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 Gidch, 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.
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.
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."
EXPLORATION 4

Exploration expenditures declined during 1992 because low commodity prices continued to affect company profits. New joint-ventures reported programs in underexplored areas of the state. New discoveries will increase activity in the near future.

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- Coal 4
- Industrial minerals 4

Western region 4
- Metals 4
- Coal 7
- Industrial minerals 7

Eastern interior region 8
- Metals 8
- Coal 10
- Industrial minerals 10

Southcentral region 11
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- Coal 12
- Industrial minerals 12

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Southeastern region 13
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Mineral development expenditures for 1992 increased 16 percent over 1991. Most of the work was at the Fort Knox Mine site near Fairbanks and at the Greens Creek Mine near Juneau. Red Dog Mine near Kotzebue worked to improve air quality and water quality, but no expenditure was reported.

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Hardrock drilling 37
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How to convert federal claims to state claims 40

Record enrollments and strong industry support indicate a strong and stable future for the school.

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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, table 1).

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.

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

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 jointventure 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

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration</td>
<td>$47,762,596</td>
<td>$63,255,594</td>
<td>$39,908,539</td>
<td>$30,200,000</td>
</tr>
<tr>
<td>Development</td>
<td>134,272,350</td>
<td>14,326,500</td>
<td>25,574,350</td>
<td>29,590,300</td>
</tr>
<tr>
<td>Production</td>
<td>276,983,741</td>
<td>332,024,500</td>
<td>346,468,907</td>
<td>360,826,400</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$459,018,687</td>
<td>$610,606,594</td>
<td>$611,951,796</td>
<td>$620,616,700</td>
</tr>
</tbody>
</table>

### Table 2. Alaskan mine employment, 1989-92

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold/silver/mining</td>
<td>1,316</td>
<td>1,151</td>
<td>1,240</td>
<td>1,251</td>
</tr>
<tr>
<td>Lode</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Polymetallic</td>
<td>161</td>
<td>265</td>
<td>235</td>
<td>240</td>
</tr>
<tr>
<td>Base metals</td>
<td>407</td>
<td>425</td>
<td>415</td>
<td>415</td>
</tr>
<tr>
<td>Recreational</td>
<td>325</td>
<td>315</td>
<td>320</td>
<td>325</td>
</tr>
<tr>
<td>Sand &amp; gravel</td>
<td>625</td>
<td>645</td>
<td>685</td>
<td>640</td>
</tr>
<tr>
<td>Building stone</td>
<td>148</td>
<td>160</td>
<td>165</td>
<td>145</td>
</tr>
<tr>
<td>Coal</td>
<td>120</td>
<td>115</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Peat</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tin, jade, soap-stone, ceramics, platinum</td>
<td>40</td>
<td>40</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Mineral development</td>
<td>785</td>
<td>95</td>
<td>133</td>
<td>164</td>
</tr>
<tr>
<td>Mineral exploration</td>
<td>550</td>
<td>374</td>
<td>268</td>
<td>137</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,277</td>
<td>3,585</td>
<td>3,646</td>
<td>3,492</td>
</tr>
</tbody>
</table>

aCalculated on a 260-day work year.
--- = Information not available.
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 (71,000,000 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 22,810 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 1992 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.

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.
EXPLORATION

Explore 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 national 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 Lounsberry 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

<table>
<thead>
<tr>
<th>Years</th>
<th>Base metals</th>
<th>Polymetallic*</th>
<th>Precious metals</th>
<th>Industrial minerals</th>
<th>Coal and peat</th>
<th>Other</th>
<th>TOTAL YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>31,757,900</td>
<td>N/A</td>
<td>10,944,100</td>
<td>20,080,300</td>
<td>1,150,000</td>
<td>20,000</td>
<td>70,000</td>
</tr>
<tr>
<td>1983</td>
<td>9,758,760</td>
<td>N/A</td>
<td>20,087,555</td>
<td>1,138,454</td>
<td>2,605,000</td>
<td>279,500</td>
<td>34,133,069</td>
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<tr>
<td>1984</td>
<td>4,720,596</td>
<td>N/A</td>
<td>14,948,544</td>
<td>2,065,000</td>
<td>22,283,650</td>
<td>2,000</td>
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<tr>
<td>1985</td>
<td>2,397,600</td>
<td>N/A</td>
<td>6,482,400</td>
<td>270,000</td>
<td>9,150,600</td>
<td>0</td>
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<tr>
<td>1986</td>
<td>1,847,660</td>
<td>N/A</td>
<td>6,107,084</td>
<td>790,000</td>
<td>8,914,744</td>
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<tr>
<td>1987</td>
<td>2,523,350</td>
<td>N/A</td>
<td>11,743,711</td>
<td>1,150,000</td>
<td>15,734,061</td>
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<td>1988</td>
<td>1,208,000</td>
<td>N/A</td>
<td>41,370,600</td>
<td>2,730,000</td>
<td>45,468,800</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>3,503,000</td>
<td>N/A</td>
<td>43,205,300</td>
<td>924,296</td>
<td>47,625,596</td>
<td>0</td>
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<tr>
<td>1990</td>
<td>5,282,200</td>
<td>N/A</td>
<td>57,185,394</td>
<td>321,000</td>
<td>63,255,594</td>
<td>0</td>
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</tr>
<tr>
<td>1991</td>
<td>4,789,500</td>
<td>N/A</td>
<td>34,422,009</td>
<td>603,000</td>
<td>39,908,539</td>
<td>0</td>
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<tr>
<td>1992</td>
<td>1,116,000</td>
<td>3,560,000</td>
<td>25,083,000</td>
<td>425,000</td>
<td>30,209,000</td>
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<tr>
<td>TOTAL</td>
<td>66,904,566</td>
<td>3,560,000</td>
<td>272,389,737</td>
<td>13,516,750</td>
<td>362,437,353</td>
<td>0</td>
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</tr>
</tbody>
</table>

*Note. Polymetallic deposits considered as a separate category for the first time.

--- No expenditures reported.

--- No expenditures reported.

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

<table>
<thead>
<tr>
<th>Northern</th>
<th>Western</th>
<th>Eastern Interior</th>
<th>Southwestern</th>
<th>South-Central</th>
<th>Alaska Peninsula</th>
<th>South-Eastern</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base metals</td>
<td>$80,000</td>
<td>$125,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$893,000</td>
</tr>
<tr>
<td>Polymetallic*</td>
<td>-</td>
<td>110,000</td>
<td>$100,000</td>
<td>$2,600,000</td>
<td>750,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Precious metals</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>112,000</td>
<td>34,500</td>
<td>363,500</td>
<td>-</td>
</tr>
<tr>
<td>Placer</td>
<td>105,000</td>
<td>128,000</td>
<td>112,000</td>
<td>34,500</td>
<td>363,500</td>
<td>-</td>
<td>25,000</td>
</tr>
<tr>
<td>Lode</td>
<td>-</td>
<td>1,500,000</td>
<td>8,358,350</td>
<td>175,000</td>
<td>328,000</td>
<td>$8,650</td>
<td>13,945,000</td>
</tr>
<tr>
<td>Coal and peat</td>
<td>400,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Industrial minerals</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$855,000</td>
<td>$1,888,000</td>
<td>$8,595,350</td>
<td>$2,809,500</td>
<td>$1,459,500</td>
<td>$8,650</td>
<td>$14,863,000</td>
</tr>
</tbody>
</table>

| Exploration employment | | | | | | | |
| Employment | | | | | | | |
| Workdays | 2,120 | 3,393 | 13,636 | 5,206 | 5,180 | 270 | 9,472 | 36,277 |
| Workyears* | 8 | 18 | 53 | 20 | 8 | 1 | 36 | 140 |
| Number of companies reporting | 8 | 8 | 25 | 11 | 18 | 2 | 10 | 82 |

--- No expenditures reported.

*Jade, platinum, gemstones.

*Based on 260-day workyear.

*Small discrepancy on total due to rounding.
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
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.

Table 5. Summary of claim activity, 1988-92

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>New claims</td>
<td></td>
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</tr>
<tr>
<td>State</td>
<td>8,062</td>
<td>3,928</td>
<td>2,573</td>
<td>3,391</td>
<td>2,501</td>
</tr>
<tr>
<td>Federal</td>
<td>3,786</td>
<td>1,562</td>
<td>1,888</td>
<td>1,299</td>
<td>679</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11,848</td>
<td>5,490</td>
<td>4,461</td>
<td>4,690</td>
<td>3,180</td>
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<tr>
<td>Active claim assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>63,694</td>
<td>64,225</td>
<td>58,067</td>
<td>52,976</td>
<td>46,869</td>
</tr>
<tr>
<td>Total state</td>
<td>34,848</td>
<td>33,145</td>
<td>29,116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total federal</td>
<td>27,680</td>
<td>24,521</td>
<td>20,933</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>75,542</td>
<td>69,715</td>
<td>62,528</td>
<td>57,666</td>
<td>50,049</td>
</tr>
</tbody>
</table>

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.

COAL

No activity was reported in this region in 1992.

INDUSTRIAL MINERALS

Two companies reported exploration for...
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 line-meters (50,00 line-feet) of geochemical sampling and
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 Tofy 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, Verstone 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 Herinig 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 Bonnfield 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 Collarde 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 Ketchen Creek.

Placer exploration was widespread in the Forty-mile 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 Forty-mile River.

COAL
Usibelli Coal Mine near Healy reported no exploration in 1992. Doyon Ltd. extracted a bulk sample from its Little Tonza nal holdings 136 kilometers (85 miles) southeast of McGrath, where 24 meter (80 foot) seams of subbituminous coal are layered within a 7-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.
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 Kahlitna 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.
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 pre-development 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. Further 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.  

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 Lounsberry 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.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Base metals</th>
<th>Polymetalllics</th>
<th>Precious metals</th>
<th>Industrial minerals</th>
<th>Coal and peat</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>1982</td>
<td>$10,270,000</td>
<td>N/A</td>
<td>$19,320,000</td>
<td>$4,251,000</td>
<td>$7,750,000</td>
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<tr>
<td>1983</td>
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<td>$7,112,500</td>
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<td>$27,862,500</td>
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<td>1984</td>
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<td>$579,000</td>
<td>$27,000,000</td>
<td>$53,348,055</td>
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<tr>
<td>1985</td>
<td>$13,000,000</td>
<td>N/A</td>
<td>$16,890,755</td>
<td>$1,830,000</td>
<td>$2,400,000</td>
<td>$34,120,755</td>
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<tr>
<td>1986</td>
<td>$3,260,800</td>
<td>8,000,000</td>
<td>$12,417,172</td>
<td>$124,000</td>
<td>$530,000</td>
<td>$24,331,972</td>
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<tr>
<td>1987</td>
<td>$38,080,000</td>
<td>48,000,000</td>
<td>$13,640,848</td>
<td>$188,000</td>
<td>$342,000</td>
<td>$100,208,848</td>
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<tr>
<td>1988</td>
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<td>68,000,000</td>
<td>$40,645,400</td>
<td>$19,000</td>
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<td>$274,845,400</td>
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<tr>
<td>1989</td>
<td>118,200,000</td>
<td>411,000</td>
<td>$6,665,350</td>
<td>$7,000,000</td>
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<td>$134,272,350</td>
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<tr>
<td>1990</td>
<td>-</td>
<td>4,101,000</td>
<td>$7,136,500</td>
<td>$30,000</td>
<td>$3,079,000</td>
<td>$14,346,500</td>
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<tr>
<td>1991</td>
<td>-</td>
<td>8,000,000</td>
<td>$14,994,350</td>
<td>$262,000</td>
<td>$2,318,000</td>
<td>$25,574,350</td>
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<tr>
<td>1992</td>
<td>80,000</td>
<td>4,300,000</td>
<td>$23,151,300</td>
<td>$4,040,000</td>
<td>$1,655,000</td>
<td>$29,590,300</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Northern Interior</th>
<th>South-central Alaska</th>
<th>Alaska Peninsula</th>
<th>South-western</th>
<th>South-eastern</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base metals</td>
<td>--</td>
<td>--</td>
<td>$75,000</td>
<td>--</td>
<td>$5,000</td>
<td>$80,000</td>
</tr>
<tr>
<td>Polymetalllic</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>$4,300,000</td>
</tr>
<tr>
<td>Precious metals</td>
<td>--</td>
<td>--</td>
<td>$1,634,300</td>
<td>--</td>
<td>$30,000</td>
<td>$17,430,000</td>
</tr>
<tr>
<td>Placer</td>
<td>$63,000</td>
<td>$2,230,000</td>
<td>$1,464,000</td>
<td>--</td>
<td>$30,000</td>
<td>$5,721,000</td>
</tr>
<tr>
<td>Lode</td>
<td>--</td>
<td>$11,000,000</td>
<td>--</td>
<td>--</td>
<td>$6,430,000</td>
<td>$17,430,000</td>
</tr>
<tr>
<td>Coal and peat</td>
<td>400,000</td>
<td>--</td>
<td>$1,255,000</td>
<td>--</td>
<td>--</td>
<td>$1,655,000</td>
</tr>
<tr>
<td>Industrial minerals</td>
<td>--</td>
<td>--</td>
<td>$70,000</td>
<td>--</td>
<td>$334,000</td>
<td>$404,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$463,000</td>
<td>$2,230,000</td>
<td>$12,634,300</td>
<td>$2,864,000</td>
<td>$35,000</td>
<td>$11,364,000</td>
</tr>
</tbody>
</table>

Exploration employment:

| Workdays | 1,780 | 2,341 | 12,748 | 5,904 | 540 | 19,241 | 42,554 |
| Workyears* | 7 | 9 | 49 | 23 | 2 | 74 | 164 |
| Number of companies reporting* | 6 | 4 | 12 | 11 | -- | 4 | 6 | 43 |

- = No expenditures reported. 
*Based on a 260-day workyear. 
*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 absorption 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
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 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. Mine 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 (NOₓ) 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 Kahlitna 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 Kahlitna River and on Lake Creek: both are in the Cache Creek district. The partnership plans to start a mechanized mining operation on the Kahlitna 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 startup 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 activities. 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-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 usage 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 appendices 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*

<table>
<thead>
<tr>
<th>Metals</th>
<th>Quantity</th>
<th>Estimated values*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold (ounces)</td>
<td>231,700</td>
<td>243,900</td>
</tr>
<tr>
<td>(kilograms)</td>
<td>7,206</td>
<td>7,585</td>
</tr>
<tr>
<td>Silver (ounces)</td>
<td>10,135,000</td>
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<tr>
<td>(kilograms)</td>
<td>315,199</td>
<td>281,382</td>
</tr>
<tr>
<td>Platinum (ounces)</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>(grams)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lead (tons)</td>
<td>44,220</td>
<td>69,591</td>
</tr>
<tr>
<td>(tonnes)</td>
<td>40,106</td>
<td>63,119</td>
</tr>
<tr>
<td>Zinc (tons)</td>
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<tr>
<td>(tonnes)</td>
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<td>Tin (pounds)</td>
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<td>Jade and soapstone (tons)</td>
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<td>(tonnes)</td>
</tr>
<tr>
<td>Sand and gravel (million tons)</td>
</tr>
<tr>
<td>(million tonnes)</td>
</tr>
<tr>
<td>Building stone (million tons)</td>
</tr>
<tr>
<td>(million tonnes)</td>
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<td>Subtotal</td>
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<tr>
<th>Energy minerals</th>
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<td>Coal (tons)</td>
</tr>
<tr>
<td>(tonnes)</td>
</tr>
<tr>
<td>Peat (cubic yards)</td>
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<tr>
<td>(cubic meters)</td>
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<td>Subtotal</td>
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</table>

<table>
<thead>
<tr>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>$533,024,500</td>
</tr>
</tbody>
</table>

*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.

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 extremely 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

Production 23

Figure 13. Selected production projects, 1992.

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...
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, it is 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

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of operators</th>
<th>Production in ounces of gold</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>13</td>
<td>12</td>
<td>5,500</td>
</tr>
<tr>
<td>Western</td>
<td>35</td>
<td>33</td>
<td>56,100</td>
</tr>
<tr>
<td>Eastern interior</td>
<td>105</td>
<td>106</td>
<td>73,600</td>
</tr>
<tr>
<td>Southcentral</td>
<td>22</td>
<td>21</td>
<td>55,070</td>
</tr>
<tr>
<td>Southwestern</td>
<td>25</td>
<td>24</td>
<td>15,650</td>
</tr>
<tr>
<td>Southeastern</td>
<td>4</td>
<td>3</td>
<td>37,560</td>
</tr>
<tr>
<td>TOTAL</td>
<td>204</td>
<td>199</td>
<td>243,880</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Mine size</th>
<th>1990</th>
<th>1991</th>
<th>1992</th>
<th>Number of mines</th>
<th>Production in ounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>8</td>
<td>21</td>
<td>23</td>
<td>1,856</td>
<td>3,582</td>
</tr>
<tr>
<td>Medium</td>
<td>11</td>
<td>8</td>
<td>6</td>
<td>12,132</td>
<td>8,431</td>
</tr>
<tr>
<td>Large</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>54,497</td>
<td>84,539</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>34</td>
<td>34</td>
<td>68,485</td>
<td>96,552</td>
</tr>
</tbody>
</table>

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

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

*Derived from polymetallic employment category (table 2, p. 2).*

*10-650 oz gold/yr
*650-2,500 oz gold/yr
>*2,500 oz gold/yr
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.

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.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Ore milled (tons)</th>
<th>Ore milled (tonnes)</th>
<th>Ore grade</th>
<th>Concentrate</th>
<th>Total concentrate</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>33,305</td>
<td>30,214</td>
<td>Zinc</td>
<td>N/A</td>
<td>8,532</td>
<td>228</td>
</tr>
<tr>
<td>1990</td>
<td>33,966</td>
<td>30,582</td>
<td>Lead</td>
<td>N/A</td>
<td>4,730</td>
<td>350</td>
</tr>
<tr>
<td>1991</td>
<td>1,599,276</td>
<td>1,450,863</td>
<td>Silver</td>
<td>334,100</td>
<td>342,000</td>
<td>331</td>
</tr>
<tr>
<td>1992</td>
<td>1,582,000</td>
<td>1,435,190</td>
<td>Zinc</td>
<td>410,700</td>
<td>421,400</td>
<td>349</td>
</tr>
</tbody>
</table>


### 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 (Grieppe, 1992). The company also planned to haul coal to Omilik 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,
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 district, 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 Innachuk 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 Innachuk 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 maintenance 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 Construction Inc. to extract gravel to upgrade

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*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 districts: 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-dozeloder operations integrated for overburden removal and post-mine reclamation and revegetation concurrent with active mining. Cooks Mining is the modern...
representative of three generations of mining families that date back to the turn-of-the-century Fairbanks gold rush.

Other open cut 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 Monzuela (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 Ketchem Creek with a work crew of two. Points North (Bob Cacey) 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) of Chicken Creek using open cut mining methods. Although 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) 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
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 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), Schaefer (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 subbituminous coal from the Mioocene Sunrana 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 Sunnwell 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 Sunnwell 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 opencut 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) bailed 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) of 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 Enscher 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 Mankana-Palmer area, where extensive glacio-fluvial 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 Enterprises 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 Tululsk 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 Julian 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 331,035 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 (710,000 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.

**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 National 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, 1984-92a

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Placer exploration</td>
<td>31,000</td>
<td>46,000</td>
<td>32,400</td>
<td>50,250</td>
<td>152,000</td>
<td>97,250</td>
<td>78,930</td>
<td>51,247</td>
<td>6,740</td>
</tr>
<tr>
<td>Placer thawfield</td>
<td>98,000</td>
<td>34,000</td>
<td>227,000</td>
<td>130,000</td>
<td>300,000</td>
<td>210,000</td>
<td>105,000</td>
<td>130,000</td>
<td>65,000</td>
</tr>
<tr>
<td>Placer subtotal</td>
<td>129,000</td>
<td>80,000</td>
<td>259,400</td>
<td>180,250</td>
<td>452,000</td>
<td>307,250</td>
<td>183,830</td>
<td>181,247</td>
<td>71,740</td>
</tr>
<tr>
<td>Coal subtotal</td>
<td>25,700</td>
<td>8,700</td>
<td>28,800</td>
<td>19,900</td>
<td>26,150</td>
<td>38,670</td>
<td>18,195</td>
<td>16,894</td>
<td>12,875</td>
</tr>
<tr>
<td>Hardrock (core)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>95,600</td>
<td>223,630</td>
<td>242,440</td>
<td>648,600</td>
<td>205,805</td>
<td>211,812</td>
</tr>
<tr>
<td>Hardrock (rotary)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19,500</td>
<td>130,220</td>
<td>89,790</td>
<td>112,355</td>
<td>110,850</td>
<td>148,022</td>
</tr>
<tr>
<td>Hardrock subtotal</td>
<td>176,000</td>
<td>131,700</td>
<td>50,200</td>
<td>115,100</td>
<td>353,850</td>
<td>332,230</td>
<td>760,955</td>
<td>316,655</td>
<td>359,834</td>
</tr>
<tr>
<td>TOTAL (feet)</td>
<td>330,700</td>
<td>229,400</td>
<td>338,400</td>
<td>315,250</td>
<td>832,000</td>
<td>678,170</td>
<td>963,080</td>
<td>514,796</td>
<td>444,449</td>
</tr>
<tr>
<td>TOTAL (meters)</td>
<td>100,797</td>
<td>67,177</td>
<td>103,144</td>
<td>96,088</td>
<td>253,593</td>
<td>206,700</td>
<td>293,547</td>
<td>156,910</td>
<td>135,502</td>
</tr>
</tbody>
</table>

*aDoes not include 1,053,000 feet of blast-hole drilling in 1992.
- - - = Not specifically reported.
Table 14. Drilling footage by region in Alaska, 1992

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

--- 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.
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

<table>
<thead>
<tr>
<th>Commodity</th>
<th>1991 Quantity</th>
<th>1992 Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pounds</td>
<td>kilograms</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1,340,000</td>
<td>607,824</td>
</tr>
<tr>
<td>Copper</td>
<td>482,100</td>
<td>218,680</td>
</tr>
<tr>
<td>Brass</td>
<td>49,012</td>
<td>22,229</td>
</tr>
<tr>
<td>Radiators</td>
<td>17,393</td>
<td>7,889</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>851</td>
<td>386</td>
</tr>
<tr>
<td>Lead</td>
<td>3,000,000</td>
<td>1,306,800</td>
</tr>
<tr>
<td>Magnesium</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zinc</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ferrous scrap</td>
<td>4,630,860</td>
<td>2,100,560</td>
</tr>
</tbody>
</table>

TOTAL            | $2,634,650    | $3,652,908    |

*All volume production in 1992 provided by K and K Recycling Inc. of Fairbanks and Alaska Metal Recycling of Anchorage.
*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 the $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
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 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)

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)
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<th>Title</th>
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<td>Effects of temperature on swelling of coal shale</td>
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<td>Huang/Speck (MIRL)</td>
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<td>Rinsing of cyanide effluent under arctic conditions</td>
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**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  
**EPA** - U.S. Environmental Protection Agency
REFERENCES


## APPENDIX A

**Total active claims and new claims staked in 1990, 1991, and 1992**

*(listed by quadrangle)*

Compiled by Erik Hansen (DOM)

<table>
<thead>
<tr>
<th>Quadrangle</th>
<th>Active claims assessment work</th>
<th>New claims staked</th>
<th>Total active claims*</th>
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*Total count based on all documents recorded through January 1, 1993.

Quadrangles numbered northwest to southeast according to DGGS-DOM numbering and Kardex systems.

*Excluding an undetermined number of claims on State selected land.
## APPENDIX A—Continued

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<tr>
<td>108 Yakutat</td>
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<td>112 Juneau</td>
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<td>113 Taku River</td>
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<td>379</td>
<td>171</td>
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<tr>
<td>115 Seldum</td>
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<td>176</td>
<td>82</td>
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<tr>
<td>116 Port Alexander</td>
<td>107</td>
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<tr>
<td>117 Petersburg</td>
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<td>532</td>
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<td>118 Ketchikan</td>
<td>361</td>
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<td>121 Dixon Entrance</td>
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<td>122 Prince Rupert</td>
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<tr>
<td>126 Mt. Katmai</td>
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</tr>
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<td>127 Afognak</td>
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<td>128 Bristol Bay</td>
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<tr>
<td>130 Kivalik</td>
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<td>71</td>
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<tr>
<td>133 Chugach</td>
<td>380</td>
<td>373</td>
<td>115</td>
</tr>
<tr>
<td>138 Port Moller</td>
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<tr>
<td>TOTAL</td>
<td>58,067</td>
<td>52,976</td>
<td>46,029</td>
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APPENDIX B
1992 Prospecting sites on State lands
Compiled by Erik Hansen (DOM)

<table>
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<th>Quadrangle</th>
<th>New sites</th>
<th>Extensions</th>
<th>Total</th>
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<tr>
<td>23 Philip Smith Mts.</td>
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<td>30 Wiseman</td>
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<tr>
<td>44 Bendeleben</td>
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</tr>
<tr>
<td>48 Tanana</td>
<td>28</td>
<td>10</td>
<td>38</td>
</tr>
<tr>
<td>49 Livengood</td>
<td>33</td>
<td>10</td>
<td>43</td>
</tr>
<tr>
<td>50 Circle</td>
<td>114</td>
<td>94</td>
<td>208</td>
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<tr>
<td>52 Nome</td>
<td>25</td>
<td>18</td>
<td>43</td>
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<tr>
<td>53 Solomon</td>
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<td>0</td>
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</tr>
<tr>
<td>56 Ruby</td>
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<td>0</td>
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</tr>
<tr>
<td>57 Kantishna River</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>58 Fairbanks</td>
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<td>16</td>
<td>40</td>
</tr>
<tr>
<td>59 Big Delta</td>
<td>33</td>
<td>91</td>
<td>124</td>
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<tr>
<td>60 Eagle</td>
<td>32</td>
<td>30</td>
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</tr>
<tr>
<td>67 Healy</td>
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</tr>
<tr>
<td>68 Mt. Hayes</td>
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<tr>
<td>69 Tanacross</td>
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<tr>
<td>75 Talkeetna</td>
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<tr>
<td>76 Talkeetna Mts.</td>
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<tr>
<td>78 Nabesna</td>
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<td>8</td>
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<tr>
<td>82 Sleetmute</td>
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<tr>
<td>84 Tyonek</td>
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</tr>
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<td>85 Anchorage</td>
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<td>6</td>
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</tr>
<tr>
<td>91 Bethel</td>
<td>0</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>95 Seward</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>97 Bering Glacier</td>
<td>2</td>
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<td>2</td>
</tr>
<tr>
<td>114 Sitka</td>
<td>2</td>
<td>0</td>
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</tr>
</tbody>
</table>

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

1011 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, inspections, 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
3001 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 1813
Nome, AK 99762-1815
(907) 443-2600
(907) 443-5561 (fax)

Southeastern Regional Office
410 Willoughby Ave., Ste. 105
Juneau, AK 99801-1795
(907) 465-5330
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)
Juneau, 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) 465-3362

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 99509-3930
(907) 561-6131
Fax: (907) 561-6134

Southeastern Regional Office
431 North Franklin St.
P.O. Box 107005 (mailing)
Juneau, AK 99811-0030
(907) 465-3552

DEPARTMENT OF NATURAL RESOURCES
400 Willoughby Ave., 5th Fl.
Juneau, AK 99901-1724
(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 metallic, mineral, fossil, and geothermal resources; locations and supplies of construction materials; potential geologic hazards to buildings, roads, bridges, and...
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

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

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

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 77216 (mailing)
Eagle River, AK 99577-2116
(907) 696-0070

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

DEPARTMENT OF PUBLIC SAFETY
450 Whittier St.
P.O. Box 11200 (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: Enforces 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 99776-0760

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) 474-7566

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.

**Mineral Industry Research Laboratory**

**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 Subsistence 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 ensure 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 925 (mailing)
Nome, AK 99762
(907) 443-2177

Gulkana District Office
P.O. Box 147 (mailing)
Gulkana, AK 99754
(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) 443-3430
(907) 442-2720 (fax)

**Function:** Provides direct training and support to the mining industry. Offers prospection and introductory courses in 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 the mining industry. Offers prospection and introductory courses in open admissions policy.

**U.S. Fish and Wildlife Service**

**Region 7 Office**
101 12th Ave., Ste. 320
Ketchikan, AK 99901
(907) 224-5443

**Function:** Administers 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.

Juneau Fish and Wildlife Enhancement
Federal Bldg., Rm. 417
Juneau, AK 99802
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
(FoT 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 ground and surface waters 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
111 10th Ave., NE., Rm. 100
Bellevue, WA 98004-5997
(206) 533-7037


Alaska Operations Office
222 West 7th Ave., #19
Juneau, AK 99801
(907) 271-5083

COOPERATIVE STATE-FEDERAL AGENCIES

Alaska Minerals Commission
P.O. Box 80418
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 Land 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 10700
Anchorage, AK 99501
(907) 276-0347

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 stream sites, 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
(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

Greatest Fairbanks Chamber of Commerce
702 2nd Ave.
Fairbanks, AK 99701
(907) 452-1105

Anchorage Chamber of Commerce
441 W 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) 243-2836

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

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

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

Norne Branch
P.O. Box 1974
Norne, AK 99672
(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 622002
Littleton, CO 80162-5002
(303) 973-9580

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

Secretary Treasurer-John Rischel
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 240334
Fairbanks, AK 99701
(907) 586-4161

Miners Advocacy Council
P.O. Box 73834
Fairbanks, AK 99707
(907) 479-0471

Northwest Mining Association
10 North Post St., Ste. 114
Spokane, WA 99201
(509) 624-1158

Placer Miners of Alaska
P.O. Box 23151
Fairbanks, AK 99701

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

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

ORGANIZED MINING DISTRICTS

Circle Mining District
P.O. Box 80574
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) 765-2228
Iditarod Mining District
General Delivery
Flat, AK 99734
(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
RESOURCES EDUCATION FUND
(AMEREF)
P.O. Box 190927
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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.

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801 W. 10th St., Ste. 200
Juneau, AK 99801-1894
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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
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Alaska Environmental Assembly
419 - 6th St., Ste. 328
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NATIVE REGIONAL CORPORATIONS

AHTNA INCORPORATED
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Anchorage Office
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THE ALEUT CORPORATION
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ARCTIC SLOPE REGIONAL CORPORATION
P.O. Box 129
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Anchorage Office
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BERING STRAITS NATIVE CORPORATION
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BRISTOL BAY NATIVE CORPORATION
800 Cordova Street
P.O. Box 100220 (mailing)
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(907) 276-3924 (fax)

CALISTA CORPORATION
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CHUGACH ALASKA CORPORATION
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COOK INLET REGION INC.
P.O. Box 93330
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DOYON LTD.
201 1st Ave.
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(907) 452-4753
(907) 456-6785 (fax)

KONIAG INCORPORATED
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NANA REGIONAL CORPORATION
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SEALASKA CORPORATION
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APPENDIX D
Selected significant mineral deposits in Alaska
(locations shown in figures 26-28)

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/t Au (1.4 oz/ton) Ag (fig. 26).**

2. **Red Dog - At least two major strata-bound massive sulfide deposits hosted in Pennsylvania or Mississippian shale; similar to locality 1. Main deposit at Red Dog contains measured reserves of 58.2 million tonnes (64.02 million tons) of 10.4% Zn, 5.5% Pb, 0.9% Cu, and 51 g/t Ag (1.8 oz/ton) Ag. Inferred reserves are 16.1 million tonnes (15.5 million tons) of 10.0% Zn, 2.7% Pb, and 41 g/t Ag (1.2 oz/ton) Ag. Nearby Hilltop deposit contains significant undisclosed reserves (fig. 26).**

3. **Drenchwater - Mississippian and Pennsylvania 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 1% Zn and up to 3% 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 km (6,500 ft), and contains up to 26% Zn and 51% Pb in grab samples (fig. 26).**

4. **Glinny 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 surficial 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 Kayak 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/t Ag (0.04 oz/ton) Au, and 1,028 g/t Ag (30 oz/ton) Ag (fig. 26).**

6. **Kivliktort Mountain - Mineralized float is widespread on the south flank of the mountain, apparently spatially related to the contact between shales at the base of the hills and coarse-grained siliciclastic rocks on the upper slopes. Rock samples containing up to 30% Zn have been reported (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/t Ag (0.3 oz/ton) Ag (fig. 26).**

7a. **Frost - Possible 8.2 million tonnes (9 million tons) barite in pods, lenses, and wavy-banded quartz-carbonate-barite veins. Chalcopyrite and galena occur in the vein 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. **Borite - Major strata-bound Cu-Zn deposit in brecciated carbonate rock of Devonian age; 4.56 million tonnes (5.0 million tons) orebody contains 4.0% Cu and accessory Zn and Co. Lateral 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 volcanicogenic (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/t Ag (1.6 oz/ton) Ag, and 0.69 g/t Au (0.02 oz/ton) Au (fig. 26).**

10. **Sun - Major (Cu-Pb-Zn-Ag) massive sulfide deposit in sequence of middle Paleozoic metarhyolite and metatuff. Average grades are 1 to 4% Pb, 6 to 12% Zn, 0.5 to 7% Cu, 103 to 377 g/t Ag (3 to 12 oz/ton) Ag (fig. 26).**

11. **Smucker - Middle Paleozoic volcanoconeogenic 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/t Ag (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/t Au (0.015 oz/ton) Au (fig. 26).**

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 1950s. Total production through 1951, mostly from placer deposits, estimated at 974 kg (33,300 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 1,824 kg (60,900 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/t Au (2 oz/ton) Au (fig. 28).**

18. **Porcupine Lake - Stratiform fluorite occurrences and argentoferous enargite, tetrahedrite associated with felsic volcanic rocks of late Paleozoic age. Reported grades of up to 25% to 30% fluorite (CaF2) 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).**

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*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.*
**EXPLANATION**

- Prospects with significant copper, lead, zinc, ± silver, gold, and barite deposits

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**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% MoS₂, and an adjacent 10 ha (25 acre) area where nubble contains wolframite has soils averaging greater than 0.12% WO₃. Rubble crop in this area indicates a Tertiary porphyry system as the source of the Mo and W (fig. 27).

21a Galena Creek - Steeply dipping veins contain up to 21% Cu, 3.5% Zn, and 1.3% Pb with 189 g/tone (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% CaF₂, and 0.03% WO₃, 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.
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 part (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, (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 **Kaskaik** - 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 are 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 **Porpooskuk 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, alkalic, and bostonite dikes (fig. 27).
Appendix D

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 Hogattsig, 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 (1,553,100 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-polymetallc deposit in monzonite stock (fig. 28).

44  Nixon Fork - Promising Au-Cu deposits; Nixon Fork mining produced 1,851 kg (59,500 oz) Au from Late Cretaceous skarns associated with quartz monzonite-Denovian limestone contact zones. Indicated reserve of about 10,886 kg (350,000 oz) Au in 258,300 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/t (0.071 oz/ton) gold and 50 g/t (1.47 oz/ton) silver (silver) (fig. 28).

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/t (0.071 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 Bearly and Tofy 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 on Livengood Bench, a Paleocene 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 (304,348 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 (417 million oz) of gold in 158.3 million tonnes (174.5 million tons) of rock (fig. 28).

49a  Fort Knox - Dissininated 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 (no map reference).

49b  Ryan Lode - Based on 0.69 g/t (0.02 oz/ton) cutoff total reserves in the metamafid-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 62,205 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/t (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 alkalic 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 (992,155 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  Bonnfield 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 Bonnfield 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, 0.7 to 2.0 oz/ton Au, and 0.61 to 2.1 g/t (0.018 to 0.061 oz/ton) Ag; estimated potential reserve of 34.6 million tonnes (40 million tons) for all deposits (fig. 26).

56  Mosquito, Petorne - 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 0.34 g/t (0.01 oz/ton) Au, and 0.03% Mo (fig. 27).

58  Big Creek, Ludue - 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 serpentinitized 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  Koyukuk mining district - Major placer Au and lode Ag-Au-Pb-Zn-Sb-W district. Produced 3,082 kg (9,307 oz) placer and lode-Au, about 9,549 kg (307,000 oz) lode Ag, and 2.3 million kg (6 million 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. Metaliferous 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 polynormalic 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 deposit in Late Cretaceous breccia pipe. Produced more than 49 kg (1,581 oz) Au, 268 kg (9,617 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 Nin Prospect - Porphyry Cu-Au-Ag deposit of Late Cretaceous age. Reported grades of up to 5.0% Cu and 109 g/t Au (9 oz/ton) Ag (fig. 26).

66 Valdez Creek - About 12,200 kg (39,300 oz) of past production through 1992, leaving reserves of about 5,100 kg (164,000 oz) of proved reserves and 11,800 kg (38,000 oz) in probable or possible category. Operated by Gold Fields, this operating mine is the largest placer mine in Alaska (fig. 28).

67 Denali Prospect - At least six small, stratified Cu beds 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 of Ag from placer deposits (fig. 28).

69 Nabesna mine - Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(? ) age, produced over 2,968 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 Chistichine Limestone and Nikolai Group. Inferred reserves are 744 million kg (1.64 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 stratiform Cu (Ag-Au-Pb-Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Ora Group. Produced more than 1.5 million kg (3.3 million lb) Cu from 44,760 tonnes (49,350 tons) ore (fig. 26).

78 Elammar - Stratiform Cu-Zn-Au massive sulfide deposit in sediment of Eocene(? ) Ora Group. Produced more than 7.3 million kg (16 million lb) Cu, 1,295 kg (3,107 oz) Au, and 5,960 kg (19,615 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 Latonee, Beatson - Major strata-bound Cu-Zn-Ag massive sulfide deposits in Ora Group sedimentary rocks and mafic volcanic rocks. Produced more than 93 million kg (205 million lb) Cu from 5.4 million tonnes (6 million tons) ore. Inferred reserves of 4.3 million tonnes (5 million tons) ore that grade 1% Cu, 1.5% Pb and 2% Zn (fig. 26).

81 Rau Cape - Major strata-bound Cu-Zn massive sulfide deposit in complex ore shoots enclosed in mafic volcanic rocks of Ora Group. Reported reserves of over 1 million tonnes (1.1 million tons) ore that grade 2% 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 tons) 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 (340,000 oz) refined PG metals from 1934 to 1976; one of the largest known PG metals resources in United States. Possible off-shore 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/t (0.22 oz/ton) Au. Inferred reserves are 678,440 tonnes (748,000 tons) grading 26 g/t (0.76 oz/ton) Au, 74 g/t (2.16 oz/ton) Ag, with base metal credits (fig. 28).

87 Pyramuld - 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 large tonnages (fig. 27).

90 Mike deposit - Porphyry Mo-Mn deposit of Late Tertiary age; grades of up to 0.21% Mo reported. Potential for large tonnages (fig. 27).

91 Rex deposit - Porphyry Cu prospect similar to locality 90; grades of up to 0.3% Cu reported. Potential for large tonnages (fig. 27).

92 Kusna Creek - Major stratiform Cu-Pb-Zn and skarn-sulfide deposits of Mesozoic age in mafic, volcanic, and sedimentary rocks; reported reserves of over 27 million tonnes (20 million tons) ore that grade more than 1% Cu (fig. 26).
Appendix D

resources are 58 to 96 million kg (128 to 212 million Ib) Sn in to 137 Jiy veins in graywacke; produced more than 1,555 kg (50,000 oz) Au

AlasknJuneau reserves of lode Au mineralization. Past production totaled about 466 kg (1000 oz) Ag. Sn has also been recently identified. Area

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

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).

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/tome Ag, 4.1 g/tome (0.12 oz/ton) Au, 12.8% Zn, and 4.0% Pb (fig. 26).

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

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

Tracy Arm - Strata-bound Cu-Zn-Pb massive sulfide deposit in Mesozoic schist; over 336 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/tome (0.76 oz/ton) Ag, and 0.44 g/tome (0.013 oz/ton) Au (fig. 26).

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).

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

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 barite sulfides. Reported to be mined out (fig. 26).

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/tome (29 oz/ton) Ag, and 17 g/tome (0.5 oz/ton) Au. Sn has also been recently identified. Area also contains potential for porphyry Mo deposits (fig. 26).

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/tome (0.13 oz/ton) Ag reported (fig. 28).

Kasaan Peninsula - Major skarn-type Cu-Zn-Au massive sulfide deposit of Jurassic age; area has produced over 12.7 million kg (29 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).

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 (335,000 tons) ore (fig. 28).

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

Hyder mining district - Area produced more than 22,673 tonnes (25,000 tons) high-grade 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).

Jumbo - Cu-Pb-Ag-Mo-Au 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 509,550 tonnes (560,000 tons) ore that grade 45.2% Fe, 0.75% Cu, 0.3% Co, 0.3 g/tome (0.01 oz/ton) Au, and 2.74 g/tome (0.08 oz/ton) Ag (fig. 26).
Copper City - Stratabound 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).

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% MoS₂, including 444 million tonnes (490 million tons) probable resource with grades of 0.219% MoS₂ (fig. 27).

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 (1,100 oz) Au, and 467 kg (15,000 oz) Ag (fig. 26).

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% U₂O₅. Contains inferred reserves of about 36.2 million tonnes (40 million tons) of 0.126% Nb and up to 1% REE metals (fig. 28).

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).

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).

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 (SRR), 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 0294 1

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

Alvin H. Ageoff (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 0201 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 Hamman
P.O. Box 81467
Fairbanks, AK 99708
Gold
Deadwood Creek
Circle district
ML 92 0269 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 134
Palmer, AK 99645
Gold
Poker Creek
Fortymile district
ML 92 0235 1

Michael Alexander/ David E. Lefever (SCR)
P.O. Box 32171
Fairbanks, AK 99701
Gold
Yakutat
Willow Creek
ML 92 0018 1

AMAX Gold Exploration, Inc. (EIR)
350 Indiana Street
Golden, CO 80401
Gold
Little Moose and Eva Creeks
Bosnafied district
ML 92 0303 1; ML 92 0267 1

Amex Gold Exploration (EIR)
C/O Taiga Venture
700 S. Cushman Street
Fairbanks, AK 99701
Gold
Steamboat Creek
Circle district
ML 92 0474 1

Amin, Ltd. (NR)
Alber & Cecilia Manas
Paradise Valley
Bethels, 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)
1103 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. Andersen/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. Ferenbach
1215 Bonnell, Apt. 11
Fairbanks, AK 99710
Gold
Cleary, Cora, and Lulu Creeks
Fairbanks district
ML 92 0443 1

Arctech Services (SCR)
Apt. 11
Fairbanks, AK 99701
Gold
Chulitna Creek
Valdez Creek district
ML 92 0105 1

Georgie B. Acker (SCR)
2700 S. Cushman Street
Fairbanks, AK 99701
Gold
N/A
Nome district
ML 92 0243 1

Aurora Mining (EIR)
Lester Lines
P.O. Box 103820
Anchorage, AK 99510
Gold
N/A
N/A
ML 92 0044 1

Aspen Exploration Corporation (WR)
7925 E. Harvard Avenue, Suite A
Denver, CO 80231-3821
Gold
N/A
N/A
ML 92 0044 1

Charles Barnes (SCR)
P.O. Box 193
Cancwell, AK 99729
Gold
Grog Creek
Valdez Creek district
ML 92 0305 1

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

[APPENDIX E continues on the next page...]

#### Appendix E  63

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>City, State, Zip</th>
<th>Gold Mining Districts</th>
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<tbody>
<tr>
<td><strong>Ben Batty</strong> (EIR)</td>
<td>544 North 600 West</td>
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<td>Gold</td>
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<td><strong>Rye and Jay Creeks</strong></td>
<td>Fairbanks, AK 99709</td>
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<td>Wasilla, AK 99687</td>
<td>Gold</td>
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<td><strong>Gold and Eldorado Creeks</strong></td>
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<td><strong>Bayless Mining (EIR)</strong></td>
<td>Michael Busby</td>
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<td><strong>P.O. Box 1170</strong></td>
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<td>Cliff Knowlton</td>
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<td><strong>2245 John Evans Lane</strong></td>
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<td>Patrick &amp; Mary Doyle</td>
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<td>Don Gilson</td>
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<td>Hank Gradney</td>
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<td><strong>Joe Bradley/Todd Bruce (SCR)</strong></td>
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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 1
Anchorage, AK 99510
Gold
Specimen Creek
Delta River district
ML 92 0362 1

Gary Buchholz (SCR)
2004 Old Steese N.
Fairbanks, AK 99712
Gold
Phlecan Creek
Chitina 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 0099 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 Chathanika River
Circle district
ML 92 0325 1

Robert J. Casey (EIR)
P.O. Box 106
Central, AK 99730
Gold
Portage Creek
Circle district
ML 92 0332 1

Camp Creek Mining (EIR)
Eric & Alvia Kiley
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 711375
Engle River, AK 99777
Gold
Upper Cache Creek
Yentna district
ML 92 0348 1

Carroll-Vendra, 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 Knibauer
413 Cowles Street
Fairbanks, AK 99701
Gold
Fox Creek
Fairbanks district
ML 92 0024 1

Caswell Creek Sand and Gravel (SCR)
Herald 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 99758
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 0037 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 0035 1

Joseph L. Cloud (N/A)
H CO 1, Box 875
Kenai, AK 99611
Gold
Boulder Creek
N/A
ML 92 0024 1

John H. Cole (EIR)
P.O. Box 10139
Fairbanks, AK 99710
Gold
Portage Creek
Bonneville district
ML 92 0191 1

Lyle & Steve Collinge (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
Talask Creek & Kukak Tributaries
N/A
ML 92 0247 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 Connlin (EIR)
92472 Chardonnay Way
Chester, 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
Bonneville district
ML 92 0247 1

Cook Island Partnership (SCR)
Samuel M. Gaston
8511 Hartwell 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
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>Contact Person</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Cook's Mining (EIR)</td>
<td>John Cook, P.O. Box 70456, Fairbanks, AK 99707</td>
<td>Gold, Fairbanks</td>
<td></td>
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<tr>
<td></td>
<td>F. Cornelius (EIR), P.O. Box 20523</td>
<td>Koyukuk district</td>
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<td>John Reed Dart (EIR), P.O. Box 70456</td>
<td>Gold, Fairbanks district</td>
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<td>Cecil A. Cox (EIR), P.O. Box 34245</td>
<td>Gold, Fairbanks district</td>
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<td>Ed or Pat Coyle (SCR), 290 South Park Street, Anchorage, AK 99500</td>
<td>Gold, Fairbanks district</td>
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<td>Bert Craig (EIR), 633 Pleasant Drive, North Pole, AK 99705</td>
<td>Gold, Fairbanks district</td>
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<td>Jimmie Dale (EIR), 743 Wilcox Avenue, Fairbanks, AK 99709</td>
<td>Gold, Fairbanks district</td>
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<td>John Reed Dart (EIR), P.O. Box 50</td>
<td>Manley Hot Springs, AK 99756</td>
<td></td>
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<td>Robert C. Emerson (EIR), 1811 Phillips Field Road, Fairbanks, AK 99701</td>
<td>Gold, Fairbanks district</td>
<td></td>
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<tr>
<td>Empire Exploration, Inc. (N/A)</td>
<td>Jerry Bonnifield (EIR), P.O. Box 9104</td>
<td>Fairbanks, AK 99707</td>
<td></td>
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<tr>
<td>Flat Creek Mining Co. (WR)</td>
<td>James P. (EIR), P.O. Box 437</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Pick Mining (EIR)</td>
<td>G. Fulton &amp; R. Wrede, P.O. Box 113</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Milo E. Flothe (WR), P.O. Box 242</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Pick Mining (EIR)</td>
<td>Mitch Fleming (NR), P.O. Box 9102</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>James L. &amp; Sharon L. Fogarty (EIR)</td>
<td>Fairbanks, AK 99707</td>
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<td>Flat Creek, Inc.</td>
<td>Elmer W. Foss/Harold Osberg (EIR)</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Harry or Jeannine Faulkner (SWR)</td>
<td>Fairbanks, AK 99707</td>
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<td>Flat Creek, Inc.</td>
<td>Don P. DeLima (EIR), P.O. Box 95930</td>
<td>Anchorage, AK 99514</td>
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<td>Flat Creek, Inc.</td>
<td>Richard Denby (SCR), P.O. Box 82204</td>
<td>Nome, AK 99701</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>John Denslinger (NR), 102 Jefferson Street, The Dalles, OR 97058</td>
<td>Nome, AK 99701</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Thomas Domenier (EIR), HCO 4 Box 8937</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Michael B. Dugger (EIR), 5219 Half Moon Drive, Colorado Springs, CO 80915</td>
<td>Nome, AK 99701</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Ed's Gravel Pit (SCR), P.O. Box 3448</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Jimmie Dale (EIR), 743 Wilcox Avenue, Fairbanks, AK 99709</td>
<td>Fairbanks, AK 99707</td>
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</tr>
<tr>
<td>Flat Creek, Inc.</td>
<td>Jeff Edgerton (EIR), P.O. Box 34245</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Ed's Gravel Pit (SCR), P.O. Box 3448</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
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<td>Fairbanks, AK 99707</td>
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<td>Jeff Edgerton (EIR), P.O. Box 34245</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Jimmie Dale (EIR), 743 Wilcox Avenue, Fairbanks, AK 99709</td>
<td>Fairbanks, AK 99707</td>
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<tr>
<td>Flat Creek, Inc.</td>
<td>Jeff Edgerton (EIR), P.O. Box 34245</td>
<td>Fairbanks, AK 99707</td>
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</tr>
</tbody>
</table>
Patricia S. Franklin (EIR)
1213 Copper 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
Kahilina River
Yentna district
ML 92 0276
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
Plat Creek
Fairbanks district
ML 92 0124 1
Four Brothers Mining (EIR)
Clarke H. Billings
P.O. Box 81177
Fairbanks, AK 99708
Gold
Tonsanika 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 Mendola 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 Mendola Road
Nyssa, OR 97913
Gold
Thistle Creek
N/A
ML 92 0003 1
Robert A. Garrabrunt (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
Ketchikan 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
Gakonan, AK 99586
Gold
N/A
N/A
ML 92 0405 1
Dennis Gilbreath (EIR)
P.O. Box 10048
Fairbanks, AK 99100
Gold
Flat Creek
Circle district
ML 92 0158 1
Girdwood Mining Co. (SCR)
Reynolds/McCarty/McLinn
P.O. Box 1087
Girdwood, AK 99587
Gold
Crow Creek
Hope-Sunrise district
ML 92 0388 1
Carl & Dessie Glenville (N/A)
HC 67, Box 1195
Anchorage, AK 99556
Gold
N/A
N/A
ML 92 0042 1; ML 92 0195 1
Phil Godfrey (EIR)
P.O. Box 3097
Belleuve, WA 98009
Sand & gravel
Lena Point
Juneau district
ML 92 0420 1
Phil Godfrey (SER)
P.O. Box 3097
Belleuve, WA 98009
Sand & gravel
Lemon Creek Pit
Juneau district
ML 92 0417 1
Goldstream Mining, Inc. (EIR)
19337 Old Steese Hwy., N.
Fairbanks, AK 99712
Gold
Gilmore Creek
Fairbanks district
ML 92 0179 1
Goldofin Native Corporation (WR)
P.O. Box 52099
Golvin, AK 99762
Sand & gravel
Goldofin 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 6455
Fairbanks, AK 99708
Gold
Long Creek
Ruby-Poorman district
ML 92 0410 1
Scott Gregor/Jamin Klopman (SWR)
P.O. Box 1082
Red Devil, AK 99656
Gold
Taylor Creek
Aniak district
ML 92 0043 1
Chris L. Groppel (EIR)
P.O. Box 574
Delta Junction, AK 99737
Gold
Tenderfoot Creek
Richardson district
ML 92 0117 1
Mark A. Gunauer (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 3000
Fairbanks, AK 99707
Gold
Linda Creek
Koyukuk district
ML 92 0103 1
Ham Mining Co. (EIR)
Harold Mitchell
P.O. Box 65
Chick, AK 99702
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
David H. Johnson (N/A)
4748 Old Seward Highway
Anchorage, AK 99503
Gold
N/A
N/A
ML 92 0281 1

Jensen & Co. (SCR)
W. Deering Jones
30 E. 11th Avenue
Anchorage, AK 99501
Gold
Roaring, Weber, and Wilson Creeks
Hope-Sunrise district
ML 92 0030 1

Cheryl Jong (WR)
P.O. Box 1107
Nome, AK 99762
Gold
Washington Creek
Kougorok district
ML 92 0281 1

Martin P. Junge (EIR)
P.O. Box 505
Fairbanks, AK 99701
Gold
Faith, Hope, and Charity Creeks
Fairbanks district
ML 92 0291 1

K.C. Mining Co. (EIR)
Kenneth Hanson
P.O. Box 10657
Fairbanks, AK 99710
Gold
Fairbanks district
ML 92 0301 1

Robert W. Kellet (EIR)
P.O. Box 193
Healy, AK 99743
Gold
Totalanika River
Fortymile district
ML 92 0041 1

Lambert Mining Company (EIR)
Timothy Kellett
503 W. 3rd Avenue
Anchorage, AK 99501
Gold
North Fork Creek
Kougorok district
ML 92 0281 1

Robert & Mary Kirschen (N/A)
P.O. Box 286
Terese, AK 99961
Gold
N/A
N/A
ML 92 0301 1

Susan S. Knappman (EIR)
P.O. Box 253
Central, AK 99730
Gold
26 Pup
Circle district
ML 92 0281 1

Ted Knutson/Miner Laws (EIR)
2326 St. Elias Drive
Anchorage, AK 99517
Gold
North Fork Creek
Circle district
ML 92 0281 1

Douglas A. Kolstad (N/A)
17335 W. Juanita Loop
Eagle River, AK 99577
Gold
Gold
N/A
ML 92 0413 1

Sam Koppenberg (EIR)
P.O. Box 80067
Fairbanks, AK 99708
Gold
Mission and Cross Creeks
Fairbanks district
ML 92 0033 1

Lawrence Korte (EIR)
300 Howland Rd.
Fairbanks, AK 99712
Gold
McMinn Creek
Fortymile district
ML 92 0291 1

Janus Kralik/Ed W. Schworer
(WR)
P.O. Box 1793
Nome, AK 99762
Gold
Gold Run and Alder Creeks;
Bluestone River
Port Clarence district
ML 92 0281 1

Floyd E. Krause (N/A)
P.O. Box 7037
Fairbanks, AK 99707
Gold
Robinson-Andor Walby and Robin
Wade Creek
N/A
ML 92 0281 1

Rudy W. Krzeski (EIR)
4426 Churchill Street
Shoreview, MN 55126
Gold
Albion & Crooked Creeks
Circle district
ML 92 0413 1

Ben Krzykowski (EIR)
P.O. Box 60091
Fairbanks, AK 99706
Gold
Big Eldorado Creek
Fairbanks district
ML 92 0301 1

Kurt's Construction (EIR)
Kurt A. Uteeck
HC 60, Box 3560
Delta Junction, AK 99743
Sand & gravel
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 0033 1

Don Lasley (EIR)
P.O. Box 30047
Fairbanks, AK 99710
Gold
North Fork Harrison Creek
Circle district
ML 92 0391 1

Lawler Family (SCR)
P.O. Box 386
Kasilof, AK 99610
Gold
West Fork Chistochina River
Chistochina district
ML 92 0381 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 0170 1

L&R Mining (EIR)
T.H. Leonard & B. Redfern
P.O. Box 51
Salchak, AK 99714
Gold
L&R Creek near Porcupine Cr. &
Salchak River
Richardson district
ML 92 0121 1

Ray Lester (EIR)
372 Old Steese Hwy. N.
Fairbanks, AK 99712
Gold
Birch Creek
Circle district
ML 92 0221 1

Raymond P. Lester (EIR)
372 Old Steese Hwy. N.
Fairbanks, AK 99712
Gold
Birch and Butte Creeks
Circle district
ML 92 0413 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 9006
Coldfoot, AK 99701
Gold
Nolan and Acme Creeks
Koyukuk district
ML 92 0001 1

Gary Lindeman (SCR)
44320 Parkway Avenue
Soldotna, AK 99669
Gold
Canyon Creek
Hope-Sunrise district
ML 92 0200 1

Pete Lindsey/Julia Malakie (SCR)
P.O. Box 318
Clam Gulch, AK 99768
Gold
Vuduz 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 24194
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 McPherson Creek
Fortymile district
ML 92 0518 1

Steve Losonsky (EIR)
P.O. Box 80321
Fairbanks, AK 99708
Gold
Hunter Creek
Rampart district
ML 92 0186 1

Appendix E

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 Layer/Alain 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 0121 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
Gnes Creek
Innoko district
ML 92 0096 1

Marvin Mahrt (EIR)
715 Waves Street
Fairbanks, AK 99709
Gold
Dry and Caribou Creeks
Bonnfield 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 99523
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)
Mervin L. Arnessen
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/NAAC 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 Locust Avenue
Anchorage, AK 99516
Canyon Creek
Hope-Sunrise district
ML 92 0181 1

Don or Dan May (EIR)
535 Hagedoerger 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 McIntosh (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

Metcot, Inc. (SCR)
HCR 64, Box 300
Seward, AK 99664
Sand & gravel
Kenai Peninsula
ML 92 0467 1

Michel/Gaddis/Wilson/Narvex (EIR)
P.O. Box 61099
Fairbanks, AK 99706
Gold
Bonanza Creek
Circle district
ML 92 0339 1

Minex Alaska, Inc. (WR)
Yoram Falkovich
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. & Fleretta A. McClain
P.O. Box 436
Soldotna, AK 99669
Estevan 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. Miscoyich (SWR)
1093 N. Greengrove Street
Orange, CA 92667
Gold
Discovery and Otter Creeks
lidated district
ML 92 0140

Mike McEvilly (EIR)
P.O. Box 1489
Fairbanks, AK 99707
Gold
Porcupine Creek
Circle district
ML 92 0118

 antigen-Miller (EIR)
P.O. Box 81515
Fairbanks, AK 99708
Gold
Grubstake Creek
Bonnifield district
ML 92 0233

Wayne G. Mitchell (N/A)
1731 Bridgewater Drive
Fairbanks, AK 99709
Gold
Paarrigan Creek
N/A
ML 92 0447

Melvin or Lois Montgomery (EIR)
7073 Trails End Road
Delta Junction, AK 99737
Gold
Gilkland Creek
Fortymile district
ML 92 0070

Anthony T. Monaco (N/A)
2521 Autumn Creek
Anchorage, AK 99516
Gold
Willow and Craigie Creeks
N/A
ML 92 0459

Vincent C. Monzullia (EIR)
2920 Monzulla Lane
Fairbanks, AK 99712
Gold
Victoria Creek
Fairbanks district
ML 92 0452

Vincent C. Monzullia (EIR)
Rt. 1, Box 659A, Avenue 1
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

Mrak Placer Mine (SCR)
Hermon Mrak & Aklesk Mrak
P.O. Box 1963
Palmer, AK 99645
Gold
Willow Creek
Willow Creek district
ML 92 0049

Donald E. Mullikin (WR)
P.O. Box 790
Homer, AK 99603
Gold
Skookum Creek
Koyuk district
ML 92 0269

Donald E. Mullikin (WR)
P.O. Box 790
Homer, AK 99603
Gold
Black & Grouse Creeks
Koyuk district
ML 92 0270

Samuel L. Munjas (NR)
6781 Clark Road
Paradise, VA 29566
Gold
Hammond River
Koyuk district
ML 92 0385

James Munsell (EIR)
P.O. Box 81155
Fairbanks, AK 99708
Gold
Little Minook, Jr. Cr.
Rampart district
ML 92 0076

Nana Regional Corporation (NR)
1001 E. Benson Boulevard
Anchorage, AK 99508
Sand & gravel
Spud
N/A
ML 92 0163

Nana Regional Corporation (NR)
1001 E. Benson Boulevard
Anchorage, AK 99508
Silver, Lead, Zinc
Red Dog
Nanok district
ML 92 0086

N.B. Tweet & Sons (WR)
P.O. Box 1107
Nome, AK 99762
Gold
Kougarok River
Kougarok district
ML 92 0137

Nevada Star Resource Corp. (SWR)
P.O. Box 10322
Vancouver, BC V7Y 1G5
Canada
Gold
Forty Seven Creek
Aniak district
ML 92 0456

Harold Nevers (EIR)
1645 Pinewood Drive
Juneau, AK 99801
Gold
American Creek
Hot Springs district
ML 92 0030

William H. Nordeen (NR)
P.O. Box 901
Coldfoot, AK 99701
Gold
Emma Creek
Koyuk district
ML 92 0357

Roger Nordholm (WR)
P.O. Box 171
Kotzebue, AK 99752
Gold
Candle Creek
Fairhaven district
ML 92 0387

North Pacific Mining Corp. (WR)
121 W. Fireweed Lane, #102
Anchorage, AK 99503
Gold
Illinois Creek
Kaiyuh Hills district
ML 92 0041

Ross Novak (EIR)
P.O. Box 83200
Fairbanks, AK 99708
Gold
Eureka Creek
Hot Springs district
ML 92 0184

Nuway Mining Company Inc. (SCR)
P.O. Box 1067
Kasilof, AK 99610
Gold
N/A
ML 92 0291

NYAC Mining Co. (SWR)
737 E. Street
Anchorage, AK 99501
Gold
Tulikusk River and Tributaries
NYAC/Anik district
ML 92 0089

Franklin L. O'Donnell Jr. (EIR)
P.O. Box 32
Juneau, AK 99712
Gold
Mosue Creek
Bonnifield district
ML 92 0327

Jim & Nancy Oller (N/A)
2206 Eureka, 49
Anchorage, AK 99503
Gold
N/A
ML 92 0210

Gorden E. Olson (EIR)
7100 North Milford
Holly, MI 48442
Gold
Eagle Creek
Circle district
ML 92 0153

Steven Olson (EIR)
P.O. Box 38443
Fairbanks, AK 99711
Gold
Eagle Creek
Fortymile district
ML 92 0011

O'Malley Sales (SCR)
P.O. Box 012774
Anchorage, AK 99510
Sand & gravel
Anchorage
ML 92 0437

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 0030

Bill O'Neal (EIR)
2173 University Avenue, South
Fairbanks, AK 99709
Gold
Exter Dome
Fairbanks district
ML 92 0046

OreTech (WR)
Jeffrey Keener
P.O. Box 1955
Nome, AK 99762
Gold
Avil Creek
Nome district
ML 92 0308
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 Peele Road
North Pole, AK 99705
Gold
Newman Creek
Fairbanks district
ML 92 0272 1

P and P Mining (EIR)
Paul W. White
2551 Peele 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

Mae Payne (EIR)
1079 Victor
North Pole, AK 99705
Gold
Hoosler Creek
Rampart district
ML 92 0319 1

Jon M. Peckenpaugh (WR)
928 Morningside Drive
Twin Falls, ID 83301
Gold
Inaauchuk 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 11
Manley Hot Springs, AK 99756
Gold
Little Boulder Creek
Hot Springs district
ML 92 0295 1

Bert Pettigrew (WR)
P.O. Box 1230 AY
Nome, AK 99762
Gold
Avnu Creek
Nome district
ML 92 0433 1

Bert Pettigrew (WR)
Route 3, Box 123
Ellensburg, WA 98266
Gold
Oregon Creek
Nome district
ML 92 0400 1

Ray 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
Alaska and Chapman Creeks;
Trubutary Hutalana River
Koyukuk district
ML 92 0255 1

Placer Dome U.S. Inc. (SWR)
Carey Cassaboom
5631 Silverado Way, Suite H
Anchorage, AK 99518
Gold
Otter and Black Creeks
Iditarod district
ML 92 0277 1

Dan & Cindy Piano (SWR)
P.O. Box 87275
Wasilla, AK 99677
Gold
Anvil 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 99677
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 72763
Fairbanks, AK 99707
Gold
Lillywig and Ingle Creeks
Fortymile district
ML 92 0065 1

R. Rubin 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 99765
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 Bonnfield district ML 92 0119 1

Joseph J. Rollins (SCR)
Associated Construction
P.O. Box 266
Anchorage, AK 99510
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-Tootla district ML 92 0240 1

RSH Company (SER)
Ralph S. Horency
P.O. Box 211474
Auke Bay, AK 99821
Sand & gravel Lemon Creek Juneau district ML 92 0434 1

RSH Company (SER)
Ralph S. Horency
P.O. Box 211474
Auke Bay, AK 99821
Sand & gravel Lemon Creek Juneau district ML 92 0444 1

John Rubel (EIR)
8183 Richardson Highway
Salcha, AK 99714
Gold Bench Above Democrat (Banner) Richardson district ML 92 0026 1

Ruby Mining (WR)
Al Kangas
P.O. Box 1
Ruby, AK 99768
Gold Long Creek Ruby-Poomran district ML 92 0265 1

Salter & Assoc. Inc. (EIR)
Ed Salter
P.O. Box 30
Marlery, 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. Scharf (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 Utki 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. Schnebel (SER)
P.O. Box 149
Haines, AK 99827
Gold Porcupine Creek Porcupine district ML 92 0174 1

D. Schroedl/R.E. Dalton (NIA)
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 99708
Gold Deadwood Creek Anchorage, AK 99511
Gold Last Chance and Murray Creeks Hot Springs district ML 92 0442 1

Shishmaref Native Corporation (WR)
General Delivery Shishmaref, AK 99772
Gold Sand & gravel Seward Peninsula ML 92 0438 1

Barry Shockley (WR)
P.O. Box 81978
Fairbanks, AK 99708
Gold Monument Creek Ruby-Poomran district ML 92 0224 1

SHS Mining (SWR)
P.O. Box 10226
Anchorage, AK 99511
Gold Stony River McGrath district ML 92 0446 1

Silent Island Mining (NIA)
Adam Amariak Sr.
P.O. Box 95
Togiak, AK 99678
Gold N/A ML 92 0052 1

Ralph Simonson (EIR)
Elgin, OR 97827
Gold Totalanika River Bonnfield district ML 92 0239 1

John Sipes (EIR)
2741 Perimeter Drive
North Pole, AK 99705
Gold Deadwood Creek Circle district ML 92 0356 1

Sinuq, Inc. (WR)
P.O. Box 101
Gambell, AK 99742
Sand & gravel St. Lawrence Island ML 92 0284 1

Samuel C. Skidmore (EIR)
P.O. Box 470
Fairbanks, AK 99707
Gold Valhalla 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 1

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 0141 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
Bonnfield district
ML 92 0250 1

C.S. Sparks (EIR)
1901 Parkside Drive
Anchorage, AK 99501
Gold
Faith Creek
Fairbanks district
ML 92 0143 1

Spernak and Son Inc. (SCR)
8223 Sand Lake Road
Anchorage, AK 99502
Sand & gravel
Anchorage area
ML 92 0213 1

Dennis J. Stankevich (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 1

Vernon Stepp (EIR)
290 Pearl Drive
Fairbanks, AK 99712
Gold
Bottom Dollar Creek
Circle district
ML 92 0029 1

Jim Stewart (EIR)
835 Fairview Avenue
North Pole, AK 99705
Gold
Deadwood and Nome Creeks
Circle district
ML 92 0047 1

R.B. Stough/T.A. Weston (EIR)
177 Simpson Way
Fairbanks, AK 99712
Gold
Boston and Eureka Creeks
Fortymile district
ML 92 0164 1

Rosalyn Stowell (EIR)
Eagle, AK 99730
Gold
Dome Creek, Little Miller Pup
Fortymile district
ML 92 0440 1

Phillip D. Strange (SCR)
P.O. Box 871478
Wasilla, AK 99677
Gold
Sidney Creek
Willow Creek district
ML 92 0048 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
Tokatani River
Bonnfield district
ML 92 0066 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 Tillion Way
North Pole, AK 99705
Gold
Swift Creek
Ruby-Poneman district
ML 92 0026 1

Wayne Tachiek (EIR)
P.O. Box 3503
Soldotna, AK 99669
Gold
Moose Creek
Bonnfield district
N/A
ML 92 0013 1

Tuiga Mining Company, Inc. (WR)
4740 East 115th Avenue
Anchorage, AK 99515
Gold
Bear Creek
Hogansta district
ML 92 0192 1

Myron C. Tate (NR)
3529 Blue Jay Way
North Pole, AK 99705
Gold
Myrtle Creek
Bonnfield district
N/A
ML 92 0397 1

Ronald H. Thole (N/A)
1735 University Avenue
Fairbanks, AK 99709
N/A
N/A
N/A
ML 92 0081 1

Ronald H. Thole (N/A)
1735 University Avenue
Fairbanks, AK 99709
N/A
N/A
N/A
ML 92 0082 1

Three "G" Mining (SCR)
Charlotte Bradley
P.O. Box 387
Trapper Creek, AK 99687
Gold
Twin Creek and tributary
Yentna district
ML 92 002 1

Three "G" Mining (SCR)
Jack Lacroix
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
Bonnfield district
ML 92 0040 1

David W. Timmons (N/A)
3225 Leisure
Fairbanks, AK 99701
Gold
Sawyer Creek
N/A
ML 92 0320 1

Candm & 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

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 0020 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 8373
Fairbanks, AK 99708
Gold
Thompson Pup, Fay Archibald, Nolan
Koyukuk district
ML 92 0389 1

Tri-Valley Corporation (EIR)
2001 Westwind Drive, Suite 14
Bakersfield, CA 93301
Gold
Richardson district
ML 92 0379 1

Triple I Mining (WR)
P.O. Box 2001
Nome, AK 99762
Gold
Little rocker Creek
Nome district
ML 92 0241 1

Wally Tradeau (EIR)
P.O. Box 92514
Fairbanks, AK 99708
Gold
Jack Wade Creek
Fortymile district
ML 92 0042 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
Sedron 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

Tulukskai Dredging Ltd. (SWR)
737 E Street
Anchorage, AK 99501
Gold
Tulukskai 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
Foker 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
Flatt-Fox Creek
Bonnifield district
ML 92 0189 1

Betty K. Velikanje (WR)
2600 Drager Drive
Anchorage, AK 99517
Gold
Salmon River
Kougavok 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 99678
Gold
Candle Creek and Kiwalik River
Fairhaven district
ML 92 0307 1

Joe Vogler (EIR)
P.O. Box 40
Fairbanks, AK 99701
Gold
Done Creek
Fairbanks district
ML 92 0260 1

Earl W. Voytilla (EIR)
P.O. Box 5211
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
Done Creek
Fairbanks district
ML 92 0251 1

Helen H. Warner (EIR)
P.O. Box 8074
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 Wenters (SCR)
P.O. Box 982
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 10050
Anchorage, AK 99510
Gold
Big Delta Quadrangle
Richardson district
ML 92 0441 1

Michael & Kathleen 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
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<th>Contact Person</th>
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<td>Andy E. Miscovich</td>
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*ML stands for Mineral Location.*
**APPENDIX F**

Primary metals production in Alaska, 1880-1991

<table>
<thead>
<tr>
<th>Year</th>
<th>Gold (oz)</th>
<th>Silver (AAS)</th>
<th>Mercury (lb)</th>
<th>Antimony (lb)</th>
<th>Tin (lb)</th>
<th>Lead (tons)</th>
<th>Zinc (tons)</th>
<th>Platinum (oz)</th>
<th>Copper (lb)</th>
<th>Chromium (lb)</th>
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<td>173,872</td>
<td>72,874</td>
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<td>17.57</td>
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<td>80,250</td>
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<td>1890</td>
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*Note: Data for 1880-1991.*
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<th>Year</th>
<th>Gold (oz)</th>
<th>Silver (oz)</th>
<th>Mercury (fl. oz.)</th>
<th>Antimony (lb)</th>
<th>Tin (ton)</th>
<th>Lead (ton)</th>
<th>Zinc (mt)</th>
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**APPENDIX F**

continued

*From State and federal documents.

1967-68 fiscal year.

When state and federal figures differ significantly, state figures are used.

Not traceable by year.

Crude platinum, total production of refined metal is about 377,000 oz.
APPENDIX G

Production of industrial minerals, coal, and other commodities in Alaska, 1880-1992

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<th>Barite</th>
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*Building-stone production figures for 1880-1937 are for the southeasternt and interior regions of Alaska only.

Includes 2.4 million lb U\textsubscript{3}O\textsubscript{5} (1955-71); 505,000 tons gypsum (1905-26); 286,000 lb WO\textsubscript{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, pumice, clay, soapstone, miscellaneous gemstones, and other commodities (1880-1985).

Production not traceable by year.

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.

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

$m$ = Million dollars.

$k$ = Thousand dollars.

--- = Not reported.

W = Withheld.
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<th>Building stone\textsuperscript{a} m$t\textsuperscript{a}</th>
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<td>48,145,000</td>
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<td>74,208,000</td>
<td>6,727,000</td>
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<td>66,126,000</td>
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<td>3,437,000</td>
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<td>1985</td>
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<td>28,184,080</td>
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<td>20,873,110</td>
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<td>16,696,374</td>
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<td>1988</td>
<td>1,551,162</td>
<td>17,264,500</td>
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<td>1989</td>
<td>1,452,353</td>
<td>14,418,000</td>
<td>2,914,000</td>
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<tr>
<td>1990</td>
<td>1,376,000</td>
<td>15,013,500</td>
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<td>1991</td>
<td>1,540,000</td>
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<td>1992</td>
<td>1,531,800</td>
<td>14,599,746</td>
<td>2,500,000</td>
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<tr>
<td>Other\textsuperscript{b}</td>
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<td>TOTAL</td>
<td>43,631,883</td>
<td>663,50</td>
<td>1,069,651,841</td>
<td>215,023</td>
<td>98,039,836</td>
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</table>

\textsuperscript{a} (metric tonnes)  
\textsuperscript{b} (tonnes)  
\textsuperscript{c} (US$)
Table 18. Conversion factors for U.S. customary units and International System of units (metric) of measurement

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<thead>
<tr>
<th>U.S. unit</th>
<th>Multiply by</th>
<th>Metric unit</th>
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<tr>
<td><strong>MASS</strong></td>
<td></td>
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</tr>
<tr>
<td>ounce, troy (oz tr)</td>
<td>0.0311</td>
<td>kilogram (kg)</td>
</tr>
<tr>
<td>ounce, avoirdupois (oz avdp)</td>
<td>0.0283</td>
<td>kilogram (kg)</td>
</tr>
<tr>
<td>pound, avoirdupois (lb)</td>
<td>0.4536</td>
<td>kilogram (kg)</td>
</tr>
<tr>
<td>ton, short (2,000 lb)</td>
<td>0.9072</td>
<td>tonne (mg)</td>
</tr>
<tr>
<td>tonne (mg)</td>
<td>1.102</td>
<td>ton (2,000 lb)</td>
</tr>
<tr>
<td><strong>LENGTH</strong></td>
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<td></td>
</tr>
<tr>
<td>foot (ft)</td>
<td>0.3048</td>
<td>meter (m)</td>
</tr>
<tr>
<td>mile (mi)</td>
<td>1.609</td>
<td>kilometer (km)</td>
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<tr>
<td><strong>AREA</strong></td>
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</tr>
<tr>
<td>mile² (mi²)</td>
<td>2.590</td>
<td>kilometer² (km²)</td>
</tr>
<tr>
<td>acre</td>
<td>2.471</td>
<td>hectare</td>
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<tr>
<td><strong>VOLUME</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yard³ (yd³)</td>
<td>0.7646</td>
<td>meter³ (m³)</td>
</tr>
<tr>
<td>gallon</td>
<td>3.785</td>
<td>liter</td>
</tr>
</tbody>
</table>

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. Kaliyuk 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. Nenana 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)