of this writing, BLM and the State Division of Mining are working on a simplified procedure to transfer federal mining claims directly to state claims without going through the state-select status. We suggest that you check with the Alaska Division of Mining regarding the status of this procedure before you embark on converting your federal claims.

Further information can be obtained at the following offices:

Alaska Division of Mining
Frontier Building
3601 C Street, Suite 880
Anchorage, AK 99503
(907) 762-2550
1-800-478-2154

Alaska Division of Mining
3700 Airport Way
Fairbanks, AK 99709
(907) 451-2788

UNIVERSITY OF ALASKA FAIRBANKS

SCHOOL OF MINERAL ENGINEERING

The School of Mineral Engineering at the University of Alaska Fairbanks celebrated its 75th anniversary in 1992. The school offers bachelor's and master's degrees in geological engineering, mining engineering, and petroleum engineering; a master's degree in mineral preparation engineering; and, in cooperation with other schools and colleges at the University, the school offers Ph.D. degrees in all four of the disciplines mentioned.

The 1993 enrollment of 128 students—a record in recent years—included 79 undergraduate students and 49 graduate students (fig. 22). Enrollment included 41 students in geological engineering, 29 in mining engineering, 53 in petroleum engineering, and 10 in mineral preparation engineering. The school awarded 20 degrees in 1992, eight undergraduate and 12 graduate. Four of these degrees were in geological engineering, five in mining engineering, nine in petroleum engineering, and two in mineral preparation engineering.

Through its mining extension program, the school also offers nonacademic courses to dozens of interested individuals throughout the state of Alaska. Other mining related programs are offered by the University of Alaska through the Institute of Mining Technology in Juneau (fig. 25), and the Mining and Petroleum Training Service in Anchorage. Appendix C of this report gives further details of the programs offered.

In May 1993, UAF Chancellor Joan Wadlow selected well-known petroleum engineer Robert Trent of Wyoming as dean of the School of Mineral Engineering. One vacant instructional faculty position will be filled in 1993. Of the 12 instructional faculty members, four teach geological engineering, three mining engineering, four petroleum engineering, and one teaches mining extension courses. Four of the eight research faculty members work in the Mineral Industry Research laboratory and four work in the Petroleum Development Laboratory. The school employees 30 people—20 faculty and 10 support staff.

UAF School of Mineral Engineering is noted for expertise in processing and drying Alaskan coals, mining and processing placer deposits of precious metals, mining and excavation methods for permafrost, and specialized recovery methods for Alaska petroleum. The school is expanding its expertise in sophisticated modeling techniques for heat flow, ground control, dust generation, and ventilation in permafrost excavations; development of biological remediation methods for mining waste water; and recovery of gas hydrate deposits. Research is conducted through the Mineral Industry Research Laboratory and Petroleum Development Laboratory. Some research is done in cooperation with other branches of the university, including the Geophysical Institute, the Institute of Arctic Biology, and the School of Agriculture and Land Resources Management. The Silver Fox mine near Fairbanks is used for practical instruction and research (figs. 23 and 24).

The school conducts numerous research projects relating to the mineral and petroleum industries in Alaska. Research is currently funded at more than $3 million. Table 17 summarizes current and recent projects.

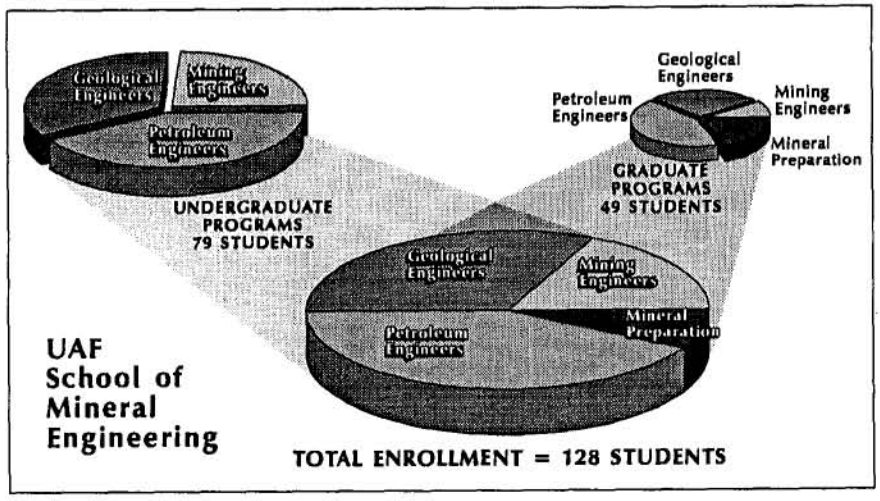


Figure 22. *Total enrollment for School of Mineral Engineering, 1992-93.*

All eligible students receive scholarships which are provided from endowments made by individuals and companies in the mining and petroleum industries. The school awarded almost $20,000 in scholarships in 1992. The U.S. Bureau of Mines and other sources provide fellowships to support graduate student research.

Industry and individuals provide cash and in-kind contributions to the instructional programs. In 1992, cash contributions included $20,000 from AMAX Gold, $10,000 each from BP Exploration, Cambior Alaska, and Citigold Alaska, $2,000 from ARCO Alaska, and $350 from Great Western Chemical. In-kind contributions included a $30,000 mine design software package from Morris-Knudsen, a $38,000 drilling module from ARCO Alaska, a $68,000 plotter from Atlas Wireline, and a $500 TV/VCR from Alaska Women in Mining.

The school co-hosted the Thirteenth Placer Mining Conference in March 1992, and the Second International Symposium on Mining in the Arctic in July 1992. Faculty members are also active in many professional societies and state and national committees. ⚒

Figure 23. *University of Alaska Fairbanks mining engineering students gain practical experience at the school's Silver Fox Mine, 11 miles north of Fairbanks. (University of Alaska photo)*

Figure 25. *(Below) Robert Greig, director of the Institute of Mining Technology, demonstrates rock bolting for students. Beside the UAF School of Mineral Engineering, the university offers mining education through the Institute of Mining Technology at the University of Alaska Southeast campus and the Mining Extension Program at Fairbanks. (Photo courtesy of BP Minerals America)*

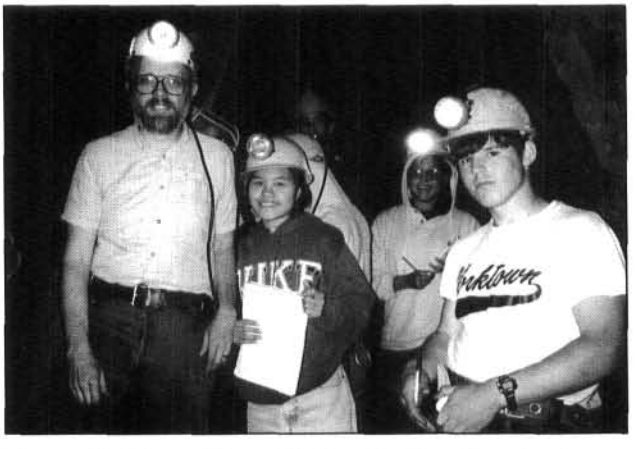


Figure 24. *Upward Bound high-school students in the sump adit at the UAF Silver Fox Mine. Left to right: Dr. Mike Nelson, mine manager, and students Lorrinda Wells, Anchorage, Alaska; Shane Valentine, Post Falls, Idaho; Tracy Peter, Kipnuk, Alaska, and James Grijalvic, Salcha, Alaska. (University of Alaska photo)*

Table 17. *Recent and currently funded research projects*

Title	Sponsor	Amount	Investigator	End date
Characterization of oil	DOE	$ 585,000	Sharma (PDL)	June 1993
Applications of enhanced oil recovery methods to the West Sak Reservoir	UAF Natural Resources Fund	16,900	Khataniar (PDL)	February 1995
Hydrometallurgy process for metal recovery	NERCO	1,135,086	Rao/Lin (MIRL)	December 1994
Effect of gold mine effluent water on plant growth	Citigold	14,000	Nelson (MIRL) Karlsson(SALRM)	December 1993
Effects of temperature on swelling of coal shale	USBM	77,905	Huang/Speck (MIRL)	September 1992
Preconcentration of A-J Mine ore	Echo Bay	112,000	Nelson/Walsh/ Speck (MIRL)	August 1992
Vehicle traction on frozen and partially frozen ground	CRREL	30,000	Nelson (MIRL)	December 1993
Rinsing of cyanide effluent under arctic conditions	USBM	30,000	Nelson (MIRL)	May 1992
Economic evaluation of vat leach plant designs for northern locations	USBM	30,000	Walsh/Nelson (MIRL)	May 1992
Endicott field research	USBM	30,000	Ogbe (PDL)	May 1992
Treatment of precious mine waste waters—Alaskan testing of biological methods	ASTF, USBM, and Citigold Alaska	461,871	Nelson (MIRL)/ Arps (IAB)	June 1994
Roof support systems for development openings in alluvial permafrost	USBM	98,000	Nelson & Bandopadhyay (MIRL)	May 1994
Schrader Bluff Reservoir characterization	ASTF/CONOCO	350,000	Sharma (PDL)	June 1995
Conversion of methane to higher hydrocarbons by electron and ion impact	DOE	177,000	Sackinger (GI) & Kamath (PDL)	September 1992
Hydrocarbon miscible slug injection for improved recovery from Schrader Bluff Reservoir	DOE/CONOCO	600,000	Sharma (PDL)	October 1995
Battery enterprise site soil leachability study	EPA/Foster Wheeler	9,454	Rao (MIRL)	August 1992
Hot water drying of Little Tonzona coal	Doyon	7,000	Walsh (MIRL)	December 1992
Coal characterization	Doyon	1,797	Walsh (MIRL)	December 1992
TOTAL		**$3,164,113**		

DOE - U.S. Department of Energy
CRREL - Cold Regions Research and Engineering Laboratory (U.S. Army Corps of Engineers)
USBM - U.S. Bureau of Mines
ASTF - Alaska Science and Technology Foundation
EPA - U.S. Environmental Protection Agency
PDL - Petroleum Development Laboratory
MIRL - Mineral Industrial Research Laboratory
SALRM - School of Agriculture and Land Resource Management
IAB - Institute of Arctic Biology
GI - Geophysical Institute

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APPENDIX A
Total active claims and new claims staked in 1990, 1991, and 1992[a] (listed by quadrangle)[b] Compiled by Erik Hansen (DOM)

	Quadrangle	Active claims assessment work			New claims staked						Total active claims[c]		
					Federal			State					
		1990	1991	1992	1990	1991	1992	1990	1991	1992	1990	1991	1992
13	Umiat	0	0	0	0	15	0	0	0	0	0	15	0
14	Sagavanirktok	0	0	0	0	0	0	1	0	0	0	0	0
15	Mt. Michelson	0	0	0	0	0	0	0	0	0	0	0	0
17	Point Hope	0	0	0	0	0	0	0	0	0	0	0	0
18	De Long Mts.	1,386	1,388	1,384	0	0	0	0	0	0	1,386	1,388	1,384
23	Philip Smith Mts.	9	5	3	2	3	0	1	2	0	12	10	3
26	Noatak	66	66	66	0	0	0	0	0	0	66	66	66
27	Baird Mts.	114	126	125	0	0	0	2	0	0	116	126	125
28	Ambler River	110	111	117	0	0	0	7	0	0	117	111	117
29	Survey Pass	34	34	32	0	0	0	0	0	0	34	34	32
30	Wiseman	1,385	1,346	1,279	4	2	4	90	7	48	1,479	1,355	1,331
31	Chandalar	752	645	548	0	17	0	24	12	16	776	674	564
32	Christian	1	2	1	0	0	0	0	0	0	1	2	1
35	Kotzebue	0	0	13	0	0	0	0	0	15	0	0	28
36	Selawik	0	0	0	0	0	0	0	0	0	0	0	0
37	Shungnak	1	28	22	0	0	0	0	0	0	1	28	22
38	Hughes	54	54	54	0	0	0	0	0	0	54	54	54
39	Bettles	298	360	266	29	5	0	4	0	0	331	365	266
43	Teller	488	382	327	0	0	0	30	60	0	518	442	327
44	Bendeleben	839	819	792	0	0	0	32	75	15	871	894	807
45	Candle	486	470	433	0	8	0	16	7	20	502	485	453
47	Melozitna	125	117	85	0	0	0	4	0	0	129	117	85
48	Tanana	1,027	914	1,025	0	0	0	117	168	66	1,144	1,082	1,091
49	Livengood	3,335	4,187	2,740	0	0	0	116	143	288	3,502	4,330	3,028
50	Circle	3,394	3,296	3,386	41	8	0	301	270	520	3,736	3,574	3,906
51	Charley River	183	182	183	0	0	0	0	0	0	183	182	183
52	Nome	697	625	420	0	61	23	33	64	30	730	750	473
53	Solomon	396	332	360	0	0	0	16	95	12	412	427	372
54	Norton Bay	110	110	110	0	0	0	0	0	0	110	110	110
55	Nulato	3,175	1,632	1,631	0	0	0	0	0	0	3,175	1,632	1,631
56	Ruby	846	764	768	0	0	0	1	18	30	847	782	798
57	Kantishna River	243	133	80	9	15	58	0	0	0	252	148	138
58	Fairbanks	2,158	2,252	1,518	0	0	0	206	149	131	2,364	2,401	1,649
59	Big Delta	1,998	2,677	2,842	10	541	88	398	789	363	2,406	4,007	3,293
60	Eagle	1,973	1,268	1,448	1	5	0	129	84	131	2,103	1,357	1,579
63	Unalakleet	0	0	0	0	0	0	0	0	0	0	0	0
64	Ophir	657	365	342	0	0	0	9	12	61	666	377	403
65	Medfra	281	254	255	0	0	0	24	1	0	305	255	255
66	Mt. McKinley	233	338	238	0	0	0	20	25	0	253	363	238
67	Healy	4,307	3,536	3,001	605	42	12	84	204	44	4,996	3,782	3,057
68	Mt. Hayes	2,871	3,339	1,678	240	16	2	15	23	2	3,126	3,378	1,682
69	Tanacross	1,144	1,360	520	0	0	0	19	166	101	1,163	1,526	621
72	Holy Cross	5	6	12	0	0	0	0	0	0	5	6	12
73	Iditarod	1,399	664	568	0	0	3	10	6	11	1,409	670	582
74	McGrath	329	75	290	0	0	0	0	0	0	329	75	290
75	Talkeetna	1,758	1,514	940	0	0	2	111	89	183	1,869	1,603	1,125
76	Talkeetna Mts.	770	629	723	3	0	1	120	109	117	893	738	841
77	Gulkana	20	18	17	0	0	0	0	10	0	20	28	17
78	Nabesna	354	304	337	0	0	0	4	39	0	358	343	337
81	Russian Mission	51	44	43	0	0	0	0	0	0	51	44	43
82	Sleetmute	185	155	158	0	0	0	0	0	0	185	155	158
83	Lime Hills	102	12	12	0	0	0	0	3	0	102	15	12

[a]Total count based on all documents recorded through January 1, 1993.
[b]Quadrangles numbered northwest to southeast according to DGGS-DOM numbering and Kardex systems.
[c]Excluding an undetermined number of claims on State selected land.

APPENDIX A—Continued

	Quadrangle	Active claims assessment work 1990	1991	1992	New claims staked Federal 1990	1991	1992	State 1990	1991	1992	Total active claims 1990	1991	1992
84	Tyonek	5,137	4,307	4200	0	0	0	26	44	82	5,163	4,351	4,282
85	Anchorage	689	607	596	0	17	7	181	182	78	870	806	681
86	Valdez	465	268	341	10	4	0	7	41	18	482	313	359
87	McCarthy	103	193	187	0	0	0	0	0	0	103	193	187
91	Bethel	380	59	43	0	0	0	0	2	0	380	61	43
92	Taylor Mts.	263	290	246	0	0	0	0	0	2	263	290	248
93	Lake Clark	387	386	295	0	0	0	0	1	1	387	387	296
94	Kenai	14	12	11	0	0	0	0	0	0	14	12	11
95	Seward	1,484	1,523	1,322	38	141	67	36	5	13	1,558	1,669	1,402
96	Cordova	0	2	1	0	1	3	0	0	1	0	3	5
97	Bering Glacier	274	298	255	0	0	0	0	4	0	274	302	255
101	Goodnews	75	39	0	0	0	0	0	0	0	75	39	0
102	Dillingham	0	0	0	0	0	0	0	0	0	0	0	0
103	Iliamna	780	1,194	1,140	0	0	0	86	450	147	866	1,644	1,287
104	Seldovia	10	2	10	0	0	0	0	0	0	10	2	10
105	Blying Sound	1	0	0	0	0	0	0	0	0	1	0	0
107	Icy Bay	0	0	0	0	0	0	0	0	6	0	0	6
108	Yakutat	1	1	11	0	0	0	0	0	0	1	1	11
109	Skagway	473	493	483	27	1	92	0	0	0	500	494	575
111	Mt. Fairweather	4	2	1	4	0	0	2	0	0	10	2	1
112	Juneau	3,947	2,807	2,663	255	174	58	54	1	25	4,056	2,982	2,746
113	Taku River	0	0	0	0	0	0	0	0	0	0	0	0
114	Sitka	289	379	171	94	11	27	4	0	4	387	390	202
115	Sumdum	121	176	82	97	38	0	0	0	0	218	214	82
116	Port Alexander	107	1	1	0	0	0	0	0	0	107	1	1
117	Petersburg	448	482	532	89	26	51	0	2	0	537	510	583
118	Bradfield Canal	361	294	500	134	2	2	0	0	0	495	296	502
119	Craig	943	938	917	24	113	169	0	0	9	967	1,051	1,095
120	Ketchikan	391	398	206	107	32	1	51	15	0	549	445	207
121	Dixon Entrance	186	184	206	65	0	25	0	0	0	251	184	231
122	Prince Rupert	0	0	0	0	0	0	0	0	0	0	0	0
123	Hagemeister Island	216	240	216	0	0	0	0	0	0	216	240	216
126	Mt. Katmai	0	0	0	0	0	0	0	0	0	0	0	0
127	Afognak	2	2	2	0	0	0	36	0	0	38	2	2
128	Bristol Bay	0	0	0	0	0	0	0	0	14	0	0	14
130	Karluk	0	0	0	0	0	0	0	0	0	0	0	0
133	Chignik	71	71	67	0	0	0	0	0	0	71	71	67
135	Trinity Islands	380	373	115	0	0	0	83	14	2	463	387	117
138	Port Moller	16	17	17	0	0	0	0	0	0	16	17	17
TOTAL		58,067	52,976	46,029	1,888	1,299	695	2,573	3,391	2,606	62,528	57,666	49,330

APPENDIX B
1992 Prospecting sites on State lands
Compiled by Erik Hansen (DOM)

	Quadrangle	New sites	Extensions	Total
23	Philip Smith Mts.	1	0	1
30	Wiseman	6	0	6
44	Bendeleben	0	8	8
48	Tanana	28	10	38
49	Livengood	33	10	43
50	Circle	114	94	208
52	Nome	25	18	43
53	Solomon	8	0	8
56	Ruby	1	0	1
57	Kantishna River	3	6	9
58	Fairbanks	24	16	40
59	Big Delta	33	91	124
60	Eagle	32	30	62
67	Healy	59	12	71
68	Mt. Hayes	0	14	14
69	Tanacross	15	11	26
75	Talkeetna	16	0	16
76	Talkeetna Mts.	9	0	9
78	Nabesna	0	8	8
82	Sleetmute	0	3	3
84	Tyonek	1	42	43
85	Anchorage	11	6	17
91	Bethel	0	8	8
95	Seward	1	0	1
97	Bering Glacier	2	0	2
114	Sitka	2	0	2
TOTAL		**424**	**387**	**811**

APPENDIX C

State and federal agencies, and private interest groups involved in mineral development activities, 1992

(Note: The *1993 Service Directory of the Alaska Miners Association* lists technical and professional consultants and companies available for work in Alaska. The report is available for $12 from the Association's Anchorage office.)

STATE OF ALASKA AGENCIES

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT
State Office Building, 9th Fl.
P.O. Box 110800 (mailing)
Juneau, AK 99811-0800
(907) 465-2500

Function: *Promotes economic development in Alaska.*

Division of Economic Development
State Office Building, 9th Fl.
P.O. Box 110804 (mailing)
Juneau, AK 99811-0804
(907) 465-2017

1001 Noble St., Ste. 360
Fairbanks, AK 99701
(907) 452-7464

Function: *Primary advocacy agency in state government for economic growth. Researches and publishes economic data on Alaska's mining industry. Provides information and assistance to new or developing businesses. Attracts capital investment by advertising Alaska's resources potential. Provides research staff aid for the Alaska Minerals Commission.*

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
410 Willoughby Ave., Ste. 301
Juneau, AK 99801-1795
(907) 465-5000
Public Information (907) 465-5060

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.*

Northern Regional Office
1001 Noble St., Ste. 350
Fairbanks, AK 99701-4980
(907) 451-2360

Southcentral Regional Office
3601 C St., Ste. 1334, Frontier Bldg.
Anchorage, AK 99503-5940
(907) 563-6529
Permit Information (907) 563-6529
(collect calls accepted)

Nome District Office
P.O. Box 1815
Nome, AK 99762-1815
(907) 443-2600
(907) 443-5961(fax)

Southeastern Regional Office
410 Willoughby Ave., Ste. 105
Juneau, AK 99801-1795
(907) 465-5350
Permit Information (907) 465-5342
(collect calls accepted)

DEPARTMENT OF FISH AND GAME
1255 W. 8th St.
P.O. Box 25526 (mailing)
Juneau, AK 99802-5526
(907) 465-4100

Habitat Division
(907) 465-4105

Function: *Protects habitat in fish streams and manages refuges, sanctuaries, and critical habitats. Requires permits for any work involving: the blockage of fish passage; equipment crossings or operation in streams with anadromous fish; use, diversion, or pollution of streams containing anadromous fish; construction, exploration, or development work in state game refuges, game sanctuaries, and critical habitat areas.*

Central Regional Office
Habitat Division
1300 College Rd.
Fairbanks, AK 99701-1599
(907) 451-6192

Southcentral Regional Office
Habitat Division
333 Raspberry Rd.
Anchorage, AK 99518-1599
(907) 267-2342

Southeastern Regional Office
Habitat Division
803 3rd St., 1st Fl.
P.O. Box 240020 (mailing)
Douglas, AK 99824-0020
(907) 465-4290

OFFICE OF MANAGEMENT AND BUDGET
Division of Governmental Coordination
431 North Franklin St.
P.O. Box 110030 (mailing)
Juneau, AK 99811-0030
(907) 465-3562

Function: *Conducts coordinated state review of permits for mining projects within Alaska's Coastal Management Zone. Provides information to applicants on project design for consistency with the policies and standards of the Alaska Coastal Management Program. Coordinates state response to direct federal actions, including proposed regulations, that affect Alaska's mining industry.*

Southcentral Regional Office
3601 C St., Ste. 370, Frontier Bldg.
Anchorage, AK 99503-5930
(907) 561-6131
Fax: (907) 561-6134

Southeastern Regional Office
431 North Franklin St.
P.O. Box 110030(mailing)
Juneau, AK 99811-0030
(907) 465-3562

DEPARTMENT OF NATURAL RESOURCES
400 Willoughby Ave., 5th Fl.
Juneau, AK 99801-1724
(907) 465-2400

Division of Forestry
3601 C St., Ste. 1058, Frontier Bldg.
P.O. Box 107005 (mailing)
Anchorage, AK 99510-7005
(907) 762-2501

Function: *Establishes guidelines to manage mining in state forests.*

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

Southcentral Regional Office
3601 C St., Ste. 1008, Frontier Bldg.
P.O. Box 107005 (mailing)
Anchorage, AK 99510-7005
(907) 762-2117

Southeastern Regional Office
400 Willoughby Ave., 5th Fl.
Juneau, AK 99801-1724
(907) 465-2491

Division of Geological & Geophysical Surveys
794 University Ave., Ste. 200
Fairbanks, AK 99709-3645
(907) 474-7147

Function: *Conducts geological and geophysical surveys to determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal 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 and general geologic inventories. Publishes a variety of reports 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 drill-core storage facility at Eagle River.

Juneau Office
400 Willoughby Ave., 3rd Fl.
Juneau, AK 99801
(907) 465-2520

Division of Land
3601 C St., Ste. 814, Frontier Bldg.
P.O. Box 107005 (mailing)
Anchorage, AK 99510-7005
(907) 762-2692

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

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2700

Southcentral Regional Office
3601 C St., Ste. 1080, Frontier Bldg.
P.O. Box 107005 (mailing)
Anchorage, AK 99510-7005
(907) 762-2253

Southeastern Regional Office
400 Willoughby Ave.
Juneau, AK 99801-1724
(907) 465-3400

Division of Mining
3601 C St., Ste. 800, Frontier Bldg.
P.O. Box 107016 (mailing)
Anchorage, AK 99510-7016
(907) 762-2165

Function: *Principal agency for management of mining and reclamation on state land in Alaska. Maintains a mining information office in Fairbanks. Issues property rights to leasable minerals; adjudicates locatable mineral filings. Issues 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 (ASMACRA), which includes permitting and inspection of coal mining activity and reclamation of abandoned mines.*

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2790

Division of Parks and Outdoor Recreation
3601 C St., Ste. 1200, Frontier Bldg.
P.O. Box 107001 (mailing)
Anchorage, AK 99510-7001
(907) 762-2600

Function: *Manages approximately 3,000,000 acres of state park lands primarily for recreational uses, preservation of scenic values, and watershed. Responsible for overseeing mining access, recreational mining activity, and valid mining claim inholdings within state park lands.*

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

Southcentral Regional Office
3601 C St., Ste., 1280, Frontier Bldg.
P.O. Box 107001 (mailing)
Anchorage, AK 99510-7001
(907) 762-2616

Southeastern Regional Office
400 Willoughby Ave., 3rd Fl.
Juneau, AK 99801-1724
(907) 465-4563

History and Archaeology Section
3601 C St., Ste. 1278, Frontier Bldg.
P.O. Box 107001 (mailing)
Anchorage, AK 99510-7001
(907) 762-2626

Division of Water
3601 C St., Frontier Bldg.
P.O. Box 107005 (mailing)
Anchorage, AK 99510-7005
(907) 762-2145

Function: *Manages water resources of the State; issues water-appropriation permits and certificates; responsible for safety of all dams in Alaska; conducts surveys to determine the locations, quantity, and quality of ground and surface water.*

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2772
Water Quality Lab-474-7713

Eagle River Office
18225 Fish Hatchery Road
P.O. Box 772116 (mailing)
Eagle River, AK 99577-2116
(907) 696-0070

Southeastern Regional Office
400 Willoughby Ave., 4thFl.
Juneau, AK 99801-1724
(907) 465-3400

DEPARTMENT OF PUBLIC SAFETY
450 Whittier St.
P.O. Box 111200 (mailing)
Juneau, AK 99801-1200
(907) 465-4322

Division of Fish and Wildlife Protection
5700 East Tudor Rd.
Anchorage, AK 99507-1225
(907) 269-5509

Function: *Enforce state laws, in particular AS Title 16. Acts as enforcement arm for Alaska Department of Fish and Game.*

DEPARTMENT OF REVENUE
State Office Bldg.
11th Fl., Entrance A
P.O. Box 110400 (mailing)
Juneau, AK 99811-0400
(907) 465-2300

Income and Excise Tax Audit Division
State Office Bldg.
11th Fl., Entrance B
P.O. Box 110420 (mailing)
Juneau, AK 99811-0420
(907) 465-2320

Function: *Issues licenses (including mining) for production and sale of minerals.*

Division of Audit
550 W. 7th Ave., Ste. 320A
Anchorage, AK 99501-3540
(907) 276-5364

Function: *Administers mining-license tax, which is based on net income, including royalties. On application, will grant certificate of tax exemption for first year of new mining operations, except for mining of sand and gravel. Tax returns must be filed annually.*

UNIVERSITY OF ALASKA
Fairbanks, AK 99775-0760

College of Natural Sciences
Department of Geology & Geophysics
408 Brooks Building
(907) 474-7565

Function: *Provides undergraduate and graduate education in geology and geophysics and conducts basic and applied research in geologic sciences. Offers B.S., M.S., and Ph.D. program options in general geology, economic geology, petroleum geology, geophysics, and ice-snow-permafrost geophysics.*

School of Mineral Engineering
Duckering Bldg., Rm. 437
(907) 474-7366

Function: *Provides undergraduate and graduate education programs in geological*

engineering, mining engineering, mineral preparation engineering, and petroleum engineering. Offers mining extension programs in both urban and rural areas. Through research programs conducts laboratory and field studies to promote mineral and energy development.

Mineral Industry Research Laboratory (MIRL)
O'Neill Resources Bldg., Rm. 212B
(907) 474-7135

Function: *Conducts applied and basic research in exploration, development, and utilization of Alaska's mineral and coal resources with emphasis on coal characterization, 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.*

Mining Extension Program
Duckering Bldg., Rm. 401
(907) 474-7702

Function: *Offers prospecting and introductory mineral and mining courses under an open admissions policy.*

Mining and Petroleum Training Service
University of Alaska Anchorage
155 Smithway, Ste. 101
Soldotna, AK 99669
(907) 262-2788

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 materals, first aid and CPR, industrial hygiene and professional safety education and consulting are available on demand.*

University of Alaska Southeast
Institute of Mining Technology
Airport Office Center
9085 Glacier Hwy, Suite 301
Juneau, AK 99801
(907) 463-4840

Function: *The IMT is designed to train students for entry level positions in the mining industry. Students receive classroom and hands on underground mine experience in the Institute's training mine. The Maggie-Kathleen Program graduates complete all required MSHA training for certification.*

FEDERAL AGENCIES

U.S. DEPARTMENT OF THE INTERIOR
Office of the Secretary
1689 C St., Ste. 100
Anchorage, AK 99501-5151
(907) 271-5485

Function: *Coordinates the Department of the Interior's policy and stewardship with DOI bureaus for the management of over 200 million acres of public land in Alaska. The Special Assistant to the Secretary also serves as the Chairman of the Federal Subsitence Management Board.*

Bureau of Land Management
Alaska State Office
22 West 7th Ave., #13
P.O. Box 13 (mailing)
Anchorage, AK 99513-7599
907) 271-3343
Mineral Law Branch - (907) 271-3791
Public Room - (907) 271-5960

Function: *Administers federal public lands (except national parks, wildlife refuges, national monuments, national forests, and military withdrawals). Issues leases for all federal leasable minerals including oil and gas, coal, phosphates, and oil shale. Arranges for sale of minerals other than leasable or salable materials, including sand, gravel, or stone. Issues right-of-way and special-use permits. Monitors mining operations to insure protection of surface resources. Maintains land-status plats and issues patents. Records federal mining claims and annual assessment affidavits.*

Anchorage District Office
6881 Abbott Loop Rd.
Anchorage, AK 99507-2599
(907) 267-1232

Arctic District Office
1150 University Ave.
Fairbanks, AK 99709-3844
(907) 474-2300

Nome District Office
P.O. Box 952 (mailing)
Nome, AK 99762
(907) 443-2177

Glennallen District Office
P.O. Box 147 (mailing)
Glennallen, AK 99588
(907) 822-3217

Kobuk District Office
1150 University Ave.
Fairbanks, AK 99709-3844
(907) 474-2330

Steese-White Mountain Office
1150 University Ave.
Fairbanks, AK 99709-3844
(907) 474-2350

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

Tok Field Office
P.O. Box 309 (mailing)
Tok, AK 99780
(907) 883-5121

Fairbanks Support Center and Land Information Office (Public Room)
1150 University Ave.
Fairbanks, AK 99709-3844
(907) 474-2250

Function: *Primary contact for information on Interior and northern regions.*

U.S. Bureau of Mines
Alaska Field Operations Center
3301 C. St., Ste. 525
Anchorage, AK 99503-3935
(907) 271-2455

Function: *Alaska programs are designed to aid development of a viable mineral industry in Alaska with emphasis on field programs focused towards the identification of type, amount and distribution of mineral deposits in Alaska. The field information is augmented by other Bureau programs which provided information on beneficiation technologies (research); economic feasibility studies (potential supply); and economic and environmental effects of mineral development (policy analysis). Information is provided to other government agencies to aid land planning and land use decisions, and to the private sector to identify targets of opportunity for further exploration and/or development.*

Juneau Branch - AFOC
P.O. Box 20550 (mailing)
Juneau, AK 99802-0550
(907) 364-2111

U.S. Fish and Wildlife Service
Region 7 Office
1011 East Tudor Rd.
Anchorage, AK 99503
(907) 786-3542

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.*

Fairbanks Fish and Wildlife Enhancement
Ecological Service/Endangered Species Branch
101 12th Ave., Rm. 232
Box No. 20 (mailing)
Fairbanks, AK 99701
(907) 456-0388

Juneau Fish and Wildlife Enhancement
Federal Bldg., Rm. 417
P.O. Box 21287 (mailing)
Juneau, AK 99802
(907) 586-7240

Anchorage Fish and Wildlife Enhancement
605 West 4th Ave., Rm. 62
Anchorage, AK 99501
(907) 271-2787

U.S. Geological Survey
Geological Division
4200 University Dr.
Anchorage, AK 99508-4663
(907) 786-7495

Water Division
4230 University Dr.
Anchorage, AK 99508
(907)786-7100

Alaska Distribution USGS Section
(for maps and brochures)
Federal Bldg.
101 12th Ave.
Fairbanks, AK 99701
(907) 456-0244

U.S. Geological Survey Earth Science Information Center
Geologic Division
4230 University Dr., Rm. 101
Anchorage, AK 99508-4667
(907) 786-7012

Function: *Investigates and reports on physical resources; configuration and character of land surface; composition and structure of underlying rocks; and quality, volume, and distribution of water and minerals. Conducts 1:250,000-scale geologic mapping under the auspices of the Alaska Mineral Resource Assessment Program (AMRAP). Publishes and distributes nearly all available topographic maps of Alaska.*

National Park Service
Alaska Regional Office
2525 Gambell St.
Anchorage, AK 99503
(907) 257-2634

Function: *Administers lands within the national park system in Alaska. Manages valid prior-right 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
117 107th Ave. NE., Rm. 100
Bellevue, WA 98004-5997
(206) 553-7037

Juneau Field Office
Federal Building
107 West 9th
P.O. Box 22049 (mailing)
Juneau, AK 99802-2049
(907) 586-7165

Mine Safety and Health Administration
205 North 4th St., Rm. 103
Coeur d'Alene, ID 83814
(208) 667-6680

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) 233-2647

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

U.S. Forest Service
Regional Office
Federal Bldg.
P.O. Box 21628 (mailing)
Juneau, AK 99802-1628
(907) 586-7862

Function: *Helps meet national mineral and energy needs by encouraging and supporting environmentally sound mineral enterprises on national forest system lands. Provides joint administration of general mining laws on national forest system lands with the Bureau of Land Management. 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.
Seattle, WA 98101
(206) 442-5810

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

Alaska Operations Office
222 West 7th Ave., #19
Anchorage, AK 99513-7588
(907) 271-5083

Alaska Operations Office
410 Willoughby Ave., Ste. 100
Juneau, AK 99801
(907) 586-7619

U.S. DEPARTMENT OF THE ARMY

Corps of Engineers
Regulatory Branch
P.O. Box 898
Anchorage, AK 99506-0898
Write: Attention: NPAAO-R-S
Call: Chief of Compliance Section
(907) 753-2720 or (800) 478-2712
(in Alaska only)

Function: *Regulates work in navigable waters of United States and discharge of dredged or fill material into United States waters, including wetlands. Examples of regulated mining activities include construction of berms, dikes, diversion pads, stockpiles, and reclamation activities.*

COOPERATIVE STATE-FEDERAL AGENCIES

Alaska Public Lands Information Center
250 Cushman St., Ste. 1A
Fairbanks, AK 99701
(907) 451-7352

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, Alaska Departments of Natural Resources and Fish and Game, and Alaska Division of Tourism.*

BOARDS AND COMMISSIONS

Alaska Minerals Commission
P.O. Box 80148
Fairbanks, AK 99708
(907) 479-6240

Function: *The Mineral 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.*

Citizens' Advisory Commission on Federal Areas
3700 Airport Way
Fairbanks, AK 99709
(907)451-2775

Function: *The Citizens' Advisory Commission on Federal Areas was established in 1981 by the Alaska Legislature to protect the rights of Alaskans to continue their traditional uses of federal lands throughout the state. This was done in response to Congressional enactment in December 1980 of the Alaska National Interest Lands Conservation Act (ANILCA), which placed millions of acres of federally owned lands into conservation system units with restrictive land-use and management requirements.*

Alaska Water Resources Board
P.O. Box 107005
Anchorage, AK 99510
(907) 762-2575

Function: *The Alaska Water Resources Board serves as an advisory group to the Governor on all matters relating to use and appropriation of water in the State of Alaska. The board has been particularly supportive of water resources legislation, including amendments to the Alaska Water Use Act for reservations of water and instream uses, basin-wide water rights adjudications, and housekeeping amendments to improve water-rights adjudication. The board has taken a keen interest in the state's water quality programs and water quality standards.*

Alaska Science & Technology Foundation
550 West 7th Ave., Ste. 360
Anchorage, AK 99501-3555
(907) 272-4333

Function: *The Foundation was created to make public funds available for long-term investment in economic development and technological innovation within the State and to improve the health status of its residents. Through the awarding of grants for basic and applied research, the Foundation will enhance the State's economy and help build its science and engineering capabilities.*

CHAMBERS OF COMMERCE

Alaska State Chamber of Commerce
415 E St., Ste. 201
Anchorage, AK 99501
(907) 278-2722

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.*

Juneau Chamber of Commerce
124 West 5th Ave.
Juneau, AK 99801
(907) 586-6420

Greater Fairbanks Chamber of Commerce
709 2nd Ave.
Fairbanks, AK 99701
(907) 452-1105

Anchorage Chamber of Commerce
441 West 5th Ave., Ste. 300
Anchorage, AK 99501
(907) 272-2401

NONGOVERNMENTAL GROUPS AND ASSOCIATIONS

Alaska Miners Association, Inc.
Statewide Office
501 West Northern Lights Blvd., Ste. 203
Anchorage, AK 99503
(907) 276-0347

Anchorage Branch
P.O. Box 190509
Anchorage, AK 99519-0509
(907) 243-2856

Fairbanks Branch
P.O. Box 73069
Fairbanks, AK 99707
(907) 451-6650

Juneau Branch
Sealaska Corp.
1 Sealaska Plaza, Ste. 400
Juneau, AK 99801
(907) 586-1512

Kenai Branch
Kachemak Mining
47660 Falls Creek Dr.
Homer, AK 99603
(907) 235-6396

Nome Branch
P.O. Box 1974
Nome, AK 99762
(907) 443-5296

Alaska Women in Mining
Fairbanks Branch
P.O. Box 83542
Fairbanks, AK 99708
(907) 479-9750

Juneau Branch
P.O. Box 34044
Juneau, AK 99804
(907)586-4161

Anchorage Branch
P.O. Box 240334
Anchorage, AK 99524
(907) 276-6762

Society of Mining Engineers
P.O. Box 625002
Littleton, CO 80162-5002
(303) 973-9550

Alaska Section
1001 Noble St., Ste. 360
Fairbanks, AK 99701
(907) 452-7464

Secretary Treasurer-John Rishel
1505 Atkinson Dr.
Anchorage, AK 99504
(907) 337-0511

American Institute of Professional Geologists
7828 Vance Dr., Ste. 103
Arvada, CO 80003
(303) 431-0831

Alaska Section
P.O. Box 9-2082
Anchorage, AK 99509
(907) 562-3279

Miners Advocacy Council
P.O. Box 73824
Fairbanks, AK 99707
(907) 479-0471

Northwest Mining Association
10 North Post St., Ste. 414
Spokane, WA 99201
(509) 624-1158

Placer Miners of Alaska
P.O. Box 83151
Fairbanks, AK 99708

Resource Development Council for Alaska, Inc.
121 N. Fireweed, Ste. 250
Anchorage, AK 99503
(907) 276-0700

Western Mining Council
Kenai Peninsula Chapter
Old Nash Rd.
Seward, AK 99664
(907) 224-5963

ORGANIZED MINING DISTRICTS

Circle Mining District
P.O. Box 80674
Fairbanks, AK 99708
(907) 488-6058

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

Forty-Mile Miners Association
47660 Falls Creek Dr.
Homer, AK 99603
(907) 235-6396

Haines Mining District
P.O. Box 149
Haines, AK 99827
(907) 766-2228

Iditarod Mining District
General Delivery
Flat, AK 99384
(907) 561-1591

Juneau Mining District
P.O. Box 20765
Juneau, AK 99802
(907) 789-4065

Kantishna Mining District
P.O. Box 84608
Fairbanks, AK 99708

Koyukuk Mining District
P.O. Box 9142
Coldfoot, AK 99701

Livengood-Tolovana Mining District
P.O. Box 55698
North Pole, AK 99707
(907) 488-6453

Valdez Creek Mining District
P.O. Box 875534
Wasilla, AK 99687-5534

Yentna Mining District
13004 NE 9th Ave.
Vancouver, WA 98685

MINERAL EDUCATION PROGRAM

ALASKA MINERALS AND ENERGY RESOURCE EDUCATION FUND (AMEREF)
P.O. Box 190927
Anchorage, AK 99519-0927
(907) 274-2211

Function: *A nonprofit corporation formed to help prepare students in grades four through eight to make informed decisions about Alaska's mineral and energy resources.*

Alaska Department of Education
801 W. 10th St., Ste. 200
Juneau, AK 99801-1894
(907) 465-2841

ENVIRONMENTAL ORGANIZATIONS

Note: *The following two organizations submitted addresses to be included in this appendix. They have been actively involved in statewide mining issues including water quality, reclamation, rent, and royalty reform. Litigation has been sometimes used and resulted in court rulings. Both organizations state their primary interests and perspective as maintenance of environmental quality and adherence to environmental laws and regulations.*

Trustees for Alaska
725 Christensen Dr., Ste. 4
Anchorage, AK 99501

Alaska Environmental Assembly
419 - 6th St., Ste. 328
Juneau, AK 99801

NATIVE REGIONAL CORPORATIONS

AHTNA INCORPORATED
Main Office
P.O. Box 649
Glennallen, AK 99588-0649
(907) 822-3476
(907) 822-3495 (fax)

Anchorage Office
406 Fireweed Lane, Ste. 101
Anchorage, AK 99503
(907) 274-7662
(907) 274-6614 (fax)

THE ALEUT CORPORATION
4000 Old Seward Hwy, #300
Anchorage, AK 99503-6087
(907) 561-4300
(907) 563-4328 (fax)

ARCTIC SLOPE REGIONAL CORPORATION
P.O. Box 129
Barrow, AK 99723-0129
(907) 852-8633
(907) 852-8533
(907) 852-5733 (fax)

Anchorage Office
301 Danner Ave., Suite 300
Anchorage, AK 99518-3035
(907) 349-2369
(907) 349-5476 (fax)

BERING STRAITS NATIVE CORPORATION
P.O. Box 1008
Nome, AK 99762-1008
(907) 443-5252
(907) 443-2985 (fax)

BRISTOL BAY NATIVE CORPORATION
800 Cordova Street
P.O. Box 100220 (mailing)
Anchorage, AK 99510-0220
(907) 278-3602
(907) 276-3924 (fax)

CALISTA CORPORATION
601 W. 5th Ave., Suite 200
Anchorage, AK 99501-2225
(907) 279-5516
(907) 272-5060 (fax)

CHUGACH ALASKA CORPORATION
560 E. 34th Ave., Ste. 200
Anchorage, AK 99503-4196
(907) 563-8866
(907) 563-8402 (fax)

COOK INLET REGION INC.
P.O. Box 93330
Anchorage, AK 99509-3330
(907) 274-8638
(907) 279-8836 (fax)

DOYON LTD.
201 1st Ave.
Fairbanks, AK 99701
(907) 452-4755
(907) 456-6785 (fax)

KONIAG INCORPORATED
4300 B St., Suite 407
Anchorage, AK 99503
(907) 561-2668
(907) 562-5258 (fax)

NANA REGIONAL CORPORATION
P.O. Box 49
Kotzebue, AK 99752
(907) 442-3301
(907) 442-2866 (fax)

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

SEALASKA CORPORATION
One Sealaska Plaza, Ste. 400
Juneau, AK 99801
(907) 586-1512
(907) 586-9223 (fax)

APPENDIX D
Selected significant mineral deposits in Alaska (locations shown in figures 26-28)[a]

Map no.

1 **Lik** - Major strata-bound massive sulfide (Zn-Pb-Ag-Ba) deposit in black shale and chert. Proven reserve (Lik) estimate of 21.77 million tonnes (24 million tons) of 9% Zn, 3.1% Pb, and 48 g/tonne (1.4 oz/ton) Ag (fig. 26).

2 **Red Dog** - At least two major strata-bound massive sulfide deposits hosted in Pennsylvanian or Mississippian shale; similar to locality 1. Main deposit at Red Dog contains measured reserves of 58.2 million tonnes (64.02 million tons at 18.4% Zn, 5.5% Pb, 93 g/tonne (2.7 oz/ton) Ag. Inferred reserves are 14.1 million tonnes (15.5 million tons) of 10.0% Zn, 2.7% Pg, and 41 g/tonne (1.2 oz/ton) Ag. Nearby Hilltop deposit contains significant undisclosed reserves (fig. 26).

3 **Drenchwater** - Mississippian and Pennsylvanian shales and cherts contain three strata-bound base metal occurrences spatially related to acid volcanics. In the lowest unit a siliceous mudstone contains a 0.6 m (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 1,982 m (6,500 ft), and contains up to 26% Zn and 51% Pb in grab samples (fig. 26).

4 **Ginny Creek** - Epigenetic, disseminated Zn-Pb-Ag deposits with barite in sandstone and shale of Noatak Sandstone of Late Devonian through Early Mississippian age. Random grab samples of surface float contain 0.3% to 3.0% Zn and highly variable amounts of Pb and Ag (fig. 26).

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-grade material contain up to 0.43% Cu, 34% Pb, 28.8% Zn, 1.4 g/tonne (0.04 oz/ton) Au, and 1,028 g/tonne (30 oz/ton) Ag ((fig. 26).

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. 26).

6 **Whoopee 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, 4.8 g/tonne (0.14 oz/ton) Au, and 507 g/tonne (14.8 oz/ton) Ag (fig. 26).

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 10 g/tonne (0.3 oz/ton) Ag (fig. 26).

7a **Frost** - Possible 8.2 million tonnes (9 million tons) barite in pods, lenses, and wavey-banded quartz-calcite-barite veins. Chalcopyrite and galena occur in the veins which cross cut Paleozoic limestone and dolomite for a minimum distance of 1.6 km (1 mi). Selected samples contain up to 13.2% Zn (fig. 26).

8 **Bornite** - Major strata-bound Cu-Zn deposit in brecciated carbonate rock of Devonian age; 4.56 million tonnes (5.0 million ton) orebody contains 4.0% Cu and accessory Zn and Co. Larger reserve estimate of 36.2 million tonnes (40 million tons) of about 2% Cu and undisclosed amount of Zn and Co. At grade of 1.2% Cu, reserves are 91 million tonnes (100 million tons) (fig. 26).

9 **Arctic** - Major volcanogenic (Cu-Zn) massive sulfide deposit hosted in sequence of metarhyolite, metatuff, and graphitic schist of Devonian age; indicated reserves of 36.3 million tonnes (40 million tons) grade 4.0% Cu, 5.5% Zn, 0.8% Pb, 55 g/tonne (1.6 oz/ton) Ag, and 0.69 g/tonne (0.02 oz/ton) Au (fig. 26).

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, 103 to 377 g/tonne (3 to 11 oz/ton) Ag (fig. 26).

11 **Smucker** - Middle Paleozoic volcanogenic massive sulfide deposit; 915 m (3,000 ft) long and up to 58 m (190 ft) wide contains significant tonnage of Cu-Pb-Zn ore that grades 1.5% Pb, 5 to 10% Zn, 103 to 343 g/tonne (3 to 10 oz/ton) Ag, with minor Au (fig. 26).

12 **Avan Hills** - Disseminated chromite in layered ultramafic rocks; grab samples contain up to 4.3% Cr with 0.51 g/tonne (0.015 oz/ton) PGM (fig. 28).

13 **Misheguk Mountain** - Chromite occurrences similar to those in Avan Hills (fig. 28).

14 **Klery Creek** - Lode and placer Au deposits worked intermittently from 1909 through 1930s. Total production through 1931, mostly from placer deposits, estimated at 974 kg (31,320 oz) Au (fig. 28).

15 **Ernie Lake** - (Ann Creek) Strata-bound massive sulfide occurrence in metarhyolite, metatuff, and marble. Gossan zones strongly anomalous in Cu-Pb-Zn and Ag (fig. 26).

16 **Koyukuk-Nolan mining district** - Major placer Au district; from 1893 to 1991, produced an estimated 9,900 kg (318,300 oz) Au. Significant deep placer reserves remain (fig. 28).

17 **Chandalar mining district** - Major Au producing district; substantial production in excess of 1,894 kg (60,908 oz) Au 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 40,800 tonnes (45,000 tons) with grade of 69 g/tonne (2 oz/ton) Au (fig. 28).

18 **Porcupine Lake** - Stratiform fluorite occurrences and argentiferous enargite, tetrahedrite associated with felsic volcanic rocks of late Paleozoic age. Reported grades of up to 25% to 30% fluorite (CaF_2) reported, with grab samples of 4.8% Cu (fig. 27).

19 **Wind River** - Strata-bound Pb-Zn massive sulfide prospects; reported grades of up to 5% Pb (fig. 26).

[a]This generalized summary does not describe all of the known 6,400 mineral deposits in Alaska. In cooperation with DGGS, the USGS released Bulletin 1786, "Significant metalliferous lode deposits and placer districts in Alaska," which describes 262 significant mineral deposits and 43 placer districts.

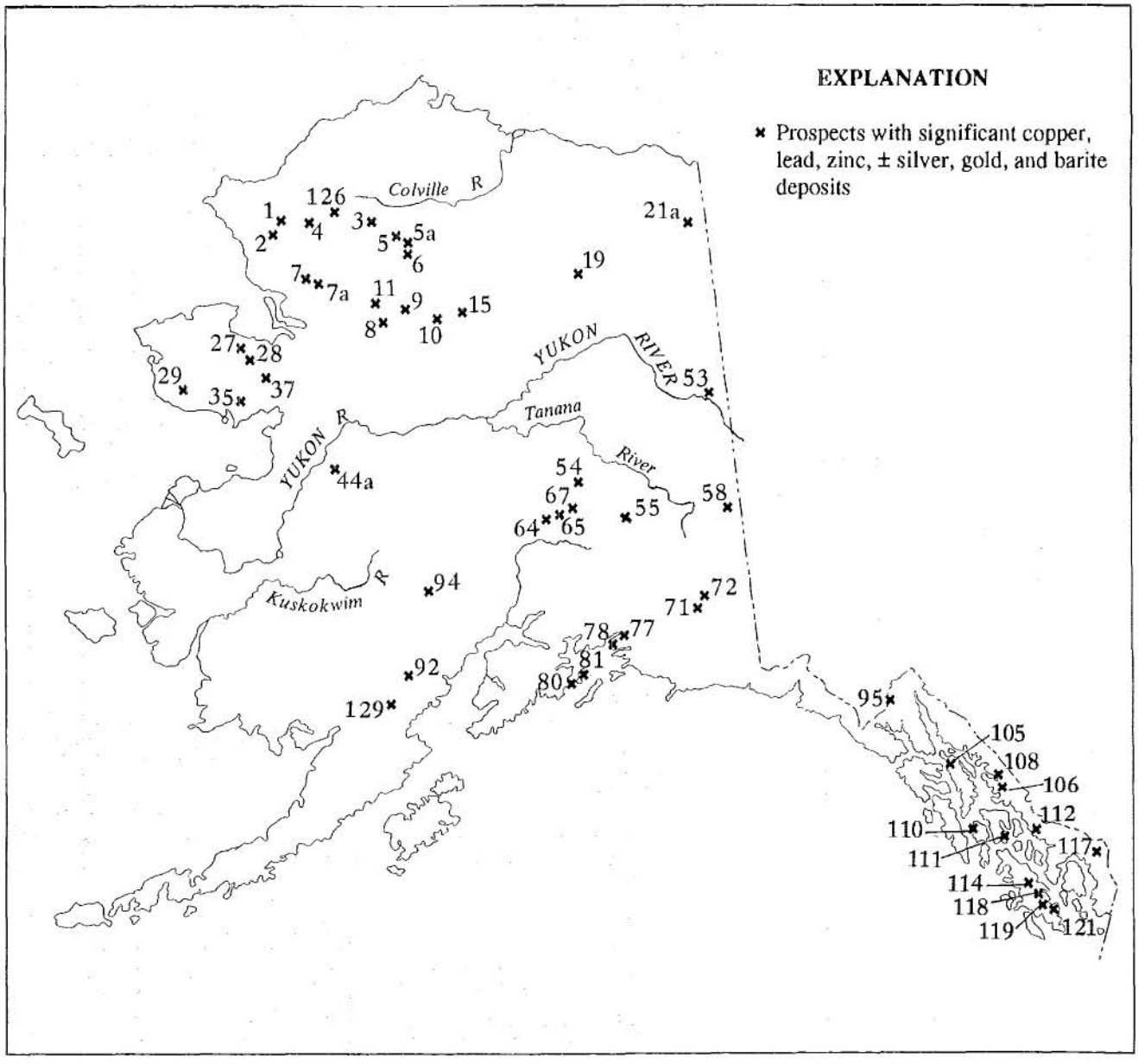


Figure 26. *Significant copper, lead, zinc with credits of silver, gold, and barite deposits in Alaska, 1992.*

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. 27).

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 14 ha (35 acre) area where soil samples average more than 0.2% MoS_2, and an adjacent 10 ha (25 acre) area where rubble contains wolframite has soils averaging greater than 0.12% WO_3. Rubble crop in this area indicates a Tertiary porphyry system as the source of the Mo and W (fig. 27).

21a **Galena Creek** - Steeply dipping veins contain up to 21% Cu, 3.5% Zn, and 1.3% Pb with 189 g//tonne (5.5 oz/ton) Ag on the east side of the creek, and a large area of disseminated mineralization and veinlets contains predominantly Zn on the ridge west of the creek (fig. 26).

22 **Cape Creek** - Major placer Sn producer. More than 454 tonnes (500 tons) Sn produced from 1935 to 1941; from 1979 to 1990, produced 940 tonnes (1,040 tons) Sn. Derived from Cape Mountain in contact zone of Cretaceous granite and limestone (fig. 27).

23 **Buck Creek** - Major placer Sn producer. More than 998 tonnes (1,100 tons) Sn produced from 1902 to 1953 (fig. 27).

24 **Lost River** - Major Sn, fluorite, W, and Be deposit associated with Cretaceous Sn granite system. More than 317 tonnes (350 tons) Sn produced from skarn and greisen lode sources. Measured reserves amount to 22.3 million tonnes (24.6 million tons) that grade 0.15% Sn, 16.3% CaF_2, and 0.03% WO_3, based on 13,720 m (45,000 ft) of diamond drilling (fig 27).

25 **Ear Mountain** - Placer Sn district and Sn-Cu-Au-Ag-Pb-Zn skarn mineralization of Cretaceous age. Area also anomalous in U (fig. 27).

26 **Kougarok Mountain** - Sn deposit hosted in quartz-tourmaline-topaz greisen of Cretaceous age. Grades may average 0.5% Sn and 0.01% Ta

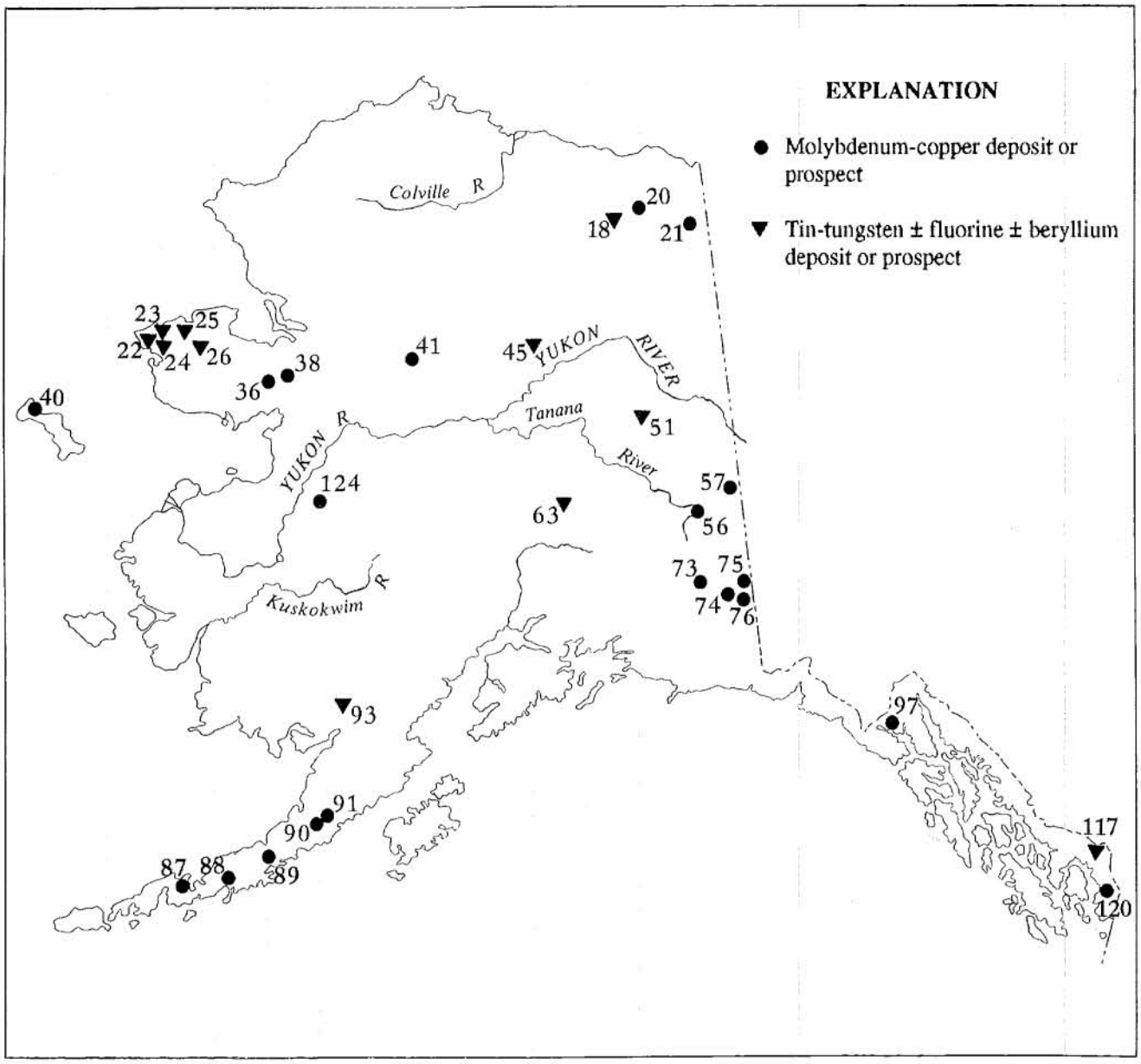


Figure 27. *Significant molybdenum-copper and tin-tungsten with credits of fluorite and beryllium deposits in Alaska, 1992.*

and Nb, but a high grade resource of 136,050 tonnes (150,000 tons) grading 1% + Sn has been identified, with incrementally higher tonnage at lower grades (fig. 27).

27 **Hannum** - Stratiform, carbonate-hosted Pb-Zn-Ag massive sulfide deposit of mid-Paleozoic age in heavily oxidized zone that ranges from 9 to 46 m (30 to 150 ft) thick. Mineralized zone reported to assay up to 10% Pb, 2.2% Zn, 1.4 g/tonne (0.04 oz/ton) Au, and 60.3 g/tonne (1.76 oz/ton) Ag (fig. 26).

28 **Independence Creek** - Pb-Zn-Ag massive sulfide deposit; high-grade ore shipped in 1921 contained 30% Pb, 5% Zn, up to 5,141 g/tonne (150 oz/ton) Ag. Mineralization restricted to shear zone in carbonates (fig. 26).

29 **Sinuk River** - Stratiform Pb-Zn-Ag-Ba-F massive sulfide deposits and layered Fe deposits of Paleozoic age. Mineralized zones extend over 2,440 m (8,000 ft) along strike. Stratiform Zn deposit at Aurora Creek thought to extend for at least 1,220 m (4,000 ft) along strike (fig. 26).

30 **Nome mining district** - Major placer Au producer. Production in excess of 148,336 kg (4,769,219 oz) Au all from placers. Sporadic Sb and W production in past (fig. 28).

31 **Rock Creek** - About 6.6 million tons grading 2.5 g/tonne (0.072 oz/ton) Au in vein swarms and stringers in an area 457 m (1,500 ft) long, 152 m (500 ft) maximum width and 91 m (300 ft) deep (fig. 28).

32 **Big Hurrah** - Epigenetic vein deposit in black slate and metasedimentary rocks of York Slate. Deposit contains some W mineralization and has produced over 840 kg (27,000 oz) Au from nearly 45,350 tonnes (50,000 tons) milled ore. Proven, inferred, and indicated reserves total 94,328 tonnes (104,000 tons) that grade 21 g/tonne (0.61 oz/ton) Au, 19 g/tonne (0.55 oz/ton) Ag, and credits of WO_3 (fig. 28).

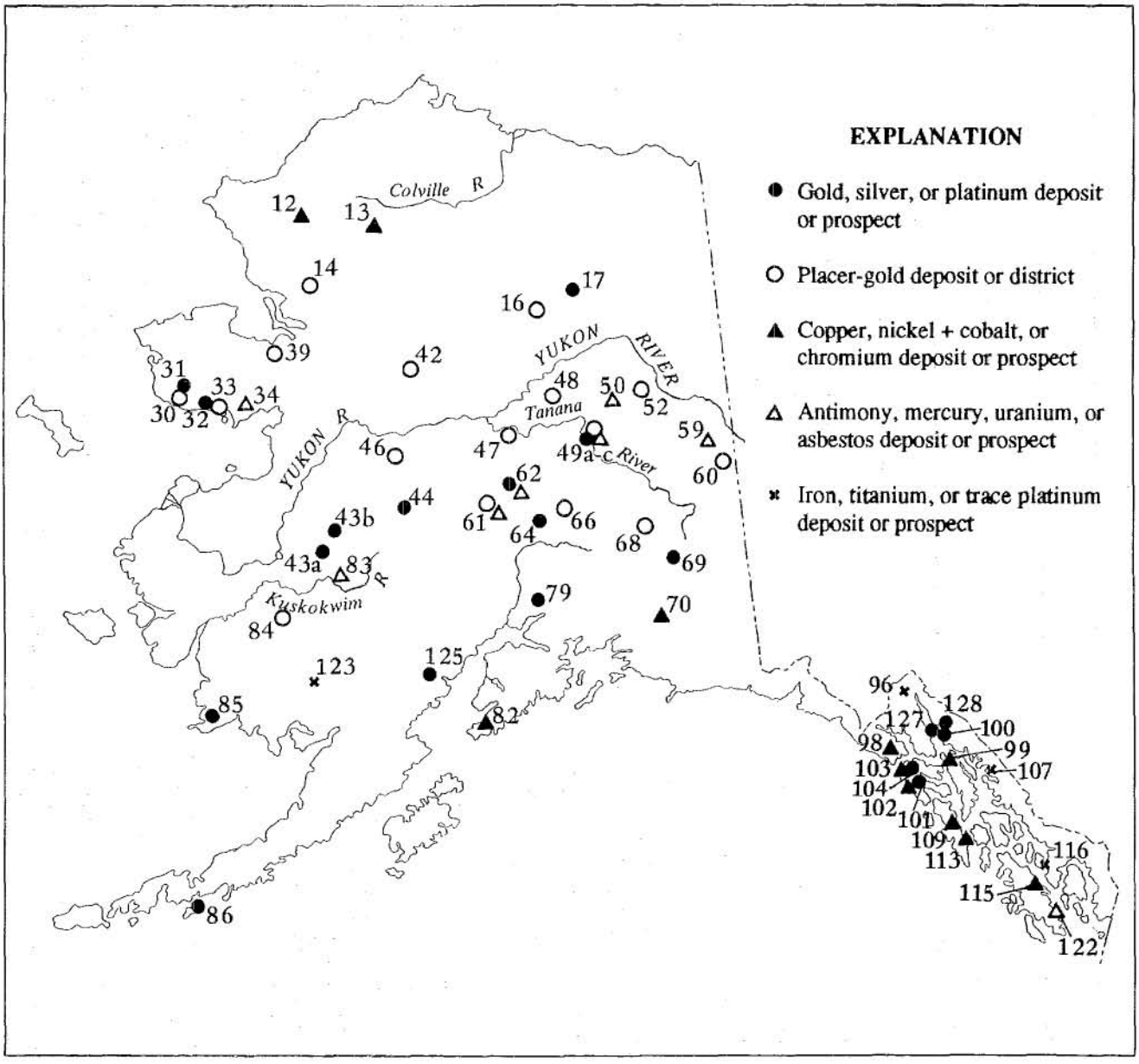


Figure 28. *Significant gold, silver, platinum, and strategic mineral deposits in Alaska, 1992.*

33 **Solomon mining district** - Major placer Au district; produced over 12,449 kg (400,250 oz) Au. Three structurally controlled Au deposits in Bluff area—Daniels Creek, Saddle, and Koyana Creek—contain minimum inferred reserves of 5.9 million tonnes (6.5 million tons) grading 3.4 g/tonne (0.1 oz/ton) Au (fig. 28).

34 **Kachauik** - U prospect in Cretaceous alkalic intrusive rocks. Highly anomalous geochemical values and U concentrations of 1,000 ppm reported (fig. 28).

35 **Omalik** - Vein-type Pb-Zn-Ag massive sulfide prospect in Paleozoic carbonate rocks; from 1881 to 1900, produced 363 tonnes (400 tons) of Pb-Zn ore that averaged about 10% Pb and 1,371 g/tonne (40 oz/ton) Ag. Grades of oxidized Zn ore reported to be up to 34% Zn (fig. 26).

36 **Windy Creek** - Disseminated Mo-Pb-Zn mineralization in quartz veins and skarns with reported values as high as 0.15% Mo (fig. 27).

37 **Quartz Creek** - Significant Pb-Zn-Ag mineralization; reported grades of 15% combined Pb-Zn and 343 g/tonne (10 oz/ton) Ag (fig 26).

38 **Placer River** - Significant Mo-F mineralization disseminated in intrusive rocks. Reported values of 0.2% Mo (fig. 27).

39 **Candle Creek** - Placer Au deposits with 7,559 kg (243,040 oz) of past Au production from placers; significant reserves remaining in a large ancestral channel system. Large base metal sulfide concentrations and U values in concentrates (fig. 28).

40 **Poovookpuk Mountain** - Porphyry Mo mineralization. Reported grades of up to 0.25% Mo (fig. 27).

41 **Purcell Mountain** - Mo and Ag occurrences associated with Cretaceous alkalic igneous plutons, alaskite, and bostonite dikes (fig. 27).

42 **Koyukuk-Hughes mining district** - Production of 6,878 kg (221,140 oz) Au from 1930 to 1975, mainly from Alaska Gold dredging operation at Hogatza; dredge reactivated in 1981, but deactivated in 1984, and reactivated again in 1990. Nonfloat mechanized operation on Utopia Creek produced significant amount of placer Au from 1930 to 1962 (fig. 28).

43a **Iditarod district** - Major placer Au district; produced 48,368 kg (1,555,100 oz) Au through 1990. 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. 28).

43b **Innoko-Tolstoi mining district** - Major placer Au district with significant lode Au-Sb-Hg potential; lode sources for placers are volcanic-plutonic complexes of Late Cretaceous and dike swarms that intrude Mesozoic flysch; mining district produced 18,170 kg (584,182 oz) Au almost all from placer deposits. New discovery on Vinasale Mountain south of McGrath is Au-polymetallic deposit in monzonite stock (fig. 28).

44 **Nixon Fork** - Promising Au-Cu deposits; Nixon Fork mine produced 1,851 kg (59,500 oz) Au from Late Cretaceous skarns associated with quartz monzonite-Devonian limestone contact zones. Indicated reserve of about 10,886 kg (350,000 oz) Au in 258,500 tonnes (285,000 tons) of ore (fig. 28).

44a **Illinois Creek** - Near-surface geologic resources are 3.7 million tonnes (4.1 million tons) of 2.4 g/tonne (0.071 oz/ton) gold and 50 g/tonne (1.47 oz/ton) silver (fig. 26).

45 **Bonanza Creek** - Skarn-type W mineralization along intrusive contact; no published information available (fig. 27).

46 **Ruby mining district** - Placer Au-Sn district; produced more than 14,220 kg (457,200 oz) Au from 1931 to 1991; mining district also contains Pb-Ag prospects with grades reportedly as high as 2,811 g/tonne (82 oz/ton) Ag (fig. 28).

47 **Hot Springs mining district** - Placer Au-Sn district; produced more than 16,919 kg (543,958 oz) Au and over 326,590 kg (720,000 lb) cassiterite through 1990. Includes Eureka and Tofty subdistricts (fig. 28).

48 **Livengood-Tolovana mining district** - Placer Au district; produced more than 14,631 kg (470,413 oz) Au since discovery in 1914 to 1991. Substantial reserves remain mainly on Livengood Bench, a Pliocene ancestral channel (fig. 28).

49 **Fairbanks mining district** - Nationally ranked Au-producing district; largest producer in Alaska. Produced about 245,890 kg (7,905,721 oz) Au from placer deposits. Major lode-Au and lode-Sb producer; produced more than 9,472 kg (304,548 oz) Au and over 1.8 million kg (4 million lb) Sb from veins and shear zones through 1990. Production of W exceeded 4,000 STU since 1915, all derived from skarn near Cretaceous quartz monzonite. Proven and probable reserves, open at depth, are 128,000 kg (4.117 million oz) of gold in 158,3 million tonnes (174.5 million tons) of rock (no map reference).

49a **Fort Knox** - Disseminated Au deposit within granodiorite/quartz monzonite pluton near Fairbanks. Proven and probable reserves, open at depth, are 128,000 kilograms (4,117,000 ounces) of gold in 158.3 million tonnes (174.5 million tons) of rock (fig. 28).

49b **Ryan lode** - Based on a 0.69 g/tonne (0.02 oz/ton) cutoff total reserves in the metasediment-hosted Ryan Lode and subparallel igneous-hosted Curlew Shear are 19,781 kg (636,000 oz) of gold in 7.5 million tonnes (8.3 million tons) of rock. An additional geologic resource of about 62,206 kg (2 million oz) occurs within extensions of these shears (fig. 28).

49c **Grant Mine** - A series of subparallel Au-bearing quartz veins in the schist and quartzite of Ester Dome. Indicated reserves, 1990, on one vein system, the O'Dea, are 192,285 tonnes (212,000 tons) of 12 g/tonne (0.36 oz/ton) Au. Other similar vein systems have been identified within the property (fig. 28).

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. 28).

51 **Twin Mountain** - Significant W mineralization associated with skarn development along contact zone of quartz monzonite stock of Cretaceous age (fig. 27).

52 **Circle mining district** - Currently one of Alaska's largest producing placer-Au district; produced 31,077 kg (999,155 oz) Au since discovery in 1893 to 1991. Has significant potential for Sn, W, and Au mineralization from variety of lode sources (fig. 28).

53 **Three Castle Mountain, Pleasant Creek, Casca VABM** - Strata-bound Pb-Zn massive sulfide mineralization. Reported grades of up to 17% Zn and 2% Pb (fig. 26).

54 **Bonnifield district massive sulfide deposits (Anderson Mountain, Dry Creek, Sheep Creek, Virginia Creek, BT, Liberty Belle)** - Significant volcanogenic Cu-Pb-Zn-Ag massive sulfide deposits of Devonian to Mississippian age in Bonnifield mining district. Potential for high-grade deposits reported. Includes Liberty Bell strata-bound Au-B deposit and mineralization in Sheep Creek; latter contains Sn as well as base metals (fig. 26).

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, 24 to 69 g/tonne (0.7 to 2.0 oz/ton) Ag, and 0.61 to 2.1 g/tonne (0.018 to 0.061 oz/ton) Au; estimated potential reserve of 34.6 million tonnes (40 million tons) for all deposits (fig. 26).

56 **Mosquito, Peternie** - Porphyry Mo prospects of early Tertiary age; reported grades of up to 0.17% Mo (fig. 27).

57 **Taurus** - Significant major porphyry Cu-Au prospect of Paleocene age. East Taurus Zone contains inferred reserves of 126 million tonnes (140 million tons) grading about 0.30% Cu and .34 g/tonne (0.01 oz/ton) Au, and 0.03% Mo (fig. 27).

58 **Big Creek, Ladue** - Strata-bound Pb-Zn-Ag massive sulfide prospects in metavolcanic rocks (fig. 26).

59 **Slate Creek** - At least 50 million tonnes (55 million tons) of 6.3%, high-quality chrysotile asbestos in serpentinized ultramafic rocks of Permian(?) age (fig. 28).

60 **Fortymile mining district** - Major placer Au district. Produced over 16,272 kg (523,154 oz) placer Au since discovery in 1886 to 1991 (fig. 28).

61 **Kantishna mining district** - Major placer Au and lode Ag-Au-Pb-Zn-Sb-W district. Produced 3,089 kg (99,307 oz) placer and lode-Au, about 9,549 kg (307,000 oz) lode Ag, and 2.3 million kg (5million lb) 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 strata-bound base metal deposits occur in schist and quartzite (fig. 28).

62 **Stampede mine** - Major Sb deposit; produced more than 1.42 million kg (3.5 million lb) Sb from large shear zone in polymetamorphic rocks of Yukon-Tanana terrane (fig. 28).

63 **Coal Creek** - Greisen-hosted Sn-Cu-W deposit in "McKinley" age pluton (55 million-year-old). Reported reserves of 4.54 million tonnes (5 million tons)

of ore that grade 0.28% Sn and 0.3% Cu with credits of W, Ag, and Zn (fig. 27).

64 **Golden Zone mine** - Major Au-Cu-Ag deposits in Late Cretaceous breccia pipe. Produced more than 49 kg (1,581 oz) Au, 268 kg (8,617 oz) Ag, and 19,051 kg (42,000 lb) Cu. Estimated reserves are 7,153 kg (230,000 oz) of Au in about 1.8 million tonnes (2 million tons) ore (figs. 26 and 28).

65 **Nim Prospect** - Porphyry Cu-Ag-Au deposit of Late Cretaceous age. Reported grades of up to 5.0% Cu and 309 g/tonne (9 oz/ton) Ag (fig. 26).

66 **Valdez Creek** - About 12,200 kg (392,300 oz) of past production through 1992, leaving reserves of about 5,100 kg (164,000 oz) of proven reserves and 11,800 kg (380,000 oz) in probable or possible category. Operated by Cambior Alaska Inc., this operating mine is the largest placer mine in Alaska (fig. 28).

67 **Denali Prospect** - At least six small, strata-bound Cu lodes in volcanic sedimentary rocks of Triassic age that may contain 4.54 million tonnes (5 million tons) ore that grade about 2% Cu with credits of Ag (fig. 26).

68 **Chistochina** - Porphyry Cu prospects of Tertiary age and placer-Au district; produced more than 5,594 kg (179,851 oz) Au and small amount Pt from placer deposits (fig. 28).

69 **Nabesna mine** - Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(?) age; produced over 2,068 kg (66,500 oz) Au from about 79,816 tonnes (88,000 tons) of ore from 1930 to 1941 (fig. 28).

70 **Spirit Mountain** - Massive and disseminated Cu-Ni mineralization in mafic-ultramafic complex (fig. 28).

71 **Kennecott deposits** - Major stratiform Cu-Ag massive sulfide deposits localized near contact between Chitistone 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 544 million kg (1.2 billion lb) Cu and 311,028 kg (10 million oz) Ag from 4.35 million tonnes (4.8 million tons) ore. Some reserves remain (fig. 26).

72 **Binocular and other prospects** - Kennecott-type Cu-Ag massive sulfide deposits (fig. 26).

73 **Bond Creek - Orange Hill** - Two major porphyry Cu-Mo deposits of Late Cretaceous age; reported inferred reserves of 770 million tonnes (850 million tons) ore that grade 0.3 to 0.5% Cu and 0.03% Mo (fig. 27).

74 **Carl Creek** - Porphyry Cu prospect in altered intrusive complex; similar to locality 73 (fig. 27).

75 **Baultoff** - Porphyry Cu prospect in altered intrusive rocks; inferred reserves of 132 million tonnes (145 million tons) of 0.20% Cu similar to locality 73 (fig. 27).

76 **Horsfeld** - Porphyry Cu prospect; similar to locality 73 (fig. 27).

77 **Midas mine** - Significant strata-bound Cu (Ag-Au-Pb-Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Orca Group. Produced more than 1.5 million kg (3.3 million lb) Cu from 44,760 tonnes (49,350 tons) ore (fig. 26).

78 **Ellamar** - Strata-bound Cu-Zn-Au massive sulfide deposit in sediment of Eocene(?) Orca Group. Produced more than 7.3 million kg (16 million lb) Cu, 1,596 kg (51,307 oz) Au, and 5,960 kg (191,615 oz) Ag from about 273,764 tonnes (301,835 tons) ore (fig. 26).

79 **Willow Creek, Independence, Lucky Shot, War Baby** - Major lode-Au (Ag-Cu-Pb-Zn-Mo) in veins that cut Mesozoic quartz diorite. Produced more than 18,860 kg (606,400 oz) Au from lode sources and about 1,729 kg (55,600 oz) Au from associated placer deposits (fig. 28).

80 **Latouche, Beatson** - Major strata-bound Cu-Zn-Ag massive sulfide deposits in Orca Group sedimentary rocks and mafic volcanic rocks. Produced more than 93 milion kg (205 million lb) Cu from 5.4 million tonnes (6 million tons) ore. Inferred reserves of 4.53 million tonnes (5 million tons) ore that grade 1% Cu, 1.5% Pb+Zn (fig 26).

81 **Rua Cove** - Major strata-bound Cu-Zn massive sulfide deposit in complex ore shoots enclosed in mafic volcanic rocks of Orca Group. Reported reserves of over 1 million tonnes (1.1 million tons) ore that grade 1.25% Cu (fig. 26).

82 **Red Mountain and Claim Point** - Significant Cr occurrence associated with layered ultramafic complexes of Tertiary age at Red Mountain near Seldovia. More than 35,419 tonnes (39,951 tons) metallurgical-grade ore shipped through 1976; huge low-grade Cr resource may remain, of which 27 million tonnes (30 million tons) grade 5.1% Cr_2O_3 (fig. 28).

83 **Red Devil** - Major Hg-Sb deposit; high-grade epithermal Hg-Sb deposit hosted in shear zones in Kuskokwim Group sedimentary rocks. More than 1.24 million kg (35,000 flasks) Hg produced from 68,025 tonnes (75,000 tons) ore (fig. 28).

84 **Aniak/Nyac mining district** - Significant placer Au district. Aniak mining district produced 16,358 kg (525,920 oz) Au from placer deposits, mainly from the NYAC and Donlin Creek areas (fig. 28).

85 **Goodnews Bay** - Major placer Pt district; estimated to have produced over 16,796 kg (540,000 oz) refined PGE metals from 1934 to 1976; one of the largest known PGE metal resources in United States. Possible resources of 45 million m^3 (60 million yd^3) of deep, PGE-bearing gravels remain. Lode source believed to be Alaskan-type zoned ultramafic complex of Jurasssic or Cretaceous age. Possible significant offshore placer potential (fig. 28).

86 **Apollo-Sitka mines** - Major lode Au deposits; produced more than 3,347 kg (107,600 oz) Au from ore that averaged about 7.5 g/tonne (0.22 oz/ton) Au. Inferred reserves are 678,440 tonnes (748,000 tons) grading 26 g/tonne (0.76 oz/ton) Au, 74 g/tonne (2.16 oz/ton) Ag, with base metal credits (fig. 28).

87 **Pyramid** - Late Tertiary porphyry Cu-Mo deposit; inferred reserves of 113 million tonnes (125 million tons) ore that grade 0.4% Cu and 0.03% Mo reported (fig. 27).

88 **Ivanof** - Late Tertiary porphyry Cu prospect; grades of up to 0.72% Cu reported. Potential for large tonnages (fig. 27).

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. 27).

90 **Mike deposit** - Porphyry Mo prospect of late Tertiary age; grades of up to 0.21% Mo reported. Potential for large tonnages of low-grade Mo mineralization (fig. 27).

91 **Rex deposit** - Porphyry Cu prospect similar to locality 90; grades of up to 0.3% Cu reported. Potential for moderate reserves of low-grade mineralization (fig. 27).

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 9,070,000 tonnes (10 million tons) ore that grade more than 1% Cu (fig. 26).

93 **Sleitat Mountain** - High-grade east-west-trending, Sn-W-Ag topaz-quartz greisen system hosted in 59 million-year-old old binary granite and in hornfels. Zone up to 1,915 m (3,000 ft) long and 152 m (500 ft) wide. One drill-hole showed 26 m (85 ft) of 1.8% Sn, and 0.4% W. Inferred resources are 58 to 96 million kg (128 to 212 million lb) Sn in 26.3 million tonnes (29 million tons) ore (fig. 27).

94 **Jimmy Lake** - Complex Cu-Ag-Sn mineralization of late Tertiary(?) age; reported grades of up to 3,599 g/tonne (105 oz/ton) Ag and 3% Cu (fig. 26).

95 **Haines Barite** - Major stratiform Ba-Pb-Zn-Cu-Ag deposit in pillow basalt-dominated section of Paleozoic or Triassic age; consists of 15- to 18-m (48- to 60-ft)-thick zone of 60-percent barite with upper zone [0.6 to 2.4 m (2 to 8 ft) thick] of massive sulfides that contain 2% Pb, 3% Zn, 1% Cu, up to 137 g/tonne (4 oz/ton) Ag, and 4 g/tonne (0.12 oz/ton) Au. Estimated to contain 680,250 tonnes (750,000 tons) of 65% barite with Zn and Ag credits (fig. 26).

96 **Klukwan** - Major Fe-Ti deposits in zoned ultramafic complex of Mesozoic age; reported to contain 2.7 billion tonnes (3 billion tons) of material that contains 16.8% Fe and 1.6 to 3.0% Ti (fig. 28).

97 **Nunatak** - Porphyry Mo deposit; reported reserves of 7.7 million tonnes (8.5 million tons) ore that grades 0.125% Mo and 117 millions tonnes (129 million tons) of 0.04% Mo (fig. 27).

98 **Brady Glacier** - Major Ni-Cu deposit in layered gabbro-pyroxenite complex of Tertiary age. Proven reserves of 91 million tonnes (100 million tons) ore that grade 0.5% Ni, 0.3% Cu reported and about 0.03% Co; also contains PGE concentrations (fig. 28).

99 **Mertie Lode and Funter Bay mining district** - Contains substantial reserves of lode Au mineralization. Past production totaled about 466 kg (15,000 oz) Au. Deposits also contain significant Ni-Cu and Pb-Zn-Ag mineralization. Funter Bay deposit contains reported reserves of 507,920 tonnes (560,000 tons) that grade 0.34% Ni, 0.35% Cu, and 0.15% Co in gabbro-pipe system (fig. 28).

100 **Alaska-Juneau** - Major lode Au deposit that consists of 30 to 90 m (100- to 300-ft) wide zone that contains en echelon, Au-bearing quartz veins in metamorphic rocks; produced more than 109,482 kg (3.52 million oz) Au from 80 million tonnes (88.5 million tons) ore from 1893 to 1944. Reserves (all categories), of 96 million tonnes (105.7 million tons) of 1.7 g/tonne (0.05 oz/ton) Au remain (fig. 28).

101 **Chichagof and Hirst Chichagof** - Major lode-Au deposits in quartz veins that cut Mesozoic graywacke; produced more than 23,949 kg (770,000 oz) Au, most of which was produced at Chichagof mine. Inferred leased reserves estimated to be 3,110 kg (100,000 oz) Au (fig. 28).

102 **Mirror Harbor** - Ni-Cu mineralization in layered-gabbro complex of Mesozoic age; reported proven reserves of 7,256 tonnes (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. 28).

103 **Bohemia Basin** - Major Ni-Cu-Co mineralization in layered mafic complex similar to locality 1^^; reported reserves of 20 million tonnes (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. 28).

104 **Apex-El Nido** - Significant lode Au-W deposits that occur as crosscutting veins in graywacke; produced more than 1,555 kg (50,000 oz) Au (fig. 28).

105 **Greens Creek** - Major sediment-hosted Pb-Zn-Cu-Ag-Au volcanogenic massive sulfide deposit of Devonian or Triassic age; most recent reserve estimate is about 12.5 million tonnes (13.8 million tons) ore that grades about 456 g/tonne (13.3 oz/ton) Ag, 4.1 g/tonne (0.12 oz/ton) Au, 12.8% Zn, and 4.0% Pb (fig. 26).

106 **Sumdum** - Volcanogenic Cu-Pb-Zn massive sulfide deposit in Mesozoic metamorphic complex with potential strike length of over 3,048 m (10,000 ft). Inferred reserves of 24 million tonnes (26.7 million tons) ore that grade 0.57% Cu, 0.37% Zn, and 10 g/tonne (0.3 oz/ton) Ag reported (fig. 26).

107 **Snettisham** - Fe-Ti deposit in mafic zoned-intrusive complex; reported grades of about 18.9% Fe and 2.6% Ti (fig. 28).

108 **Tracy Arm** - Strata-bound Cu-Zn-Pb massive sulfide prospect in Mesozoic schist; over 335 m (1,100 ft) long and up to 3.7 m (12 ft) thick. Reported grades of 1.5% Cu, 3.9% Zn, 26 g/tonne (0.76 oz/ton) Ag, and 0.44 g/tonne (0.013 oz/ton) Au (fig. 26).

109 **Red Bluff Bay** - Significant chrome mineralization in Mesozoic ultramafic complex (probably ophiolite); reported reserves of 517 tonnes (570 tons) of material that grade 40% Cr and 26,303 tonnes (29,000 tons) that grade 18 to 35% Cr (fig 28).

110 **Cornwallis Peninsula** - Volcanogenic Cu-Pb-Zn-Ag-Ba massive sulfide deposit of Triassic(?) age; reported grades of up to 20% Pb-Zn and 788 g/tonne (23 oz/ton) Ag 9 (fig. 26).

111 **Castle Island** - Stratiform barite deposit of Triassic age hosted in carbonate and pillow basalt; about 776,390 tonnes (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. 26).

112 **Groundhog Basin** - Area contains several massive sulfide prospects in Mesozoic schist and gneiss whose origins are now thought to be plutonic associated. Reported grades of up to 8% Pb, 994 g/tonne (29 oz/ton) Ag, and 17 g/tonne (0.5 oz/ton) Au. Sn has also been recently identified. Area also contains potential for porphyry Mo deposits (fig. 26).

113 **Snipe Bay** - Ni-Cu deposit in zoned mafic-ultramafic complex; inferred reserves of 390,000 tonnes (430,000 tons) of 0.3% Ni, 0.3% Cu, and 4.4 g/tonne (0.13 oz/ton) Ag reported (fig. 28).

114 **Kasaan Peninsula** - Major skarn-type Cu-Fe-Au massive sulfide deposit of Jurassic age; area has produced over 12.7 million kg (28 million lb) Cu, and 1,711 kg (55,000 oz) Ag. Reported reserves of 3.6 million tonnes (4 million tons) ore that grade 50% Fe and less than 2% Cu (fig. 26).

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, 2.3 million kg (5 million lb) Cu, over 622 kg (20,000 oz) PGM, and Au and Ag credits were produced from 294,775 tonnes (325,000 tons) ore (fig. 28).

116 **Union Bay** - Significant Fe-Ti mineralization in ultramafic complex; area also contains Pt and V concentrations (fig. 28).

117 **Hyder mining district** - Area produced more than 22,675 tonnes (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 also contains potential for porphyry Mo-W mineralization and massive sulfide-skarn Pb-Ag-Au-W deposits (figs. 26 and 27).

118 **Jumbo** - Cu-Fe-Mo-Ag skarn deposit; produced more than 4.5 million kg (10 million lb) Cu, 8,708 kg (280,000 oz) Ag, and 218 kg (7,000 oz) Au from 113,375 tonnes (125,000 tons) ore. Zoned magnetite-Cu skarns are associated with epizonal granodiorite pluton of Cretaceous age. Reported reserves of 589,550 tonnes (650,000 tons) ore that grade 45.2% Fe, 0.75% Cu, 0.3 g/tonne (0.01 oz/ton) Au, and 2.74 g/tonne (0.08 oz/ton) Ag (fig. 26).

119 **Copper City** - Stratiform Cu-Zn-Ag-Au massive sulfide deposit hosted in late Precambrian or earliest Paleozoic Wales Group. Reported grades of up to 12.7% Cu, 2.7% Zn, 86 g/tonne (2.5 oz/ton) Ag, and 6.9 g/tonne (0.2 oz/ton) Au (fig. 26).

120 **Quartz Hill** - World-class porphyry-Mo deposit in composite felsic pluton (25 million-year-old); possible resource of 1.36 billion tonnes (1.5 billion tons) ore that grades 0.136% MoS_2, including 444 million tonnes (490 million tons) probable resource with grades of 0.219% MoS_2 (fig. 27).

121 **Niblack** - Volcanogenic Cu-Pb-Au-Ag massive sulfide deposit hosted in Precambrian(?) Wales Group or Ordovician to Silurian Descon Formation; produced more than 635,000 kg (1.4 million lb) Cu, 342 kg (11,000 oz) Au, and 467 kg (15,000 oz) Ag (fig. 26).

122 **Bokan Mountain** - Numerous U-Th prospects associated with Jurassic peralkaline intrusive complex; from 1955 to 1971, produced more than 108,840 tonnes (120,000 tons) ore that graded about 1% U_3O_8. Contains inferred reserves of about 36.2 million tonnes (40 million tons) of 0.126% Nb and up to 1% REE metals (fig. 28).

123 **Kemuk Mountain** - Magmatic Fe-Ti deposit hosted in Cretaceous(?) pyroxenite. Inferred reserves of 2.17 billion tonnes (2.4 billion tons) that average 15 to 17% Fe, 2 to 3% TiO_2, and 0.16% P_2O_5 (fig. 28).

124 **McLeod** - Porphyry Mo deposit that contains quartz-molybdenite fissure veins in quartz-feldspar porphyry. Chip samples contain up to 0.09% Mo (fig. 27).

125 **Johnson River** - Epigenetic(?) quartz-sulfide stockwork or massive sulfide deposit hosted in volcaniclastic, pyroclastic, and volcanic rocks of Jurassic Talkeetna Formation. Deposit has drilled out reserves containing 16,795 kg (540,000 oz) Au and 126,980 tonnes (140,000 tons) of Zn (fig. 28).

126 **Nimiuktuk River** - Small hill of massive, high-grade barite estimated to contain at least 1.36 million tonnes (1.5 million tons) barite. Widespread stream-sediment Ba anomalies in area indicate further barite potential (fig. 26).

127 **Kensington** - Stockworks of quartz veins in sheared and chloritized quartz diorite produced 9,886 tonnes (10,900 tons) grading 6 g/tonne (0.18 oz/ton) Au prior to 1930. Recent reserve estimates indicate at least 10.4 million tonnes (11.5 million tons) grading 4.9 g/tonne (0.143 oz/ton) Au. Subparallel Horrible vein system contains 3.56 million tonnes (3.93 million tons) grading 3.7 g/tonne (0.11 oz/ton) Au (fig. 28).

128 **Jualin** - Five quartz-fissure veins in Cretaceous quartz diorite, more than 4,573 m (15,000 ft) of underground workings; produced 1,505 kg (48,387 oz) Au, mainly prior to 1930. Reserves estimated at 0.97 million tonnes (1.07 million tons) of 12 g/tonne (0.349 oz/ton) Au (fig. 28).

129 **Pebble Copper** - Cu-Au porphyry with identified resource of 454 million tonnes (500 million tons) grading 0.35% copper and 0.4 g/tonne (0.012 oz/ton) Au with Mo in the 0.03% to 0.04% range (fig. 26).

APPENDIX E

Mining licenses issued by and received from the Alaska Department of Revenue, 1992

[The entries include in this order: company name, (region), address, resource, site of operation, mining district, and licence number. Alaska Peninsula Region (APR), Eastern Interior Region (EIR), Northern Region (NR), Southcentral Region (SCR), Southwestern Region (SWR), Southeastern Region (SER),Undistributed (UR), Western Region (WR), and N/A indicates specific information not provided.]

Roland F. Achman (EIR)
P.O. Box 61185
Fairbanks, AK 99706
Gold
Harrison Creek
Circle district
ML 92 0404 1

Del Ackels (NR)
P.O. Box 61520
Fairbanks, AK 99706
Gold
Tobin Creek
Chandalar district
ML 92 0187 1

Alvin H. Agoff (SWR)
P.O. Box 2791
Palmer, AK 99645
Gold
Prince Creek
Iditarod district
ML 92 0279 1

Alaska Gold Co. (WR)
Aspen Exploration Corp.
P.O. Box 640
Denver, CO 80237
Gold
Rock Creek
Nome district
ML 92 0059 1

Alaska Gold Company (NR)
P.O. Box 640
Nome, AK 99762
Gold
Submarine Beach
Nome district
ML 92 0108 1

Alaska Gold Company (WR)
P.O. Box 640
Nome, AK 99762
Gold
Third Beachline
Nome district
ML 92 0109 1

Alaska Gold Company (WR)
P.O. Box 640
Nome, AK 99762
Gold
Center Creek
Nome district
ML 92 0401 1

Alaska Placer Development Inc. (EIR)
P.O. Box 81467
Fairbanks, AK 99708
Gold
Livengood Bench
Livengood/Tolovana district
ML 92 0342 1

Alaska Placer Development (EIR)
Karl Hanneman
P.O. Box 81467
Fairbanks, AK 99708
Gold
Deadwood Creek
Circle district
ML 92 0469 1

Alaska United Mining, Inc. (N/A)
1101 Colonial Drive
Wasilla, AK 99687
Gold
N/A
N/A
ML 92 0017 1

William J. Aldridge (EIR)
P.O. Box 1334
Palmer, AK 99645
Gold
Poker Creek
Fortymile district
ML 92 0235 1

Michael Alexander/David E. Lefever (SCR)
P.O. Box 521171
Big Lake, AK 99652
Gold
Willow, Wet Gulch
Willow Creek district
ML 92 0018 1

AMAX Gold Exploration, Inc. (EIR)
350 Indiana Street
Golden, CO 80401
Gold
Little Moose and Eva Creeks
Bonnifiled district
ML 92 0305 1; ML 92 0267 1

Amax Gold Exploration (EIR)
c/o Taiga Ventures
2700 S. Cushman Street
Fairbanks, AK 99701
Gold
Steamboat Creek
Circle district
ML 92 0474 1

Ammi, Ldt. (NR)
Albert & Cecilia Manns
Paradise Valley
Bettles, AK 99726
Gold
Birch Creek
Koyukuk-Wiseman district
ML 92 0083 1

D. Anderson/L. Mickelson (NR)
Route 2 Box 269
Frazee, MN 56544
Gold
Smith Creek
Koyukuk-Wiseman district
ML 92 0386 1

Gerald Irvin Anderson (SCR)
1013 E. Diamond Blvd., #168
Anchorage, AK 99515
Gold
Yacko Creek
Nelchina district
ML 92 0125 1

Anderson & Son Mining (SWR)
P.O. Box 277
McGrath, AK 99627
Gold
Yankee Creek
Innoko district
ML 92 0112 1

Wayne Anderson (EIR)
1901 Cheechako Drive
Fairbanks, AK 99709
Gold
Tenderfoot Creek
Richardson district
ML 92 0144 1

J.R. Andresen/Richard Minder (EIR)
P.O. Box 10072
Fairbanks, AK 99710
Gold
Rebel Creek
Fortymile district
ML 92 0384 1

Adam Anthony/Perry Massie (WR)
P.O. Box 1042
Nome, AK 99762
Gold
American Creek
Nome district
ML 92 0226 1

AOS Mining & Engineering (EIR)
Roy W. Ferrenbach
1215 Bunnell, Apt. 11
Fairbanks, AK 99701
Gold
Cleary, Cora, and Lulu Creeks
Fairbanks district
ML 92 0443 1

Arctech Services (SCR)
Kathryn M. Thomas
P.O. Box 3005
Kenai, AK 99611
Sand & gravel
N/A
N/A
ML 92 0416 1

ASA, Inc. (EIR)
Jack Dimarchi
2700 S. Cushman Street
Fairbanks, AK 99701
Gold
N/A
N/A
ML 0444 1

Aspen Exploration Corporation (WR)
7925 E. Harvard Avenue, Suite A
Denver, CO 80231-3821
Gold
N/A
Nome district
ML 92 0243 1

Aurora Mining (EIR)
Lester Lines
P.O. Box 103820
Anchorage, AK 99510
Gold
Pup Creek off north Fork Harrison
Circle district
ML 92 0105 1

S.R. Bailey/E.M. Grover (SCR)
7031 Gibbs Hill Circle
Anchorage, AK 99504
Gold
Chulitna Creek
Valdez Creek district
ML 92 0148 1

Charles Barnes (SCR)
P.O. Box 193
Cantwell, AK 99729
Gold
Grogg Creek
Valdez Creek district
ML 92 0350 1

Steve Barnett (NR)
P.O. Box 86
Sand Point, AK 99661
Gold
Hammond River
Koyukuk district
ML 92 0336 1

Ben Batty (EIR)
544 North 600 West
Cedar City, UT 84720
Gold
Rye and Jay Creeks
Fairbanks district
ML 92 0110 1

Tod Bauer (SCR)
P.O. Box 871502
Wasilla, AK 99687
Gold
Gold and Eldorado Creeks
Valdez Creek district
ML 92 0316 1

Bayless Mining (EIR)
Michael Busby
P.O. Box 1170
Fairbanks, AK 99707
Gold
Chicken Creek
Fortymile district
ML 92 0101 1

B.C. Mining (EIR)
Cliff Knowlton
2245 John Evans Lane
Fairbanks, AK 99712
Gold
Half Dollar Creek
Circle district
ML 92 0068 1

Bear Cub Mine (WR)
D.A. Young/M. Dozette
4231 Grape Place
Anchorage, AK 99508
Gold
Bear Creek
Koyuk district
ML 92 0351 1

Beaver Loop Sand and Gravel (SCR)
Patrick & Mary Doyle
HC01 Box 1225
Kenai, AK 99611
Sand & gravel
Beaver Loop Road
Kenai Peninsula
ML 92 0273 1

Beaver State Mining (EIR)
Don Glasburn
P.O. Box 107
Central, AK 99730
Gold
Gold Dust Creek
Circle district
ML 92 0036 1

Beehive Mining (WR)
Layne Gardner
1967 Yankovich Road
Fairbanks, AK 99709
Gold
Bear and Sheridan Creeks
Koyuk district
ML 92 0085 1

Beehive Mining (WR)
Layner Gardner
1967 Yankovich Road
Fairbanks, AK 99709
Gold
Quartz Creek
Koyuk district
ML 92 0072 1

W.J. Beerman (SCR)
2416 South First Street
Yakima, WA 98901
Gold
Big Four Creek
Chistochina district
ML 92 0263 1

Earl H. Beistline (EIR)
P.O. Box 80148
Fairbanks, AK 99708
Gold
Eagle and Cripple Creeks
Circle district
ML 92 0395 1

Earl H. Beistline (WR)
P.O. Box 80148
Fairbanks, AK 99708
Gold
Limestone and Jump Creeks
Fairhaven district
ML 92 0138 1

Bill L. Bell (SCR)
P.O. Box 2288
Soldotna, AK 99669
Gold
Kahiltna River
Yentna district
ML 92 0428 1

Chester L. Bell (NR)
P.O. Box 353
Sterling, AK 99672
Gold
Emery Creek
Chandalar district
ML 92 0256 1

Rocky Bell (NR)
P.O. Box 353
Sterling, AK 99672
Gold
Ready Bullion Creek
Chandalar district
ML 92 0257 1

Aaron Benjamin (SCR)
P.O. Box 473
Talkeetna, AK 99676
Gold
Dollar Creek
Yentna district
ML 92 0317 1

Rhinehardt Berg (WR)
General Delivery
Candle, AK 99728
Gold
Mud Creek
Fairhaven district
ML 92 0073 1

Rhinehardt Berg (WR)
General Delivery
Candle, AK 99752
Gold
Kugruk River, Mina, and Independence Creeks
Fairhaven district
ML 92 0225 1

Arthur & Jeanne Berglund (SCR)
HCO1 Box 6275
Palmer, AK 99645
Gold
Willow Creek
Willow Creek district
ML 92 0275 1

Bering Straits Native Corporation (WR)
P.O. Box 1008
Nome, AK 99762
Sand & gravel
Manila Creek
Nome district
ML 92 0312 1

Russ Bevans/Pete Hutton (SCR)
HC 78, Box 2655
Chugiak, AK 99567
Gold
Fortress Creek
Willow Creek district
ML 92 0209 1

Big "G" Mining Co. (EIR)
Hank Gradney
P.O. Box 74400
Fairbanks, AK 99707
Gold
Deadwood Creek
Circle district
ML 92 0028 1

Big "G" Mining (EIR)
Henry Gradney
P.O. Box 74400
Fairbanks, AK 99707
Gold
Crooked Creek
Circle district
ML 92 0027 1

Gerald D. Black (NR)
P.O. Box 72500
Fairbanks, AK 99707
Gold
Big Joe and Big Creek
Chandalar district
ML 92 0450 1

Jerry O. Blackmore (WR)
HC32 Box 6684A
Wasilla, AK 99654
Gold
Telegram Creek
Nome district
ML 92 0237 1

Rodney A. Blakestad (SCR)
6374 Harvard Lane
Highlands Ranch, CO 80126
Gold
Theodore, Lewis, Ivan, and Pretty Creeks
Redoubt district
ML 92 0466 1

Patrick J. Bliss (WR)
711 "H" Street, Suite 450
Anchorage, AK 99501
Gold
Ungalik River
Koyuk district
ML 92 0402 1

Anthony J. Bluma (SCR)
HC 31 Box 5187 A
Wasilla, AK 99687
Gold
Little Dollar Creek
Yentna district
ML 92 0204 1

Board of Trade Inc. (WR)
P.O. Box 967
Nome, AK 99762
Sand & gravel
Nome Creek
Nome district
ML 92 0146 1

Bonanza Creek Mining (EIR)
Doug & Sacie Miller
P.O. Box 71587
Fairbanks, AK 99707
Gold
Bonanza Creek
Circle district
ML 92 0023 1

Ted R. Botnan (EIR)
3555 Mendenhall Lp. Rd. #71
Juneau, AK 99801
Gold
Independence and Treasure Creeks
Fairbanks district
ML 92 0120 1

Frank J. Boulanger (EIR)
General Delivery
Chicken, AK 99732
Gold
South Fork Creek
Fortymile district
ML 92 0464 1

Glen Bouton (NR)
665 Farmers Loop Road
Fairbanks, AK 99712
Gold
Chapman Creek
Koyukuk district
ML 92 0031 1

Joe Bradley/Todd Bruce (SCR)
c/o 2811 Spenard Road
Anchorage, AK 99517
Gold
Mills Creek
Yentna district
ML 92 0173 1

John A. Brown (EIR)
1689 Goldstream Road
Fairbanks, AK 99709
Gold
Moose Creek
Kantishna district
ML 92 0217 1

BTW Mining and Exploration Corporation (WR)
741 E. 13th Avenue
Anchorage, AK 99501
Gold
Sunset Creek
Nome district
ML 92 0408 1

BTW Mining and Exploration Corporation (EIR)
4640 E. 113th Avenue, Suite 100
Anchorage, AK 99501
Gold
Speciman Creek
Delta River district
ML 92 0362 1

Gary Buchholz (SCR)
2004 Old Steese N.
Fairbanks, AK 99712
Gold
Phelean Creek
Chistochina district
ML 92 0391 1

D.J. Burnham (SER)
P.O. Box 3130
Anchorage, AK 99510
Gold
Gulf of Alaska
Yentna district
ML 92 0208 1

John R. Burns (EIR)
P.O. Box 5
Chicken, AK 99732
Gold
Davis Creek
Fortymile district
ML 92 0009 1

John R. Burns/ Robert Wolff (EIR)
P.O. Box 5
Chicken, AK 99732
Gold
Davis Creek
Fortymile district
ML 92 0176 1

Richard Busk (SWR)
P.O. Box 100971
Anchorage, AK 99510
Gold
Synneva Creek
Iliamna district
ML 92 0147 1

Dickie L. Byrd (EIR)
P.O. Box 10084
Fairbanks, AK 99710
Gold
Flat Creek, Tributary of Chatanika River
Circle district
ML 92 0325 1

Robert J. Cacy (EIR)
P.O. Box 106
Central, AK 99730
Gold
Portage Creek
Circle district
ML 92 0332 1

Camp Creek Mining (EIR)
Eric & Alvin Kile
P.O. Box 140424
Anchorage, AK 99514
Gold
Camp, Canyon, Woods, and Brophy Creeks
Fortymile district
ML 92 0132 1

Caprock Alaska Joint Venture (SCR)
8101 E. Prentice Avenue, #608
Englewood, CO 80111
Gold
White and Valdez Creeks
Valdez Creek district
ML 92 0203 1

Robert D. Carlson (SCR)
P.O. Box 771375
Eagle River, AK 99577
Gold
Upper Cache Creek
Yentna district
ML 92 0348 1

Carroll-Vondra, Inc. (EIR)
Yutan Construction Co.
P.O. Box 71775
Fairbanks, AK 99707
Brown's Hill
Fairbanks district
ML 92 0075 1

Cassiterite Placers, Inc. (EIR)
Jack Neubauer
413 Cowles Street
Fairbanks, AK 99701
Gold
Fox Creek
Fairbanks district
ML 92 0024 1

Caswell Creek Sand and Gravel (SCR)
Harold Bell
P.O. Box 147
Willow, AK 99688
Sand & gravel
Matanuska-Susitna Borough
ML 92 0122 1

Ernest M. Chase (SWR)
P.O. Box 141
Anvik, AK 99558
Gold
Flat Creek
Marshall district
ML 92 0046 1

Chicken Mountain Mining Co. (SWR)
Kenneth Dahl & Jeff Darling
P.O. Box 232
Girdwood, AK 99587
Gold
Idaho Claim
Iditarod district
ML 92 0021 1

Chicken Mountain Mining Co. (SWR)
Kenneth Dahl & Jeff Darling
P.O. Box 232
Girdwood, AK 99587
Gold
Flat Creek
Iditarod district
ML 92 0019 1

Douglas M. Clark (EIR)
c/o Howard Grey & Associates Inc.
711 H Street, Suite 450
Anchorage, AK 99501
Gold
Chena River and Middle Fork
Fairbanks district
ML 92 0337 1

Douglas M. Clark (EIR)
711 H Street, Suite 450
Anchorage, AK 99501
Gold
Trib to M. Fork and Chena River
Fairbanks district
ML 92 0335 1

Joseph L. Cloud (N/A)
HC01 Box 875
Kenai, AK 99611
Gold
Boulder Creek
N/A
ML 92 0324 1

John H. Cole (EIR)
P.O. Box 10139
Fairbanks, AK 99710
Gold
Portage Creek
Bonnifield district
ML 92 0191 1

Lyle & Steve Colledge (EIR)
P.O. Box 60478
Fairbanks, AK 99706
Gold
Bottom Dollar Creek
Circle district
ML 92 0340 1

Cominco Alaska Exploration (NR)
5660 B Street
Anchorage, AK 99518
Gold
Talarik Creek & Kaktuk Tributaries
N/A
ML 92 0274 1

B.W. Comstock/D.B. Vial (WR)
General Delivery
Candle, AK 99728
Gold
Bull Hill (Bench), Candle
Candle district
ML 92 0159 1

Mike Conklin (EIR)
92472 Chardonnay Way
Cheshire, OR 97419
Gold
North Fork Fortymile
Fortymile district
ML 92 0383 1

James P. Conway (SCR)
HC 02, Box 7660
Palmer, AK 99645
Gold
Valdez Creek
Valdez Creek district
ML 92 0128 1

Fred A. Cook (EIR)
P.O. Box 311
Delta Junction, AK 99737
Gold
Portage Creek
Bonnifield district
ML 92 0247 1

Cook Island Partnership (SCR)
Samuel M. Gaston
8511 Hartzell Road
Anchorage, AK 99507
Sand & gravel
Municipality of Anchorage
ML 92 0162 1

Cook's Mining (EIR)
John Cook
P.O. Box 70456
Fairbanks, AK 99707
Gold
Deep Creek
Fairbanks district
ML 92 0034 1

Cook's Mining (EIR)
John Cook
P.O. Box 70456
Fairbanks, AK 99707
Gold
Fairbanks Creek
Fairbanks district
ML 92 0035 1

Cook's Mining (EIR)
John Cook
P.O. Box 70456
Fairbanks, AK 99707
Gold
Fairbanks Creek
Fairbanks district
ML 92 0254 1

F. Cornelius/G. Erickson (EIR)
P.O. Box 2052
Fairbanks, AK 99701
Gold
Fox Creek
Fairbanks district
ML 92 0152 1

Cecil A. Cox (EIR)
P.O. Box 16213
Two Rivers, AK 99716
Gold
40 Mile River
Fortymile district
ML 92 0421 1

Ed or Pat Coyle (SCR)
290 South Park Street
Anchorage, AK 99508
Gold
Kakitna River
Yentna district
ML 92 0044 1

Ed or Pat Coyle (SCR)
290 South Park Street
Anchorage, AK 99508
Gold
Kahitna River
Yentna district
ML 92 0131 1

Bert Craigen (EIR)
633 Pleasure Drive
North Pole, AK 99705
Gold
Robinson Creek
Fortymile district
ML 92 0361 1

Jimmie Dale (EIR)
743 Wilcox Avenue
Fairbanks, AK 99709
Gold
Hoosier Creek
Hot Springs district
ML 92 0151 1

John Reed Dart (EIR)
P.O. Box 50
Manley Hot Springs, AK 99756
Gold
Boulder Creek
Hot Springs district
ML 92 0054 1

John David/Tamara Ketscher (NR)
P.O. Box 1
Bettles, AK 99726
Gold
So. Fk. Koyukuk
Koyukuk district
ML 92 0012 1

Don P. DeLima (EIR)
P.O. Box 56106
Manley Hot Springs, AK 99756
Gold
American Creek and Colordo Gulch
Hot Springs district
ML 92 0155 1

Richard Demby (SCR)
P.O. Box 82204
Fairbanks, AK 99708
Gold
Slate Creek
Chistochina district
ML 92 0422 1

John Denslinger (NR)
1602 Jefferson Street
The Dalles, OR 97058
Gold
Weise Creek
Shungnak district
ML 92 0227 1

Thomas Domeier (EIR)
HCO 4 Box 9379
Palmer, AK 99645
Gold
Confederate Creek
Fortymile district
ML 92 0331 1

Michael B. Dugger (EIR)
5218 Half Moon Drive
Colorado Springs, CO 80915
Gold
Mastodon Creek
Circle district
ML 92 0156 1

Ed's Gravel Pit (SCR)
Joanna M. Hollier
P.O. Box 366
Kenai, AK 99611
Sand & gravel
Kenai Peninsula
ML 92 0375 1

Judd Edgerton (EIR)
P.O. Box 34
Chicken, AK 99732
Gold
Napoleon Creek
Fortymile district
ML 92 0245 1

Ed Elllis (SCR)
P.O. Box 824
Cooper Landing, AK 99572
Gold
Lake Creek
Yentna district
ML 92 0445 1

Robert C. Emerson (EIR)
1811 Phillips Field Road
Fairbanks, AK 99701
Gold
St. Patrick, Happy, and Eva Creeks
Fairbanks district
ML 92 0390 1

Empire Exploration, Inc. (N/A)
P.O. Box 142593
Anchorage, AK 99514
Gold
Tribs of Cottonwood Creek
N/A
ML 92 0434 1

Engstrom Dredging Co. (WR)
Ron Engstrom
P.O. Box 536
Nome, AK 99762
Gold
Basin Creek
Nome district
ML 92 0403 1

Krister Eriksson (SCR)
P.O. Box 398
Glenallen, AK 99588
Gold
Falls Creek
Yentna district
ML 92 0318 1

45 Pup Mining (EIR)
Charles Richard Hammond
P.O. Box 7
Chicken, AK 99732
Gold
45 Pup
Fortymile district
ML 92 0015 1

Thomas E. Faa (EIR)
P.O. Box 666
Wamic, OR 97063
Gold
Moose Creek
Bonnifield district
ML 92 0067 1

Jerry L. Fabrizio (SER)
4739 University Way NE #1646
Seattle, WA 98105
Gold
Porcupine Creek
Porcupine district
ML 92 0087 1

Fairbanks Exploration, Inc. (SCR)
Kelly Dolphin
P.O. Box 73795
Fairbanks, AK 99707
Gold
Gold Hill
Valdez Creek district
ML 92 0219 1

Fairbanks Exploration, Inc. (SCR)
Kelly Dolphin
P.O. Box 73795
Fairbanks, AK 99707
Gold
Gold Hill
Valdez Creek district
ML 92 0220 1

Fairbanks Gold, Inc. (EIR)
P.O. Box 73726
Fairbanks, AK 99707
Gold
Fish Creek Drainage
Fairbanks district
ML 92 0194 1

Harry or Jeannine Faulkner (SWR)
P.O. Box 1307
Bethel, AK 99559
Gold
Ophir Creek and Tributaries
NYAC district
ML 92 0365 1

Flat Creek Mining Co. (WR)
James P. (Pete) Haggland
P.O. Box 81464
Fairbanks, AK 99708
Gold
Flat Creek
Ruby-Poorman district
ML 92 0115 1

Flat Pick Mining (EIR)
G. Fulton & R. Wrede
P.O. Box 115
Central City, AK 99730
Gold
Switch Creek
Circle district
ML 92 0323 1

Mitch Fleming (NR)
P.O. Box 9102
Coldfoot, AK 99701
Gold
Myrtle Creek
Koyukuk district
ML 92 0238 1

Milo E. Flothe (WR)
P.O. Box 242
Sterling, AK 99672
Gold
Quartz Creek
Koyuk district
ML 0228 1

James L. & Sharon L. Fogarty (EIR)
3034 Dyke Road
North Pole, AK 99705
Gold
Walker Creek
Fortymile district
ML 92 0058 1

Elmer W. Foss/Harold Osberg (EIR)
P.O. Box 73252
Fairbanks, AK 99707
Gold
Bedrock Creek
Fortymile district
ML 92 0182 1

Patricia S. Franklin (EIR)
1213 Coppet Street
Fairbanks, AK 99709
Gold
Fairbanks Creek
Fairbanks district
ML 92 0261 1

Daniel R. Freitas (SCR)
9191 Old Seward Highway, #21
Anchorage, AK 99515
Gold
Kahiltna River
Yentna district
ML 92 0276 1

Bob Fritz (SCR)
3127 Wesleyan Drive
Anchorage, AK 99508
Gold
Willow Creek
Willow Creek district
ML 92 0149 1

Tad R. & John Fullerton (SWR)
16935 Maplewild S.W.
Seattle, WA 98166
Gold
Flat Creek
Iditarod district
ML 92 0124 1

Four Brothers Mining (EIR)
Clarke H. Billings
P.O. Box 81117
Fairbanks, AK 99708
Gold
Totatlanika River
Bonnifield district
ML 92 0341 1

G.A. Hanks and Sons (EIR)
18908 Old River Road
W. Sacramento, CA 95691-2098
Gold
Lost Chicken Creek
Fortymile district
ML 92 0165 1

Paul Gallagher (EIR)
Route 1, Box 751 Mendiola Road
Nyssa, OR 97913
Gold
Platt, Homestake, and Fox Creeks
Fortymile district
ML 92 0004 1

Paul E. Gallagher (N/A)
Route 1, Box 751 Mendiola Road
Nyssa, OR 97913
Gold
Thistle Creek
N/A
ML 92 0003 1

Robert A. Garrabrant (SCR)
10224 Colville
Eagle River, AK 99577
Gold
Willow Creek
Willow Creek district
ML 92 0465 1

Stanley Gelvin (EIR)
P.O. Box 30149
Central, AK 99730
Gold
Crooked Creek
Circle district
ML 92 0063 1

Stanley M. Gelvin (EIR)
P.O. Box 30149
Central, AK 99730
Gold
Ketchem Creek
Circle district
ML 92 0062 1

Roy George (EIR)
General Delivery
Chicken, AK 99732
Gold
South Fork Fortymile
Fortymile district
ML 92 0369 1

David L. Gerke (WR)
4324 Thompson, Suite 2
Anchorage, AK 99508
Gold
Soloman River
Council district
ML 92 0455 1

James R. Gerth (N/A)
P.O. Box 245
Gakona, AK 99586
Gold
N/A
N/A
ML 92 0405 1

Dennis Gilbreath (EIR)
P.O. Box 10048
Fairbanks, AK 99110
Gold
Flat Creek
Circle district
ML 92 0158 1

Girdwood Mining Co. (SCR)
Reynolds/McCarthy/McLinn
P.O. Box 1089
Girdwood, AK 99587
Gold
Crow Creek
Hope-Sunrise district
ML 92 0388 1

Carl & Dessie Glenville (N/A)
HC 67, Box 1195
Anchor Point, AK 99556
Gold
N/A
N/A
ML 92 0042 1; ML 92 0195 1

Phil Godfrey (SER)
P.O. Box 3097
Bellevue, WA 98009
Sand & gravel
Lena Point
Juneau district
ML 92 0420 1

Phil Godfrey (SER)
P.O. Box 3097
Bellevue, WA 98009
Sand & gravel
Lemon Creek Pit
Juneau district
ML 92 0417 1

Goldstream Mining, Inc. (EIR)
1937 Old Steese Hwy., N.
Fairbanks, AK 997912
Gold
Gilmore Creek
Fairbanks district
ML 92 0179 1

Golovin Native Corporation (WR)
P.O. Box 62099
Golovin, AK 99762
Sand & gravel
Golovin Native Corp. Lands
Seward Peninsula
ML 92 0373 1

Richard Goodson (EIR)
P.O. Box 12
Chicken, AK 99732
Gold
Fortymile River
Fortymile district
ML 92 0430 1

Wallace E. Gordon (NR)
3035 Madison Way
Anchorage, AK 99508
Gold
Hill top between Lake and Spring Creeks
Koyukuk district
ML 92 0099 1

Wallace E. Gordon (NR)
3035 Madison Way
Anchorage, AK 99503
Gold
Lake Creek
Koyukuk district
ML 92 0102 1

Gene Alfred Granath (SCR)
P.O. Box 574
Kenai, AK 99611
Gold
Falls Creek
Hope-Sunrise district
ML 92 0206 1

Grateful Dog Mining (EIR)
Roger McPherson
1100 Southwood Lane
Fairbanks, AK 99712
Gold
Ridge above Treasure Creek
Fairbanks district
ML 92 0298 1

Grateful Dog Mining (EIR)
Roger McPherson
1100 Southwood Lane
Fairbanks, AK 99712
Gold
Hattie Creek
Fairbanks district
ML 92 0299 1

The Gravel Station (SCR)
Ingeborg M. Turner
P.O. Box 3489
Palmer, AK 99645
Sand & gravel
Matanuska Valley
ML 92 0283 1

Doug Green (WR)
P.O. Box 61455
Fairbanks, AK 99768
Gold
Long Creek
Ruby-Poorman district
ML 92 0410 1

Scott Gregor/
Jamin Klopman (SWR)
P.O. Box 101
Red Devil, AK 99656
Gold
Taylor Creek
Aniak district
ML 92 0043 1

Chris L. Groppel (EIR)
P.O. Box 1060
Delta Junction, AK 99737
Gold
Tenderfoot Creek
Richardson district
ML 92 0117 1

Mark A. Gumaer (WR)
P.O. Box 1682
Nome, AK 99762
Gold
Dick Creek
Kougarok district
ML 92 0111 1

Gypsy Luck Mining Co. (EIR)
Glen C. Parr
624 Maple Street
Shelton, WA 98584
Gold
Moose Creek
Bonnifield district
ML 92 0259 1

John Hall (NR)
P.O. Box 2700
Fairbanks, AK 99707
Gold
Linda Creek
Koyukuk district
ML 92 0103 1

Ham Mining Co. (EIR)
Harold Mitchell
P.O. Box 65
Chicken, AK 99732
Gold
Mosquito Fork
Fortymile district
ML 92 0134 1

Hard Rock, Inc. (SER)
P.O. Box 129
Haines, AK 99827
Sand & gravel
5.5 Mile Haines Highway
Porcupine district
ML 92 0211 1

Ernest & Rena Harrell (SCR)
2025 Village Drive
Wasilla, AK 99654
Gold
Willow Creek
Willow Creek district
ML 92 0093 1

Robert Harrison (EIR)
P.O. Box 16
Central, AK 99730
Gold
Gold King Creek
Bonnifield district
ML 92 0142 1

Gerald L. Hassel (EIR)
P.O. Box 49
Ester, AK 99725
Gold
Ready Bullion Creek
Fairbanks district
ML 92 0185 1

Hawley Resource Group, Inc. (SCR)
C.C. Hawley
941 E. Dowling Road, #300
Anchorage, AK 99518
Gold
Near Bryn Maur Creek and Long Creek
Yentna district
ML 92 0461 1

Hawley Resource Group, Inc. (SCR)
941 E. Dowling Road, #300
Anchorage, AK 99518
Gold
Boulder and Alpha Creeks
Yentna district
ML 92 0329 1

Hayden Expoloration & Mining (EIR)
Forest A. Hayden
P.O. Box 110930
Anchorage, AK 99511
Gold
Baby Creek
Fortymile district
ML 92 0264 1

Heflinger Mining & Equipment Co. (EIR)
Carl Heflinger
665 19th Avenue #307
Fairbanks, AK 99701
Gold
Livengood Creek
Livengood district
ML 92 0377 1

Fred Heflinger (EIR)
P.O. Box 82390
Fairbanks, AK 99708
Gold
Walker Fork
Fortymile district
ML 92 0193 1

Jack Hendrickson (EIR)
P.O. Box 10154
Fairbanks, AK 99710
Gold
Sourdough Creek
Circle district
ML 92 0354 1

John & Becky Hendrickson (EIR)
P.O. Box 10154
Fairbanks, AK 99710
Gold
Birch Creek
Circle district
ML 92 0460 1

Dale E Henkins (SER)
P.O. Box 240261
Douglas, AK 99824
Gold
Montana Creek
Juneau district
ML 92 0426 1

Herndon & Thompson Leasing Co. (SCR)
41745 Bear Creek Drive
Homer, AK 99603
Sand & gravel
Kenai Peninsula
ML 92 0440 1

Herndon & Thompson Leasing Co. (SCR)
41745 Bear Creek Drive
Homer, AK 99603
Sand & gravel
Kenai Peninsula
ML 92 0439 1

Bruce Herning (EIR)
P.O. Box 73846
Fairbanks, AK 99707
Gold
Palmer Creek
Fairbanks district
ML 92 0249 1

Martin Herzog (SCR)
3817 S. Carson Street, #428
Carson City, NV 89701
Gold
Cache Creek
Yentna district
ML 92 0126 1

Russell D. Hoffman (SCR)
HC 60-Box 153
Copper Center, AK 99573
Gold
Limestone Creek
Chistochina district
ML 92 0248 1

Lee Holland (EIR)
Route 1, Box 32940
Nenana, AK 99760
Gold
N/A
N/A
ML 92 0055 1

Lee Holland /James Wood (EIR)
P.O. Box 58597
Fairbanks, AK 99711
Gold
Little Boulder Creek
N/A
ML 92 0056 1

T.E. & Susan Holloway (EIR)
8323 Richmond Highway
Salcha, AK 99714
Gold
Portage Creek
Bonnifield district
ML 92 0183 1

Hope Mining Company (SCR)
P.O. Box 101827
Anchorage, AK 99510
Gold
Resurrection and Palmer Creeks
Hope-Sunrise district
ML 92 0229 1

Alf Hopen (EIR)
P.O. Box 74246
Fairbanks, AK 99707
Gold
Little Eldorado Creek
Fairbanks district
ML 92 0098 1

Paul E. & James W. Hunt (EIR)
P.O. Box 204
Kirkland, Wa 98083
Gold
Jack Wade Creek
Fortymile district
ML 92 0180 1

C. Hutcheson/S. Lankford (SCR)
P.O. Box 467
Trapper Creek, AK 99683
Gold
Albert Creek
Nelchina district
ML 92 0349 1

Jeremy Hyter (SCR)
2427 E. 86th
Anchorage, AK 99507
Gold
Willow Creek
Willow Creek district
ML 92 0457 1

Inca Mining Associations (SCR)
P.O. Box 91259
Anchorage, AK 99509
Gold
East Broxson Gulch
Valdez Creek district
ML 92 0453 1

Inner Earth Resources (EIR)
P.O. Box 2677
Largo, FL 34649
Gold
Cherry and No Name Creeks
Fortymile district
ML 92 0334 1

Inside-Out Mining (NR)
Paul Dionne
P.O. Box 9072
Coldfoot, AK 99701
Gold
Nolan Creek Bench
Koyukuk district
ML 92 0154 1

Interior Alaskan Association (EIR)
742 Bennet Road
Fairbanks, AK 99712
Gold
Independence, Mammoth, and Mastadon Creeks
Circle district
ML 92 0409 1

J A B Development, Inc. (NR)
1665 Eagle River Road
Eagle River, AK 99577
Gold
Hammond River
Koyukuk district
ML 92 0252 1

Jackson Mining Co. (EIR)
Roy Traxler/Naimy Birklid
936 Coppet Street
Fairbanks, AK 99709
Gold
Totatlanika River
Bonnifield district
ML 92 0343 1

Brian Jeleniewski (EIR)
P.O. Box 5052
Fairbanks, AK 99707
Gold
Moose Creek
Bonnifield district
ML 92 0079 1

Daniel D. Jensen (EIR)
P.O. Box 12
Delta Junction, AK 99737
Gold
McCumber Creek
Delta/Bonnifield district
ML 92 0344 1

O.J. Jiles (N/A)
5250 Auburn-Folsom Road
Loomis, CA 95650
Gold
Gold Bottom Gulch
N/A
ML 92 0265 1

Jim Cline Ent. (SCR)
James & Jacqueline Cline
P.O. Box 2
Glenallen, AK 99588
Sand & gravel
Private property
Nelchina district
ML 92 0287 1

David H. Johnson (N/A)
4748 Old Seward Highway
Anchorage, AK 99503
Gold
N/A
N/A
ML 92 0281 1

Jones & Co. (SCR)
W. Deering Jones
HCR 68, Box 1120
Moose Pass, AK 99631
Gold
Roaring, Weber, and Wilson Creeks
Hope-Sunrise district
ML 92 0050 1

Cheryl Jong (WR)
P.O. Box 1107
Nome, AK 99762
Gold
Washington Creek
Kougorok district
ML 92 0169 1

Martin P. Junge (EIR)
P.O. Box 981
Dillingham, AK 99576
Gold
S. Fork 40 Mile River
Fortymile district
ML 92 0389 1

K.C. Mining Co. (EIR)
Kenneth Hanson
P.O. Box 10657
Fairbanks, AK 99710
Gold
Faith Creek
Fairbanks district
ML 92 0025 1

Robert W. Kellet (EIR)
P.O. Box 113
Healy, AK 99743
Gold
Totalanika River
Bonnifield district
ML 92 0234 1

Kelly Mining Company (EIR)
Timothy Kelly
2120 E. 36th Avenue
Anchorage, AK 99508
Gold
North Fork Creek
Circle district
ML 92 0262 1

Robert & Mary Kirsch (N/A)
P.O. Box 826
Kenai, AK 99611
Gold
N/A
N/A
ML 92 0051 1

Susan S. Knapman (EIR)
P.O. Box 253
Central, AK 99730
Gold
26 Pup
Circle district
ML 92 0190 1

Ted Knutson/Marin Lovs (EIR)
2326 St. Elias Drive
Anchorage, AK 99517
Gold
Mammoth Creek
Circle district
ML 92 0135 1

Douglas A. Kolstad (N/A)
17335 W. Juanita Loop
Eagle River, AK 99577
Gold
Alder Creek
N/A
ML 92 0394 1

Sam Koppenberg (EIR)
P.O. Box 80067
Fairbanks, AK 99708
Gold
Faith, Hope, and Charity Creeks
Fairbanks district
ML 92 0306 1

T.J. Koppenberg (EIR)
HCO 4-9068
Palmer, AK 99645
Gold
Homestake and Faith Creeks
Fairbanks district
ML 92 0106 1

Lawrence Kordecki (EIR)
300 Howland Rd.
Fairbanks, AK 99712
Gold
McManns Creek
Fortymile district
ML 92 0033 1

Janos Kralik/Ed W. Schwoyer (WR)
P.O. Box 1793
Nome, AK 99762
Gold
Gold Run and Alder Creeks;
Bluestone River
Port Clarence district
ML 92 0198 1

Floyd E. Krause (N/A)
P.O. Box 71373
Fairbanks, AK 99707
Gold
Robinson-Andor Walby and Robin Wade Creeks
N/A
ML 92 0221 1

Rudy W. Krzak (EIR)
4426 Churchill Street
Shoreview, MN 55126
Gold
Albion & Crooked Creeks
Circle district
ML 92 0412 1

Ben Krzykowski (EIR)
P.O. Box 60091
Fairbanks, AK 99706
Gold
Big Eldorado Creek
Fairbanks district
ML 92 0360 1

Kurt's Construction (EIR)
Kurt A. Ueeck
HC 60, Box 3560
Delta Junction, AK 99737
Sand & gravel
Milton Road area
Delta Junction
ML 92 0315 1

Lapp & Son (EIR)
Ed Lapp
536 6th Avenue, West #4
Kalispell, MT 59901
Gold
Eagle Creek & Tributary
Circle district
ML 92 0038 1

Don Lasley (EIR)
P.O. Box 30047
Central, AK 99730
Gold
North Fork Harrison Creek
Circle district
ML 92 0399 1

Lawler Family (SCR)
P.O. Box 386
Kasilof, AK 99610
Gold
West Fork Chistochina River
Chistochina district
ML 92 0380 1

L.B.M.B. Mining Company (SWR)
c/o 1536 W. Martinette Avenue
Exeter, CA 03221
Gold
Murray and New York Creeks
NYAC/Aniak district
ML 92 0171 1

L&R Mining (EIR)
T.H. Leonard & C.R. Redfern
P.O. Box 51
Salcha, AK 99714
Gold
L&R Creek near Porcupine Cr. & Salcha River
Richardson district
ML 92 0121 1

Ray Lester (EIR)
732 Old Steese Hwy. N.
Fairbanks, AK 99712
Gold
Birch Creek
Circle district
ML 92 0222 1

Raymond P. Lester (EIR)
732 Old Steese N. #8
Fairbanks, AK 99712
Gold
Birch and Butte Creeks
Circle district
ML 92 0463 1

Bill & Clara Light (NR)
P.O. Box 74804
Fairbanks, AK 99707
Gold
Smith Creek
Koyukuk district
ML 92 0294 1

Light Mining (NR)
Bill & Clarence Light
P.O. Box 9064
Coldfoot, AK 99701
Gold
Nolan and Acme Creeks
Koyukuk district
ML 92 0001 1

Gary Lindman (SCR)
44320 Parkway Avenue
Soldotna, AK 99669
Gold
Canyon Creek
Hope-Sunrise district
ML 92 0200 1

Pete Lindsey/Joseph Malatesta (SCR)
P.O. Box 318
Clam Gulch, AK 99568
Gold
Valdez and White Creeks
Valdez district
ML 92 0047 1

Little El Dorado Gold Camp, Inc. (EIR)
Andrew G. Wescott
1132 Lakeview Terrace
Fairbanks, AK 99701
Gold
Fox Creek Gulch
Fairbanks district
ML 92 0100 1

George Livermore (WR)
P.O. Box 241449
Anchorage, AK 99524
Gold
Ruby Gulch
Ruby-Poorman district
ML 92 0295 1

Lodestar Explorations, Inc. (EIR)
P.O. Box 39280
Vancouver, BC V6C 1B4
Canada
Gold
Headwaters of McCord Creek
Fortymile district
ML 92 0178 1

Steve Losonsky (EIR)
P.O. Box 80321
Fairbanks, AK 99708
Gold
Hunter Creek
Rampart district
ML 92 0186 1

Richard L. Loud (EIR)
742 Bennett Road
Fairbanks, AK 99712
Gold
N. Fork Harrison and Harrison Creeks
Circle district
ML 92 0431 1

James Lounsbury (NR)
365 Henderson Road
Fairbanks, AK 99709
Gold
Union Gulch
Koyukuk district
ML 92 0107 1

Victor Loyer/Alan Olson (WR)
P.O. Box 165
Palmer, AK 99645
Gold
Near Candle Creek
Fairhaven district
ML 92 0242 1

Lucky Seven Mining Co. (EIR)
P.O. Box 71614
Fairbanks, AK 99707
Gold
Fish Creek
Fairbanks district
ML 92 0216 1

Lucky Seven Mining Co. (EIR)
P.O. Box 71614
Fairbanks, AK 99707
Gold
Pearl Creek
Fairbanks district
ML 93 0064 1

Luke's Mining Company (SCR)
Tony Neal
2396 Kachemak Bay Drive
Homer, AK 99603
Sand & gravel
Luke's Pit
Kenai Peninsula
ML 92 0212 1

Lyman Resources in Alaska, Inc. (SWR)
P.O. Box 192
McGrath, AK 99627
Gold
Snow Gulch, Quartz Creek
NYAC/Aniak district
ML 92 0095 1

Rocky MacDonald (N/A)
P.O. Box 81035
Fairbanks, AK 99708
Gold
Frying Pan
N/A
ML 92 0346 1

Robert Magnuson (SWR)
P.O. Box 101
McGrath, AK 99627
Gold
Madison Creek
Innoko district
ML 92 0113 1

Warren E. Magnuson (SWR)
P.O. Box 1845
Hawthorne, NV 89415
Gold
Ganes Creek
Innoko district
ML 92 0096 1

Marvin Mahrt (EIR)
715 Waves Street
Fairbanks, AK 99709
Gold
Dry and Caribou Creeks
Bonnifield district
ML 92 0116 1

Sheldon Maier (EIR)
P.O. Box 611
Petersburg, AK 99833
Gold
South Fork Fortymile River
Fortymile district
ML 92 0218 1

Bruce A. Manning (SCR)
1810 Talkeetna
Anchorage, AK 99508
Gold
Bird Creek
Yentna district
ML 92 0172 1

Edward D. Martin Jr. (N/A)
P.O. Box 521
Cooper Landing, AK 99572
Gold
Hargood Bench
N/A
ML 92 0468 1

William K. Martin (EIR)
2259 Linden Street
Livermore, CA 94550
Gold
South and Mosquito Forks; Fortymile River
Fortymile district
ML 92 0451 1

Elmer Emory Martinson (WR)
Nome, AK 99762
Gold
Kougarok River
Kougarok district
ML 92 0199 1

Mascott Mining Inc. (NR)
T.L. Bryant
P.O. Box 264
Ridgway, CO 81432
Gold
Hammond River and Vermont Creek
Koyukuk district
ML 92 0368 1

Perry or George Massie (WR)
P.O. Box 3040
Fallbrook, CA 92028
Gold
Cripple River
Nome district
ML 92 0310 1

Mat-Su Aggregate (SCR)
Merwin L. Arneson
P.O. Box 737
Palmer, AK 99645
Sand & gravel
N/A
Mat-Su Valley
ML 92 0415 1

Mark Matter (SWR)
P.O. Box 44
Aniak, AK 99557
Gold
Marvel Creek
Aniak/NYAC district
ML 92 0092 1

G.A. Matthews/M. Williams (EIR)
P.O. Box 241
Tok, AK 99780
Gold
Kenyon Creek
Fortymile district
ML 92 0268 1

Maxwell Mine & Exploration (SCR)
Barbara M. Maxwell
3910 Loc Sault Avenue
Anchorage, AK 99516
Canyon Creek
Hope-Sunrise district
ML 92 0181 1

Don or Dan May (EIR)
535 Hagelbarger Avenue
Fairbanks, AK 99712
Gold
Goldstream Creek
Fairbanks district
ML 92 0104 1

Robert C. McClanahan (SWR)
1902 Second Avenue, S.E.
Bothell, WA 98012
Gold
Taylor Creek
Aniak district
ML 92 0454 1

Robert C. McClanahan/ W. Gale Willis (N/A)
1902 Second Avenue, S.E.
Bothell, WA 98012
Gold
Bailey Creek
N/A
ML 92 0449 1

William & Velma McLintock (WR)
P.O. Box 82567
Fairbanks, AK 99708
Gold
Poorman Creek
Ruby-Poorman district
ML 92 0424 1

Dennis S. McMurdie (EIR)
7418 Fire Oak Drive
Austin, TX 78759
Gold
Hope Creek
Fairbanks district
ML 92 0393 1

Mespelt & Asmay Mining Co. (WR)
Nixon Fork Mine
McGrath, AK 99627
Gold
Nixon Fork Mine
McGrath district
ML 92 0311 1

Metco, Inc. (SCR)
HCR 64, Box 300
Seward, AK 99664
Sand & gravel
Kenai Peninsula
ML 92 0467 1

Michel/Gaddis/Wilson/Nartex (EIR)
P.O. Box 61099
Fairbanks, AK 99706
Gold
Bonanza Creek
Circle district
ML 92 0339 1

Minex Alaska, Inc. (WR)
Yoram Palkovitch
P.O. Box 103
Girdwood, AK 99587
Gold
Beach Operation
Nome district
ML 92 0371 1; ML 92 0048

The Mining Co. (EIR)
John E. & Floretta A. McClain
P.O. Box 436
Soldotna, AK 99669
Ester and Willow Creeks
Fairbanks district
ML 92 0077 1

Mining Management Corp. (SCR)
Stella Darlene Lavender
P.O. Box 91725
Anchorage, AK 99509
Gold
Roosevelt and Valdez Creeks
Valdez Creek district
ML 92 0053 1

Andrew W. Miscovich (EIR)
P.O. Box 1489
Fairbanks, AK 99797
Gold
Chatham Creek
Fairbanks district
ML 92 0213 1

Andy Emil Miscovich (EIR)
942 Pedro Dome Road
Fairbanks, AK 99712
Gold
Dome Creek
Fairbanks district
ML 92 0333 1

Miscovich Mining Co. (WR)
Howard M. Miscovich
P.O. Box 262
Galena, AK 99741
Gold
Poorman Creek
Ruby-Poorman district
ML 92 0301 1

John A. Miscovich (SWR)
1093 N. Greengrove Street
Orange, CA 92667
Gold
Discovery and Otter Creeks
Iditarod district
ML 92 0140 1

Mike Miscovich (EIR)
P.O. Box 1489
Fairbanks, AK 99707
Gold
Porcupine Creek
Circle district
ML 92 0118 1

Rod Mitchell/Donald Watts (EIR)
P.O. Box 81515
Fairbanks, AK 99708
Gold
Grubstake Creek
Bonnifield district
ML 92 0233 1

Wayne G. Mitchell (N/A)
1731 Bridgewater Drive
Fairbanks, AK 99709
Gold
Ptarmigan Creek
N/A
ML 92 0447 1

Melvin or Lois Montgomery (EIR)
7073 Trails End Road
Delta Junction, AK 99737
Gold
Gillaland Creek
Fortymile district
ML 92 0070 1

Anthony T. Monaco (N/A)
2521 Autumn Creek
Anchorage, AK 99516
Gold
Willow and Craigie Creeks
N/A
ML 92 0459 1

Vincent C. Monzulla (EIR)
2920 Monzulla Lane
Fairbanks, AK 99712
Gold
Victoria Creek
Fairbanks district
ML 92 0452 1

Vincent C. Monzulla (EIR)
Rt. 1, Box 659A, Avenue I
Big Pine Key, FL 33043
Gold
Smallwood Creek
Fairbanks district
ML 92 0014

Roger L. Moore (EIR)
288 Rambling Road, #26
Fairbanks, AK 99712
Gold
Ready Bullion Creek
Fairbanks district
ML 92 0472 1

Mrak Placer Mine (SCR)
Hermon Mrak & Aklestad Hermon
P.O. Box 1963
Palmer, AK 99645
Gold
Willow Creek
Willow Creek district
ML 92 0049 1

Donald E. Mullikin (WR)
P.O. Box 790
Homer, AK 99603
Gold
Skookum Creek
Koyuk district
ML 92 0269 1

Donald E. Mullikin (WR)
P.O. Box 790
Homer, AK 99603
Gold
Black & Grouse Creeks
Koyuk district
ML 92 0270 1

Donald E. Mullikin (WR)
P.O. Box 790
Homer, AK 99603
Gold
Boulder Creek
Koyuk district
ML 92 0271 1

Samuel L. Munjar Jr. (NR)
6781 Clark Road
Paradise, VA 95969
Gold
Hammond River
Koyuk district
ML 92 0385 1

James Munsell (EIR)
P.O. Box 81155
Fairbanks, AK 99708
Gold
Little Minook Jr. Cr.
Rampart district
ML 92 0076 1

Nana Regional Corporation (NR)
1001 E. Benson Boulevard
Anchorage, AK 99508
Sand & gravel
Spud
N/A
ML 92 0163 1

Nana Regional Corporation (NR)
1001 E. Benson Boulevard
Anchorage, AK 99508
Silver, Lead, Zinc
Red Dog
Noatak district
ML 92 0086 1

N.B. Tweet & Sons (WR)
P.O. Box 1107
Nome, AK 99762
Gold
Kougarok River
Kougarok district
ML 92 0137 1

Nevada Star Resource Corp. (SWR)
P.O. Box 10322
Vancouver, BC V7Y 1G5
Canada
Gold
Forty Seven Creek
Aniak district
ML 92 0456 1

Harold Nevers (EIR)
8148 Pinewood Drive
Juneau, AK 99801
Gold
American Creek
Hot Springs district
ML 92 0300 1

William H. Nordeen (NR)
P.O. Box 9013
Coldfoot, AK 99701
Gold
Emma Creek
Koyukuk district
ML 92 0357 1

Roger Nordlum (WR)
P.O. Box 171
Kotzebue, AK 99752
Gold
Candle Creek
Fairhaven district
ML 92 0387 1

North Pacific Mining Corp. (WR)
121 W. Fireweed Lane, #102
Anchorage, AK 99503
Gold
Illinois Creek
Kaiyuh Hills district
ML 92 0411 1

Ross Novak (EIR)
P.O. Box 83200
Fairbanks, AK 99708
Gold
Eureka Creek
Hot Springs district
ML 92 0184 1

Nuway Mining Company Inc. (SCR)
P.O. Box 1067
Kasilof, AK 99610
Gold
N/A
N/A
ML 92 0291 1

Nuway Mining Company Inc. (N/A)
P.O. Box 1067
Kasilof, AK 99610
Gold
N/A
N/A
ML 92 0289 1

Nuway Mining Company Inc. (SCR)
P.O. Box 1067
Kasilof, AK 99610
Gold
N/A
N/A
ML 92 0290 1

NYAC Mining Co. (SWR)
737 E. Street
Anchorage, AK 99501
Gold
Tuluksak River and Tributaries
NYAC/Aniak district
ML 92 0089 1

Franklin L. O'Donnell Jr. (EIR)
P.O. Box 32
Chicken, AK 99732
Gold
Moose Creek
Bonnifield district
ML 92 0327 1

Jim & Nancy Oliver (N/A)
2208 Eureka, #9
Anchorage, AK 99503
Gold
Big Creek
N/A
ML 92 0210 1

Gorden E. Olson (EIR)
7100 North Milford
Holly, MI 48442
Gold
Jack Wade Creek
Fortymile district
ML 92 0011 1

Steven Olson (EIR)
P.O. Box 58443
Fairbanks, AK 99711
Gold
Eagle Creek
Circle district
ML 92 0153 1

O'Malley Sales (SCR)
P.O. Box 012774
Anchorage, AK 99510
Sand & gravel
Anchorage
ML 92 0437 1

On-Line Exploration Services Inc. (EIR)
Kevin P. Adler
11976 Wilderness Drive
Anchorage, AK 99516
Gold
West Fork Tolovana River; Lost Creek
Livengood district
ML 92 0330 1

Bill O'Neal (EIR)
2173 University Avenue, South
Fairbanks, AK 99709
Gold
Ester Dome
Fairbanks district
ML 92 0246 1

Orc-Tech (WR)
Jeffrey Keener
P.O. Box 1955
Nome, AK 99762
Gold
Anvil Creek
Nome district
ML 92 0308 1

ORC-Tech (WR)
Thomas K. Blake
P.O. Box 543
Nome, AK 99762
Gold
Dome-Telegram Creeks
Nome district
ML 92 0309 1

Oxy Minerals Corporation (N/A)
P.O. Box 300
Tulsa, OK 74102
Copper
N/A
N/A
ML 92 0314 1

P and P Mining (EIR)
2551 Peede Road
North Pole, AK 99705
Gold
Newman Creek
Fairbanks district
ML 92 0272 1

P and P Mining (EIR)
Paul W. White
2551 Peede Road
North Pole, AK 99705
Gold
Newman Creek
Fairbanks district
ML 92 0141 1

Pacific Mining Inc. (EIR)
1300 East 74th
Anchorage, AK 99518
Gold
Porcupine Creek
Circle district
ML 92 0328 1

James M. Parry (EIR)
P.O. Box 1656
Fairbanks, AK 99707
Gold
No Grub Creek
Richardson district
ML 92 0302 1

Paul & Co. (EIR)
Paul Manuel
P.O. Box 83102
College, AK 99708
Gold
Crooked Creek
Circle district
ML 92 0030 1

Paul & Co. (EIR)
Paul Manuel
P.O. Box 83102
Fairbanks, AK 99708
Gold
Porcupine Creek
Circle district
ML 92 0037 1

Douglas Paulson (EIR)
P.O. Box 61246
Fairbanks, AK 99706
Gold
Ester Creek
Fairbanks district
ML 92 0060 1

Mac Payne (EIR)
1079 Victor
North Pole, AK 99705
Gold
Hoosier Creek
Rampart district
ML 92 0319 1

Jon M. Peckenpaugh (WR)
928 Morningside Drive
Twin Falls, ID 83301
Gold
Inmachuk River
Fairhaven district
ML 92 0196 1

Dave Penz (SWR)
P.O. Box 29
Russian Mission, AK 99657
Gold
Buster Creek
Marshall district
ML 92 0207 1

Vernon Petefish (EIR)
P.O. Box 111
Manley Hot Springs, AK 99756
Gold
Little Boulder Creek
Hot Springs district
ML 92 0293 1

Bert Pettigrew (WR)
P.O. Box 1230AY
Nome, AK 99762
Gold
Anvil Creek
Nome district
ML 92 0433 1

Bert Pettigrew (WR)
Route 3, Box 123
Ellensburg, WA 98926
Gold
Oregon Creek
Nome district
ML 92 0400 1

Roy Philpott (NR)
115 Charles Street
Fairbanks, AK 99701
Gold
Smith Creek
Koyukuk district
ML 92 0097 1

Gary R. Pike (NR)
300 Simpson Way
Fairbanks, AK 99712
Gold
Prospect Creek
Koyukuk district
ML 92 0423 1

Gary Pike/Dan Schwietert (EIR)
P.O. Box 10361
Fairbanks, AK 99712
Gold
Dome Creek
Fairbanks district
ML 92 0080 1

John Pike (EIR)
1091 Ichabod Street
North Pole, AK 99705
Gold
Little Boulder Creek
Hot Springs district
ML 92 0032 1

Placer Dome, U.S. Inc. (NR)
5631 Silverado Way, Suite H
Anchorage, AK 99518
Gold
Alaha and Chapman Creeks;
Tributary Hutlanana River
Koyukuk district
ML 92 0255 1

Placer Dome U.S. Inc. (SWR)
Carey Cossaboom
5631 Silverdao Way, Suite H
Anchorage, AK 99518
Gold
Otter and Black Creeks
Iditarod district
ML 92 0277 1

Dan & Cindy Plano (SWR)
P.O. Box 878275
Wasilla, AK 99687
Gold
Anivl Creek, Innoko River
Innoko district
ML 92 0366 1

Jerry Pushcar (WR)
P.O. Box 1604
Nome, AK 99762
Gold
Lower Willow and Nelson Creeks
Council district
ML 92 0197 1

R.A. Hanson Company, Inc. (SWR)
P.O. Box 7400
N. 8700 Crestline
Spokane, WA 99207
Gold
Salmon River and tributaries
Goodnews Bay district
ML 92 0230 1

R.A. Hanson Company, Inc. (SWR)
P.O. Box 7400
N. 8700 Crestline
Spokane, WA 99207
Gold
Salmon River and tributaries
Goodnews Bay district
ML 92 0231 1

Rainbow Mining & Development (SCR)
500 N. Main Street, Suite B
Wasilla, AK 99687
Gold
Peters Creek
Yentna district
ML 92 0476 1

Red Samm Construction, Inc. (SER)
P.O. Box 3097
Bellevue, WA 98009
Sand & gravel
Lemon Creek Pit
Juneau district
ML 92 0418 1

Red Samm Construction, Inc. (SER)
P.O. Box 3097
Bellevue, WA 98009
Sand & gravel
Lena Point
Juneau district
ML 92 0419 1

Mary Lou Redmond & Sons Co. (SCR)
P.O. Box 8700
Indian, AK 99540
Gold
Indian Creek
Yentna district
ML 92 0296 1

Richard Redmond (N/A)
P.O. Box 8700
Indian, AK 99540
Gold
Macklin Creek
N/A
ML 92 0353 1

Leo A. Regner (EIR)
P.O. Box 72733
Fairbanks, AK 99707
Gold
Lillywig and Ingle Creeks
Fortymile district
ML 92 0065 1

R. Robin Richardson (SCR)
P.O. Box 23
Sutton, AK 99674
Gold
Willow Creek
Willow Creek district
ML 92 0170 1

Lynn W. Rill (EIR)
215 Ellingsen Street
Fairbanks, AK 99701
Gold
Ready Bullion Creek
Fairbanks district
ML 92 0448 1

John Ritter (EIR)
P.O. Box 73792
Fairbanks, AK 99707
Gold
Bonanza Creek
Circle district
ML 92 0473 1

John Ritter (EIR)
P.O. Box 73792
Fairbanks, AK 99707
Gold
Steamboat Creek
Circle district
ML 92 0396 1

John Ritter/George Seuffert (EIR)
P.O. Box 156
Central, AK 99730
Gold
Ketchum Creek
Circle district
ML 92 0041 1

Michael D. Roberts (EIR)
P.O. Box 82182
Fairbanks, AK 99708
Gold
Dome Creek
Fairbanks district
ML 92 0143 1

Robert A. Roberts (EIR)
P.O. Box 225
Tok, AK 99280
Gold
Stone House and Chicken Creeks
Fortymile district
ML 92 0376 1

Roger L. Roberts (SWR)
Ophir/Takotna, AK 99675
Gold
Ophir and Gold Run Creeks
Innoko district
ML 92 0378 1

James G. Roland (EIR)
Annabelle Mine
710 McGrath Road
Fairbanks, AK 99712
Gold
Moose Creek
Bonnifield district
ML 92 0119 1

Joseph J. Rollins (SCR)
Associated Construction
P.O. Box 266
Anchor Point, AK 99556
Sand & gravel
Kenai Peninsula
ML 92 0145 1

John Roop (EIR)
P.O. Box 873185
Wasilla, AK 99687
Gold
Fortymile River
Fortymile district
ML 92 0321 1

Ronald Rosander (WR)
P.O. Box 129
McGrath, AK 99627
Gold
Colorado Creek
Innoko-Tolstoi district
ML 92 0240 1

RSH Company (SER)
Ralph S. Horecny
P.O. Box 211474
Auke Bay, AK 99821
Sand & gravel
Lemon Creek
Juneau district
ML 92 0436 1

RSH Company (SER)
Ralph S. Horecny
P.O. Box 211474
Auke Bay, AK 99821
Sand & gravel
Lemon Creek
Juneau district
ML 92 0414 1

John Rubel (EIR)
8183 Richardson Highway
Salcha, AK 99714
Gold
Bench Above Democrat (Banner)
Richardson district
ML 92 0326 1

Ruby Mining (WR)
Al Kangas
P.O. Box 1
Ruby, AK 99768
Gold
Long Creek
Ruby-Poorman district
ML 92 0266 1

Salter & Assoc. Inc. (EIR)
Ed Salter
P.O. Box 30
Manley, AK 99756
Gold
Joe Bush Creek
Hot Springs district
ML 92 0084 1

Sandvik Enterprises (SCR)
Lynn C. Sandvik
HC 02, Box 7480-2
Palmer, AK 99645
Sand & gravel
Mat-Su Valley
ML 92 0282 1

Savage Mining (EIR)
Dwayne Savage
P.O. Box 10613
Fairbanks, AK 99710
Gold
Last Chance Creek
Fairbanks district
ML 92 0406 1

Paul Sayer (SWR)
P.O. Box 10
Homer, AK 99603
Gold
Little Creek, Ester, and Bedrock Creeks
Innoko district
ML 92 0150 1

Beatrice L. Schafer (EIR)
P.O. Box 114
Manley Hot Springs, AK 99756
Gold
Little Boulder Creek
Hot Springs district
ML 92 0355 1

Earl L. Schene (EIR)
P.O. Box 66
Chicken, AK 99732
Gold
Uhler Creek
Fortymile district
ML 92 0358 1

John A. Schilling (EIR)
P.O. Box 81424
Fairbanks, AK 99708
Gold
Thanksgiving Creek
Rampart district
ML 92 0016 1

John J. Schnabel (SER)
P.O. Box 149
Haines, AK 99827
Gold
Porcupine Creek
Porcupine district
ML 92 0174 1

D. Schroedl/R.E. Dalton (N/A)
P.O. Box 58712
Fairbanks, AK 99711
Gold
Boulder Creek
N/A
ML 92 0167 1

George Seuffert Jr. (EIR)
P.O. Box 156
Central, AK 99730
Gold
Deadwood Creek
Fairbanks district
ML 92 0292 1

W.L. Shaffer (WR)
P.O. Box 10499
Fairbanks, AK 99710
Gold
Near Kiwalik River
Fairhaven district
ML 92 0347 1

W.L. Shaffer (EIR)
P.O. Box 10499
Fairbanks, AK 99710
Gold
Cache Creek
Hot Springs district
ML 92 0188 1

M. Dennis Shepard/ John Andresen (EIR)
P.O. Box 82504
Fairbanks, AK 99708
Gold
Last Chance and Murray Creeks
Hot Springs district
ML 92 0442 1

Shishmaref Native Corporation (WR)
General Delivery
Shishmaref, AK 99772
Sand & gravel
Seward Peninsula
ML 92 0438 1

Barry Shockley (WR)
P.O. Box 81978
Fairbanks, AK 99708
Gold
Monument Creek
Ruby-Poorman district
ML 92 0224 1

SHS Mining (SWR)
P.O. Box 110226
Anchorage, AK 99511
Gold
Stony River
McGrath district
ML 92 0446 1

Silent Island Mining (N/A)
Adam Arnariak Sr.
P.O. Box 95
Togiak, AK 99678
Gold
N/A
ML 92 0052 1

Ralph Simonson (EIR)
Elgin, OR 97827
Gold
Totatlanika River
Bonnifield district
ML 92 0239 1

John Sipes (EIR)
2741 Perimeter Drive
North Pole, AK 99705
Gold
Deadwood Creek
Circle district
ML 92 0356 1

Sivuqaq, Inc. (WR)
P.O. Box 101
Gambell, AK 99742
Sand & gravel
St. Lawerence Island
ML 92 0284 1

Samuel C. Skidmore (EIR)
P.O. Box 470
Fairbanks, AK 99707
Gold
Vault Creek
Fairbanks district
ML 92 0471 1

William L. Smith (N/A)
906 Cunningham
Anchorage, AK 99501
Gold
Silvertip
N/A
ML 92 0175 1

Dan Snodgrass (EIR)
Polar Mining Inc.
1245 Lance Lane
Fairbanks, AK 99712
Gold
Fish Creek
Fairbanks district
ML 92 0071

Hans Sobanja (N/A)
P.O. Box 10196
Fairbanks, AK 99710
Gold
Gold Creek
N/A
ML 92 0253 1

Harold L. & Betty M. Soule (SCR)
2840 E. 142nd Avenue
Anchorage, AK 99516
Gold
Windy Creek
Yentna district
ML 92 0114 1

Sound Quarry, Inc. (WR)
P.O. Box 2011
Nome, AK 99762
Sand & gravel
Cape Nome
Nome district
ML 92 0313 1

Robert L. Southwood (EIR)
P.O. Box 60782
Fairbanks, AK 99706
Gold
Gold King Creek
Bonnifield district
ML 92 0250 1

C.S. Sparks (EIR)
1901 Parkside Drive
Anchorage, AK 99501
Gold
Faith Creek
Fairbanks district
ML 92 0133 1

Spernak and Son Inc. (SCR)
8223 Sand Lake Road
Anchorage, AK 99502
Sand & gravel
Anchorage area
ML 92 0123 1

Dennis J. Stankewich (EIR)
1822 Sunrise Drive
Anchorage, AK 99508
Gold
Squaw Gulch, Canyon Creek
Fortymile district
ML 92 0338 1

Stebbins Native Corporation (N/A)
P.O. Box 110
Stebbins, AK 99671
Sand & gravel
Within corporation lands
N/A
ML 92 0374 1

Donald Stein (EIR)
105 Dunbar Avenue
Fairbanks, AK 99701
Gold
Twin and Pedro Creeks
Fairbanks district
ML 92 0057

Vernon Stepp (EIR)
290 Pearl Drive
Fairbanks, AK 99712
Gold
Bottom Dollar Creek
Circle district
ML 92 0029

Jim Steward (EIR)
835 Faultline Avenue
North Pole, AK 99705
Gold
Deadwood and No Name Creeks
Circle district
ML 92 0470 1

R.B. Stough/T.A. Weston (EIR)
Eagle, AK 99738
Gold
Dome Creek, Little Miller Pup
Fortymile district
ML 92 0164 1

Rosalyn Stowell (EIR)
177 Simpson Way
Fairbanks, AK 99712
Gold
Boston and Eureka Creeks
Hot Springs district
ML 92 0432 1

Phillip D. Strange (SCR)
P.O. Box 871478
Wasilla, AK 99687
Gold
Sidney Creek
Willow Creek district
ML 92 0458 1

James Swan (NR)
452 Winter Avenue
Fairbanks, AK 99712
Gold
Gold Creek
Chandalar district
ML 92 0010 1

Tom Swartwood (EIR)
P.O. Box 3472
Palmer, AK 99645
Gold
Totatlanika River
Bonnifield district
ML 92 0166 1

Richard A. Swenson (EIR)
P.O. Box 16025
Two Rivers, AK 99716
Gold
Dorie Creek
Hot Springs district
ML 92 0397 1

Swift Creek Mining Co. (WR)
Conrad House
3911 Tillison Way
North Pole, AK 99705
Gold
Swift Creek
Ruby-Poorman district
ML 92 0026 1

Wayne Tachick (EIR)
P.O. Box 3503
Soldotna, AK 99669
Gold
Moose Creek
Bonnifield district
ML 92 0013 1

Taiga Mining Company, Inc. (WR)
4740 East 115th Avenue
Anchorage, AK 99516
Gold
Bear Creek
Hogatza district
ML 92 0192 1

Myron C. Tate (NR)
3529 Blue Jay Way
North Pole, AK 99705
Gold
Myrtle Creek
Koyukuk district
ML 92 0392 1

Ronald H. Thole (N/A)
1735 University Avenue
Fairbanks, AK 99709
N/A
N/A
N/A
ML 92 0082 1

Ronald H. Thole (N/A)
1735 University Avenue
Fairbanks, AK 99709
N/A
N/A
N/A
ML 92 0081 1

J.R. Thomas (NR)
7930 Casey Circle
Anchorage, AK 99507
Gold
Bird Creek
Koyukuk district
ML 92 0413 1

Martha Thomas (NR)
P.O. Box 10996
Fairbanks, AK 99710
Gold
Prospect Creek
Koyukuk district
ML 92 0039 1

Three "G" Mining (SCR)
Charlotte Bradley
P.O. Box 387
Trapper Creek, AK 99687
Gold
Twin Creek and tributary
Yentna district
ML 92 0022 1

Three "G" Mining (SCR)
Jack Lacross
P.O. Box 387
Trapper Creek, AK 99687
Gold
Twin Creek and tributaries
Yentna district
ML 92 0372 1

Thurman Oil & Mining (N/A)
P.O. Box 83151
Fairbanks, AK 99708
Gold
Glenn Creek
N/A
ML 92 0236 1

Neil Thurneau (EIR)
P.O. Box 50
Chicken, AK 99732
Gold
Younger Creek
Fortymile district
ML 92 0214 1

Tilleson Mining & Reclamation (EIR)
Harold & Tilleson
P.O. Box 55823
North Pole, AK 99705
Gold
California Creek
Bonnifield district
ML 92 0040 1

David W. Timmons (N/A)
3225 Leisure
Fairbanks, AK 99701
Gold
Sawyer Creek
N/A
ML 92 0320 1

Camden & Cynthia Toohey (SCR)
P.O. Box 113
Girdwood, AK 99587
Gold
Crow Creek
Hope-Sunrise district
ML 92 0288 1

Top of World Mining (EIR)
Robert V. Wolff
Boundary Box BYA
Tok, AK 99780
Gold
Walker Fork
Fortymile district
ML 92 0223 1

Trans Alas-Can Gold (SCR)
3605 Arctic Boulevard, #1382
Anchorage, AK 99503
Gold
White Creek
Valdez district
ML 92 0020 1

John J. Trautner (N/A)
P.O. Box 909
Girdwood, AK 99587
Gold
N/A
N/A
ML 92 0232 1

Treasure Creek Mining (EIR)
Donald M. Read
P.O. Box 716285
Fairbanks, AK 99707
Gold
Vault Creek Bench
Fairbanks district
ML 92 0069 1

James W. Treesch (N/A)
18550 Man O'War Road
Eagle River, AK 99577
Gold
Squaw Creek
N/A
ML 92 0322 1

Tri-Con Mining, Inc. (NR)
P.O. Box 83730
Fairbanks, AK 99708
Gold
Thompson Pup, Fay Archibald, Nolan
Koyukuk district
ML 92 0345 1

Tri-Valley Corporation (EIR)
2001 Westwind Drive, Suite 14
Bakersfield, CA 93301
Gold
N/A
Richardson district
ML 92 0379 1

Triple L Mining (WR)
P.O. Box 2001
NOme, AK 99762
Gold
Little Rocker Creek
Nome district
ML 92 0241 1

Wally Trudeau (EIR)
P.O. Box 82514
Fairbanks, AK 99708
Gold
Jack Wade Creek
Fortymile district
ML 92 0462 1

Keith Tryck (WR)
P.O. Box 310
Girdwood, AK 99587
Gold
Ophir Creek
Ruby-Poorman district
ML 92 0398 1

Robert S. Tucker (N/A)
Box HC 31-5169-B
Wasilla, AK 99687
Gold
Stetson Creek
N/A
ML 92 0088 1

Ronald K. Tucker (EIR)
P.O. Box 4
Manley, AK 99756
Gold
Lillian Creek
Livengood district
ML 92 0304 1

Tuluksak Dredging Ltd. (SWR)
737 E Street
Anchorage, AK 99501
Gold
Tuluksak River and tributaries
Aniak/NYAC district
ML 92 0090 1

John L. Turner (EIR)
409 Dunkel Street
Fairbanks, AK 99701
Gold
40 Mile River
Fortymile district
ML 92 0359 1

Usibelli Coal Mine, Inc. (EIR)
P.O. Box 1000
Healy, AK 99743
Coal
Poker Flats Mine
Healy Area/Bonnifield district
ML 92 0161 1

Usibelli Coal Mine, Inc. (EIR)
P.O. Box 1000
Healy, AK 99743
Coal
Gold Run Pass Mine
Healy Area/Bonnifield district
ML 92 0160 1

Tom C. Van Ostrand (EIR)
P.O. Box 314
Healy, AK 99743
Gold
Platt-Fox Creek
Bonnifield district
ML 92 0189 1

Betty K. Velikanje (WR)
2600 Draper Drive
Anchorage, AK 99517
Gold
Salmon River
Kougarok district
ML 92 0091 1

Rudolph Vetter (EIR)
P.O. Box 70342
Fairbanks, AK 99707
Gold
Portage and Half Dollar Creeks
Circle district
ML 92 0136 1

S. Allen Vezey (WR)
1216 Range View
North Pole, AK 99705
Gold
Hastings Creek
Nome district
ML 92 0074 1

Michael L. Vial (WR)
P.O. Box 292
Willow, AK 99728
Gold
Candle Creek and Kiwalik River
Fairhaven district
ML 92 0307 1

Joe Vogler (EIR)
P.O. Box 40
Fairbanks, AK 99701
Gold
Ketchum Creek
Circle district
ML 92 0061 1

Ray A. Vogt (EIR)
Fairbanks, AK 99707
Gold
Dome Creek
Fairbanks district
ML 92 0260 1

Earl W. Voytilla (EIR)
P.O. Box 58211
Fairbanks, AK 99711-0211
Gold
Tenderfoot Creek
Richardson district
ML 92 0177 1

Betty Wagner-Krutzsch (WR)
P.O. Box 1567
Nome, AK 99762
Gold
Specimen Gulch
Nome district
ML 92 0352 1

Wales Native Corporation (WR)
P.O. Box 529
Wales, AK 99783
Sand & gravel
2.6 miles east of Village Creek
Seward Peninsula
ML 92 0285 1

Wales Native Corporation (WR)
P.O. Box 529
Wales, AK 99783
Sand & gravel
1/4 mile northeast of Village Creek
Seward Peninsula
ML 92 0286 1

Dan Walsh (WR)
9641 Vanguard Drive, #15
Anchorage, AK 99507
Gold
Dexter Creek
Nome district
ML 92 0425 1

Ross Walton (EIR)
1247 Hartzog Loop
North Pole, AK 99705
Gold
DomeCreek
Fairbanks district
ML 92 0251 1

Helen H. Warner (EIR)
P.O. Box 80674
Fairbanks, AK 99708
Gold
Porcupine Creek
Circle district
ML 92 0244 1

Jim Watkins (SCR)
P.O. Box 2871 (Mistler)
Palmer, AK 99645
Gold
Falls Creek
Yentna district
ML 92 0278 1

Douglas & Edith Weathers (SCR)
P.O. Box 8082
Nikiski, AK 99635
Gold
Cache Creek
Yentna district
ML 92 0201 1

Vernon Weaver (N/A)
P.O. Box 962
Delta Junction, AK 99737
Gold
Meyers Fork
N/A
ML 92 0168 1

WGM Inc./Stone Boy, Inc. (EIR)
P.O. Box 100059
Anchorage, AK 99510
Gold
Big Delta Quadrangle
Richardson district
ML 92 0441 1

Michael & Kathie White (N/A)
P.O. Box 2974
Valdez, AK 99686
Gold
Wilson Creek
N/A
ML 92 0363 1

Mark Whitmore (N/A)
P.O. Box 927
Slana, AK 99586
Gold
Moose Creek
N/A
ML 92 0215 1

Wilde Down Under (N/A)
804 A North Juanita Avenue
Redondo Beach, CA 90277
Gold
Mineral Creek
N/A
ML 92 0139 1

Wilde Down Under (N/A)
Richard Algie Hasha
3605 Arctic Blvd., #2834
Anchorage, AK 99503
Gold
Mineral Creek
N/A
ML 92 0370 1

James Wilde (EIR)
Central, AK 99730
Gold
Switch Creek
Circle district
ML 92 0382 1

Fred D. Wilkinson (EIR)
P.O. Box 1
Central, AK 99730
Gold
Ketchem
Circle district
ML 92 0381 1

Frank & Vivian Willford (EIR)
752 Wanda Drive
North Pole, AK 99705
Gold
Hoosier Creek
Rampart district
ML 92 0157 1

Wilbur A. & Ann J. Williams (SWR)
3407 Spenard Road, Space 42
Anchorage, AK 99503
Gold
Granite Creek
Iditarod district
ML 92 0205 1

Willis Mine Services (N/A)
Dean L. Willis
P.O. Box 30063
Central, AK 99730
Gold
Slate Creek
N/A
ML 92 0364 1

Willow Creek Joint Venture (N/A)
P.O. Box 819
Palmer, AK 99645
Willow Creek
Willow Creek district
ML 92 0435 1

David L. Wilmarth (SWR)
P.O. Box 111037
Anchorage, AK 99511
Gold
Julian Creek
Iditarod district
ML 92 0127 1

Richard Wilmarth (SWR)
Red Devil, AK 99656
Gold
Chicken Creek
Iditarod district
ML 92 0094 1

Kenneth Wise (EIR)
P.O. Box 212313
Anchorage, AK 99521
Gold
Mosquito Fork
Fortymile district
ML 92 0066 1

Charles B. Woodruff (EIR)
P.O. Box 2278
Fairbanks, AK 99707
Gold
Near Bitzeshtini Mtn.
Hot Springs district
ML 92 0297 1

Ron Wrede (EIR)
P.O. Box 71
Central, AK 99730
Gold
Deadwood Creek
Circle district
ML 92 0367 1

Jules W. Wright (EIR)
P.O. Box 290
Nenana, AK 99760
Gold
Bonnifield Creek
Bonnifield district
ML 92 0429 1

L.E. or Marilyn Wyrick (SWR)
P.O. Box 261
McGrath, AK 99627
Gold
Granite Creek
Iditarod district
ML 92 0280 1

George Yoder (N/A)
1525 Henry Street
North Pole, AK 99705
Gold
Sheep Creek
N/A
ML 92 0407 1

Young Pioneer Mining (EIR)
Andy E. Miscovich
P.o. Box 1489
Fairbanks, AK 99707
Gold
Upper Dome Creek
Fairbanks district
ML 92 0078 1

Yukon Mining Co., Inc. (EIR)
P.O. Box 101454
Anchorage, AK 99510
Gold
Golden Creek
Tozi Moran district
ML 92 0258 1

George W. Zimmer (N/A)
P.O. Box 140174
Anchorage, AK 99514
Gold
Quartz Creek
N/A
ML 92 0045 1

George W. Zimmer (N/A)
P.O. Box 140174
Anchorage, AK 99514
Gold
Quartz Creek
N/A
ML 92 0202 1

George Zimmer (N/A)
P.O. Box 140174
Anchorage, AK 99514
Gold
Quartz Creek
N/A
ML 92 0129 1

APPENDIX F
Primary metals production in Alaska, 1880-1991[a]

Year	Gold		Silver		Mercury		Antimony		Tin		Lead		Zinc		Platinum		Copper		Chromium	
	(oz)	(m$)	(oz)	(t$)	(flask[b])	(t$)	(lb)	(t$)	(lb)	(t$)	(tons)	(t$)	(tons)	(m$)	(oz)	(t$)	(lb)	(m$)	(tons)	(t$)
1880-1899	1,153,889	23.85	496,101	329.0	--	--	--	--	--	--	250	17.0	--	--	--	--	--	--	--	--
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	8.0	30	2.5	--	--	--	--	360,000	0.04	--	--
1903	420,069	8.68	143,600	77.8	--	--	--	--	50,000	14.0	30	2.5	--	--	--	--	1,200,000	0.16	--	--
1904	443,115	9.16	198,700	114.9	--	--	--	--	28,000	8.0	30	2.5	--	--	--	--	2,043,586	0.28	--	--
1905	756,101	15.63	132,174	80.2	--	--	--	--	12,000	4.0	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	3.40	--	--
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[c]	44.1[c]	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	16.70	1,071,782	543.3	--	--	520,000	W	204,000	78.8	437	41.1	--	--	--	--	86,509,312	15.14	--	--
1916	834,068	17.24	1,379,171	907.4	--	--	1,200,000	W	278,000	121.0	820	113.2	--	--	8	0.7	119,654,839	29.50	--	--
1917	709,049	14.66	1,239,150	1,020.6	--	--	500,000	W	200,000	123.3	852	146.6	--	--	53	5.5	88,793,400	24.40	1,100	W
1918	458,641	9.48	847,789	847.8	--	--	540,000	W	136,000	118.0	564	80.1	--	--	284	36.6	69,224,951	17.10	1,100	W
1919	455,984	9.42	629,708	705.3	--	--	--	--	112,000	73.4	687	72.1	--	--	569	73.7	47,220,771	8.80	--	--
1920	404,683	8.37	953,546	1,039.7	--	--	--	--	32,000	16.1	875	140.0	--	--	1,478	160.1	70,435,363	13.00	--	--
1921	390,558	8.07	761,085	761.1	45	1.5	--	--	8,000	2.4	759	68.3	--	--	40	2.7	57,011,597	7.40	--	--
1922	359,057	7.42	729,945	729.9	--	--	--	--	2,800	0.9	377	41.5	--	--	29	2.8	77,967,819	10.50	--	--
1923	289,539	5.98	814,649	668.1	--	--	--	--	3,800	1.6	410	57.4	--	--	--	--	85,920,645	12.60	--	--
1924	304,072	6.29	669,641	448.6	2	0.3	--	--	14,000	7.1	631	100.9	--	--	28	2.6	74,074,207	9.70	--	--
1925	307,679	6.36	698,259	482.4	44	3.6	W	W	28,600	15.4	789	140.6	--	--	10	1.2	73,055,298	10.30	--	--
1926	324,450	6.70	605,190	377.0	22	1.7	W	W	16,000	10.4	778	124.4	--	--	3,570	274.5	67,778,000	9.49	--	--
1927	286,720	5.97	350,430	215.0	--	--	--	--	53,400	34.0	1,008	127.0	--	--	--	--	55,343,000	7.25	--	--
1928	331,140	6.85	351,730	187.0	--	--	--	--	82,000	41.0	1,019	118.0	--	--	120	9.0	41,421,000	5.96	--	--
1929	375,438	7.76	472,900	252.0	4	0.5	--	--	77,200	35.0	1,315	166.0	--	--	475	32.0	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	102.0	15	1.2	--	--	8,200	2.0	1,660	126.0	--	--	393	14.0	22,614,000	1.88	--	--
1932	493,860	10.20	234,050	66.0	8	0.5	--	--	--	--	1,260	75.6	--	--	--	--	8,738,500	0.55	--	--
1933	469,286	9.70	154,700	55.0	--	--	--	--	5,800	2.3	1,157	85.6	--	--	605	18.6	29,000	0.02	--	--
1934	537,281	8.78	154,700	100.0	--	--	--	--	8,200[c]	4.3	839	62.1	--	--	2,555	85.6	121,000	0.06	--	--
1935	469,495	16.43	286,600	206.0	--	--	--	--	98,800	49.8	815	65.2	--	--	8,685	259.6	15,056,000	1.25	--	--
1936	540,580	18.92	484,306	375.0	--	--	--	--	226,000	105.0	941	86.6	--	--	5,654	241.9	39,267,000	3.72	--	--
1937	627,940	21.98	494,340	382.0	--	--	962,000	147.6	372,000[c]	202.3[c]	823	97.1	--	--	9,823	313.4	36,007,000	4.74	--	--
1938	662,000	23.17	479,853	310.0	8	0.6	444,000	54.8	210,000	89.1	994	91.5	--	--	41,000	2,450.0	29,760,000	2.98	--	--
1939	676,780	23.68	201,054	136.5	--	--	210,000	25.9	66,000	38.0	937	88.1	--	--	33,900	2,034.0	278,500	0.04	--	--
1940	755,900	26.45	191,679	136.3	156[c]	130.9	306,000	42.8	92,000	52.0	840	72.0	--	--	28,886	1,093.0	110,000	0.02	--	--
1941	692,314	24.23	199,700	142.0	W	W	774,000	87.3	93,600[c]	61.0[c]	742	58.0	--	--	22,630	813.0	144,000	0.02	--	--
1942	487,657	17.07	135,200	96.0	W	W	316,000	41.0	5,600	2.5	523	44.0	--	--	22,000	779.0	48,000	0.01	--	--
1943	99,583	3.49	31,700	22.0	786	153.4	368,000	33.3	2,000[c]	1.0[c]	200	22.0	--	--	27,900	1,020.0	54,000	0.01	5,564	186.3
1944	49,296	1.73	15,240	10.8	841	165.0	70,080	30.0	--	--	44	5.8	--	--	33,616	2,017.0	4,000	0.01	1,845	64.6
1945	68,117	2.38	9,983	6.2	275	180.0	W	W	--	--	11	1.8	--	--	22,949	1,377.0	10,000	0.01	--	--
1946	226,781	7.93	41,793	26.3	699	68.7	W	W	--	--	115	25.0	--	--	22,882	1,418.7	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	1,351.2	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	1,209.2	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	1,545.2	7,700	0.02	--	--

APPENDIX F
continued

Year	Gold (oz)	Gold (m$)	Silver (oz)	Silver (t$)	Mercury (flask[b])	Mercury (t$)	Antimony (lb)	Antimony (t$)	Tin (lb)	Tin (t$)	Lead (tons)	Lead (t$)	Zinc (tons)	Zinc (m$)	Platinum (oz)	Platinum (t$)	Copper (lb)	Copper (m$)	Chromium (tons)	Chromium (t$)
1950	289,285	10.13	52,638	48.0	W	W	W	W	158,000	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	2,061.6	138,000	198.0	21	7.2	--	--	W	W	2,000	0.01	--	--
1952	240,571	8.42	31,825	28.7	40	W	740,000	1,406.0	180,000	243.9	1	0.3	--	--	W	W	--	--	W	W
1953	253,771	8.88	35,387	32.1	1,023	270.0	W	W	98,000	105.9	--	--	--	--	W	W	--	--	W	W
1954	248,511	8.70	33,694	31.8	1,046	276.0	--	--	398,000	409.9	--	--	--	--	W	W	8,000	0.02	2,953	208.0
1955	249,294	8.73	33,693	30.4	43	12.0	--	--	172,000	182.5	1	0.3	--	--	W	W	2,000	0.01	7,082	625.3
1956	204,300	7.33	26,700	24.1	3,414	837.0	134,400	150.0	--	--	1	0.3	--	--	W	W	--	--	7,200	711.5
1957	215,467	7.54	28,862	26.0	5,461	1,349.0	71,120	80.0	--	--	9	3.0	--	--	W	W	--	--	4,207	431.0
1958	186,000	6.53	24,000	22.0	3,380	774.0	--	--	--	--	--	--	--	--	W	W	10,000	0.03	--	--
1959	171,000	5.99	22,000	20.0	3,750	852.0	--	--	--	--	--	--	--	--	W	W	72,000	0.04	--	--
1960	180,000	6.30	23,000	21.0	4,450	938.0	W	W	--	--	--	--	--	--	W	W	82,000	0.04	--	--
1961	114,228	3.99	--	--	4,080	816.0	--	--	--	--	--	--	--	--	W	W	184,000	0.06	--	--
1962	165,142	5.78	--	--	3,843	711.0	--	--	--	--	--	--	--	--	W	W	--	--	--	--
1963	99,000	3.48	6,100	9.0	400	76.0	W	W	--	--	5	1.1	--	--	W	W	--	--	--	--
1964	58,000	2.05	7,200	6.0	303	95.0	46,400	60.3	--	--	--	--	--	--	W	W	22,000	0.01	--	--
1965	43,000	1.51	5,000	6.0	180	104.0	46,400	60.3	--	--	14	4.0	--	--	W	W	64,000	0.03	--	--
1966	27,325	0.96	7,000	9.0	185	101.0	16,000	19.2	--	--	19	4.3	--	--	W	W	--	--	--	--
1967	22,948	0.80	6,000	9.0	161	79.0	20,000	22.0	--	--	--	--	--	--	W	W	W	W	--	--
1968	21,000	0.81	3,000	6.5	156	78.0	6,000	6.0	--	--	--	--	--	--	W	W	--	--	--	--
1969	21,227	0.88	2,000	4.2	238	100.0	94,000	100.0	--	--	2	0.5	--	--	W	W	--	--	--	--
1970	38,400	1.38	4,000	7.0	3,100	1,260.0	365,000	410.0	--	--	--	--	--	--	W	W	W	W	--	--
1971	34,000	1.36	2,000	4.0	675	285.0	68,000	74.0	34,000	47.0	--	--	--	--	W	W	--	--	--	--
1972	8,639[c]	0.56	1,000	2.0	125	44.0	160,000	185.0	W	W	--	--	--	--	W	W	--	--	--	--
1973	15,000[c]	1.86	13,200	22.0	70	52.5	420,000	515.0	10,000	12.0	6	2.0	--	--	W	W	--	--	--	--
1974	16,000[c]	2.56	1,500	3.5	70	52.5	80,000	95.0	W	W	--	--	--	--	W	W	--	--	--	--
1975	14,980[c]	3.35	6,000	25.0	--	--	120,000	145.0	22,000	60.0	--	--	--	--	W	W	--	--	--	--
1976	22,887[c]	6.90	6,500	24.0	--	--	160,000	165.0	W	W	14	6.0	--	--	W	W	--	--	8,000[c]	1,200.0[c]
1977	50,000	7.80	8,000	20.0	--	--	W	W	W	W	--	--	--	--	--	--	--	--	--	--
1978	60,000[c]	12.00	6,000	50.0	--	--	W	W	W	W	--	--	--	--	--	--	--	--	--	--
1979	65,000[c]	18.00	6,500	93.0	--	--	100,000	125.0	100,000	830.0	--	--	--	--	--	--	--	--	--	--
1980	75,000[c]	32.00	7,500	111.0	--	--	--	--	120,000	984.0	31	29.0	--	--	--	--	--	--	--	--
1981	134,200[c]	55.20	13,420	111.3	W	W	--	--	106,000	700.0	--	--	--	--	900	200.0	--	--	--	--
1982	175,000[c]	69.90	22,000	198.0	--	--	--	--	198,000	1,365.0	--	--	--	--	W	W	--	--	--	--
1983	169,000[c]	67.60	33,200	332.0	--	--	22,400	45.0	215,000	1,100.0	--	--	--	--	W	W	--	--	--	--
1984	175,000[c]	62.13	20,000	159.0	5	1.5	135,000	225.8	225,000	400.0	--	--	--	--	W	W	--	--	--	--
1985	190,000	61.18	28,500	171.0	27	10.0	65,000	98.0	300,000	650.0	--	--	--	--	--	--	--	--	--	--
1986	160,000[c]	60.80	24,000	134.4	12	2.8	45,000	67.5	340,000	890.0	--	--	--	--	W	W	--	--	--	--
1987	229,707	104.51	54,300	391.0	--	--	--	--	288,000	460.0	--	--	--	--	W	W	--	--	--	--
1988	265,500	112.84	47,790	282.0	W	W	--	--	300,000	950.0	--	--	--	--	25	13.8	--	--	--	--
1989	284,617	108.7	5,211,591	27,300.0	--	--	--	NR	194,000	672.0	9,585	7,700.0	19,843	29,400.0	--	--	--	--	--	--
1990	231,700	89.20	10,135,000	50,675.0	--	--	--	--	57,000	200.0	44,220	30,954.0	181,200	253,680.0	--	--	--	--	--	--
1991	243,900	88.29	9,076,854	39,110.0					6,800	22.1	69,591	33,403.7	278,221	278,221.0	15	5.3	--	--	--	--
1992	262,530	88.46	9,115,755	34,913.0	--	--	--	--	1,500	5.9	68,664	31,585.0	274,507	301,957.7	--	--	--	--	--	--
Other[d]	--	--	--	--	1,438	--	--	--	--	--	--	--	--	--	333,936	46,940.3	--	--	--	--
TOTAL (metric)	**32,862,901 (1,022 tonnes)**	**1,804.97**	**53,556,885 (1,666 tonnes)**	**168,345.4**	**40,945 (1,411,521 kg)**	**9,910.5**	**11,070,800 (5,021 tonnes)**	**6,655.1**	**7,266,700 (3,296 tonnes)**	**12,472.9**	**218,360 (198,053 tonnes)**	**106,651.8**	**754,449 (684,285 tonnes)**	**863,259.2**	**668,537[e] (20,793 kg)**	**65,811.2**	**1,373,793,932 (632,152 tonnes)**	**228.04**	**39,951 (35,419 tonnes)**	**3,426.7**

[a]From 34state and federal documents.
[b]76-lb flask.
[c]When state and federal figures differ significantly, state figures are used.
[d]Not traceable by year.
[e]Crude platinum; total production of refined metal is about 575,000 oz.

W = Withheld.
-- = Not reported.
t$ = Thousand dollars.
m$ = Million dollars.

APPENDIX G

Production of industrial minerals, coal, and other commodities in Alaska, 1880-1992

Year	Coal		Sand and gravel		Building stone[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[d]	0.02[d]	--	--	510	0.01	--	--	--
1901	1,300[d]	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

[a]Building-stone production figures for 1880-1937 are for the southcentral and interior regions of Alaska only.

[b]Includes 2.4 million lb U_3O_8 (1955-71); 505,000 tons gypsum (1905-26); 286,000 lb WO_3 (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 (1880-1985).

[c]Production not traceable by year.

[d]When 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.

[e]Marble quarried on Prince of Wales Island, southeastern Alaska (1900-41).

m$ = Million dollars.
t$ = Thousand dollars.
-- = Not reported.
W = Withheld.

Year	Coal		Sand and gravel		Building stone[a]		Barite		Other[b]
	s. tons	m$	s. tons	m$	s. tons	m$	s. tons	t$	$
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
1958	759,000	6.93	4,255,000	3.87	615,000	2.07	--	--	695,000
1959	602,000[d]	5.88[d]	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	350.0	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	850.0	5,163,000
1970	786,000[d]	5.28[d]	20,375,000[d]	26.07[d]	6,470,000	10.01	134,000[d]	1,875.0	7,994,000
1971	748,000[d]	5.05[d]	26,391,000	41.99	2,658,000	5.07	102,000[d]	1,075.0	--
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	1,792.0	12,846,000
1974	700,000	7.34	118,740,000[d]	240.94[d]	5,484,000	12.95	110,000	1,895.0	14,495,000
			42,614,000	88.96					
1975	766,000	7.81	48,145,000	95.78	8,877,000	26.65	2,000[d]	30.0	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	750.0	--
1979	750,000	16.00	50,900,000	104.90	3,650,000	15.45	20,000	800.0	930,000
1980	800,000	16.00	40,000,000	86.00	3,700,000	15.40	50,000	2,000.0	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	22.10	--	--	400,000
1991	1,540,000	39.00	14,160,011	45.45	3,000,000	22.50	--	--	462,000
1992	1,531,800	38.30	14,599,746	42.20	2,900,000	22.97	--	--	430,000
Other[d]	--	--	--	--	2,300,000[e]	W	79,000	W	--
TOTAL (metric)	**43,631,883 (39,574,118 tonnes)**	**663.50**	**1,069,651,841 (970,174,219 tonnes)**	**2,150.23**	**99,039,836 (89,829,131 tonnes)**	**400.85**	**856,000 (776,563 tonnes)**	**11,417.0**	**176,025,877**

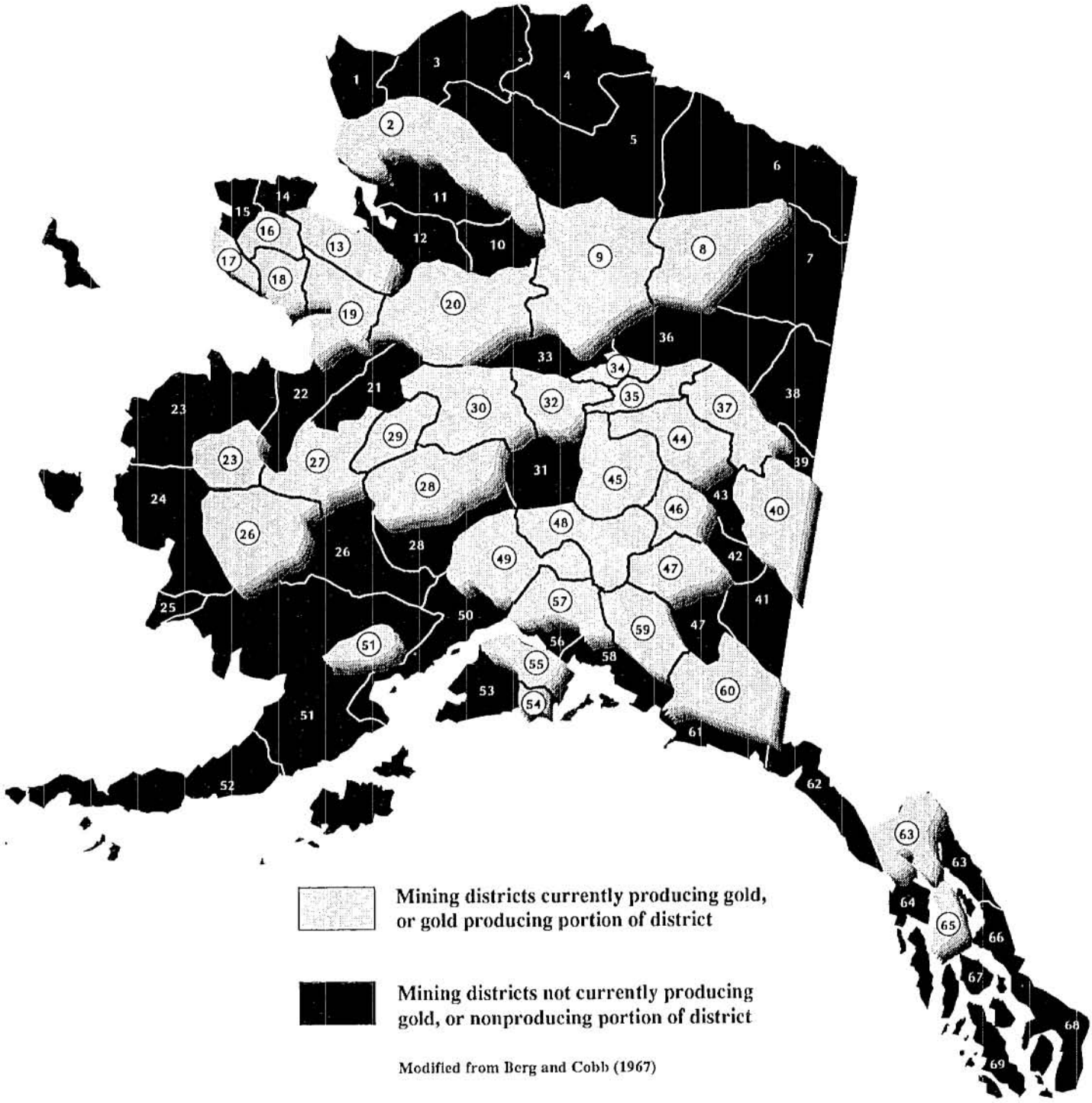
Table 18. *Conversion factors for U.S. customary units and International System of units (metric) of measurement*

U.S. unit	Multiply by	Metric unit
MASS		
ounce, troy (oz tr)	0.0311	kilogram (kg)
ounce, aviordupois (oz avdp)	0.0283	kilogram (kg)
pound, avoirdupois (lb)	0.4536	kilogram (kg)
ton, short (2,000 lb)	0.9072	tonne (mg)
tonne (mg)	1.102	ton (2,000 lb)
LENGTH		
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
AREA		
mile^2 (mi^2)	2.590	kilometer^2 (km^2)
acre	2.471	hectare
VOLUME		
yard^3 (yd^3)	0.7646	meter^3 (m^3)
gallon	3.785	liter

SOURCE: Hansen, W.R., ed., 1991, *Suggestions to Authors of the United Sates Geological Survey* (7th ed.).

ALASKA MINING DISTRICTS

1. Lisburne district
2. Noatak district
3. Wainwright district
4. Barrow district
5. Colville district
6. Canning district
7. Sheenjek district
8. Chandalar district
9. Koyukuk district
10. Shungnak district
11. Kiana district
12. Selawik district
13. Fairhaven district
14. Serpentine district
15. Port Clarence district
16. Kougarok district
17. Nome district
18. Council district
19. Koyuk district
20. Hughes district
21. Kaiyuh district
22. Anvik district
23. Marshall district
24. Bethel district
25. Goodnews Bay district
26. Aniak district
27. Iditarod district
28. McGrath district
29. Innoko-Tolstoi district
30. Ruby district
31. Kantishna district
32. Hot Springs district
33. Melozitna district
34. Rampart district
35. Tolovana district
36. Yukon district
37. Circle district
38. Black district
39. Eagle district
40. Fortymile district
41. Chisana district
42. Tok district
43. Goodpaster district
44. Fairbanks district
45. Bonnifield district
46. Delta River district
47. Chistochina district
48. Valdez Creek district
49. Yentna district
50. Redoubt district
51. Iliamna district
52. Port Moller/Kodiak Island district
53. Homer district
54. Seward district
55. Hope district
56. Anchorage district
57. Willow Creek district
58. Prince William Sound district
59. Nelchina district
60. Nizina district
61. Yakataga district
62. Yakutat district
63. Porcupine district
64. Chichagof district
65. Admiralty district
66. Petersburg district
67. Kupreanof district
68. Hyder district
69. Ketchikan district


Mining districts currently producing gold, or gold producing portion of district
Mining districts not currently producing gold, or nonproducing portion of district
Modified from Berg and Cobb (1967)