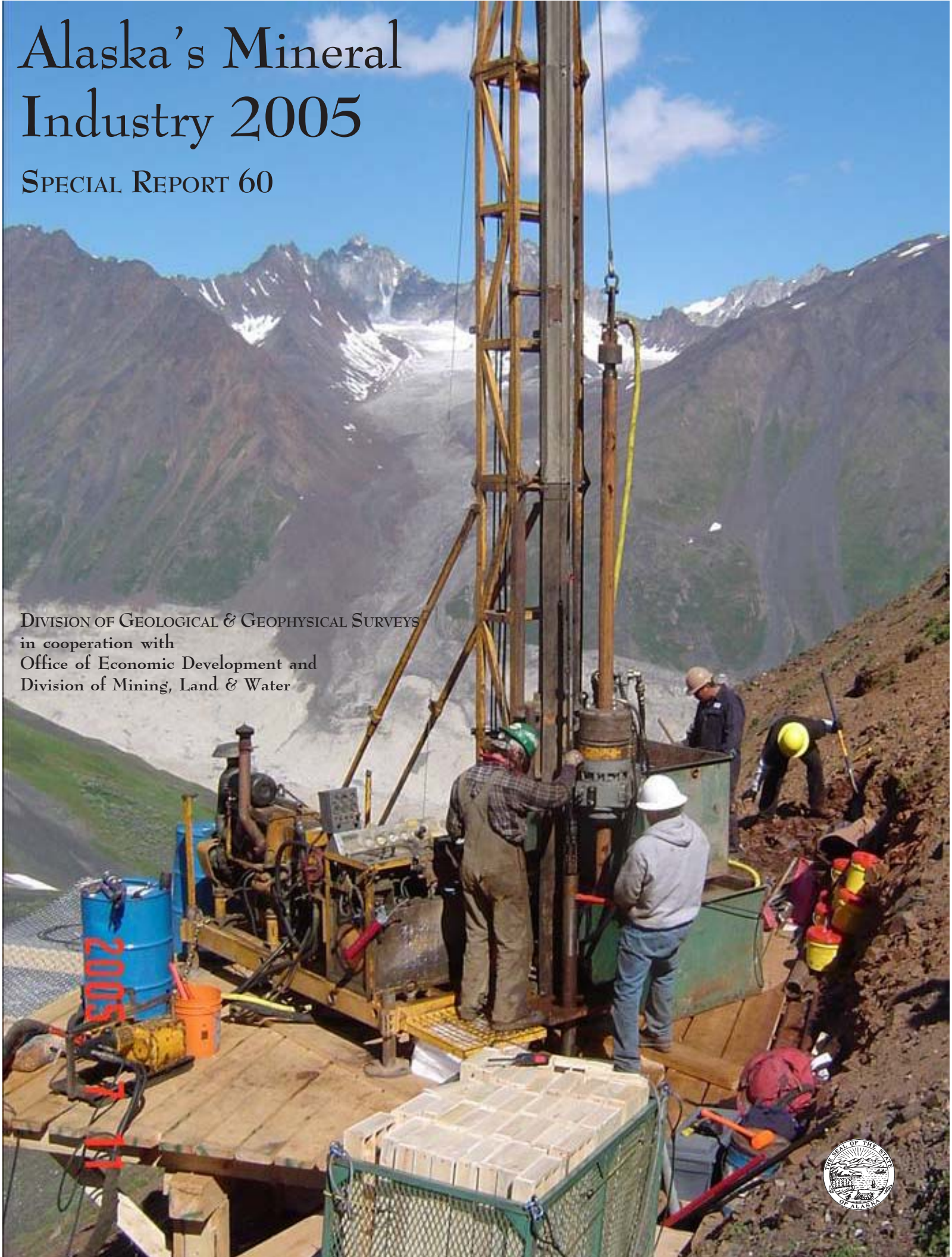
Alaska's Mineral Industry 2005

Special Report 60



Division of Geological & Geophysical Surveys
in cooperation with
Office of Economic Development and
Division of Mining, Land & Water

Alaska's Mineral Industry 2005

by
R.A. Hughes and D.J. Szumigala

Division of Geological & Geophysical Surveys

SPECIAL REPORT 60

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EXECUTIVE SUMMARY

Alaska's Mineral Industry 2005 is the twenty-fifth in a series of annual reports. The reports are a cooperative venture between the Division of Geological & Geophysical Surveys (DGGS) and the Division of Mining, Land & Water in the Alaska Department of Natural Resources and the Office of Economic Development, Department of Commerce, Community and Economic Development. This report and data supersede previously published DGGS Information Circular 52.

Alaska's mineral industry had a very strong year in 2005, propelled by strong metal prices. The 2005 cumulative value of Alaska's mineral industry was $1.853 billion, a combination of exploration and development investments, plus the gross value of mineral products. This is a record value and the tenth straight year exceeding $1 billion. The $603 million export value of minerals in 2005 is also a new record. Mineral exports composed 16.8 percent of the total exports from Alaska in 2005, with zinc ore accounting for 11.9 percent of the total and the highest value commodity exported from Alaska.

The mineral industry paid a total of $37.4 million to the state of Alaska and Alaska municipalities in 2005. These payments increased by almost $11 million (41 percent) above 2004 values. Mining license taxes almost doubled from 2004, largely resulting from profitability of Red Dog Mine.

The total minerals industry employment in 2005 is estimated to be 2,821 full-time-equivalent jobs. Alaskan metal miners made an average monthly wage of $6,188 during 2005, according to the Alaska Department of Labor & Workforce Development. Support services for the mining industry provided an average of 6,345 jobs for Alaskans during 2005.

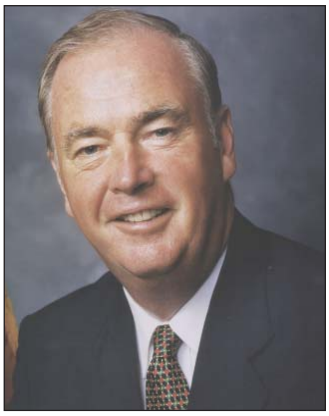
Exploration expenditures in Alaska during 2005 were $103.9 million, 47 percent higher than the $70.8 million spent in 2004. At least 16 projects had exploration expenditures of $1 million or more and these projects reached across Alaska, with more than $58 million spent in southwestern Alaska. More than 550,000 feet of drilling were completed in 2005 on exploration projects. Companies explored for a wide variety of mineral deposits and gold remained a major exploration commodity, but exploration for copper–gold porphyry systems (grouped with polymetallic deposits) was the major exploration target in 2005. Advanced exploration projects include Placer Dome Inc.–NovaGold Resources Inc.–Calista Corp.'s 28.4-million-ounce Donlin Creek intrusion-hosted gold project and Northern Dynasty Minerals Ltd.'s Pebble copper–gold porphyry project in southwestern Alaska. The Pebble project, with newly announced measured and indicated resources of 54.8 million ounces of gold, 44.7 billion pounds of copper, and 2.7 million pounds of molybdenum, was the largest exploration project in 2005.

About 5,304 new state mining claims (751,920 acres), 105 new state prospecting sites (16,800 acres), and 411 new federal claims (8,220 acres) were staked in 2005. The amount of land in Alaska under claim increased from 2004 to 2005, with approximately 3.56 million acres of land covered by claims and prospecting sites in 2005.

Development efforts were noted throughout the state and total expenditures were $347.9 million. This was the second highest year on record for development expenditures. Mine construction continued at Teck Cominco–Sumitomo's Pogo gold project in eastern Alaska and construction began at Coeur Alaska's Kensington gold project in southeastern Alaska.

Mineral production value for 2005 surpassed all previous years of record and was $1.402 billion. Values of production, in decreasing order, were from Red Dog Mine (64.4 percent); Greens Creek Mine (13.7 percent); Fort Knox Mine (10.5 percent); rock, sand, and gravel operations (7.1 percent); coal and peat operations (3.6 percent); and placer gold operations (0.8 percent). Zinc accounted for 61.5 percent of the total mineral production, followed by gold (13.6 percent), and lesser quantities of lead, rock, sand and gravel, silver, and coal and peat. The Pogo Mine is expected to begin gold production in the first half of 2006, with gold production planned at Nixon Fork Mine by late 2006, and at Kensington Mine by mid-2007.

GOVERNOR'S FOREWORD



It is my pleasure to present the Alaska Department of Natural Resources' final report on the status of Alaska's mineral industry in 2005. It documents the latest in a series of successful years that, taken together, clearly demonstrate that our mining industry is enjoying a resurgence and vitality that it has not seen for years.

Prudent state policies, combined with favorable world prices for gold and other minerals, have helped push the total value of Alaska's mineral industry to a record high of $1.85 billion in 2005, nearly double the $1.07 billion figure from 2002. It is especially gratifying to see the strong investment in exploration—up from $26 million in 2002 to $103.9 million in 2005—that will be the key to continued growth in development and production.

Mining continues to generate good job opportunities for Alaska residents. Alaska's five operating mines (Fort Knox, Greens Creek, Red Dog, Usibelli, and now Pogo) provided more than 1,500 full-time equivalent jobs of the 2,821 mineral industry jobs in Alaska in 2005. The average monthly wage for metal mining in Alaska during 2005 was $6,188, making mining one of the highest paying sectors of the Alaska economy.

In addition to jobs, mining creates public revenue by paying state and local taxes. In 2005, the industry paid a total of $37.4 million in taxes, up by almost $11 million (41 percent) over 2004. Mining license taxes almost doubled from 2004, largely due to profitability of Red Dog Mine. Mines help support local economies in both urban and rural Alaska, with mining companies serving as the largest taxpayers in the City and Borough of Juneau and the Fairbanks North Star, Denali, and Northwest Arctic boroughs, with total payments of almost $12 million.

One basic measure of the industry's health is the number of operating mines, and Alaska now has five producing mineral operations. The Red Dog zinc mine offers jobs and economic stability to Northwest Alaska residents and governments; the Greens Creek silver mine remains the largest single private employer in Juneau; Usibelli continues producing coal from the state's oldest operating mine; the Fort Knox gold mine is working to extend its operating life through heap leaching; and I was honored to attend the first gold pour at Pogo in June.

I'm proud that our administration has issued permits for three new mines in just a few years. In addition to Pogo, we issued state permits to the Rock Creek/Big Hurrah development in August. And while environmentalists continue legal challenges to the already-permitted Kensington gold mine, this well-planned project cannot be denied indefinitely.

There are many promising mineral prospects on the horizon. Operators have significantly expanded the estimated size of the world-class Pebble copper–gold deposit. The Chuitna Coal prospect developers predict production of 1 billion tons of low-sulfur coal from the Cook Inlet region over a 25-year mine life. Additional drilling at the Donlin Creek gold project near Aniak will provide information to support a production decision by late 2007. And the Nixon Fork gold mine near McGrath plans to resume operations late this year.

Because mining operates as much on hard facts as on hard rock, I'm proud of the Division of Geological & Geophysical Surveys and its geophysical mapping programs. This includes airborne geophysical surveys that are revealing a motherlode of information about the likely corridor of the natural gas pipeline.

My administration has been promoting responsible resource development and backing up that promotion with action to improve the regulatory and business climate. We have focused on providing a more streamlined process for permitting mines, while maintaining the high environmental standards that make Alaska's mines world leaders. DNR, through the Large Mine Permitting Team, continues to lead and coordinate the state's efforts for responsible development of our mineral resources.

We have also resisted efforts to unfairly burden the mineral industry with additional taxes, based on a belief that the mining industry is paying its fair share toward the support of state government. I am pleased to have the support of Alaska's legislators in maintaining a reasonable mineral tax policy, and avoiding burdening it with additional taxes that might discourage development, employment and state revenue.

The industry has benefited from state efforts to defend against the sometimes-heavy hand of federal government. We have aggressively pursued our access rights across federal land, including on RS 2477 trails and on navigable waterways. We have fought to get as much federal land as possible into the hands of the state or Native corporations, where it will be available for us to use. And we have worked long and hard to defend Alaskans' rights to access their inholdings on federal land.

While we have seen significant progress in Alaska's mining industry in recent years, the future could be even better. Our state provides the greatest opportunity for minerals exploration and development in all of North America, and there is more land in Alaska open to mineral entry than in any other western state.

With continued vigilance by state government, investment by private industry, hard work by the labor force, and cooperation by all elements of the industry, mining in Alaska will continue to enjoy its rightful place as an important part of Alaska's society and economy.

Governor Frank H. Murkowski

COMMISSIONER'S FOREWORD

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

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

In 2005, for the tenth consecutive year, the total value of the industry exceeded $1 billion and is actually getting close to the $2 billion threshold. Rising metal prices bode well for the profitability of future and now-producing mines, for moving existing projects forward, and for enticing exploration for new and existing discoveries in the state. The reported value of industrial minerals production was up considerably as a result of a booming construction industry and higher metal prices.

Existing projects provided nearly 3,000 high paying jobs in 2005, down slightly from 2004. This decrease reflects efforts to reduce operating costs and reductions in the number, but not the value, of the construction projects in the industry. Significant improvements in job opportunities are expected in future years due to a number of major projects now in progress.

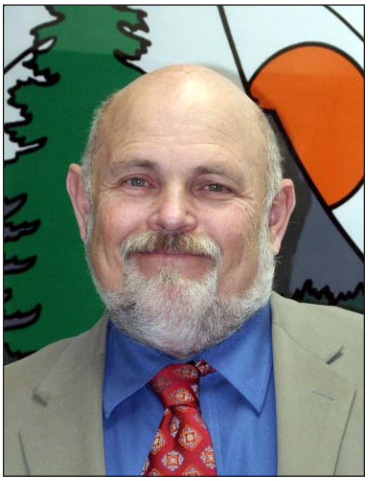
Pogo Mine construction continued for the year and into 2006 with commissioning in 2006; the first bar of gold was poured on February 12, 2006. Kensington received its final permits in mid-2005, has started construction and is expected to be commissioned in 2007; however, the project has experienced delays. Rock Creek/Big Hurrah and Nixon Fork are in advanced stages of exploration and development with mine construction decisions in 2006. Barrick/NovaGold's advanced stage Donlin Creek gold exploration project is moving forward with feasibility, advanced ore definition, and engineering.

In the longer term, the Pebble Copper project in southwestern Alaska and the intense exploration that this project has attracted to the area, along with projects along the south flank of the Brooks Range, projects in the Goodpaster district near Pogo, the Chuitna Coal project near Anchorage, and others, promise exciting future opportunities. The statewide minerals industry is forecast to grow by approximately $3 billion in annual value in the next 7 to 10 years.

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

William C. Noll, Commissioner, Department of Commerce, Community and Economic Development

COMMISSIONER'S FOREWORD



We at the Department of Natural Resources are proud to be able to issue this final report documenting 2005 as another successful year in Alaska's mineral industry. The information contained in this report–production figures, investment totals, workforce strength, and more–are all clear evidence that Alaska is successfully developing its mineral wealth for the good of our people.

What the facts and figures may not show directly, however, is the human element that is so important in the continuing success of our industry. For without these people, Alaska's mineral wealth would remain locked in the ground as no more than tantalizing, but unrealized, potential.

I would like to thank the men and women of the Department of Natural Resources for all the work they do in support of the mineral industry. The professionals in our Division of Geological & Geophysical Surveys conduct critical research and field investigations to locate, identify, and characterize our resources. The members of our Large Mine Permit Team work hard with private industry to guide them through the process of designing and permitting mineral operations that can operate in harmony with our laws and our environment.

Our engineers, scientists, and other specialists work hard every day to ensure that mining operations in our state protect the integrity of our resources, the safety of mine workers, the well-being of state residents, and, once the mining is done, the future shared use of the reclaimed land. The entire effort is supported by the many administrative, clerical, and support employees of all specialties throughout the department, who perform the thousands of tasks that as a whole make the modern mining industry possible in Alaska.

Finally, I would offer a salute to the men and women in Alaska's workforce who make a commitment to mining as a way of life when they undertake the rigorous training and accept the unique lifestyle challenges involved in pursuing mining as a safe and rewarding career in their home state.

These good people are giving their all every day to make it possible for Alaska's mining industry to enjoy its success, and I thank them. With continued good luck and hard work, we should continue to see mining remain a healthy and productive industry in Alaska. I look forward to continued good news in the future.

Mike Menge, Commissioner, Department of Natural Resources

CONTENTS

Executive Summary ..... **iii**
Introduction 1
Employment 2
Acknowledgments 4
Exploration **4**
Northern Region 6
Western Region 8
Eastern Interior Region 11
Southcentral Region 14
Southwestern Region 17
Alaska Peninsula Region 21
Southeastern Region 21
Development **24**
Northern Region 24
Western Region 25
Eastern Interior Region 27
Southcentral Region 28
Alaska Peninsula Region 28
Southeastern Region 28
Production **29**
Northern Region 36
Western Region 39
Eastern Interior Region 40
Southcentral Region 41
Southwestern Region 42
Alaska Peninsula Region 42
Southeastern Region 42
Recreational Mining **43**
Drilling **44**
Government Actions **45**
2006 Outlook 50
Appendixes
A. New claims staked in Alaska, 2001–2005 53
B. Prospecting sites in Alaska, 1999–2005 55
C. Selected significant mineral deposits and mineral districts in Alaska 57
D. State and federal agencies and private interest groups involved in mineral development activities 67
E. Alaska mining Web Sites 75
F. U.S. customary units and metric units conversion chart 77
G. Primary metals production in Alaska, 1880–2005 78
H. Production of industrial minerals, coal, and other commodities in Alaska, 1880–2005 80

CONTENTS

Figures

1. Map showing regions of mineral activity in Alaska as described in this report 1
2. Graph showing exploration and development expenditures and the value of production of Alaska mineral industry, 1981–2005 2
3. Charts illustrating 2005 mineral industry employment by category 3
4. Graph showing total mineral industry employment 1997–2005 3
5. Map showing selected mineral exploration projects in Alaska, 2005 5
6. Chart illustrating 2005 Alaska exploration expenditures by region 6
7. Chart illustrating 2005 Alaska exploration expenditures by commodity 6
8. Chart illustrating 2005 Alaska exploration expenditures by deposit type 8
9. Chart illustrating exploration expenditures in Alaska, 1956–2005 9
10. Photo showing coarse native gold in cut quartz vein sample from the Little Squaw vein 10
11. Photo showing auger drilling for soil samples on the Shorty Creek prospect, Livengood mining district 12
12. Photo showing tourmaline–sulfide mineralization in pervasively ankerite–sericite-altered alkalic plutonic rock at the Hajdukovich property 13
13. Photo showing core logging facility at Rainy Pass Lodge for processing core from Kennecott's Whistler property 14
14. Photo showing spring core drilling at the MAN property 15
15. Photo showing plane-table surveying at the Golden Zone property 16
16. Photo showing core drilling at the Pebble property 18
17. Photo showing core samples being cut for testing at geochemical laboratory 18
18. Photo showing a gold-bearing quartz vein that was exposed by hand mining methods at the Terra prospect 20
19. Photo showing reconnaissance geologic exploration at the Pyramid copper–molybdenum porphyry prospect 21
20. Photo showing underground core drilling at the Kensington gold deposit 23
21. Map showing selected mineral development projects in Alaska, 2005 26
22. Photo showing a barge full of mining equipment on its way to Nome 27
23. Photo showing construction of an underground conveyor at the Pogo gold project 28
24. Graph showing sand and gravel production in Alaska, 1950–2005 35
25. Graph showing amount and value of gold production in Alaska, 1880–2005 35
26. Graph showing coal production in Alaska, 1915–2005, including exports to Korea 35
27. Map showing selected production projects, 2005 36
28. Chart illustrating Alaska mineral production by sector 36
29. Graph showing Alaska international mineral exports, 1996–2005 39
30. Photo showing overview of Red Dog Mine 40
31. Photo showing 25 ounce, 2.5 ounce, and 1.9 ounce gold nuggets found with Garrett Infinium detector at Moore Creek 43
32. Photo showing recreational miners metal detecting for gold nuggets at Moore Creek 44
33. Photo showing core drilling at the Democrat property, Richardson mining district 44
34. Photo showing DGGS geologists examining a metamorphic rock outcrop in the Liberty Bell area near Healy 47
35. Photo showing BLM geologist examining tourmaline-cemented breccia and quartz–tourmaline–sulfide veins at the Breccia Prospect, Lime Hills Quadrangle 49

CONTENTS

Tables

1. Total value of the mineral industry in Alaska by year (in millions of dollars) 2
2. Estimated Alaska mine employment, 1998–2005 3
3. Reported exploration expenditures and employment in Alaska, 2005 6
4. Reported exploration expenditures in Alaska by commodity, 1981–2005 7
5. Summary of claim activity by acres, 1991–2005 8
6. Reported mineral development expenditures and employment in Alaska by commodity and region, 2005 24
7. Reported mineral development expenditures in Alaska by commodity, 1982–2005 25
8. Estimated mineral production in Alaska, 2003–2005 29
9. Companies and individuals reported to be producing metal in Alaska, 2005 30
10. Average metal prices, 1994–2005 37
11. Reported refined gold production, number of operators, and industry employment, 2003–2005 37
12. Production for selected Alaska placer gold mines, 1999–2005 37
13. Reported sand and gravel production and industry employment in Alaska by region, 2005 38
14. Reported rock production and industry employment in Alaska by region, 2005 38
15. Alaska international mineral exports 39
16. Red Dog Mine production statistics, 1989–2005 40
17. Fort Knox Mine production statistics, 1996–2005 41
18. Greens Creek Mine production statistics, 1989–2005 43
19. Companies reporting significant drilling programs in Alaska, 2005 45
20. Drilling footage by region in Alaska, 2005 45
21. Drilling footage reported in Alaska, 1982–2005 46
22. Detailed state airborne geophysical surveys and follow-up geologic ground-truthing 48
23. Detailed federal airborne geophysical survey work contracted by DGGS 48
24. Revenues paid to the State of Alaska and municipalities by Alaska's mineral industry, 2000–2005 51

Alaska's Mineral Industry 2005

R.A. Hughes[1] and D.J. Szumigala[2]

INTRODUCTION

This summary of Alaska's mineral industry activity for the year 2005 is the twenty-fifth in the series of annual reports, and is made possible by information provided through phone interviews, many replies to more than 1,400 questionnaires sent to participants in the mineral industry, press releases, and other sources of information. This report is part of a cooperative venture between the Division of Geological & Geophysical Surveys (DGGS) and the Division of Mining, Land & Water (DMLW) in the Department of Natural Resources (DNR) and the Office of Economic Development, Department of Commerce, Community and Economic Development (Commerce). Funds for printing the report are provided by Commerce. Information in this report supersedes data previously published in DGGS Information Circular 52.

Figure 1 shows the regions of the state used in this and subsequent sections. Table 1 and figure 2 show the estimated value of the mineral industry in Alaska per year between 1981 and 2005, as divided between exploration and development investments, and the gross value of the mineral products. Company information is used to define the exploration and development parameters. Average metal prices are calculated from the daily London PM closing price for gold, and from the average weekly spot price on the London Metal Exchange for the other metals. These prices are used to calculate the value of metals produced in the state, but do not take into account the costs of mining or transportation, or smelter charges and penalties. Coal prices are estimated from average coal prices for similar-grade material around the Pacific Rim. Industrial material prices are based on regional rates provided by some operators.

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

Alaska's mineral industry had a very strong year in 2005, propelled by strong metal prices and renewed interest in Alaska's outstanding mineral endowment. The total value of Alaska's mineral industry was $1.853 billion, a record value and the tenth straight year topping $1 billion (table 1). The 2005 cumulative value of Alaska's mining industry is an increase of about $235 million from the $1.619 billion reported in 2004. The 2005 cumulative value is a new record. Increases in expenditures for exploration and development and the value of production compared to 2004 and previous years contributed to the record year.

Exploration expenditures rose significantly above robust 2004 levels to almost $104 million. At least 16 projects had exploration expenditures of $1 million or more and these projects spanned across Alaska.

Development efforts were noted throughout the state and total expenditures were $347.9 million. This was the second highest year for development expenditures on record. Expenditures in 1996 (the highest recorded year) were $394 million and included the construction of the Fort Knox Mine. Mine construction continued at Teck Cominco Ltd.–Sumitomo Metal Mining Co.'s Pogo gold project in eastern Alaska and construction began at Coeur Alaska Inc.'s Kensington gold project in southeastern Alaska.

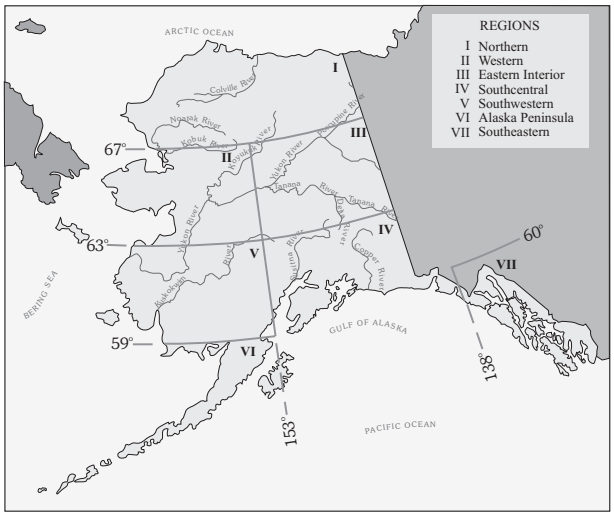


Figure 1. *Regions of mineral activity as described in this report.*

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

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

Production for 2005 rose above all previous years of record and was $1.402 billion. The values of produced commodities in descending order were zinc (61.5 percent), gold (13.6 percent), lead (8.2 percent), rock, sand and gravel (7.1 percent), silver (6.1 percent), and coal and peat (3.6 percent). The Pogo Mine is expected to begin gold production in the first half of 2006, the Nixon Fork Mine has projected gold production by late 2006, and the Kensington Mine has planned gold production by mid-2007.

EMPLOYMENT

Table 2 lists estimated employment in the Alaska minerals industry for the past eight years. Figure 3 displays employment within various segments of Alaska's mineral industry. The total minerals industry employment in 2005 is estimated to be 2,821 full-time-equivalent jobs, a decrease of 227 jobs from the estimated 2004 total of 3,048 jobs and an estimated 98 fewer jobs than the average employment total from 1998 through 2004 (fig.4). Most of the 2005 employment decrease was in the base metal, rock, and sand and gravel segments of mining. These employment decreases were partially offset by significant increases in the exploration and development sectors. It is expected that the number of jobs in the development sector will decrease for 2006 because the construction phase of the Pogo project is complete. The number of jobs will increase significantly in the lode gold production sector as Pogo Mine begins production in 2006. Lode gold mining jobs should increase significantly in 2007 when the Kensington and Rock Creek mines are scheduled to begin production. A worldwide shortage of experienced miners and mine employees may further affect the growth of lode mining in Alaska. Higher metal prices may also spur more placer gold mining, but higher fuel costs may limit that change.

The average monthly wage for metal mining in Alaska during 2005 was $6,188, according to the Alaska Department of Labor & Workforce Development. The average monthly wage for coal, metal, and nonmetallic mining and mining support activities was $6,012. The mining support activities sector of the labor force provided an average of 6,345 jobs during 2005 and the metal–mineral subsector of the wholesale trade sector of the workforce provided an average of 103 jobs during 2005.

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

	Exploration (expenditure)	Development (expenditure)	Production (value)	Total (calculated)
1981	76.3	24.7	188.6	289.6
1982	45.6	41.6	196.4	283.6
1983	34.1	27.9	212.4	274.4
1984	22.3	53.4	199.4	275.1
1985	9.2	34.1	226.6	269.9
1986	8.9	24.3	198.5	231.7
1987	15.7	100.3	202.4	318.4
1988	45.5	275	232.2	552.7
1989	47.8	134.3	277	459.1
1990	63.3	14.3	533	610.6
1991	39.9	25.6	546.5	612
1992	30.2	29.6	560.8	620.6
1993	30.3	27.7	448.7	506.7
1994	31.1	45	507.5	583.6
1995	34.3	148.6	537.2	720.1
1996	44.7	394	590.4	1,029.1
1997	57.8	168.4	936.2	1,162.4
1998	57.3	55.4	921.2	1,033.9
1999	52.3	33.8	1,032.9	1,119
2000	34.9	141.7	1,106.4	1,283
2001	23.8	81.2	917.3	1,022.3
2002	26.5	34	1,012.8	1,073.3
2003	27.6	39.1	1,000.7	1,067.4
2004	70.8	209.1	1,338.7	1,618.6
2005	103.9	347.9	1,401.6	1,853.4
TOTAL	**1,034.1**	**2,511**	**15,325.4**	**18,870.5**

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

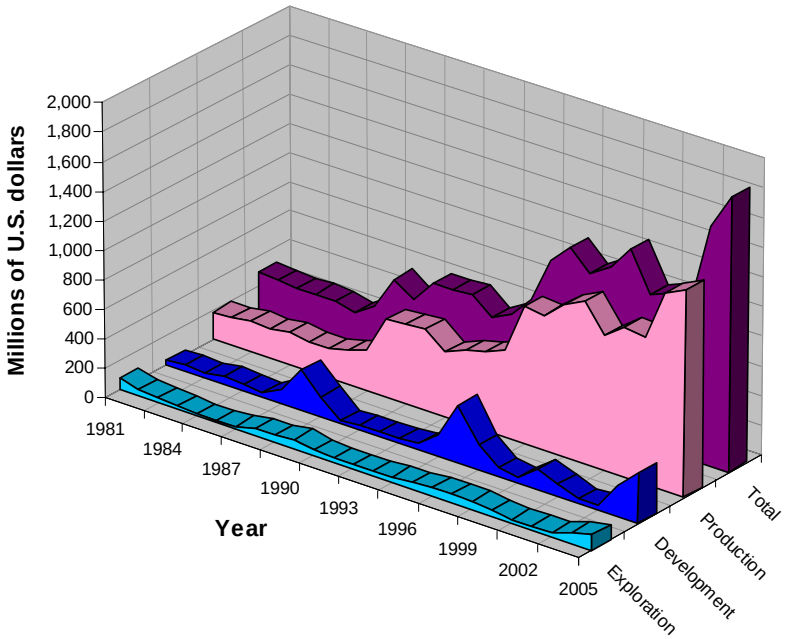


Figure 2. *Alaska's mineral industry total value, 1981–2005.*

Table 2. *Estimated Alaska mine employment, 1998–2005*[a]

	1998	1999	2000	2001	2002	2003	2004	2005
Placer gold/silver mining	710	591	470	176	148	82	64	86
Lode gold/silver mining	345	296	274	337	413	325	433	411
Polymetallic	275	275	275	275	262	295	265	250
Base Metals	466	549	556	559	580	388	508	449
Recreational	255	240	250	210	180	175	175	175
Sand and gravel	658	590	603	556	702	349	567	400
Rock	121	128	150	137	177	35	475	148
Coal	128	121	121	121	100	65	90	95
Peat[b]	40	38	36	32	21	20	4	6
Tin, jade, soapstone, ceramics, platinum	20	20	20	20	20	20	0	0
Mineral Development	177	135	345	333	135	64	283	498
Mineral Exploration	282	183	83	79	86	88	184	303
TOTAL	**3,477**	**3,166**	**3,183**	**2,835**	**2,824**	**1,906**	**3,048**	**2,821**

[a]Reported man-days are calculated on a 260-day work year to obtain average annual employment unless actual average annual employment numbers are provided.
[b]This figure does not include all of the man-days associated with peat operations; most of those man-days are included in sand and gravel numbers.

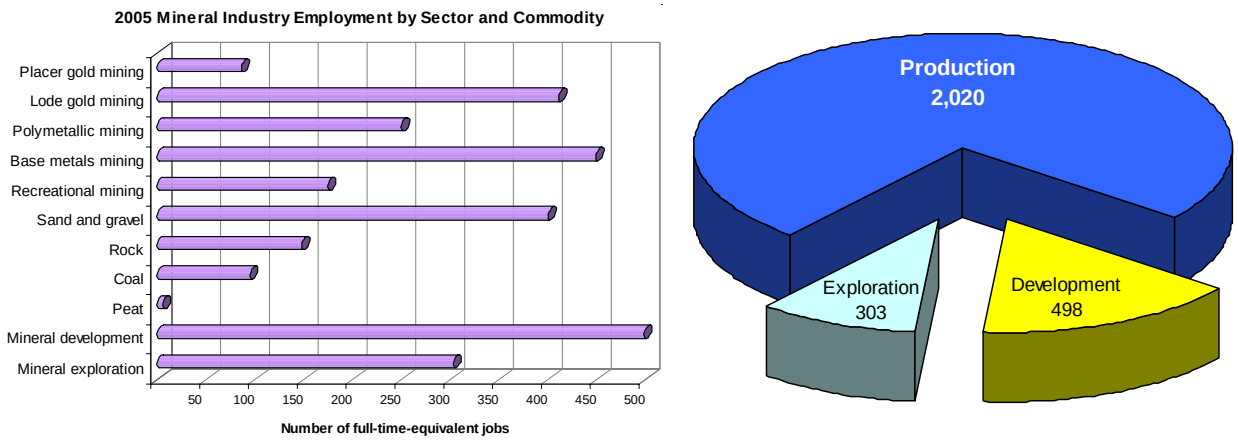


Figure 3. *2005 mineral industry employment in Alaska by category.*

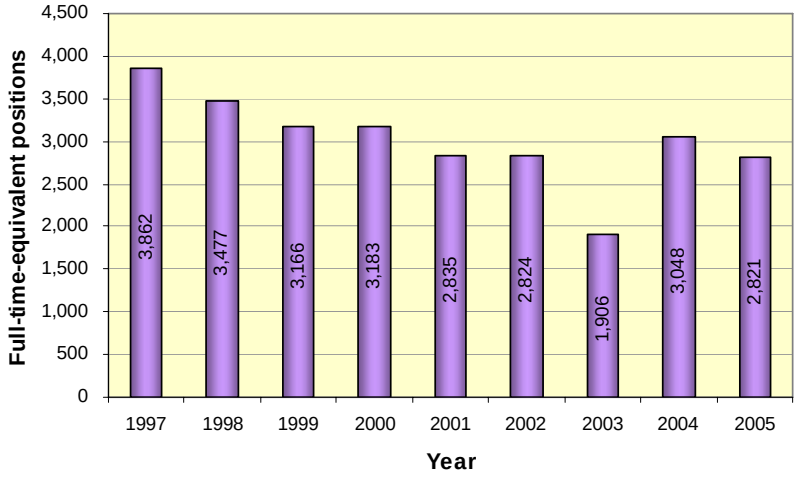


Figure 4. *Total mineral industry employment in Alaska from 1997–2005.*

The Alaska Miners Association contracted the McDowell Group to complete an economic study. Along with other information, the study reported an average employment of 2,900 direct jobs in mining with a $194 million payroll and 5,100 jobs linked to mining in Alaska with a $280 million annual payroll. Metal mines in Alaska pay an average annual wage of $70,000, and greater than 80 percent of mine employees are Alaskans. Many of the jobs offered by the mining industry are rural-based, where few, if any, other employment opportunities are available. Mining benefits many Alaska Native (First Peoples) corporations by making direct payments for mining activities on their lands and by local hiring of corporation shareholders.

ACKNOWLEDGMENTS

This report on the Alaska minerals industry is intended to provide current, accurate, and technically reliable information. The authors wish to thank all companies, agencies, and individuals that responded to the questionnaires or phone calls and provided information about their activities and operations. Without their voluntary and timely information this report would not be possible.

DGGS mailed more than 1,000 questionnaires in December 2005 and received 108 responses. Another set of questionnaires was mailed in early 2006. Dave Szumigala (DGGS) and Rich Hughes (Commerce) prepared the body of the text, tables, and appendices with information supplied by many individuals and with the assistance of staff from other agencies. Where appropriate, these people have been acknowledged in the text. Information and text previously compiled for DGGS Information Circular 52 were used extensively.

The cover design is by Joni Robinson, and the graphic illustrations are modified from earlier versions made by Fred Sturmann and Joni Robinson of DGGS. Paula Davis (DGGS) edited the final version, and Joni Robinson completed the layout and design. The Office of Economic Development paid printing costs.

EXPLORATION

Exploration expenditures in Alaska during 2005 were at least $103.9 million, 47 percent higher than the $70.8 million spent in 2004. Figure 5 shows the location of the most significant exploration projects in Alaska during 2005. At least 16 projects had exploration expenditures of $1 million or more and these projects reached across Alaska. Figure 6 and table 3 show 2005 exploration expenditures in Alaska by region as described in text. Almost $58 million was spent in southwestern Alaska, with $10.5 million spent in southcentral Alaska, $10.2 million spent in southeastern Alaska, $9.6 million spent in western Alaska, and $9.5 million spent in eastern Interior Alaska. As in years past, most exploration funds (more than 72 percent) were derived from Canadian sources. Eleven percent of the exploration funds were from non-U.S. and non-Canadian sources. At least 550,000 feet of core and rotary drilling were completed in 2005 on exploration projects.

Companies explored for a wide variety of mineral deposits in Alaska during 2005. Exploration expenditures by commodity are listed in table 4 and shown in figure 7. Gold remained a major exploration commodity, but exploration for copper–gold porphyry systems (grouped with polymetallic deposits) was the major exploration target in 2005. Base metal exploration expenditures decreased significantly from 2004 levels. Platinum-group-element exploration remained steady. Figure 8 shows 2005 Alaska exploration expenditures by deposit type. Almost half ($45.0 million) of the $103.8 million exploration expenditures were spent on porphyry copper–gold properties. Almost $23.7 million were spent on intrusion-related gold deposits, with $16.6 million spent on various gold–quartz vein deposits, $10.0 million spent exploring for polymetallic massive sulfide deposits, and $8.6 million spent on platinum-group-element ultramafic deposits, epithermal gold deposits, epithermal uranium deposits, diamond, and other deposit types.

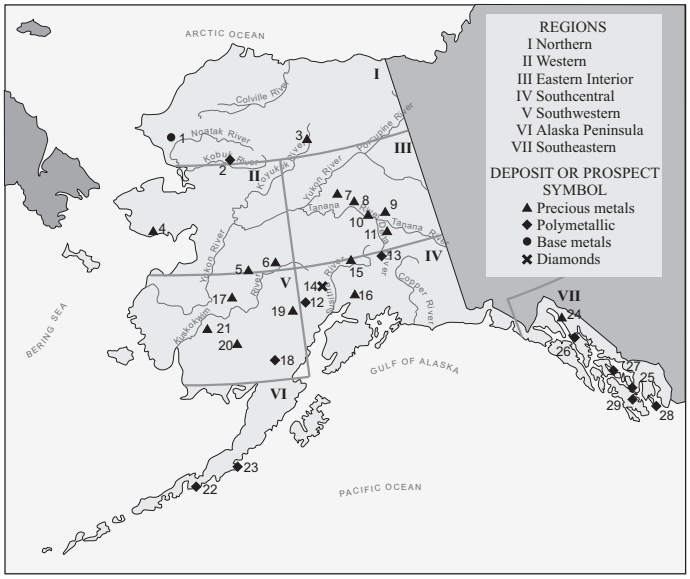
Advanced exploration projects include Placer Dome Inc.–NovaGold Resources Inc.–Calista Corp.'s 28.4-million-ounce Donlin Creek intrusion-hosted gold project and Northern Dynasty Minerals Ltd.'s Pebble copper–gold porphyry project in southwestern Alaska. The Pebble project, with newly announced measured and indicated resources of 54.8 million ounces of gold, 44.7 billion pounds of copper, and 2.7 million pounds of molybdenum, was the largest exploration project in 2005.

Increased exploration expenditures in Alaska mirror mineral exploration budget increases worldwide. The increases in worldwide exploration expenditures resulted from a combination of increased spending by major mining companies, a significant reduction in the negative influence of industry consolidation from peak years 2000 and 2001, and higher spending by junior mining companies in response to stronger gold and base-metal prices. According to the Metals Economics Group (MEG), the worldwide budget for hardrock mineral (nonferrous metal) exploration increased by 34 percent in 2005 over 2004, to $5.1 billion. Exploration spending has increased 168

percent since 2002. Junior mineral exploration company budgets account for almost half of the worldwide exploration spending. Also reversing a declining trend, the largest percentage increase in exploration budgets in 2004 compared to 2003 took place in the United States (85 percent) and the Pacific Rim region (69 percent). The top five geographic areas for exploration in 2005 were Latin America, Canada, Africa, Australia, and the United States. Gold exploration dominated the worldwide exploration spending by commodity with 47 percent of the total, followed by base metals (29 percent), diamonds (13 percent), platinum-group metals (4 percent), and other (7 percent). Advanced exploration (late stage) projects account for 40 percent of the worldwide exploration spending in 2005, equaling the amount spent on grassroots exploration projects (40 percent), with 20 percent of the spending on mine site exploration. Worldwide exploration spending was projected to increase in 2006.

Figure 9 is a graph of mineral exploration expenditures in Alaska from 1956 to 2005. Exploration expenditures per year are shown with raw (not adjusted for inflation) and adjusted (inflation adjusted to 2005 dollars) values. Exploration expenditures and employment by region are detailed in table 3.

Table 5 summarizes the number of new and active (new plus existing) mining claims per year, from 1991 to 2005. The table lists the number of 20-acre federal mining claims, 160-acre state prospecting sites, and 40- or 160-acre state mining claims. About 5,304 new state mining claims (751,920 acres), 105 new state prospecting sites (16,800 acres), and 411 new federal claims (8,220 acres) were staked in 2005. State claim staking increased slightly from



I Northern Region
1. Red Dog Mine—Teck Cominco Alaska Inc.
2. Ambler Project—NovaGold Resources Inc.
3. Nolan Creek Mine—Silverado Gold Mines Ltd.

II Western Region
4. Rock Creek, Big Hurrah—NovaGold Resources Inc.
5. Ganes Creek—Full Metal Minerals Ltd.
6. Nixon Fork Mine—St. Andrew Goldfields Ltd.

III Eastern Interior Region
7. Shorty Creek—Select Resources Corp.
8. Fairbanks District
   a. Fort Knox, Gil & District—Kinross Gold Corp.
   b. Golden Summit—Freegold Ventures Ltd.
9. Pogo—Goodpaster mining district
   a. Pogo—Teck Cominco Alaska Inc.
   b. LMS—AngloGold Ashanti (USA) Exploration Inc.
10. Richardson district—Select Resources Corp.
11. Hajdukovich—Canaco Resources Inc.

IV Southcentral Region
12. Whistler—Kennecott Exploration Co.
13. MAN—Anglo American Exploration (USA) Inc., Nevada Star Resources Inc.
14. Shulin Lake—Golconda Resources Ltd./Shulin Lake Mining Inc./Shear Minerals Ltd.
15. Golden Zone—Piper Capital Inc./Hidefield Gold Plc.
16. Lucky Shot—Full Metal Minerals Ltd.

V Southwestern Region
17. Donlin Creek—Placer Dome Inc.
18. Pebble area
   a. Pebble—Northern Dynasty Minerals Ltd.
   b. Big Chunk—Liberty Star Gold Corp.
   c. Pebble South—Full Metal Minerals Ltd.
19. Terra—AngloGold Ashanti (USA) Exploration Inc.
20. Shotgun—TNR Gold Corp.
21. Nyac—Tonogold Resources Inc.

VI Alaska Peninsula Region
22. Port Moller area—Full Metal Minerals Ltd.
23. Chignik area—Full Metal Minerals Ltd/Metallica Resources Inc.

VII Southeastern Region
24. Kensington, Jualin—Coeur Alaska Inc.
25. Union Bay—Lonmin PLC/Pacific North West Capital Corp./Freegold Ventures Ltd.
26. Greens Creek Mine—Kennecott Minerals Co.
27. Woewodski Island—Olympic Resources Group LLC/Bravo Venture Group Inc.
28. Duke Island—Quaterra Resources Inc.
29. Niblack—Niblack Mining Corp.

Figure 5. *Selected exploration projects in Alaska, 2005.*

2004 levels, while the number of new federal mining claims increased dramatically from 2004 levels to slightly above the average value in the past 5 years. The number of active 160-acre state claims increased 50 percent from 2004 to 2005. The amount of land in Alaska under claim increased from 2004 to 2005, with approximately 3.56 million acres of land covered by claims and prospecting sites in 2005. This acreage is an increase of 8 percent from 2004 levels but about 4 percent below the 3.7 million acres under claim in 1999. Alaska had 8,313 active federal claims in early 2005.

Prospecting sites and mining claims were staked across Alaska, with detailed information listed in Appendices A and B. Several large blocks of mining claims were staked in 2005. Rimfire Minerals Corp. staked almost 81 square miles of state mining claims in the Pogo area. Alaska Gold Co., a subsidiary of NovaGold Resources Inc., staked additional claims in the Ambler mineral belt totaling 26.25 square miles and also staked claims covering the recently reclaimed Illinois Creek Mine. Northridge Exploration staked 45 square miles of state mining claims in the Talkeetna Mountains Quadrangle over an area with good potential for volcanogenic massive sulfide mineralization. On-Line Exploration Services staked 30 square miles of state mining claims for Linux Gold Corp. near Granite Mountain in the Candle Quadrangle.

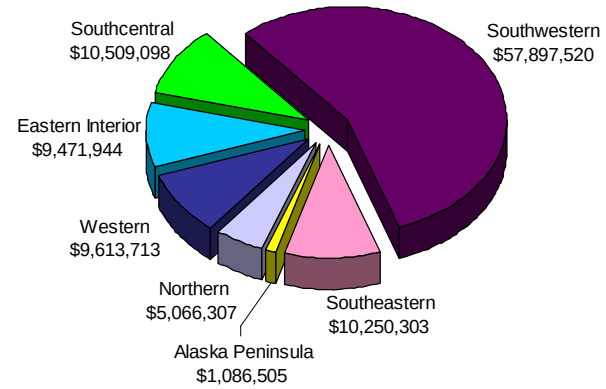


Figure 6. *2005 Alaska exploration expenditures by region.*

NORTHERN REGION

Teck Cominco Alaska Inc. drilled exploration targets in the area surrounding Red Dog Mine. Drilling results were not announced, but several priority exploration targets remain around the mineralized systems at the Anarraaq, Aktigiruk, Paalaaq and Su Lik deposits; these targets may be drilled in 2006.

NovaGold Resources Inc. reported significant drill intersections from the Arctic deposit on its Ambler volcanogenic massive sulfide project in the Kobuk River area of the Brooks Range. The results from the nine-hole, 9,843-foot program confirmed additional high-grade copper and precious metal mineralization along the southeast margin of the deposit. Drill hole AR05-93 intersected three massive-sulfide intervals with 7.4 percent copper equivalent average over 69 feet, including 18.7 feet grading 3.1 percent copper, 0.017 ounces of gold per ton, 1.29 ounces of silver per ton, 0.6 percent lead, and 4.9 percent zinc (6.5 percent copper equivalent), and 17.7 feet of 4.4 percent copper, 0.009 ounces of gold per ton, 1.17 ounces of silver per ton, 0.8 percent lead, and 6.1 percent zinc (8.4 percent copper equivalent). Drill hole AR05-97 intersected four massive-sulfide intervals with 9.1 percent copper equivalent over 49.5 feet, including 28.5 feet of

Table 3. *Reported exploration expenditures and employment in Alaska, 2005*

	Northern	Western	Eastern interior	South-central	South-western	South-eastern	Alaska Peninsula	Total
				Exploration expenditures				
Placer	$ 700,000	$ 349,000	$ 392,980	$ 214,400	$ 30,000	$ 0	$ 10,000	**$ 1,686,380**
Lode	4,366,307	9,264,713	9,078,964	10,294,698	57,867,520	10,250,303	1,076,505	**102,199,009**
TOTAL	**$5,066,307**	**$9,613,713**	**$9,471,944**	**$10,509,098**	**$57,897,520**	**$10,250,303**	**$1,086,505**	**$103,895,389**
				Exploration employment				
Employment								
Workdays	2,450	5,884	8,324	9,960	44,878	6,116	1,209	78,821
Workyears[a]	9	23	32	38	173	24	5	303
Companies reporting[b]	6	14	37	28	14	13	4	116

[a]Based on 260-day workyear.
[b]Some companies were active in several areas.

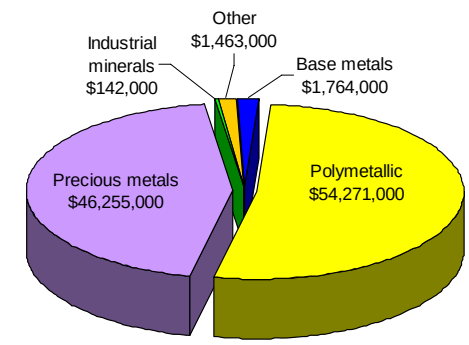


Figure 7. *Exploration expenditures in Alaska in 2005 by commodity.*

3.5 percent copper, 0.014 ounces of gold per ton, 1.55 ounces of silver per ton, 1.2 percent lead, and 5.9 percent zinc (7.7 percent copper equivalent); and 14.4 feet of 5.7 percent copper, 0.018 ounces of gold per ton, 1.70 ounces of silver per ton, 0.1 percent lead, and 2.1 percent zinc (7.7 percent copper equivalent).

NovaGold also systematically evaluated existing data in the Ambler district, staked additional mining claims in the Ambler district, collected Arctic deposit ore samples for metallurgical testing, initiated engineering studies for transportation and power, and conducted baseline environmental studies. NovaGold plans to put up 30 monitoring stations with wind generators to collect wind data near the Arctic deposit and to drill the Center of the Universe prospect in 2006 as part of a larger evaluation of the Ambler region. The Center of the Universe prospect was discovered by interpretation of an airborne geophysical survey and follow-up ground work.

Little Squaw Gold Mining Co. had a small exploration program on the Chandalar property, with work concentrated on ten gold prospects

Table 4. *Reported exploration expenditures in Alaska by commodity, 1981–2005*

	Base metals	Polymetallic[a]	Precious metals[b]	Industrial minerals	Coal and peat	Other[c]	Total
1981	$ 28,262,200	N/A	$ 35,273,200	$10,300,000	$ 2,341,000	$ 127,000	**$ 76,303,400**
1982	31,757,900	N/A	10,944,100	- -	2,900,000	15,300	**45,617,300**
1983	9,758,760	N/A	20,897,555	2,068,300	1,338,454	70,000	**34,133,069**
1984	4,720,596	N/A	14,948,554	270,000	2,065,000	279,500	**22,283,650**
1985	2,397,600	N/A	6,482,400	- -	270,000	- -	**9,150,000**
1986	1,847,660	N/A	6,107,084	170,000	790,000	- -	**8,914,744**
1987	2,523,350	N/A	11,743,711	286,000	1,150,000	31,000	**15,734,061**
1988	1,208,000	N/A	41,370,600	160,200	2,730,000	- -	**45,468,800**
1989	3,503,000	N/A	43,205,300	125,000	924,296	5,000	**47,762,596**
1990	5,282,200	N/A	57,185,394	370,000	321,000	97,000	**63,255,594**
1991	4,789,500	N/A	34,422,039	92,000	603,000	2,000	**39,908,539**
1992	1,116,000	3,560,000	25,083,000	25,000	425,000	- -	**30,209,000**
1993	910,000	5,676,743	23,382,246	163,500	- -	125,000	**30,257,489**
1994	600,000	8,099,054	18,815,560	225,000	2,554,000	810,000	**31,103,614**
1995	2,770,000	10,550,000	20,883,100	100,000	- -	3,000	**34,306,100**
1996	1,100,000	11,983,364	31,238,600	400,000	- -	- -	**44,721,964**
1997	1,700,000	22,347,000	32,960,500	80,000	720,000	- -	**57,807,500**
1998	1,000,000	13,727,000	42,441,000	12,000	87,000	- -	**57,267,000**
1999	3,869,000	3,168,000	44,891,000	1,000	- -	410,000	**52,339,000**
2000	8,545,000	3,933,000	21,579,000	58,500	- -	736,100	**34,851,600**
2001	4,810,000	1,977,000	15,820,000	50,000	10,000	1,106,000	**23,773,000**
2002	1,700,000	5,162,000	17,342,000	185,000	- -	2,113,000	**26,502,000**
2003	262,000	7,081,000	19,726,000	- -	W	533,000	**27,602,000**
2004	3,100,000	40,237,000	26,954,000	213,000	50,000	258,000	**70,812,000**
2005	1,764,000	54,271,000	46,255,000	142,000	- -	1,463,000	**103,895,000**
Total	**$129,296,766**	**$191,772,161**	**$669,950,943**	**$15,496,500**	**$19,278,750**	**$8,183,900**	**$1,033,979,020**

[a]Polymetallic deposits considered as a separate category for the first time in 1992.
[b]Approximately $4.4 million spent on platinum-group-element exploration during 2005 ($3.3 million in 2004, $2.4 million in 2003, $650,000 in 2002, $2 million in 2001).
[c]Includes diamonds and tantalum.
N/A = Not available.
- - = Not reported.
W - Withheld, data included in other.

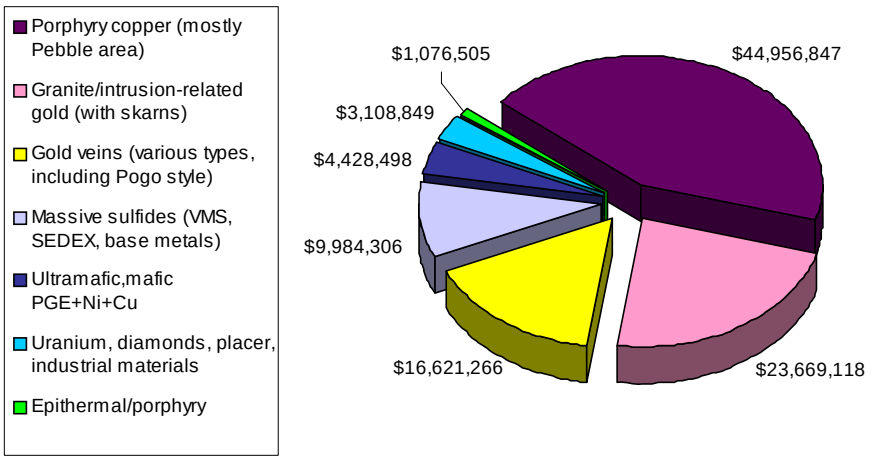


Figure 8. *2005 Alaska exploration expenditures by deposit type.*

with extensive quartz veining. Work included geologic mapping; 189 rock, soil, and stream-sediment samples were taken for analysis. At the Pallasgreen prospect, gold mineralization was found along a multiple quartz vein system for approximately 400 feet. Anomalous soil and rock results were also found in the Drumlummon area and in an unnamed quartz vein north of the Pallasgreen prospect. Further work at the Pioneer, Crystal, and Uranus prospects established drill targets at each site. Prospect mapping was started at the Little Squaw, Eneveloe, Grubstake West, Rock Glacier, and Summit areas. Little Squaw quartz vein rubble was traced about 2,500 feet eastward from the known exposures, and geologic mapping indicates that at least two mineralized quartz veins continue in that direction (fig.10).

WESTERN REGION

NovaGold Resources Inc. drilled the Big Hurrah property near Nome to develop a higher-grade resource on the project that can be integrated into the proposed Rock Creek mine plan. Environmental baseline work was also initiated at the Big Hurrah project to include the deposit in the Rock Creek permit process. Exploration drilling also continued on the Rock Creek project, with a total of 32,500 feet of drilling in the Big Hurrah and Rock Creek areas.

NovaGold in 2004 acquired the Khotol Project near the Yukon River and approximately 3 miles northeast of the recently reclaimed Illinois Creek open-pit gold mine. The property had been drilled by Anaconda Mining Co. in the early 1980s, with the best results from hole WP83-006, with 105 feet of mineralization from 79- to 184-foot depth grading 12.96 ounces of silver per ton, 25.9 percent lead, and 2.8 percent zinc. High-grade silver and associated base metal mineralization occurs as disseminated- to massive-sulfide replacement style bodies along a regional dolomitic limestone–quartzite contact. During 2004 and 2005 a series of geophysical surveys was completed, including gravity and wide-spaced pole–dipole-induced polarization (IP). Multiple kilometer-scale geophysical targets occur over a 2-mile by 1-mile area that is coincident with the two main soil anomalies identified by earlier work. Drilling in 2005 totaled 3,937 feet. No results were announced.

Triex Minerals Corp. and Full Metal Minerals Ltd. jointly managed and conducted exploration on the Boulder Creek (formerly called Death Valley) project, the largest known uranium deposit in Alaska. An open-ended, one-million-pound resource of U_3O_8 was outlined by drilling between 1979 and 1981, with an average grade of 0.27 percent U_3O_8 and an average thickness of 10 feet. The project area is on the southeastern Seward Peninsula. The deposit is a sandstone-type 'roll-front' deposit with predominantly epigenetic mineralization. Uranium was leached from a Late Cretaceous alkalic quartz monzonite and deposited in roll-fronts mode within a reducing environment of Paleocene, arkosic, carbonaceous conglomerates and sandstones of the Boulder Creek Basin. An extensive program of geological mapping, ground scintillometer mapping, prospecting, and grid-based soil sampling and biogeochemistry commenced in August after a joint-venture agreement was signed in midyear. Triex has the right to earn an initial 65 percent interest in the Boulder Creek property by making an initial cash payment of $75,000, completing $1.5 million in exploration expenditures over 4 years and issuing 200,000 shares of its stock to Full Metal. Triex has the right to acquire an additional 15 percent interest in the property by issuing an additional 300,000 shares to Full Metal and incurring an additional $1 million in expenditures on or before April 1, 2010. Geochemical sampling totaled 23.5 line-miles covering a strike length of approximately 5.6 miles. A total of 1,180 samples were collected and analyzed. Several

new geochemical anomalies were identified, suggesting potential extensions along strike to the existing deposit, as well as potential new deposits along the same granite–sandstone contact. Drilling is planned for early 2006.

Triex and Full Metal Minerals executed a second joint venture agreement to cover the 10.5 square mile McCarthy Marsh claims approximately 15 miles to the southwest of Boulder Creek, and approximately 24 miles north of the coastal town of Elim. Limited work was done in 2005, but airborne geophysics and follow-up ground work is planned for the McCarthy Marsh claim block and surrounding area in 2006.

Full Metal Minerals Ltd. and Fury Explorations Ltd. signed a joint-venture agreement to explore the Ganes Creek gold property northeast of McGrath. Fury can earn a 45 percent interest in the property by spending $3.5 million on exploration over 4 years and making payments to Full Metal totaling $200,000 cash and 800,000 shares. Fury can earn additional interest by taking the project through feasibility studies and into production. The com-

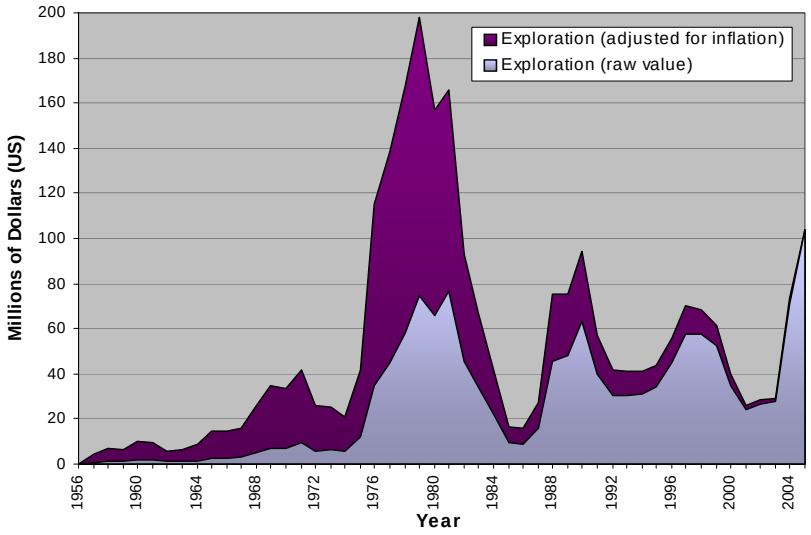


Figure 9. *Alaska mineral exploration expenditures, 1956–2005. Inflation adjusted to 2005 dollars.*

Table 5. *Summary of claim activity in Alaska by acres, 1991–2005*

Year	State Claims				State Prospecting Sites		Federal Claims	
	New 40 acre	New 160 acre	Total (Active) 40 acre	Total (Active) 160 acre	New	Total (Active)	New	Total (Active)
1991	3,277	0	38,485	0	747	1,735	1,299	23,222
1992	2,650	0	36,947	0	454	1,490	695	20,254
1993	2,110	0	34,908	0	1,412	2,281	601	9,298
1994	4,064	0	35,184	0	810	2,449	341	8,495
1995	4,508	0	31,796	0	1,030	2,850	376	7,766
1996	9,496	0	37,843	0	2,082	3,735	681	9,346
1997	8,671	0	44,001	0	2,474	5,328	1,872	11,320
1998	9,785	0	50,738	0	3,194	7,276	427	11,033
1999	11,977	0	57,012	0	1,755	7,652	308	10,176
2000	4,472	614	54,773	614	1,142	5,860	523	7,805
2001	859	907	49,361	1,501	27	3,131	464	8,248
2002	745	826	43,380	2,175	61	2,165	261	8,100
2003	857	2,602	37,151	4,358	101	1,871	676	8,424
2004	1,070	3,533	33,078	7,681	59	1,499	66	8,313
2005	806	4,498	32,443	11,481	105	1,604	411	8,400[a]

Federal claims = 20 acres, State claims = 40 acres or 160 acres, State prospecting sites = 160 acres.
Information provided by Jack Davis (Land Records Information Section, DNR) and Robert Brumbaugh, Karon Goslin, and John Hoppe (USBLM). Table has been reorganized to conform with computer records available after 1990.
[a]Estimated.

panies completed drilling seven core holes totaling 4,109 feet. Four different zones were targeted along 1.75 miles of strike length proximal to the Yankee–Ganes Creek Fault zone. Significant gold mineralization was encountered at the Katz Zone in hole GC05-54 that intersected 50 feet averaging 0.07 ounces of gold per ton, including 25 feet averaging 0.13 ounces of gold per ton. Mineralization occurs as quartz stockwork veins with sulfides in felsic and mafic dikes intruding hornfelsed sedimentary rocks. Other zones tested include two holes completed at the Independence Mine, one hole at the Independence northwest extension, two holes at the Hill 38 target, and two holes at the Katz Prospect. Long intervals of anomalous gold were intercepted in the drill holes near the Independence Mine and the Hill 38 prospect. Exploration also included collecting 328 soil samples, extending the soil grid coverage 1.2 miles to the southwest.

Mystery Creek Resources Inc., a subsidiary of St. Andrew Goldfields Ltd., continued exploration on the Nixon Fork gold–copper skarn property near McGrath. Core drilling focused primarily on the C3000 and C3300 ore chutes at the Crystal Mine, although some drilling was done late in the year in the Mystery Mine. Drilling included 25,333 feet of underground drilling and 11,047 feet of surface drilling. Drilling confirmed that the J5A zone extends from the 380-meter level to the 200-meter level of the mine, and the 2204 zone extends from the 390-meter to the 240-meter level. Several new exploration areas were explored with interesting intersections that will require follow-up. An underground winter 2006 diamond drilling program at the Mystery Creek deposit is intended to delineate and confirm additional ore zones that will provide feed for the Nixon Fork operations.

Linux Gold Corp. staked three claim blocks in the Granite Mountain area of the Seward Peninsula for gold, base metal, and uranium mineralization. Fieldwork in 2005 included geological mapping and geochemical sampling of rocks, soils, stream sediments, and pan concentrates at the Quartz Creek plutonic complex, the Peace River stock, and the Dime Creek placer gold–platinum prospect. The Kiwalik claims are located on the Quartz Creek pluton at the headwaters of the Kiwalik River, 5 miles west of Granite Mountain, whereas the Peace claims are located 3 miles east of Granite Mountain on a small intrusive stock at the headwaters of the Peace River. Geochemical samples collected from the Kiwalik and Peace claim blocks included 153 soil samples, 93 rock samples, 45 stream-sediment samples, and 31 pan concentrate samples. A detailed soil grid was placed on conspicuous gossan exposed in the meta-volcanic rocks near the eastern contact of the Quartz Creek quartz monzonite pluton. This gossan trend was traced for a distance of more than 2 miles. The Quartz Creek mineral trend appears to be zoned; base-metal occurrences are found within the volcanic wallrock and precious-metal occurrences are found within the intrusion and volcanic rocks. Highlights of soil and rock grab samples collected within the base-metal zones include 1.53 ounces of silver per ton, more than 1 percent lead, more than 1 percent zinc, 1,256 parts per million copper, 704 parts per million antimony and 83 parts per billion gold. Precious-metal zones were sampled with a soil grid placed on veined, brecciated, and oxidized volcanic rock, as well as with grab samples of veined and intensely altered plutonic rock. Geochemical results include up to 0.008 ounces of gold per ton, 0.85 ounces of silver per ton, more than 1 percent arsenic and elevated levels of lead, copper, and antimony. Pan concentrates that were collected on the upper branches of the Kiwalik River show a marked enrichment of gold (up to 0.60 ounces of gold per ton) where the streams erode mineralized intrusive

Figure 10. *Coarse native gold in cut quartz vein sample from the Little Squaw vein. Photo courtesy of Little Squaw Gold Mining Co.*

bedrock. Visible gold can be panned on the Kiwalik River. The Peace claims were not sampled as thoroughly as the Kiwalik claims. Work indicates that the eastern branch of the headwaters of the Peace River eroded into mineralized syenite and is anomalous in precious and base metals in a relatively narrow northeast-striking trend. Results include 0.125 ounces of gold per ton, 0.15 percent tungsten, and 230 parts per million uranium in pan samples and concentrations of up to 0.006 ounces of gold per ton, 2.44 ounces of silver per ton, 0.12 percent molybdenum, 0.63 percent copper, 1,232 parts per million antimony, and elevated lead, bismuth and tungsten in rock grab samples. Geochemical sampling results indicated that polymetallic mineralization can be traced for 8 miles on the Kiwalik and Peace claim blocks.

At Colorado Creek the Rosander Mining Co. continued evaluation of a series of felsic ring dikes and sills associated with the Cripple Mountains volcanic–plutonic complex. The Cripple Mountains are located near the northern end of the Kuskokwim Gold Belt. Gold mineralization is associated with a regional-scale northeast-striking set of faults cutting the complex. Trenching in 2005 confirmed previous drill results that intersected zones of 0.03 to 0.06 ounces of gold per ton over widths up to 65 feet. Mineralization is now seen to be closely associated with a lower sill that underlies a 1-mile-long zone of soil samples containing 0.15 to 0.12 ounces of gold per ton. A larger soil anomaly to the southeast will be investigated in 2006.

EASTERN INTERIOR REGION

Teck Cominco Inc. restarted gold exploration on the Pogo property along with extensive development work on the underground Pogo Mine and associated facilities. Multiple quartz veins were intersected during drilling at the Hill 4021 prospect. A new mineralized vein system with thick, southwest-dipping quartz veins but low-grade gold mineralization was discovered on the Chorizo prospect, 7.5 miles east of the mine area, during drilling of this and several other prospects. Additional drilling on the Hill 4021 prospect, the Chorizo Zone, and other new targets is planned for 2006.

AngloGold Ashanti (USA) Exploration Inc. announced a significant Pogo-type gold discovery between Pogo and Delta Junction at the LMS property. Airborne geophysics, rock, and soil geochemical sampling programs outlined an area of anomalous mineralization, with soil geochemistry values up to 0.012 ounces of gold per ton with coincident anomalous values up to 0.033 ounces of silver per ton, 609 parts per million arsenic, 56 parts per million antimony, 0.1 parts per million tellurium, 0.26 parts per million bismuth, 1.1 parts per million molybdenum, and 13 parts per million tungsten values. Rock samples from a silicified schist and gneiss outcrop contained up to 0.17 ounces of gold per ton. Significant gold intercepts were obtained from 8,859 feet of core drilling in 17 drill holes on two parallel moderately west-dipping structural zones traced for 1,600 feet along strike. The best drill intercepts were 11 feet grading 0.634 ounces of gold per ton in hole LM-05-12 and 10 feet grading 0.476 ounces of gold per ton in hole LM-05-11, with a select grab sample up to 2.36 ounces of gold per ton. The gold-rich drill intercepts also contain highly anomalous values of the same elemental suite that was anomalous in the soil sampling program. Gold-bearing quartz veins are preferentially hosted in schist and appear to be conformable to foliation. The rocks within the mineralized zone are black, locally graphitic, strongly brecciated, locally sheared, pyritic, and strongly silicified. The gold-bearing quartz veins appear to be a late-stage event that crosscuts the other alteration. Results to date show a broad, lower-grade system at surface, grading into a higher-grade vein at depth. Further exploration on the project is planned to focus on the downdip extension of the system and assessment of a possible second zone at depth (5 feet grading 1.03 ounces of gold per ton) encountered in drilling. The geochemical signature, proximity to granitic intrusions, style of mineralization (stacked, gently-dipping horizons), and gold grades suggest similarities to the nearby Pogo deposit.

Rimfire Minerals Corp. maintained a large number of claims in the Goodpaster area near Pogo. The ER, Eagle, and Beverly properties were under option agreement to AngloGold. Rimfire staked additional claims in the Pogo area in late 2005 and early 2006, becoming the largest claimholder within the Pogo area.

Kinross Gold Inc. continued an aggressive exploration-drilling program in and around the existing Fort Knox open-pit gold mine near Fairbanks. Kinross contracted Fugro Airborne Surveys Inc. to fly a 186 line-mile, high-resolution airborne magnetic and resistivity survey with 300-foot flight line spacing during 2005. HydroGeophysics Inc. was contracted to interpret the geophysical data from this survey and lower-resolution aeromagnetic and resistivity surveys flown by DGGS in 1996. HydroGeophysics identified six additional targets to explore in 2006, including the Last Chance Creek and Too Much Gold Creek prospects. Kinross also continued to evaluate the nearby Gil gold property. A 9-hole, 1,560-foot, reverse-circulation drill program was completed at the Gil intersection area and the Sourdough Ridge Zone. The best drill results ranged from 5 to 30 feet wide and from 0.029 to 0.42 ounces of gold per ton. Hole GRV05-490 intercepted 30 feet grading 0.075 ounces of gold per ton from 45- to 75-foot depth, hole GRV05-491 intercepted 30 feet grading 0.126 ounces of gold per ton from 25- to 55-foot depth, and hole GRV05-493 intercepted 10 feet grading 0.15 ounces of gold per ton at the bottom of the hole from 90- to 100-foot depth. At year's end, the True North and

Gil deposits were reclassified from reserves to resources and Kinross elected to withdraw from the Ryan Lode project.

Select Resources Corp., a wholly-owned subsidiary of Tri-Valley Corp., conducted gold exploration at the Democrat Prospect and related prospective areas within the approximately 40-square-mile Richardson Property east of Fairbanks. Select Resources acquired and reviewed all records of previous exploration in the district, built a GIS database, and critically reviewed this past work in the field; acquired QuickBird high-resolution satellite imagery for the district, and completed district-scale interpretation of available satellite imagery; numerically modeled regional and district-scale public-domain airborne geophysical data; completed an auger soil geochemical survey along the trace of the Richardson lineament; and completed an eight-hole, 3,052-foot, diamond drilling program in the Democrat Mine area. This work clarified the geologic setting of the district and highlighted a number of gold exploration targets. A total of 556 soil samples were collected from an area 5 miles long by 0.3 to 0.9 miles wide, with samples collected on a grid with a nominal spacing of 164 feet by 656 feet. Soil sampling results showed anomalous gold concentrations, coincident with enriched silver, arsenic, bismuth, molybdenum, lead, antimony, and tungsten values occurring in seven clusters, each approximately 1.2 miles in diameter, over the 4.3-mile length of the survey. Select Resources staked approximately 920 acres of State mining claims to cover the projected extension of the soil geochemical anomalies. Five drill holes tested an intensely altered, autobrecciated, and gold-mineralized quartz–feldspar porphyry stock in the Democrat pit and the other three drill holes tested strike extensions of mineralization at the Camp Pit and the Democrat Pup areas. Holes RI05-03 through RI05-07 in the Democrat Mine area intersected altered quartz feldspar porphyry containing gold mineralization with associated silver, arsenic, molybdenum, tin, and tungsten mineralization. Hole RI05-03 had the best mineralized intercept, with 38 feet (20 to 58 foot depth) grading 0.044 ounces of gold per ton and 1.30 ounces of silver per ton. Hole RI05-03 also had a 3-foot zone below this intercept, from 168.5- to 171.5-foot depth, that graded 17.9 ounces of silver per ton. Gold grades of less than 0.015 ounces of gold per ton are common below the 100-foot depth in all five holes and all of the holes ended in altered and mineralized quartz feldspar porphyry. The drill holes at the Camp Pit and the Democrat Pup areas did not encounter significant gold mineralization.

Select Resources also explored the Shorty Creek property in the Livengood mining district northwest of Fairbanks. Select Resources interprets a cluster of pronounced magnetic highs shown on public airborne magnetic data over the Shorty Creek property as shallow-level stocks of Cretaceous granodiorite and quartz-feldspar porphyry with hornfels aureoles. A total of 566 soil samples were collected on an 80- by 330-foot grid over an approximately 1.5-square-mile portion of the project (fig. 11). Initial results from 222 of these soil samples from the southern portion of the grid returned highly anomalous gold, silver, arsenic, bismuth, antimony, tellurium, and tungsten values. Gold-in-soil values in the grid range up to 0.033 ounces of gold per ton. The area of anomalous soil geochemistry is essentially coincident with a prominent aeromagnetic high. On satellite imagery, the area also appears as a distinct vegetation anomaly. This anomaly—the Hill 1835 Anomaly—covers one of four very prominent magnetic highs within the claim area. Scattered reconnaissance rock chip and stream sediment geochemical samples from the other areas indicate that they too are geochemical anomalies. Because of these features, the Hill 1835 Anomaly is a prominent target for further exploration at Shorty Creek, as well as the other three magnetic highs within the claim area. Geochemical associations, geologic observations, and geophysical results are consistent with an intrusion-related gold mineralization model.

Freegold Ventures Ltd. completed a 1,270-foot trenching program at its Golden Summit property near Fairbanks. Six trenches were placed in a 1,000-foot-wide area south of the historic Cleary Hill Mine (historic production of

Figure 11. *Auger drilling for soil samples on the Shorty Creek prospect, Livengood mining district. Photo provided by Select Resources Corp.*

281,000 ounces of gold at an average grade of 1.28 ounces of gold per ton). Two district-scale shear zones (Dolphin and Anna Mary) intersect in this area. Trench WZ-05-01 tested the mineralization within the 550-foot area between 2002 trenches CU02-4/5/6 and CU02-3, while the remaining five trenches, WK-05-02 to WK-05-06, were placed to test the eastern strike extent of the zone, and to further test the continuity of high-grade veins encountered in the 2002 trenching. Two new 6- to 18-inch-wide gold-bearing veins were encountered in trench WZ-05-01. The northernmost of the two veins graded 0.835 ounces of gold per ton over 5 feet, with three grab samples from the vein grading 4.06 ounces of gold per ton, 0.65 ounces of gold per ton, and 0.35 ounces of gold per ton. The second vein was encountered 190 feet to the south, and graded 1.03 ounces of gold per ton over 5 feet with one grab sample grading 1.86 ounces of gold per ton. Numerous other smaller quartz veins and sheeted quartz veinlets were exposed in the trenches. The Wackwitz vein was exposed in trench WZ-05-02, and the current trenching extended the known strike length of the Wackwitz vein to 730 feet. The shear zone hosting the vein in trench WZ-05-02 returned 10 feet grading 0.08 ounces of gold per ton. Native gold flakes up to 0.04 inch across were observed in the vein at this location. A total of 248 rock chip samples were collected using a 5-foot sample interval taken along the center of each trench floor. Sampling along strike of the Wackwitz generated nine chip samples using 6.5-foot spacing, with an average grade of 0.19 ounces of gold per ton over 59 feet and one grab sample with a grade of 0.48 ounces of gold per ton. An additional 31 grab samples were taken from selected veins.

Canaco Resources Inc. signed a joint-venture agreement with Teck Resources Inc. to earn a 100 percent working interest in the Hajdukovich and Macomb gold properties in the northern Alaska Range, with a total work commitment of $4 million over 4 years with staged commitments, subject to back-in right retained by Teck. Work on the Hajdukovich property included rock sampling at the Sneaker, UPEG Saddle, Gert, and PW zones. Mineralization at the Sneaker Zone consists of gold in sheeted quartz veins, and disseminated sulfides in altered megacrystic syenite and granite of a Tertiary alkalic intrusive complex (fig. 12). Aplite-hosted quartz veins occur at the UPEG Saddle Zone, and some massive sulfide lenses occur at the PW Zone. Gold-bearing quartz veins occur as northeast-trending veins with few sulfides but highly anomalous bismuth, copper, lead, and antimony values; and east–west-trending veins as en echelon sets within shear zones with abundant sulfides and abundant arsenic and silver that contain pervasive ankerite–sericite alteration and abundant tourmaline. A total of 212 rock samples were collected from the Sneaker Zone; high-grade samples of northeast-trending quartz veins have visible gold, 51 samples assayed greater than 0.029 ounces of gold per ton, and contain up to 3.57 ounces of gold per ton. Three core holes totaling 1,516 feet were drilled at the Sneaker Zone. The drill holes did not reach target depths, but some core intercepts with anomalous gold and bismuth values were altered and sheared. Rock samples of altered granite with disseminated sulfide mineralization from the UPEG Saddle Zone had values ranging up to 2.05 percent copper and 2.19 ounces of silver per ton. Rock samples of silicified schist and massive-sulfide lenses from the PW Zone contained up to 0.25 ounces of gold per ton and a quartz vein sample assayed 1.48 ounces of gold per ton. Canaco staked 38 more mining claims in the PW Zone area. Minimal work was done on the Macomb property.

Teryl Resource Corp. and Linux Gold completed an auger drilling program to test an airborne geophysical anomaly with a coincident gravity low at the All Gold Creek target on the Fish Creek property near Fairbanks.

Midas Resources Ltd., in partnership with Geoinformatics Exploration Inc., planned a winter reverse-circulation drilling program at the Uncle Sam gold property in the Richardson mining district. Midas can earn up to a 75 percent interest in the Uncle Sam property by spending $1 million on the property, with a minimum of $250,000 and 3,000 feet of drilling in the first year.

Grayd Resource Corp. conducted a small prospecting and channel sampling program at mineralized exposures along the receding margins of the LP Glacier. A portable diamond saw was used to cut 2-inch-wide by 3-inch-deep channels in glacially striated chlorite schist. Sample results include 10 feet grading 0.18 ounces of gold per ton, 10.94 ounces of silver per ton, 0.4 percent copper, 14.8 percent lead, and 2 feet grading 0.14 ounces of gold per ton, 15.98 ounces of silver per ton, 0.4 percent copper,

Figure 12. *Tourmaline–sulfide mineralization in pervasively ankerite–sericite-altered alkalic plutonic rock at the Hajdukovich property. Photo provided by Canaco Resources Inc.*

and 22.6 percent lead. Mineralization is open laterally beyond the sampling. The mineralization may be the deformed footwall stringer-alteration zone to the LP deposit cropping out 650 feet to the west of the new samples.

SOUTHCENTRAL REGION

Kennecott Exploration Co., a Rio Tinto Group company, made a significant copper discovery at the Whistler prospect near Rainy Pass. Mineralization occurs as extensive lower-grade and "quite attractive" higher grade. Kennecott drilled 12 holes that intersected broad intervals of copper and gold, along with silver and molybdenum (fig. 13). Preliminary metallurgical testing showed much of the gold is contained in a copper concentrate. Kennecott identified eight other targets similar to the Whistler prospect in the surrounding area, and three of four targets tested had copper-gold mineralization.

Full Metal Minerals Ltd. explored the historic Lucky Shot gold mine property in the Willow Creek mining district. The property has excellent access to roads, infrastructure and power. The Lucky Shot Mine was the richest gold producer in the Willow Creek mining district, with grades ranging from 2.0 to 4.0 ounces of gold per ton. Gold-bearing quartz veins and structures at Lucky Shot occur within granitic rocks of the Mesozoic Talkeetna Batholithic Complex. Gold ore from previous mining was essentially free milling and contained minor amounts of pyrite, arsenopyrite, sphalerite, chalcopyrite, tetrahedrite, galena, scheelite, and gold tellurides. In July, Full Metal completed a seven-hole, 3,018-foot diamond drilling program to test the updip potential of the Coleman/Lucky Shot shear zone, approximately 800 feet updip of historic workings and 800 feet along strike. All drill holes intersected the Lucky Shot Shear, which is typified by strong chlorite–sericite–carbonate alteration, brecciation, and silicified cataclasites. This structure is wide open for expansion to the northwest and west with limited potential to the south. Drill hole C05-12 intersected 7.0 ounces of gold per ton over a 13.1-foot true width (uncut), including 37.0 ounces of gold per ton over a 2-foot true width. Hole C05-12 is a 164-foot step-out hole to the west of hole C05-09, which had a 10-foot true width intersection averaging 1.82 ounces of gold per ton. Intercepts in hole C05-13, located 230 feet updip of hole C05-12, showed a continued strong shear zone, similar to gold-rich portions of the Lucky Shot system. Full Metal expanded the Lucky Shot property to the north, west, and south by staking 28 State mining claims. Full Metal also sampled other mineralized structures on the property. Results include a grab sample from the dump at the Nippon Vein, 3.73 miles east of Lucky Shot, averaging 1.65 ounces of gold per ton, and a channel sample within a steeply-dipping fault zone south of the Nippon Vein averaging 0.08 ounces of gold per ton over 20 feet.

Anglo American Exploration (USA) Inc. explored the 150-square-mile Area 1 (Fish Lake–Dunite Hill Area) of Nevada Star Resource Corp.'s 271-square-mile MAN property. Anglo American completed 25.8 line miles of ground electromagnetic surveys, including a Crone SQUID B-field survey, and 110 line miles of ground magnetic survey over multi-element soil anomalies identified in 2004, structural and geological mapping, and collected and analyzed 1,057 soil geochemical samples. A total of 7,330 feet of drilling was completed in eight holes (fig. 14). Drilling tested geophysical, geochemical and geological anomalies near exposures of nickel-copper (platinum-group-element) sulfide showings and sulfide gossans within the Fish Lake Ultramafic Complex. The

Figure 13. *Core logging facility at Rainy Pass Lodge for processing core from Kennecott's Whistler property. Photo by David Szumigala.*

best assay results were for drill holes 1, 6, and 8. Drill hole 8 tested strong multi-element geochemical anomalies associated with a sulfide gossan, 0.6 miles long by 500 feet wide, in the center of a large interpreted Kambalda-like footwall embayment feature along the base of the Fish Lake Complex. The drill hole encountered massive iron-nickel-copper sulfide mineralization within ultramafic rock, approximately 230 feet upsection of the basal contact. Assay results included 0.97 percent nickel and 0.14 percent copper over 3.3 feet, including 3.22 percent nickel and 0.38 percent copper over 9 inches from 500 feet depth and a 1 inch thick massive sulfide zone calculated to contain 12 percent nickel. Drill hole 6 tested strong multi-element geochemical anomalies at the west end of the embayment feature tested by drill hole 8. Assay results included a 40-foot thick intercept grading 0.27 percent nickel and 0.06 percent copper from 1,180 feet, including 0.39 percent nickel and 0.05 percent copper over 5 feet. Drill hole 1 was drilled in the footwall to the Tres Equis massive sulfide showing and encountered disseminated sulfide mineralization, including a 109-foot thick intercept grading 0.31 percent nickel, 0.14 percent copper and 0.006 ounces of platinum-group-elements per ton from 340 feet depth, with a 7 feet intercept grading 0.50 percent nickel, 0.23 percent copper and 0.012 ounces of platinum-group-elements per ton.

Overall, the 2005 drilling results, combined with historical drilling and exploration results, suggest the presence of several diffuse kilometer-scale zones of weak disseminated sulfide mineralization within the Fish Lake Complex. This low grade mineralization could provide a vector to structural traps with high-grade massive sulfide deposits. Additional ground electromagnetic and magnetic geophysical surveys and soil and rock geochemical surveys were completed after the drill program by Anglo American to delineate drill targets for 2006.

Nevada Star Resource Corp. also explored for gold over their portion of the MAN property not under joint-venture agreement with Anglo American. One hundred thirty rock samples were collected in the 2005 program for geochemical analysis. Nevada Star also staked 260 Federal mining claims to add to the MAN property.

Alaska Range Minerals Corp., a subsidiary of bcMetals Corp., was granted on option to acquire 100 percent ownership of a 9-square-mile block of mineral claims situated in the Alaska Range referred to as the Johnson property. Agreement terms require bcMetals to pay $825,000 and spend at least $13.5 million on exploration over 5 years or complete a positive feasibility study. The Johnson property is accessible by road from the Richardson Highway and is approximately 175 road miles southeast of Fairbanks. The Johnson property hosts several identified prospects, including the Verona Pick, the Woody, and the Forbes prospects, and more than 40 mineral occurrences on which very little exploration has been conducted. Metallic mineralization is of two main types: magmatic copper–nickel–platinum-group elements; and porphyry or volcanogenic massive sulfide copper–gold–silver–lead–zinc. Field mapping and soil and rock geochemical sampling were completed. Core drilling of five holes, totaling approximately 1,600 feet, was completed on 3 prospects, but heavy snow cover hampered drilling. No significant mineralization was encountered.

Piper Capital Inc. announced a new independent mineral resource estimate prepared by Norwest Corporation for its Golden Zone gold-silver-copper deposit. The property is 9 miles from the Alaska Railroad and the paved George Parks Highway on the south side of the Alaska Range (fig. 15). The Golden Zone deposit contains measured and indicated resources of approximately 2 million tons, grading 0.106 ounces of gold per ton, 0.47 ounces of silver per ton and 0.12 percent copper (utilizing a 0.05 ounces of gold per ton cut-off grade), and contains approximately 214,800 ounces of gold, 948,000 ounces of silver and 24,000 pounds of copper. Piper Capital drilled a total of 10,500 feet at the Golden Zone project in nine-

Figure 14. *Spring core drilling at the MAN property. Photo provided by Anglo American Exploration (USA) Inc.*

teen core holes and one reverse circulation hole during 2005. Twelve holes focused on the Golden Zone Breccia Pipe, six holes were drilled on the BLT Zone, one hole was drilled on the Mayflower Zone, and one hole was drilled at the Long Creek gold-copper prospect. All drill holes intersected gold mineralization. Significant results included: hole 50.5E-1with a 135.5-foot intercept grading 0.06 ounces of gold per ton at 325 feet depth and a 110-foot intercept grading 0.03 ounces of gold per ton at 625 feet depth within the Golden Zone Breccia Pipe, hole 61E-1, within the Mayflower Zone 984 feet northeast of the Golden Zone Breccia Pipe, with a 14.8-foot intercept grading 0.05 ounces of gold per ton at a depth of 88.6 feet, hole 43.3E-1, in the BLT Zone 328 feet to the southwest of the Golden Zone Breccia Pipe, with a 24.6-foot intercept grading 0.03 ounces of gold per ton at a depth of 220 feet, and hole 47.3E-2, mainly in the Golden Zone Breccia Pipe, with a 408-foot intercept grading 0.13 ounces of gold per ton starting at 298 feet depth, including a 16.7-foot intercept grading 0.58 ounces of gold per ton, 2.54 ounces of silver per ton, and 0.22 percent copper starting at 323 feet depth. At the Long Creek prospect, hole 05LC-1 had a 20-foot intercept grading 0.002 ounces of gold per ton, 0.85 ounces of silver per ton and 0.62 percent copper and a 10-foot intercept grading 0.032 ounces of gold per ton, 1.05 ounces of silver per ton, and 0.40 percent copper. Copper–silver–gold mineralization at the Long Creek prospect appears to be crudely stratabound, with disseminated to massive sulfide replacement zones in limestone cut by northeast-striking massive-sulfide veins.

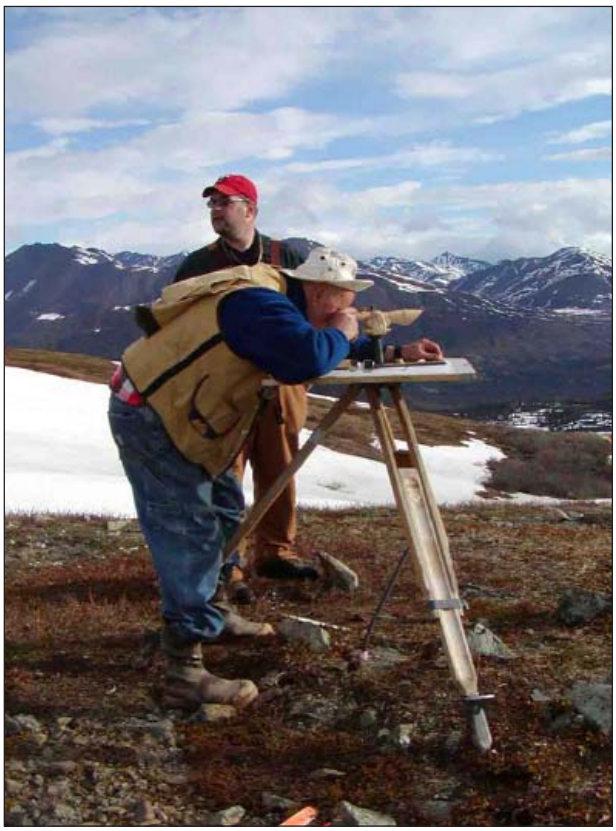


Figure 15. *Dr. Chuck Hawley plane-table surveying at the Golden Zone property. Photo provided by Piper Capital Inc.*

Piper Capital optioned part interest in the Golden Zone property to Hidefield Gold Plc. in September. Hidefield can acquire up to 50 percent of Piper Capital's interest in the Golden Zone property by spending $300,000 on exploration on the property by the end of 2005, and $600,000 in both 2006 and 2007. Piper and Hidefield each have a further option to acquire additional 12.5 percent interest in the Golden Zone property from the Mines Trust Co. by each company paying $100,000. The combined ownership would be 100 percent, and Mines Trust would retain a 2.5 percent net smelter royalty. London-based Anglo Pacific Group Plc. is a major shareholder of Hidefield Gold and Piper Capital.

Piper Capital Inc. staked 110 contiguous State of Alaska mining claims near Mt. Estelle and immediately south of Kennecott's Whistler land package. Mineralization in the Mt. Estelle area is related to composite alkalic intrusions of late Cretaceous age ranging in size from small cupolas to the Mt. Estelle batholith. Reconnaissance sampling in August 2005 in the South Estelle project area confirmed mineralization in two previously known prospects, Ultramafic and the Revelation Vein, and identified three new prospects designated Shoeshine, Train and Saddle. A mineralized intrusion sample from the Ultramafic prospect assayed 3.29 ounces of gold per ton, 7.15 ounces of silver per ton, and 0.13 percent copper. Samples from a 656-foot-long vein at the Revelation Vein prospect assayed 0.95 ounces of gold per ton, 0.24 ounces of silver per ton, and 0.10 percent copper, and 0.21 ounces of gold per ton, 0.37 ounces of silver per ton, and 0.16 percent copper. A sample from a sulfide boulder train in moraine at the Train prospect assayed 0.70 ounces of gold per ton, 2.67 ounces of silver per ton, and 0.33 percent copper. A sample from a mineralized dike traced for 1 mile along strike at the Saddle prospect assayed 0.21 ounces of gold per ton, 0.06 ounces of silver per ton, and no reported copper content.

A joint venture between Golconda Resources Ltd., Shulin Lake Mining Co., and Shear Minerals Ltd. explored the Shulin Lake property for diamonds. Core drilling tested a series of geophysical anomalies chosen from a reinterpretation of existing geophysical data. Five holes were drilled to test three magnetic anomalies interpreted as being potential pipes. Nine samples with a total weight of 5,291 pounds were submitted to SGS Lakefield Research for testing and contained one micro-diamond and diamond

indicator minerals in a volcanic tuff sequence. One white, transparent diamond fragment was recovered from sample B3 of drill hole 25. The dimensions of the diamond are 0.02 inch x 0.01 inch x 0.006 inches. Golconda staked additional claims and dug three 6-foot deep pits in a circular negative anomaly of about 0.6 miles in diameter. The anomaly is coincident with a circular swamp visible on satellite photos. The pits were sampled and each sample weighed approximately 20 pounds. Although these samples were taken from glacial till, visual observation of the concentrates showed green chrome diopside, kyanite, sapphire, rutile and anatase. Golconda plans to excavate the area of the pits in early 2006 and drill within this interpreted volcanic vent or pipe.

Diamond Gold Corp. explored for diamonds in the Sable Creek and other areas of the Yenlo Hills near Talkeetna. Diamond Gold reported finding several lamproite pipes and dikes. Diamond Gold prospected the area's creeks and reported finding a diamond in one of the pan concentrate samples. Other work included road building into the exploration area and examination of sulfide mineral occurrences in the northern Yenlo Hills.

MAX Resource Corp. completed additional work on its Gold Hill project near the Denali Highway that involved surface sampling and the review of exploration data and drill core from prior exploration work. Pyrite, arsenopyrite, pyrrhotite, chalcopyrite, molybdenum, native copper, and gold are found in veins and as disseminations in Tertiary diorite and intermediate plutonic rocks with quartz–sericite–pyrite alteration. MAX Resources is planning to drill a magnetic high interpreted to be a skarn in 2006.

SOUTHWESTERN REGION

Northern Dynasty Minerals Ltd. conducted the largest exploration project in Alaska during 2005 at the Pebble project near Lake Iliamna. The project consists of 1,331 State of Alaska mining claims covering 153 square miles. Northern Dynasty acquired a 100 percent working interest in the Pebble property (subject to a maximum 5 percent Teck Cominco net profits interest in the Exploration Lands portion of the property) early in 2005. The Pebble deposit is a calc-alkalic porphyry with quartz stockwork veins containing principally pyrite, chalcopyrite, and molybdenite in the intrusion(s) and sedimentary host rocks.

Northern Dynasty and Homer Electric Association began a joint initiative in January 2005 to review the phased power development plan for the Pebble project. Homer Electric serves 20,000 members on the western Kenai Peninsula and has a current generation capacity of 55.5 megawatts. It is anticipated that the Pebble project will eventually need 275 megawatts of power for a mine and port. This study is evaluating the current condition and capacity of the Railbelt electrical grid and has developed a number of alternatives for connecting the Pebble project into that grid. Some of the key issues are cost of power, mitigating or eliminating impacts on existing Railbelt customers, and schedule. Findings from this study will be used in a future feasibility study.

In early 2005 Northern Dynasty announced a new mineral resource for the Pebble deposit prepared by Roscoe Postle Associates Inc. The new resources include measured and indicated resources of 3.335 billion tons grading 0.28 percent copper, 0.009 ounces of gold per ton, and 0.015 percent molybdenum containing 31.3 million ounces of gold, 18.8 billion pounds of copper and 993 million pounds of molybdenum. An additional inferred resource includes 1.245 billion tons grading 0.24 percent copper, 0.0088 ounces of gold per ton, and 0.014 percent molybdenum containing 10.8 million ounces of gold, 5.8 billion pounds of copper and 361 million pounds of molybdenum, using a 0.30 percent copper-equivalent cut-off grade.

A substantial high-grade porphyry deposit was discovered by Northern Dynasty in 2004 adjoining the Pebble deposit on the east. Exploration for additional copper–gold–molybdenum porphyry-style mineralization in 2005 concentrated on the East Zone of the project area. The East Zone occurs on the western side of a large granodiorite stock, with the mineralized granodiorite intrusion capped by at least 1,500 feet of Tertiary volcanic cover. The barren Tertiary volcanic and sedimentary rocks thicken in a wedge-like shape to the east. Mineralization is associated with strong potassic alteration, abundant polyphase quartz, and quartz–sulfide veins, a high chalcopyrite to pyrite ratio (1:1), and abundant disseminated and vein sulfide mineralization. Drilling was completed in 39 holes with a total drilling footage of 60,856 feet (fig. 16 and fig. 17). Drilling in 2005 at the East Zone was over a 4,000-foot by 4,000-foot area. Some highlights of the drilling are seen in drill holes 5332, 5335, 5336, and 5337. Drill hole 5332 intersected 2,367 feet grading 1.41 percent copper equivalent, comprising 0.89 percent copper, 0.01 ounces of gold per ton, and 0.055 percent molybdenum. Included in this intersection is an 817-foot interval grading 1.74 percent copper equivalent (1.28 percent copper, 0.008 ounces of gold per ton, and 0.05 percent molybdenum). Drill hole 5335 intersected 2,478 feet grading 0.81 percent copper, 0.013 ounces of gold per ton and 0.023 percent molybdenum. Drill hole 5336 intersected 2,584 feet grading 0.67 percent copper, 0.007 ounces of gold per ton and 0.055 percent molybdenum, including 150 feet grading 1.16 percent copper, 0.021 ounces of gold per ton and 0.059 percent molybdenum. Drill hole 5337 intersected 2,619 feet grading 1.45 percent copper equivalent, comprising 0.87 percent copper, 0.020 ounces of gold per ton and 0.028 percent molybdenum, including 605 feet grading 0.90 percent copper, 0.031 ounces of gold per ton and 0.013 percent molybdenum and 290 feet grading

Figure 16. *Core drilling at the Pebble property. Photo by Steve Sutherlin and provided by* Petroleum News *(photo originally published in October 30, 2005, edition of North of 60 Mining News, a special supplement to* Petroleum News*).*

Figure 17. *Mike Borleske cutting Pebble core samples for testing at a geochemical laboratory. Mike, from the village of Nondalton, is one of many locals hired to work on the Pebble property and Northern Dynasty's facilities in Iliamna. Photo by Steve Sutherlin and provided by* Petroleum News *(photo originally published in October 30, 2005, edition of North of 60 Mining News, a special supplement to* Petroleum News*).*

1.08 percent copper, 0.038 ounces of gold per ton and 0.029 percent molybdenum. Drill hole 5332 was drilled to the east at a dip of 63 degrees and entered mineralization at a vertical depth of 1,600 feet below surface, while drill holes 5335, 5336, and 5337 were drilled vertically and entered the mineralized body 1,690, 1,645, and 1,550 feet, respectively, below surface. The East Zone deposit is open to expansion to depth and in all lateral directions. A deep drilling program to fully delineate the East Zone started in March 2006 with four drill rigs.

Northern Dynasty Minerals announced an initial mineral resource estimate, audited by Roscoe Postle Associates, for the East Zone deposit at its Pebble project. At a 0.60 percent copper equivalent cut-off, the estimated inferred mineral resources are 2.02 billion tons grading 1.05 percent copper equivalent containing 24.3 billion pounds of copper, 22.1 million ounces of gold and 1.5 billion pounds of molybdenum. At a 1 percent copper equivalent cut-off, the higher-grade inferred mineral resources are estimated at 1.04 billion tons grading 1.28 percent copper equivalent containing 16 billion pounds of copper, 14.5 million ounces of gold and 830 million pounds of molybdenum. The East Zone resource estimate is a significant increase in copper, gold, and molybdenum resources for the overall Pebble project and substantially augments its higher-grade resources. The East Zone deposit is contiguous with the Pebble deposit (now called Pebble West Zone deposit) and will be assessed for its amenability to low-cost, bulk underground mining. The East Zone deposit is open to expansion in all lateral directions and to depth. The Pebble West Zone porphyry copper–gold–molybdenum deposit is being studied at the feasibility level as an open-pit mine.

Exploration work on the Pebble property also included extensive environmental studies and community outreach, with $18 million budgeted for these activities in 2005. Two years of environmental baseline data have been collected. Forty-five consulting firms, with a total workforce of 441 Alaskans, worked on the project during 2005. During 2005, thirty-three mine site surface water stations, and 350 fish sampling and survey locations were sampled. Approximately 198 square miles were surveyed as part of the wetlands delineation program. There were 300 stakeholder/community outreach meetings in 2005 compared to 64 meetings in 2004, and 25 communities in the Bristol Bay region were visited.

Placer Dome Inc. continued an extensive drill program on the Donlin Creek project near Aniak. Three diamond core drill rigs completed 75,548 feet of infill drilling and 2,766 feet of geotechnical drilling. Reverse-circulation

drilling, totaling 15,020 feet, was completed for condemnation, water, and calcareous sandstone testing for tailings neutralization uses. Placer Dome also completed detailed engineering and design studies for all capital and operating cost estimates to a prefeasibility level. Wind monitoring instruments were installed and data collected to study the potential of local power generation. More than 15 tons of material was shipped offsite for bench and pilot test work. Extensive baseline environmental work, including habitat, fisheries and waste characterization studies along with the ongoing water quality studies, continued in preparation for formal permit applications to be filed by early 2006.

NovaGold Resources Inc., joint-venture partner with Placer Dome, reported results from the infill drill program on the Donlin Creek project. Drilling was completed to upgrade inferred gold resources to measured and indicated gold resources, as well as geotechnical and condemnation drilling. Significant assay results from the drilling are extensive. DC05-1013 had five mineralized intervals totaling 528.2 feet of 0.18 ounces of gold per ton, including 95.1 feet grading 0.37 ounces of gold per ton. DC05-1018 had eight mineralized intervals totaling 910.4 feet of 0.11 ounces of gold per ton, including intervals of 212.3 feet grading 0.16 ounces of gold per ton and 92.9 feet grading 0.18 ounces of gold per ton. DC05-1033 had four mineralized intervals totaling 295 feet of 0.19 ounces of gold per ton. DC05-1033 had four mineralized intervals totaling 295 feet of 0.19 ounces of gold per ton. DC05-1053 had five mineralized intervals totaling 374 feet, and grading 0.17 ounces of gold per ton, including 144.4 feet grading 0.22 ounces of gold per ton. DC05-1061 had 12 mineralized intervals totaling 744 feet grading 0.13 ounces of gold per ton, with the hole bottoming in 177 feet grading 0.15 ounces of gold per ton. DC05-1063 had seven mineralized intervals totaling 339.3 feet of 0.20 ounces of gold per ton, including intervals of 39.4 feet grading 0.48 ounces of gold per ton and 67.9 feet of 0.23 ounces of gold per ton. DC05-1065 had nine mineralized intervals totaling 847.2 feet of 0.15 ounces of gold per ton, including intervals of 82 feet grading 0.30 ounces of gold per ton, 97.4 feet of 0.21 ounces of gold per ton, and 216.2 feet grading 0.17 ounces of gold per ton.

Reverse-circulation drilling in the Far East Zone, 2.5 miles east of the ACMA deposit at Donlin Creek, also had some interesting results. Hole DR05-996 had 15 feet of mineralization grading 0.53 ounces of gold per ton, and hole DR05-998 had two mineralized intervals totaling 70 feet grading 0.11 ounces of gold per ton.

A new gold resource for the Donlin Creek project was announced in January 2006 by Placer Dome. The new resource estimate significantly increased the measured and indicated resource compared with 2003 resource estimates. The measured and indicated resource, using a cut-off grade of 0.035 ounces of gold per ton, increased 3.7 million ounces or 33 percent to 14.8 million ounces of gold grading an average of 0.08 ounces of gold per ton. The inferred resource decreased by 0.7 million ounces to 13.6 million ounces of gold grading 0.0794 ounces of gold per ton through conversion to the measured and indicated category. This mineral resource is constrained within a potentially economic pit model. The Donlin Creek Joint Venture expects to complete a prefeasibility level study by mid-2006 and began a feasibility drill program in February 2006.

Liberty Star Gold Corp. completed drilling and other fieldwork on the 421-square-mile Big Chunk project. The Big Chunk claims adjoin Northern Dynasty's Pebble project on the north border, forming a large donut shape and adjoining their border to the southeast. Fieldwork included staking 476 additional State mining claims; collecting 153 stream-sediment geochemical samples, 1,702 vegetation samples, 147 line-miles of line surveying and clearing, 99.1 miles of induced polarization (IP) geophysics, and 27 diamond core drill holes totaling 10,948 feet. A new geologic interpretation showed two ages of volcanic rocks on the property, one pre-mineral in age and one post-mineral in age. The pre-mineral volcanic rocks are exposed or thinly covered over a very large area and are interpreted to be part of a large caldera responsible for mineral bodies in the Big Chunk area. This summer's work included further encouraging results from the White Sox copper-molybdenum porphyry center, discovered a new porphyry center at the Baltusrol prospect, discovered gold mineralization over a 5.7-mile by 2-mile area at the Augusta prospect, identified new geochemical anomalies untested by geophysics or drilling, and identified several IP geophysical anomalies untested by drilling.

Drilling results on the Big Chunk property were positive at several prospects. Hole 15 in the Baltusrol area intercepted 50 feet of 0.1 percent copper and 0.0018 ounces of gold per ton, from 686.0 feet to 736.0 feet. Hole 12 intercepted several intervals containing up to 0.12 percent copper, up to 0.014 percent molybdenum, and up to 0.0025 ounces of gold per ton. Induced polarization anomalies continued north from the Baltusrol prospect into the Point Grey prospect area. Hole 23, in the Point Grey area, intercepted 0.0078 ounces of gold per ton over a total of 177 feet including 10 feet of 0.059 ounces of gold per ton. Associated minerals indicate that this is a gold/silver system.

Liberty Star Gold Corp staked 94 State of Alaska mining claims over a promising gold target about 40 miles northeast of the northern boundary of the Big Chunk claim block. The Bonanza Hills project area covers a dome-like feature consisting of a granitic stock intruding Cretaceous age sedimentary rocks. The sedimentary rocks are pervasively altered, contain finely disseminated sulfides, and are quartz veined. Previous gold placer workings are

present on the property. Initial sample results from quartz veins had anomalous gold values ranging from 0.02 ounces of gold per ton up to 3.11 ounces of gold per ton. Additional rock chip and soil sampling was completed but results were not announced. Preliminary geologic mapping was also done over a broad area.

AngloGold Ashanti (USA) Exploration Inc. announced a significant high-grade gold discovery at the Terra property northeast of Lime Village. High-grade quartz veins, up to 4 feet wide and containing up to 8 ounces of gold per ton in rock chip samples, occur along a 5-mile structural zone with porphyry-epithermal style mineralization (fig. 18). Five targets, each with soil sample results up to 0.146 ounces of gold per ton were identified in 2005. Twelve core holes totaling 6,562 feet were drilled on the Ben, Fish Creek, and Midway zones. Hole TR05-01 in the Ben Zone had a 3.6-foot intercept grading 4.11 ounces of gold per ton and 7.82 ounces of silver per ton. A 1-foot intercept in hole TR05-07 from the Fish Creek Zone graded 3.75 ounces of gold per ton. Early assay results from the four main vein zones indicated average gold values in the 0.58 ounces of gold per ton range over nominal 3 to 7 foot widths, with near-surface stockwork zones ranging from 33 to 66 feet wide with grades averaging 0.07 ounces of gold per ton. Veins at the Terra property are characterized as banded, epithermal-style with an associated arsenic–bismuth–tellurium signature and coarse visible gold.

Figure 18. *Gold-bearing quartz vein exposed by hand mining methods at the Terra prospect. Rock chip sample results from the vein range up to 8 ounces of gold per ton. Photo courtesy of AngloGold Ashanti (USA) Exploration Inc.*

TNR Gold Corp. expanded known intrusion-related gold mineralization at the Shotgun property during 2005 with a geochemical sampling program. TNR completed a total of 1,754.3 feet of diamond drilling in six holes on the Winchester Zone, the southernmost target of the Shotgun project, approximately 11 miles south of the main Shotgun Zone. The best geochemical results were in hole DDH05-32, collared in a medium grained felsic intrusion that averaged 0.047 ounces of gold per ton over 46 feet, including 0.115 ounces of gold per ton over 6.8 feet from the surface to the contact with Kuskokwim sedimentary rocks. Hole DDH05-31 contained felsic intrusion with a 7.5-foot intercept grading 0.03 ounces of gold per ton. All drill holes from 2005 contained anomalous gold values associated with anomalous arsenic, bismuth, copper, and tungsten values.

TNR Gold Corp. and Geocom Resources Inc. continued exploration at the D and H claims on the Iliamna project. Furio Resources Inc. completed an induced polarization survey and a ground magnetic survey on their property in the Pebble area. The results of the surveys were inconclusive.

Full Metal Minerals Ltd. completed approximately 15.5-line miles of IP geophysics in the BOO and TYP prospect areas of the Pebble South property. Two 1-mile-long zones of high chargeability coincident with moderate to low resistivity were identified beneath 300 feet of glacial cover. Full Metal also collected 103 soil samples to refine the geophysical and geochemical targets identified in 2004. Additional claims were staked to the west of the KAK claims (northern block) covering an airborne magnetic anomaly.

Tonogold Resources Inc., in partnership with Calista Corp., defined six large disseminated gold prospects in the Nyac mining district during 2005 with a soil geochemical survey covering a 5.8 square mile area. Initial grid spacing was 200 feet by 400 feet followed by 100 feet by 100 feet spacing in selected areas. More than 3,000 soil and 200 rock geochemical samples were collected from the Wallace, Bonanza Ridge, and Bonanza Creek prospects, and four adjacent or newly recognized areas (Saddle Mountain, Pipe, Rocky Ridge, and Shamrock). Numerous soil values of more than 0.015 ounces of gold per ton and multiple values over 0.03 ounces of gold per ton were found in each prospect area. The highest soil assay reported was 0.12 ounces of gold per ton and the highest rock chip value was 0.44 ounces of gold per ton. Anomalous gold results are in Cretaceous intrusions and Jurassic volcanic and volcaniclastic rocks cut by quartz-chlorite-calcite veins and veinlets containing pyrite, chalcopyrite, bismuthinite, molybdenite, and native gold. Gold mineralization is spatially associated with widespread sericite–chlorite–carbonate alteration. Tonogold plans a 20,000-foot core drill program, a 5,000-soil-sample pro-

gram, a helicopter-borne aeromagnetic survey, and district-wide geologic mapping for 2006.

David Wilmarth sampled trenches in the Julian Creek area for placer gold. Similar activities were conducted by the Little Creek Mine on Ester Creek.

ALASKA PENINSULA REGION

In June 2005, Full Metal Minerals Ltd. initiated an exploration program in the Port Moller region, consisting of surface mapping, sampling and IP geophysics on the Unga and Popov Islands epithermal gold targets, as well as the Pyramid copper-gold prospect. A total of 339 surface samples, including 22 soil, 15 stream sediment and 302 rock samples, were taken on a variety of prospects during 2005. On Unga and Popov Islands, exploration focused on evaluating historic epithermal gold showings. On Unga Island, mapping of a 4-mile-long, northeast structural corridor hosting strong alteration and anomalous gold and silver mineralization refined the stratigraphic and structural geologic setting, and identified multiple drill targets. IP surveys identified local areas of strong resistivity. At the Centennial deposit on Popov Island, IP geophysics identified a steeply-dipping resistivity and coincident chargeability anomaly at depth that could be a potential feeder zone within basement rocks to the near-surface disseminated gold mineralization. A clay mineralogy study at multiple target areas identified several areas of high-temperature clay alteration, of both high and low sulfidation affinity. At the Pyramid copper-gold-molybdenum porphyry, mapping, grid geochemical sampling, and five lines of IP geophysics and ground magnetic surveys were completed (fig. 19). Despite poor local ground conditions for the IP survey, a large chargeability anomaly was identified, coinciding with the untested potassic core of the porphyry. Satellite remote sensing identified an area with strong, high-temperature clay alteration at an unexplored area south of the historically drilled area. An IP survey, as well as mapping and sampling were completed on the Zachary Bay porphyry target on Unga Island. A weak chargeability anomaly was coincident with a widespread color anomaly and weakly anomalous geochemical sample results.

Full Metal Minerals Ltd. signed an agreement with the Bristol Bay Native Corporation to exclusively explore approximately 565,000 acres of the Alaska Peninsula. This area is prospective for epithermal gold and porphyry copper-gold deposits. Metallica Resources Inc. subsequently entered into an option agreement with Full Metal Minerals to earn a 65 percent interest in the Aleutian Islands and Alaska Peninsula properties controlled by Full Metal. In July 2005, Full Metal and Metallica Resources, after negotiating a joint-venture agreement, initiated surface geological mapping, geochemical sampling and IP geophysics surveys on historic showings located on Native-owned lands in the Chignik area. Work was performed on five porphyry copper-gold-molybdenum systems. The most encouraging prospects include Bee Creek, Kawisgag and Mallard Duck. A total of 457 surface samples, consisting of 294 soil, 48 stream sediment and 115 rock samples, were taken on a variety of prospects during 2005. Three pole-dipole IP lines were surveyed at Bee Creek during 2005. All three IP lines show strong chargeability anomalies in a zone centered on historic drill hole B-5, located in the valley floor. One IP and magnetic line was completed along the bench above the Weird Duck Breccia area of the Mallard Duck prospect, and two strong chargeability anomalies were identified.

SOUTHEASTERN REGION

Joint-venture partners Lonmin Plc, Pacific North West Capital Corp., and Freegold Ventures Ltd. continued aggressive exploration for platinum group elements at the Union Bay ultramafic complex near Ketchikan. The 2005 exploration program focused on several areas identified from last year's airborne magnetic survey and the ground magnetic survey completed earlier this year. A 10,000-foot drill program tested a number of these targets within

Figure 19. *Reconnaissance geologic exploration at the Pyramid copper–molybdenum porphyry prospect. Photo courtesy of Full Metal Minerals Ltd.*

these prospective areas but did not identify significant follow up targets. Lonmin opted to terminate its interest in the property.

Niblack Mining Corp. explored the copper-gold rich Niblack massive sulfide property on Prince of Wales Island in southeastern Alaska. The exploration program included 6,200 feet of diamond drilling in 7 drill holes and re-established environmental baseline studies. The drill program focused on the Lookout Zone, the most advanced area of the five known zones of massive sulfide mineralization on the property. A new exploration model includes multiple stacked massive sulfide lenses with predictable geometries and plunge directions and showed excellent potential for expanding known zones, as well as discovering new sulfide lenses. Niblack Mining began the permitting process for underground exploration on the property and also commenced a resource calculation for the Lookout Zone.

All seven drill holes in the Niblack drill program intersected significant mineralization, with several holes yielding multiple high-grade intervals. Four holes intersected wide zones of near-surface gold and silver oxide mineralization that overly zones of precious metal enriched sulfide mineralization at depth. Continuous intersections of combined oxide and sulfide mineralization range in width from 86.4 feet to 145.6 feet, and yield an arithmetic average of 0.15 ounces of gold per ton equivalent over 106 feet. Drill hole LO-159 intersected three distinct massive sulfide horizons separated by zones of disseminated and stringer sulfide mineralization. The entire interval totaled 225.3 feet of 0.07 ounces of gold per ton, 2.74 ounces of silver per ton, 1.67 percent copper and 4.05 percent zinc. True width of the intersection is approximately 200 feet. High-grade subintervals include 46.3 feet of 0.13 ounces of gold per ton, 2.07 ounces of silver per ton, 3.05 percent copper, and 7.79 percent zinc, and 21.1 feet grading 0.05 ounces of gold per ton, 2.57 ounces of silver per ton, 4.03 percent copper and 13.28 percent zinc. A separate 79.5 feet interval of mineralization was also intersected in LO-159, grading 0.07 ounces of gold per ton, 1.28 ounces of silver per ton, 1.25 percent copper, and 2.05 percent zinc. Drill hole LO-156 intersected 35.4 feet of 0.09 ounces of gold per ton, 2.31 ounces of silver per ton, 2.42 percent copper, and 3.16 percent zinc starting at 180-feet depth, and 4.2 feet of 0.05 ounces of gold per ton, 1.81 ounces of silver per ton, 11.3 percent copper, and 1.47 percent zinc starting at 724.1-feet depth.

At the Greens Creek underground mine near Juneau, Kennecott Minerals Co. drilled south and west of current workings and development drifting to explore additional reserves south of the 200 South, the West Bench, and the Deep Lower Southwest ore zones. Drilling into the West Gallagher Zone across the Gallagher fault from the current underground working areas at Greens Creek returned good results. In addition, the Gallagher Fault zone was successfully crossed with an underground exploration drift, and drill platforms were built to explore the new Gallagher zone. Surface exploration included 36,000 feet of diamond drilling on at least eight different prospects; geochemical soil sampling and geophysics along new gridlines in three prospects; and continued detailed geologic mapping and sampling of all active prospects.

Underground definition, pre-production, in-stope, mine-operation and exploration drilling at Greens Creek totaled more than 78,000 feet, with nearly 30,000 feet of that solely dedicated to new exploration. Results from drilling into the Gallagher zone were very encouraging. Many drill holes intercepted various amounts of white baritic, white carbonate and massive sulfide lithologies similar to ore currently mined at Greens Creek. There are at least two mineralized zones dipping shallowly to the southwest. However, true thicknesses of mineralization are still unknown, and the zones are still open to the west and south. The most significant mineralized intercepts to date include 90 feet of continuous massive sulfide mineralization in one hole, with composite grades of 0.15 ounces of gold per ton, 4.8 ounces of silver per ton, 6.8 percent lead, and 20.5 percent zinc; and 108.8 feet of continuous massive sulfide, white carbonate and white baritic mineralization in another hole, with composite grades of 0.26 ounces of gold per ton, 3.2 ounces of silver per ton, 4.6 percent lead, and 11.5 percent zinc. Other significant intercepts include a third hole with 52 feet of massive sulfide and white carbonate mineralization, with composite grades of 0.2 ounces of gold per ton, 10.3 ounces of silver per ton, 5 percent lead, and 11.3 percent zinc; and 12.7 feet of massive sulfide and mineralized argillite in a fourth hole, with composite grades of 0.05 ounces of gold per ton, 41.7 ounces of silver per ton, 3.9 percent lead, and 7.6 percent zinc. The existing drift across the fault will be further advanced next year in order to set up more exploration drilling platforms, to further define this newly discovered deposit and possibly identify and quantify a resource by the end of 2006.

Coeur Alaska Inc. continued gold exploration on its Kensington property near Juneau with a $2.2 million underground drilling program while mine development began in 2005. A total of 74 holes, totaling approximately 34,000 feet of core, were completed in 2005 and 87 percent of the holes encountered gold mineralization above the current cut-off grade of 0.12 ounces of gold per ton (fig. 20). High-grade gold mineralization was drilled in zones 35 and 41, including drill hole K-02 with 15.5 feet grading 2.477 ounces of gold per ton. A new mineralized zone was discovered between zones 35 and 41. Some highlights include drill hole K-20 with a 12-foot intercept grading 1.121 ounces of gold per ton and drill hole K-22 with four mineralized intercepts in the new zone, 5 feet grading 0.399

ounces of gold per ton, 12 feet of 0.575 ounces of gold per ton, 5 feet of 1.185 ounces of gold per ton, and 2 feet of 2.990 ounces of gold per ton. Based on the drilling, Coeur expects to convert a significant portion of the existing mineralized resources into reserves. Coeur also conducted a $0.7 million exploration-drilling program on the adjacent Jualin property and completed approximately 5,000 feet of core drilling.

Quaterra Resources Inc. completed seven diamond drill holes totaling 4,505 feet on coincident geochemical and geophysical anomalies in the Marquis, Potato Patch and Raven zones on the Duke Island ultramafic-hosted copper-nickel-cobalt-platinum-group-element property near Ketchikan. Drilling targeted airborne and ground electromagnetic conductors in the eastern Marquis zone (holes DK0501 and DK0502). Wide intervals of anomalous copper mineralization were encountered, with the best interval returning 99.5 feet grading 0.23 percent copper with 140 parts per billion, combined platinum and palladium. This zone also contained anomalous cobalt (40 to 608 parts per million) and nickel (102 to 2,730 parts per million) that correlate well with elevated copper and platinum-group-element values. Mineralization consisted of disseminated chalcopyrite and pyrrhotite hosted in variably serpentinized clinopyroxenite and olivine pyroxenite. Drill holes DK0503, DK0504, and DK0505 were drilled in the Potato Patch zone, an area with disseminated pyrrhotite and chalcopyrite hosted in coarse-grained pyroxenite. Hole DK0503 in the Potato Patch zone intercepted 149 feet grading 0.21 percent copper in pyroxenite before passing into hornblende pyroxenite and diorite that contained significantly lower copper values. Hole DK0506 at the Raven zone contains the thickest interval of continuous copper mineralization drilled on the property to date, with the interval from 8 feet to 395 feet averaging 0.20 percent copper, 56 parts per billion platinum and 59 parts per billion palladium. The 42 feet interval from 33 feet to 75 feet averaged 0.38 percent copper and 644 parts per billion platinum plus palladium. Subsequent soil sampling, max-min and gravity surveys indicate that the Raven zone is open to the south under soil cover. Structural and/or stratigraphic controls of mineralization are still poorly understood. At least 11 sulfide-bearing exploration targets occur within a 9-mile by 2.3-mile area, with the area open to expansion.

Bravo Venture Group Inc. conducted reconnaissance surface exploration of the "Blue Quartz" auriferous veins in the southwestern portion of Woewodski Island. Vein quartz, often with a distinctive blue color, is widely disbursed throughout the southern and western parts of the island as rare outcrops near shoreline and as float in linear drainages extending inland. High-grade quartz veins, some containing visible gold, were sampled in float and outcrop exposures for up to 1,600 feet along a north-northeast trend. More than 650 geochemical samples were collected and analyzed in 2005. Two trends of gold mineralization were identified by 200 to 400 parts per billion gold anomalies in soils, by 50 parts per billion to 300 parts per billion gold anomalies in stream sediments, gold-rich float containing up to 4.49 ounces of gold per ton and rare outcrops. High-grade gold in narrow quartz veins hosted by altered gabbro was exposed in hand-dug trenches, with analytical results up to 3.62 ounces of gold per ton and 0.52 ounces of silver per ton.

Figure 20. *Underground core drilling at the Kensington gold deposit. Photo courtesy of Coeur Alaska Inc.*

DEVELOPMENT

Reported and estimated mineral development expenditures in 2005 were approximately $347.9 million, a 66 percent increase over the 2004 value of $209.1 million. The increase is primarily due to construction at the Teck Pogo project, which was fully permitted in mid-2004. Other significant investments took place at the Fort Knox Mine, the Greens Creek Mine, the Kensington project, the Red Dog Mine, and the Rock Creek project. Employment attributed to development is estimated to be 498 jobs for 2005 compared to 283 jobs for 2004.

Table 6 shows development investment and regional employment. Table 7 compares the 2005 investment with that of the previous 23 years. Figure 21 shows the locations of selected development projects. Development activity was reported in all but the Alaska Peninsula region.

NORTHERN REGION

Total expenditures in the region amounted to $28.3 million with Teck Cominco spending a significant proportion of the total. Silverado Gold Mines Ltd. resumed underground placer mine development at the Nolan Creek project to account for the balance of the expenditures.

Teck Cominco undertook maintenance efforts at the Red Dog Mine in northwestern Alaska amounting to approximately $28 million. The expenditures were capitalized and therefore considered development in nature. Teck Cominco's 100 percent owned Red Dog Mine is located in northwest Alaska and is the largest zinc producing mine in the world. Red Dog proven and probable reserves at the end of the 2005 were 79,587,000 tons containing 17.7 percent zinc, and 4.7 percent lead. Construction crews completed paving the 5,800-foot runway at the Red Dog Mine. Brice Construction won the bid and provided some maintenance in winter. Total cost of the project, including design work, was $6.5 million. Mine managers are currently working with the Alaska Industrial Development and Export Authority (AIDEA) and the U.S. Army Corps of Engineers on plans for dredging and construction of a deep water port. Current estimates of this project's costs range up to $230 million. A draft EIS and draft Feasibility Report was released in December 2005.

Silverado Gold Mines Ltd. resumed underground development efforts at the Nolan Creek property during the latter part of the year. The property is located approximately 6 miles northwest of Wiseman, Alaska in the south flank of the Brooks Range. Effort was directed at development of the Swede Channel, an elevated deeply buried channel on the east side of Nolan Creek. Mining crews installed a new portal and extended the underground workings into the Swede Channel to access additional underground placer gold resources. Approximately 900 feet of the channel was developed to produce approxi-

Table 6. *Reported mineral development expenditures and employment in Alaska by commodity and region, 2005*

	Northern	Western	Eastern Interior	South-central	South-western	Alaska Peninsula	South-eastern	Total
Development Expenditures								
Base metals	$28,000,000	$ 0	$ 0	$ 0	$ 0	$0	$ 0	**$ 28,000,000**
Polymetallic	0	0	0	0	0	0	16,700,000	**16,700,000**
Precious metals								
Placer	300,000	371,500	359,800	90,800	400	0	50,000	**1,172,500**
Lode	0	10,800,000	251,038,969	0	0	0	38,000,000	**299,838,969**
Coal and peat	0	0	0	1,350,000	0	0	0	**1,350,000**
Industrial minerals	0	86,500	0	770,000	0	0	0	**856,500**
TOTAL	**$28,300,000**	**$11,258,000**	**$251,398,769**	**$2,210,800**	**$400**	**$0**	**$54,750,000**	**$347,917,969**
Development Employment								
Employment								
Workdays	300	1,391	91,341	2,480	2	0	34,050	129,564
Workyears[a]	1	5	351	10	0	0	131	498
No. of companies reporting[b]	2	7	13	9	1	0	3	35

[a]Based on 260-day workyear.
[b]Some companies are active in more than one area/commodity.
0 - No expenditures reported.

mately 2,900 bank cubic yards of gold-bearing gravel. A short drilling program before the mining operations defined the extent of planned excavation. Ore resource estimates based on drilling and conventional polygonal methods of determination indicated 5,000 bank cubic yards of resource with a grade of 0.275 ounces per bank cubic yards in the channel. See PRODUCTION section for additional information.

WESTERN REGION

Development expenditures were reported for lode, placer and sand and gravel projects. Seven projects reported expenditures amounting to $11.3 million for the year.

NovaGold Resources Inc.'s (Alaska Gold) Rock Creek gold project on the Seward Peninsula is likely to commence construction in 2006, with first production projected for early 2007. NovaGold completed additional in-fill drilling and metallurgical test work as part of the final feasibility study. The feasibility study was completed by the independent engineering firm Norwest Corporation; Samuel Engineering, Smith Williams Consulting, AMEC E&C Services Inc. and Resource Modeling Inc.; Bristol Environmental Services provided environmental studies and permitting. Project permitting progressed on schedule and permits necessary to start construction are anticipated to be in place by mid 2006. A mine construction decision at Rock Creek will be made after receipt of construction permits. Construction of a mine and mill at Rock Creek is estimated to cost $58 million. NovaGold purchased some production equipment with long lead times to ensure delivery into Nome by the summer of 2006 to begin construction of the mine. A barge shipment of mining equipment and supplies worth about $8 million was delivered to Nome in mid-October (fig. 22). NovaGold also purchased portions of the facilities and equipment of the shuttered Illinois Creek Mine and crews spent part of the summer disassembling a shop, warehouse and mill buildings, along with some portions of the mill's gold processing equipment. The Rock Creek project is anticipated to produce an average of 100,000 ounces of gold per year at a total cash cost of around $250 per ounce. Nova Gold envisions the development of the Rock Creek deposit as part of an integrated operation that includes Rock Creek,

Table 7. *Reported mineral development expenditures in Alaska by commodity, 1982–2005*

	Base metals	Polymetallics	Precious metals	Industrial minerals	Coal and peat	Total
1982	$ 10,270,000	$ N/A	$ 19,320,000	$ 4,251,000	$ 7,750,000	**$ 41,591,000**
1983	19,500,000	N/A	7,112,500	1,000,000	250,000	**27,862,500**
1984	10,710,500	N/A	15,058,555	579,000	27,000,000	**53,348,055**
1985	13,000,000	N/A	16,890,755	1,830,000	2,400,000	**34,120,755**
1986	3,260,800	8,000,000	12,417,172	124,000	530,000	**24,331,972**
1987	38,080,000	48,000,000	13,640,848	188,000	342,000	**100,250,848**
1988	165,500,000	69,000,000	40,445,400	- -	- -	**274,945,400**
1989	118,200,000	411,000	6,465,350	7,000,000	2,196,000	**134,272,350**
1990	- -	4,101,000	7,136,500	30,000	3,079,000	**14,346,500**
1991	- -	8,000,000	14,994,350	262,000	2,318,000	**25,574,350**
1992	80,000	4,300,000	23,151,300	404,000	1,655,000	**29,590,300**
1993	- -	10,731,136	15,103,000	433,500	1,400,000	**27,667,636**
1994	10,000,000	5,000,000	27,392,850	5,000	2,545,000	**44,942,850**
1995	11,200,000	9,590,000	127,165,750	426,000	200,000	**148,581,750**
1996	60,000,000	60,100,000	273,042,000	495,000	400,000	**394,037,000**
1997	133,880,000	7,300,000	26,299,000	500,000	410,000	**168,389,000**
1998	28,000,000	5,600,000	15,602,000	5,355,000	850,000	**55,407,000**
1999	12,500,000	2,500,000	15,864,000	400,000	2,575,000	**33,839,000**
2000	100,000,000	16,400,000	24,699,000	611,000	- -	**141,710,000**
2001	43,800,000	3,300,000	32,719,000	300,000	1,040,000	**81,159,000**
2002	- -	5,700,000	26,655,000	250,000	1,450,000	**34,055,000**
2003	- -	- -	38,839,332	315,000	- -	**39,154,332**
2004	17,700,000	6,215,000	177,440,081	4,991,434	2,760,000	**209,106,515**
2005	28,000,000	16,700,000	301,011,469	856,500	1,350,000	**347,917,969**
TOTAL	**$823,681,300**	**$290,948,136**	**$1,278,465,212**	**$30,606,434**	**$62,500,000**	**$2,486,201,082**

N/A = Figures not available prior to 1986.
- - = Not reported.

Saddle and Big Hurrah deposits, and the Nome Gold alluvial deposits that collectively contain in excess of 3 million ounces of gold resource.

St. Andrew Goldfields Ltd. and its subsidiary, Mystery Creek Resources Inc., plan production (permit approval now in progress) in the third quarter of 2006 at the historic high-grade Nixon Fork gold–copper mine in west-central Alaska (average mined grade over 1 ounce of gold per ton). Roscoe Postle Associates Inc. finalized a resource estimate in April 2005 that included 2004 definition drilling. Only the C3000 and C3300 zones were drilled sufficiently enough to have measured resources of 8,816 tons at 1.09 ounces of gold per ton and 16,971 tons at 1.06 ounces of gold per ton, respectively. The measured resource at Nixon Fork is 27,700 ounces of gold, using an economic cut-off of 0.61 ounces of gold per ton. The final measured and indicated resource for the C3000 zone was calculated to be 22,000 tons at an average grade of 1.08 ounces of gold per ton, using an economic cutoff of 0.61 ounces of gold per ton. An additional 15,946 tons of sub-economic measured and indicated skarn with an average grade of 0.45 ounces of gold per ton were also estimated from the C3000 zone block model. The final measured and indicated resource for C3300 zone was estimated at 43,418 tons at an average grade of 1.13 ounces of gold per ton using an economic cutoff of 0.61 ounces of gold per ton. Additionally, an inferred resource of 2,200 tons at 1.07 ounces of gold per ton was estimated for the C3300 zone. Total sub-economic grade material for C3300 zone was estimated at 51,656 tons at an average grade of 0.39 ounces of gold per ton. Indicated resources at Nixon Fork total 74,956 tons at an average grade of 0.968 ounces of gold per ton. The indicated resources are 72,600 ounces of gold. Most of the indicated resources are in the Mystery, C3000, and C3300 zones, with smaller resources in the S1750, J2102, C30001, C30002, and C3550 zones. Inferred resources total 38,570 tons grading 0.81 ounces of gold per ton from the J2102, C3300, C3550, and Whalen zones. The tailings contain an additional inferred resource of 127,832 tons grading 0.236 ounces of gold per ton, or 30,168 ounces of gold. The total measured, indicated, and inferred gold resource is 161,700 ounces. Drilling in the C3000 and C3300 ore chutes at the Crystal Mine area at Nixon Fork has been completed on 23-foot centers. Because of the small and complex nature of the skarns and the mining methods proposed at Nixon Fork, some of the sub-economic gold mineralized material, not considered in the Roscoe Postle study, could be included in the stope plans as internal dilution.

The Alaska Department of Environmental Conservation issued an Air Quality Control Construction Permit on July 7, 2005. The Alaska Department of Natural Resources issued

I Northern Region
1. Red Dog Mine—Teck Cominco Alaska Inc. (mill, tailings dam)
2. Nolan Creek Mine—Silverado Gold Mines Ltd. (underground)

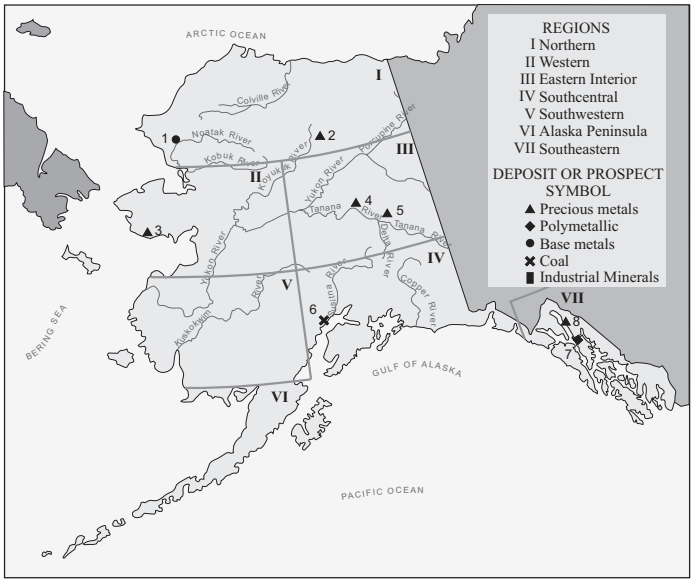
II Western Region
3. Nome area
   a. Rock Creek Project—NovaGold Resources Inc. (permitting, drilling)
   b. Several open-pit and placer mines

III Eastern Interior Region
4. Fairbanks area
   a. Fort Knox Mine—Kinross Gold Corp. (stripping)
   b. Several open-pit and underground placer gold mines
   c. Several rock, sand, and gravel operations (equipment)
5. Pogo Project—Teck Cominco Alaska Inc./Sumitomo Metals Mining America Inc. (road, power line, underground, and site construction)

IV Southcentral Region
6. Chuitna Coal Project—PacRim Coal LP (studies and permitting)

V Southwestern Region

VI Alaska Peninsula Region



VII Southeastern Region
7. Greens Creek Mine—Kennecott Minerals Co./Hecla Mining Co. (access drifting, tailings storage)
8. Kensington Project—Coeur Alaska Inc. (permitting, resource definition)

Figure 21. *Selected mineral development projects in Alaska, 2005.*

a Certificate of Approval to Operate Dam on Au-gust 31, 2005. In late October 2005 the Nixon Fork Plan of Operations, Environmental Assessment, and draft Solid Waste Disposal Permits, the key permits required for commercial production, were posted for public comment. Regulators are currently evaluating the comments received, resolving issues, and finalizing the permit documents. St. Andrew anticipates receiving the necessary permits for Nixon Fork to commence operations in the near future. Subject to the receipt of these permits, it is anticipated that Nixon Fork will commence operations in mid-2006, with an average annual output of 45,000 ounces of gold. Mystery Creek is currently in the process of reconditioning and modifying the existing milling facilities, purchasing new equipment to allow cyanide treatment of both existing and new tailings and beginning new mine development at the site in anticipation of new production beginning in the third quarter of 2006.

Mystery Creek Resources Inc. signed a royalty agreement dated February 2, 2005, in which Geoinformatics is entitled to a 1 percent net smelter returns royalty on production from the Nixon Fork project area, including the Nixon Fork Mine. Geoinformatics carried out an intervention on the Nixon Fork project area on behalf of Mystery Creek.

Other development and capitalized efforts were reported by placer gold and sand and gravel operators amounting to $458,000 on five projects.

EASTERN INTERIOR REGION

Total construction expenditures allocated to the Eastern Interior region amounted to $251.4 million, compared to $167.1 million for 2004. Construction at Pogo was the dominant project for the region and the state. Other projects or sector expenditures included Fort Knox's advanced stripping and fairly significant efforts to develop placer projects.

Figure 22. *A barge full of mining equipment heads towards Nome. Photo courtesy of NovaGold Resources Inc.*

Construction at the Pogo gold project by Teck-Pogo Inc. was the major mining development in Alaska during 2005. Teck-Pogo is the project operator and a subsidiary of Teck Cominco Inc., which owns a 40 percent interest in the Pogo deposit. Co-owners are Sumitomo Metal Mining Co., which owns a 51 percent interest, and Sumitomo Corp., which holds 9 percent interest in the mine. Surface facility construction of the mine and associated facilities was mostly completed by January 2006, including a 50-mile 138 kV power transmission line, permanent camp for 200 people, gold processing facilities, water treatment plant and paste backfill plant/dry-stack tailings facility. A new 50-mile all-season road provides access to the site from the Richardson Highway north of Delta Junction to the property. The final project capital cost is estimated at $347 million. Project costs increased due to higher than expected costs for construction materials and labor costs in Alaska, and unanticipated geotechnical conditions both on surface and underground. Commissioning of some of the process systems began and ore was placed on stockpile for the start-up. Underground development fell behind schedule and continued into 2006 due to poor ground conditions in some areas that caused a change of location of the underground ore bin and reduced the overall rate of advance (fig. 23). This schedule change affected only the start-up of the underground conveyor system, not the overall mine startup, as trucking of ore to the mill will be used as a stop-gap measure until the conveyor system is completed in the first quarter of 2006. On January 12, 2006, the first feed was introduced to the mill two months ahead of schedule. The first gold pour occurred on February 12, 2006.

The Pogo Mine has a reserve of 7.7 million tons of ore with a grade of slightly less than 0.47 ounces of gold per ton. Mining will be conducted by the "cut and fill" and "drift and fill" methods. The mill treatment rate will be 2,500 tons per day, with about half of the tailings returned to the mine for backfill; the remaining tailings will be dry stacked on the surface. Milling will incorporate grinding, gravity concentration, flotation, cyanide leaching of the concentrate, and tailings dewatering. Gold from both the gravity and carbon-in-pulp circuits is produced as doré bullion. Annual gold production is forecast to be 350,000–500,000 ounces. Production from the Pogo Mine in 2006 is projected at approximately 195,000 ounces.

Fairbanks Gold Mining, a subsidiary of Kinross Gold, continued advance stripping of ore during 2005 and acquired new mining equipment, including a Caterpillar 240-ton haul truck, two 200-ton haul trucks and a loader, to improve the daily haulage capacity at the Fort Knox Mine near Fairbanks. Capital expenditures for 2005 by Kinross Gold at the Fort Knox gold mine were approximately $69.5 million and were mainly attributed to the Phase 6 capital development at the Fort Knox pit. Crews have been working to move 75 million tons of waste rock

since mid 2004, with the schedule calling for accessing the gold-bearing rock in late 2006. The estimated 1 million ounces of gold accessible by the Phase 6 layback will be mined through 2010. In addition, the company began investigation and permitting of a valley-type heap leach of its lower grade materials. Knight Piesold and Company was the consulting firm for this project. The heap is designed to contain 160 million tons of low-grade ore. The proposed pad will cover 279 acres.

SOUTHCENTRAL REGION

Development expenditures amounting to $2.2 million were reported for nine projects. Sector reports were received from placer gold, sand and gravel, and coal projects.

Placer projects reported advanced stripping and facility improvements amounting to $90,800.

Sand and gravel projects reported facility improvements and advanced stripping amounting to $770,000.

PacRim Coal LP announced intentions to develop the Chuitna Coal project, located approximately 50 miles west of Anchorage on the north shore of Cook Inlet. PacRim is a Delaware Limited Partnership; the managing partner is PacRim Coal-GP, LLC, a Delaware limited liability company. Previous work outlined reserves in-place amounting to 655 million tons, with 300 million tons of recoverable subbituminous coal with low sulfur content. The stripping ratio averages 5.2 bank cubic yards per ton of coal. During 2005 PacRim updated baseline environmental studies and engineering studies. The final supplemental EIS is scheduled to be published in 2007. The project is designed as a coal export terminal with 3 to 12 million tons per day capacity and a 12-mile-long covered conveyor from mine facilities. Construction for this project is scheduled for 2007 with production in 2009. Construction costs will be approximately $650 million.

Agrium Inc. and Usibelli Coal Mine Inc. announced initiation of a study of a project named "Blue Sky." The study would evaluate the use of coal as a feedstock for a power plant and coal gasification facility to feed the Agrium fertilizer plant at Nikiski on the Kenai Peninsula. The proposed plant would use 4 million tons of coal per year, with plans to use coal from the Healy and Beluga coalfields.

ALASKA PENINSULA REGION

No development expenditures were reported in this region for 2005.

SOUTHEASTERN REGION

Total development expenditures reported for the region amounted to $54.75 million for the year, the second highest expenditure in the state. Expenditures in 2004 amounted to $14.14 million. Three projects reported activity and included the Kensington, Greens Creek and a placer gold projects.

Construction at Coeur Alaska Inc.'s Kensington underground gold mine complex in southeastern Alaska, 45 miles north of Juneau, began in mid-year 2005, but NGO lawsuits against federal agencies delayed some phases of construction. Coeur Alaska received all the necessary permits to move forward with the Kensington gold mine project. The U.S. Army Corps of Engineers issued a permit allowing mine tailings to be placed in the Lower Slate Lake, a 23-acre alpine lake. The Federal District Court in Alaska granted a remand of the Section 404 permit to the Army Corp of Engineers and on November 22, 2005, the US Army Corp of Engineers suspended the permit for further review. The Company is currently conducting construction activities not governed by the Section 404 permit. The Kensington deposit has 1.0 million ounces of gold contained in 4.2 million tons of ore with a grade of 0.25 ounces of gold per ton. Coeur plans a production rate of 100,000 ounces per year at a cash operating cost of $250 per ounce. The capital cost estimate is $190 million. The milling process will involve treating approximately 2,250 tons of ore per day. The process will involve primary crushing, SAG mill grinding, gravity, and flotation concentration with about 40 percent of the tailings returned to the mine for backfill; the remaining tailings will be sent to the Lower Slate Lake tailings storage facility. Concentrates will be packaged and shipped off site for final gold recovery. The Kensington Mine will employ about 300 workers during construction and provide an estimated payroll of up to $16 million. When in operation, the mine will provide approximately 225 direct and 499 indirect jobs. The project is estimated to generate $4.1 million in corporate income taxes and nearly $2 million

Figure 23. *Construction of an underground conveyor at the Pogo gold project in 2005. Photo by Kraig Hughes.*

in mining licensing taxes in addition to generating local tax revenue.

Greens Creek Mine undertook underground drilling and development for production. Reserve definition drilling footage amounted to 53,800 feet. Ore reserve development access amounted to 1,292 feet. Greens Creek Mine is operated by Kennecott Minerals Co., which owns 70.3 percent; Hecla Mining Co. owns the remaining 29.7 percent. The mine is located on Admiralty Island approximately 20 miles west of Juneau. Fifteen of the 265 total employees were assigned to the development effort.

A placer project reported advanced clearing and stripping for mining.

PRODUCTION

Production values amounting to $1,401.6 million were reported for 2005, a reasonable increase over the 2004 level of $1,338.7 million. The increase follows improved metal prices, which are up significantly compared to 2004, although production volumes were down in all commodities except zinc. Metal price percentage improvements were: gold, 8.55 percent; silver, 9.69 percent; lead, 7.50 percent; and zinc, 33.47 percent. Metals (gold, silver, lead, and zinc) account for $1,252.6 million, coal and peat for $49.9 million, and industrial minerals for $99.1 million. Metal production quantity variances were: gold, down 29,477 ounces; silver, down 5,277,270 ounces; lead, down 19,430 tons; and zinc, up 4,447 tons. Placer and all lode sources of gold reported less production in 2005. The silver production deficit is mostly attributed to a different reporting method for Red Dog Mine. The rock, sand, and gravel industry's production value was down from 2004; part of this is due to reporting shortfalls although a reduced production is noted.

Table 8 shows the quantity and value of metal and material production from 2003 to 2005. Table 9 lists the miners and mines that were reportedly producing metal in 2005. Figures 24, 25, and 26 show the historic production of sand and gravel, gold, and coal. Selected production sites are shown in figure 27.

Table 8. *Estimated mineral production in Alaska, 2003–2005*[a]

	Quantity			Estimated Values[b]		
Metals	**2003**	**2004**	**2005**	**2003**	**2004**	**2005**
Gold (ounces)[c]	528,191	456,508	427,031	$ 191,934,000	$ 192,343,315	$ 189,918,000
Silver (ounces)	18,589,100	16,947,270	11,670,000	95,300,000	113,056,930	85,382,000
Copper (tons)[d]	0[d]	0[d]	0[d]	0	0	0
Lead (tons)	162,479	150,796	131,366	64,279,000	120,636,822	115,230,000
Zinc (tons)	714,769	680,015	684,462	536,348,000	651,432,200	862,108,000
Subtotal				**$ 887,861,000**	**$ 1,077,469,267**	**$1,252,638,000**
Industrial Minerals						
Jade and soapstone (tons)	0 [e]	0	0	0	0	0
Sand and gravel (million tons)	11.9	19.6	16.6	64,140,000	101,507,347	76,537,000
Rock (million tons)	0.9	7.3	2.8	10,406,000	106,207,814	22,547,000
Subtotal				**$ 74,546,000**	**$ 207,715,161**	**$ 99,084,000**
Coal (tons)	1,088,000	1,450,000	1,402,174	38,080,000	50,750,000	49,076,000
Peat (cubic yards)	35,000[f]	208,032	62,532	175,000	2,732,554	810,000
Subtotal				**$ 38,255,000**	**$ 53,482,554**	**$ 49,886,000**
TOTAL				**$1,000,662,000**	**$ 1,338,666,982**	**$1,401,608,000**

[a]Production data from DGGS questionnaire, phone interviews with mine and quarry operators, ADOT&PF, and municipalities, Regional corporations, and federal land management agencies.
[b]Values for selected metal production was based on average prices for each year; for 2005— $444.74/ounce (unless other values were provided by the operator, silver $7.32/ounce); lead $0.43/lb, zinc $0.63/lb.; rounded to nearest $1,000.
[c]Lode production 402,120 ounces; placer production 24,911 ounces.
[d]Greens Creek has historically been credited with a small copper concentrate production; no credit was experienced for 2003–2005 production.
[e]Jade and soapstone credit has been dropped.
[f]Estimated only; no reports from producers.

Table 9. *Companies and individuals reported to be producing metal in Alaska, 2005*

Operator	Creek	District	Type[a]
	Northern Region		
Bill Fejes or Fred Heflinger	Boulder Creek	Koyukuk	O/P Placer
Compass Mining Inc.	Linda Creek	Koyukuk	O/P Placer
Dan Fair	State Creek	Koyukuk	O/P Placer
Del Ackels	Big Creek	Chandalar	O/P Placer
Donald Korte, David Korte	Clara Creek	Koyukuk	S/D
Eric C. Pyne	Jim Pup, Wake Up, California Creek	Koyukuk	O/P Placer
Hans Sobanja	Gold Creek	Koyukuk	O/P Placer
James and Lorna Lounsbury	Union Gulch	Koyukuk	S/D
James T. Wicken	Gold Creek	Koyukuk	O/P Placer
Jules Overton	Gold Bottom Gulch	Koyukuk	O/P Placer
Larry Weisz	Hammond River	Koyukuk	O/P Placer
Lloyd Swenson	Slate Creek	Koyukuk	O/P Placer
O.J. Jiles	Gold Bottom Gulch	Koyukuk	O/P Placer
Paradise Valley Inc.	Birch Creek	Koyukuk	S/D
Richard L. Wright, Jim Olmstead	Gold Creek	Koyukuk	O/P Placer
Richard Wright	Magnet Creek, Gulch Creek	Koyukuk	O/P Placer
Roy Philpott	Smith Creek	Koyukuk	O/P Placer
Samuel Kelley Thomas	Sweepstakes Creek	Koyukuk	O/P Placer
Stewart Brandon	Myrtle Creek	Koyukuk	S/D
Taiga Mining Company, Inc.	Aloha Creek, Clear Creek	Hughes	O/P Placer
Teck Cominco Alaska Inc.	Red Dog Mine	Noatak	HR O/P (zinc/lead/silver)
Tricon Mining Inc. (Silverado)	Nolan Creek	Koyukuk	U/G Placer
William H. Nordeen	Emma Creek	Koyukuk	S/D
	Western Region		
Alaska Gold Company, Ralph S. Anderson	East of Dry Creek	Cape Nome	O/P Placer
Alamin Mining Co.	Cripple/Graham Creek	Innoko	O/P Placer
Alvin H. Agoff	Prince Creek	Iditarod	O/P Placer
Alvin Hanson	Boulder Creek	Nome	S/D
Bert L. Pettigrew	Anvil Creek	Nome	O/P Placer
Bruce Weichelt	Norton Sound	Nome	S/D
Clark-Wiltze Mining, Doug Clark	Ganes Creek Tributaries	Innoko	O/P Placer
Craig Coggins	Norton Sound	Nome	S/D
Dale Whitney	Norton Sound	Nome	S/D
Daniel Murphy	N/A	Cape Nome	S/D
Daniel & Cynthia Plano	Anvil Creek, Innoko River	Innoko	O/P Placer
Douglas E. Martinson	Dry Creek, Newton Creek	Nome	O/P Placer
Douglas E. Martinson	Macklin Creek	Kougarok	O/P Placer
Frank McFarland	N/A	Cape Nome	S/D
Janet Carlisle	Left Fork Dexter Creek	Cape Nome	O/P Placer
Jerry Landgreba	N/A	Cape Nome	S/D
Jerry Pushcan	Benson Creek	Kougarok	O/P Placer
Jim and Kay Hansen	Shovel, Mystery, Solomon Creek	Nome	O/P Placer
John Mehelich	Norton Sound	Nome	S/D
Jon M. Peckenpaugh	Sherrette Creek	Kougarok	S/D
K & S Leasing	Nome Beach	Cape Nome	S/D
Kaleb Cassidy	Norton Sound	Nome	S/D
Keith Gilchrist	Norton Sound	Nome	S/D
Kelly T. Shannon	Norton Sound	Nome	S/D

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground; S/D=Suction Dredge.
Prepared from list of permitted operations; not all produced during the year.

Table 9. *Companies and individuals reported to be producing metal in Alaska, 2005—continued*

Operator	Creek	District	Type[a]
Kenneth Upchurch	Gold Run Creek	Fairhaven	O/P Placer
Lyman Resources in Alaska Inc.	Crooked Creek	Iditarod	O/P Placer
Mark Gumaer	Dick Creek	Kougarok	O/P Placer
Maureen Pederson	Niukluk River	Council	O/P Placer
Moore Creek Mining	Moore Creek	Innoko	S/D
N.B Tweet and Sons	Kougarok River	Kougarok	O/P Placer
Neil Rosander	Cripple Creek	Innoko	O/P Placer
Nevak Mining LLC	Mud Creek	Fairhaven	O/P Placer
Outdoor Channel Holdings Inc.	Arctic Creek	Cape Nome	S/D
Randall E. Smith	Norton Sound	Cape Nome	S/D
Richard J. Redmond	Little Macklin/ Macklin Creek	Kougarok	O/P Placer
Ron Rosander	Colorado Creek	McGrath-McKinley	O/P Placer
Ronald K. Tucker	Lillian Creek	Tolovana	O/P Placer
Steve Pomrenke	Martin Creek	Cape Nome	O/P Placer
Triple D Mining	Candle Creek	Fairhaven	O/P Placer
	Eastern Region		
Al Hopen	Cleary Creek	Fairbanks	O/P Placer
Alan E. Las	No Grub Creek	Fairbanks	O/P Placer
Bill Lance	Wade Creek	Fortymile	O/P Placer
Barry Clay	Switch Creek	Circle	O/P Placer
C.J. Hill	Lost Chicken Creek	Fortymile	O/P Placer
Carl J. Congdon	Quail Creek	Rampart	O/P Placer
Cascade Gold LLC, Robert J. MacDonald	Walker Fork	Fortymile	O/P Placer
Charles J. Zimmerman	Killarney Creek	Manley Hot Springs	O/P Placer
Chuck Felzien	American Creek	Fortymile	S/D
Cy Bras	Canyon Creek	Fortymile	O/P Placer
D. Harvey Bickell, Goldmark Minerals, Inc.	Walker Fork	Fortymile	O/P Placer
Dave Kukowski	Mosquito River	Fortymile	O/P Placer
David B. Smith	Deadwood Creek	Circle	O/P Placer
David Eberhardt	Chena River, Sullivan Creek	Fairbanks	S/D
David W. Howland	Dry Channel	Chistochina	O/P Placer
David W. Jacobs	Moose Creek, California Creek	Bonnifield	O/P Placer
Dean L. Willis	Crooked Creek	Circle	O/P Placer
Deon Olaverq, Donald R. Collier	Fortymile River, Mosquito Fork	Fortymile	S/D
Don Kiehl	Gold King Creek	Bonnifield	O/P Placer
Donald Stein	Gilmore and Tom Creeks	Fairbanks	O/P Placer
Doug Baker	Cache Creek	Manley Hot Springs	O/P Placer
Earl Bell	Emery Creek	Fairbanks	O/P Placer
Earl L. Schene	Uhler Creek	Fortymile	O/P Placer
Earl Vegoren	Rainy Creek	Fairbanks	O/P Placer
Earth Movers of Fairbanks	Fairbanks, Cleary, Victoria Creeks	Fairbanks	O/P Placer
Ed Lapp	Ketchum, Greenhorn, Porcupine Creeks	Circle	O/P Placer
Eric Kile	Canyon Creek	Fortymile	O/P Placer
Everett J. Polley, Jr., Margaret E. Polley	South Fork of the Fortymile River	Fortymile	S/D
Fairbanks Gold Mining Inc.	Fort Knox Mine	Fairbanks	HR O/P (gold)
Flint Wolff	Walker Fork	Fortymile	O/P Placer

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground; S/D=Suction Dredge.
Prepared from list of permitted operations; not all produced during the year.

Table 9. *Companies and individuals reported to be producing metal in Alaska, 2005—continued*

Operator	Creek	District	Type[a]
Forest Hayden	Baby Creek and Squaw Gulch	Fortymile	O/P Placer
Four Brothers Mining	Totatlanika River	Fairbanks	O/P Placer
Fred D. Wilkinson	Ketchem Creek	Circle	O/P Placer
Fred Heflinger	Walker Fork	Fortymile	O/P Placer
George Seuffert, Sr.	Chicken Creek	Fortymile	O/P Placer
Gerald and Kathryn Pitcher	Deadwood Creek	Fairbanks	S/D
Gerald Erikson	Fox Creek	Fairbanks	O/P Placer
Gerald Standefer	Newman Creek	Fairbanks	O/P Placer
Goldstream Exploration, LLC	Rhode Island Creek, Gold Run	Hot Springs	O/P Placer
Great Divide Mining Co. LLC	Little Boulder Creek	Manley Hot Springs	O/P Placer
Guy A. Matthews, Michael A Williams	Kenyon Creek	Fortymile	O/P Placer
Harold Mitchell	Mosquito River	Fortymile	O/P Placer
Herning Exploration & Mining	Palmer Creek	Circle	S/D
James Adams	Fortymile River	Fortymile	S/D
James B. Leach III, Annie Leach	Fortymile River	Fortymile	O/P Placer
James Kimbro	Fortymile River	Fortymile	S/D
James McLaughlin	American Creek	Fortymile	S/D
James W. Treesh	Branch of Cherry Creek	Fortymile	O/P Placer
Jan Kralik, William A. Bartholomae	Gold Run Creek	Port Clarence	S/D
Janice Houser	Fortymile River	Fortymile	S/D
Jay Scott Wood	American Creek	Fortymile	S/D
Jeff Owen	Davis Creek, Fortymile River	Fortymile	O/P Placer
Jerry Gallagher, Harold Lehman	Slate Creek	Rampart	O/P Placer
Joe VanNote, Genevieve Josephson, James Williams	Mineral Creek	Prince William Sound	S/D
John Schwartz	Our Creek	Fortymile	O/P Placer
Kenneth C. Hanson	Faith Creek	Circle	O/P Placer
Kevin Bergman	Ester Creek	Fairbanks	O/P Placer
Larry J. Crouse	Fox Gulch Creek	Fairbanks	O/P Placer
Leo A. Regner	Lilliwig Creek	Fortymile	O/P Placer
Marcus Brooks	Ingle Creek	Fortymile	O/P Placer
Mark Gentry Brooks	Mosquito River	Fortymile	S/D
Martin C. Marshall	Fortymile River	Fortymile	S/D
Melvin Montgomery	Gilliland Creek	Fairbanks	O/P Placer
Mike Busby, GeoQuest	Chicken Creek	Fortymile	S/D
Mike Milligan, Alan Kuhn, Pat Smith	Skoogy Gulch	Fairbanks	O/P Placer
Melvin Montgomery	Wade Creek	Fortymile	O/P Placer
Henry Gradney	Deadwood Creek	Circle	O/P Placer
Nikolaj Marchuk, Vera Marchuk	Rainy Creek	Delta River	O/P Placer
Northway Mining & Exploration Inc.	Walker Fork	Fortymile	O/P Placer
Patrick McCloskey	Deadwood Creek	Circle	O/P Placer
Paul and Joni Manuel	Crooked Creek	Circle	O/P Placer
Placer Mining Services	American Creek	Manley Hot Springs	O/P Placer
PolAmerica Inc.	Thistle Creek	Bonnifield	O/P Placer
Polar Mining Inc.	Goldstream Creek	Fairbanks	O/P Placer
R&S Limited, Silvey Jim Stroey	Confederate Creek	Fairbanks	S/D
Raleigh D. Cling	Eagle Creek	Fortymile	O/P Placer
Raymond G. Meder	Flume Creek	Fairbanks	O/P Placer
Rich Goodson	Fortymile River	Fortymile	S/D
Richard Farkas	Deadwood Creek	Circle	O/P Placer

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground; S/D=Suction Dredge.
Prepared from list of permitted operations; not all produced during the year.

Table 9. *Companies and individuals reported to be producing metal in Alaska, 2005—continued*

Operator	Creek	District	Type[a]
Richard G. Sherlund	Ketchum Creek	Circle	O/P Placer
Richard Wilder	Little Boulder Creek	Hot Springs	O/P Placer
Rob & Mary Kirsch	Kal Creek	Fortymile	O/P Placer
Robert Nelson	12 Mile Creek	Fortymile	O/P Placer
Roger C. Cope	Lewis Creek	Fairbanks	O/P Placer
Robert Keller	Thistle Creek	Bonnifield	O/P Placer
Rudd VanDyne	Fortymile Creek	Fortymile	S/D
Sam and Roberta Koppenberg, KMM, Inc.	Faith Creek	Circle	O/P Placer
Scott Helmer	American Creek	Fortymile	S/D
Scott Thomas	Half Dollar Creek	Circle	O/P Placer
Sheldon Maier	Montana Creek	Fortymile	O/P Placer
Stephan Olson	Liberty Creek	Fortymile	O/P Placer
Steve Holmes	Gold King Creek	Bonnifield	O/P Placer
Steve Losonsky	Hunter Creek, Dawson Creek	Rampart	O/P Placer
Ron Wrede	Switch Creek	Circle	O/P Placer
Roy Traxler	Totatlanika River	Bonnifield	O/P Placer
Ted Owen	Younger Creek	Fortymile	O/P Placer
Timothy N. Ruppert	Little Moose Creek	Fairbanks	O/P Placer
Tom Trudeau	Upper Treasure Creek	Fairbanks	O/P Placer
Vernon Thurneau, Carol Thurneau	Fortymile River	Fortymile	O/P Placer
Wesley DeVore	Fortymile River	Fortymile	S/D
William Bohan, Walter Bohan	Ottertail Creek	Fairbanks	S/D
William D. Baranauskas, John F. Baranauskas, Edward Lindholm	Any Creek	Fairbanks	O/P Placer
William J. Aldridge	Poker Creek	Fortymile	O/P Placer
William Rushing	Jack Wade Creek	Fortymile	S/D
Richard K. Ott, Wendy A. Ott	Omega Creek	Manley Hot Springs	O/P Placer
Timothy J. Kelly	North Fork Creek	Manley Hot Springs	O/P Placer
	Southcentral Region		
Adrian J. Ashinhurst	Falls Creek	Seward	S/D
Alvin Patscheck	Yacko Creek	Nelchina	O/P Placer
Clearwater Mountain Mining	White Creek	Valdez Creek	O/P Placer
Cynthia Toohey, Sean Toohey	Craw Creek	Anchorage	O/P Placer
Daniel A. Hartman, Charley Grieve	Cache Creek	Yentna	O/P Placer
Douglas and Edia Weathers	Cache Creek	Yentna	O/P Placer
Earle Foster	Wet Gulch	Willow Creek	S/D
Estill DeWitt	Alfred Creek	Willow Creek	O/P Placer
Fred Wilkes & Robert Bradford	Bird Creek	Yentna	O/P Placer
George Zimmer, Lillian Zimmer, Patricia A Blair	Quartz Creek	Seward	O/P Placer
Gerald I. Anderson	Yacko Creek	Nelchina	O/P Placer
Girdwood Mining Company	Crow Creek	Anchorage	O/P Placer
Gold Rush Mining	White Creek	Valdez Creek	O/P Placer
Gordon E. Richmond	Buchia Creek	Valdez Creek	O/P Placer
Gordon L. Bartel, Robert M. Haines	Mills Creek	Yentna	O/P Placer
Harold Olson	none	Willow Creek	O/P Placer
Jack Montgomery, Dan Walstrom, Jimmie Dale	Nugget Creek	Yentna	O/P Placer
Kenneth A. Lee	Cache Creek	Yentna	O/P Placer
Mark A. Solley, Mick Martinich	Sourdough Gulch	Yentna	O/P Placer
Mark Richard, Jeremey Scafide, Dwight Schull, Mark Biggs	Caribou/Alfred Creek	Willow Creek	S/D
Mike Spain	Grubstake Creek	Willow Creek	O/P Placer
Mrak, Hermon, Hermon, Aklestnd	Willow Creek, Grubstake	Willow Creek	O/P Placer

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground; S/D=Suction Dredge.
Prepared from list of permitted operations; not all produced during the year.

Table 9. *Companies and individuals reported to be producing metal in Alaska, 2005—continued*

Operator	Creek	District	Type[a]
North American Mining LLC	Willow-Little Willow	Yentna	O/P Placer
Roland L. Boehne	Red Creek, Joe Creek, Horsepasture Creek, Conglomerate Creek, Upper Red Fox Creek	Valdez Creek	S/D
Ronald S. Smith	Hargood Creek	Seward	O/P Placer
Todd Bauer	Gold Creek, Eldorado Creek	Valdez Creek	O/P Placer
Wayne Strauth	Cache Creek	Yentna	S/D
	Southwestern Region		
Andrea A. Stevens, Mark D. Matter	Marvel Creek	Aniak	O/P Placer
Hanson Industries Inc.	Salmon River	Goodnews	O/P Placer
Harry E. Faulkner	Ophir Creek	Aniak	O/P Placer
Joe Daugherty, Ken Klopman	Taylor West	Aniak	O/P Placer
L.E. or Marilyn Wyrick	Granite Creek	Aniak	O/P Placer
Larry Wilmarth	George River, Julian Creek	Aniak	S/D
Leroy Busk, Richard Busk	Syneeva Creek	Aniak	S/D
NYAC Mining Company	California, Shamrock, Bear, Rock Creek	Aniak	O/P Placer
Richard Ross	Arolik River	Bethel	S/D
	Southeastern Region		
Chilkat Mining LLC	Porcupine Creek	Juneau	O/P Placer
Fred Hurt, Paul Behm	N/A	Juneau	O/P Placer
Fred Mastel, Tom Sternberg	Quartz Creek	Hope	O/P Placer
John Schnabel	Porcupine Creek	Juneau	O/P Placer
Kennecott/Hecla	Greens Creek Mine	Admiralty Island	HR U/G (silver/gold/ zinc/lead)
Kenneth Schultz	N/A	Ketchikan	O/P Placer
Snow Lion II LTD	Porcupine Creek	Juneau	O/P Placer

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground; S/D=Suction Dredge.
Prepared from list of permitted operations; not all produced during the year.

Metals, with a value of $1,252.6 million, accounted for 89.4 percent of the total value of mineral production. Zinc continued to be the most valuable product by a significant margin, reporting 61.5 percent of the total and 68.8 percent of the metal value. This was followed by gold at 13.55 percent of the total and 15.16 percent of the metal value. Lead continued in third place at 8.22 percent of the total and 9.2 percent of the metal value. Silver was fourth with a total value of 6.1 percent of the total value and 6.8 percent of the metal value.

Alaska mineral production by sector is shown in figure 28. Values of production in decreasing order were from Red Dog (64.4 percent), Greens Creek (13.7 percent), Fort Knox (10.5 percent) rock, sand and gravel operations (7.1 percent), coal and peat (3.6 percent), and placer gold operations (0.8 percent).

Table 10 shows the average metal values used in this report over the last 12 years. Some respondents reported costs and unit values for production. In general, however, metal values were computed from weekly averages on the London Metal Exchange, and do not take into account mining, shipping, smelting, and other costs incurred by the reporting producer/company. Across-the-board metal price increases are noted from those experienced in 2004; those increases contributed substantially to the value of production despite notable reductions in quantities of metals produced.

The production estimates included in this report are from 213 questionnaires returned by miners, mining companies, native organizations, governmental agencies, municipalities, and service companies, complemented by well over 200 telephone calls, e-mails, faxes, searches of annual reports, 10-K reports, and news releases by producers. Additional information was derived from State of Alaska Annual Placer Mining Applications (APMA's) submitted to the DMLW.

The authors wish to thank the Alaska Railroad Corporation, the Alaska Mental Health Trust Land Office, the Alaska Department of Transportation & Public Facilities, the Alaska Division of Mining, Land & Water, munici-

palities, the U.S. Forest Service, the U.S. Bureau of Land Management, Native regional corporations, and the Alyeska Pipeline Service Company for providing information for this section of the report.

Tables 11 and 12 show gold production by region of the state, and the placer production by small and medium sized producers. Only one placer operation achieved a "large sized" rating; this operation has been included in medium sized producer category for confidentiality reasons. Hard-rock (lode) gold production decreased from 428,434 ounces in 2004 to 402,120 ounces in 2005. Placer gold production decreased from 28,074 ounces in 2004 to 24,911 ounces in 2005. The decrease in hard rock production reflects lower output from Fort Knox, Greens Creek and the closure of the Illinois Creek Mine in 2004. Production should increase during 2006 as a result of commissioning of the Pogo Mine. Thereafter, gold production should increase annually with commissioning of Nixon Fork, Rock Creek/Big Hurrah, Kensington, and eventually Donlin Creek mines.

Tables 13 and 14 show the value and regional importance of sand, gravel, and rock production. Production of

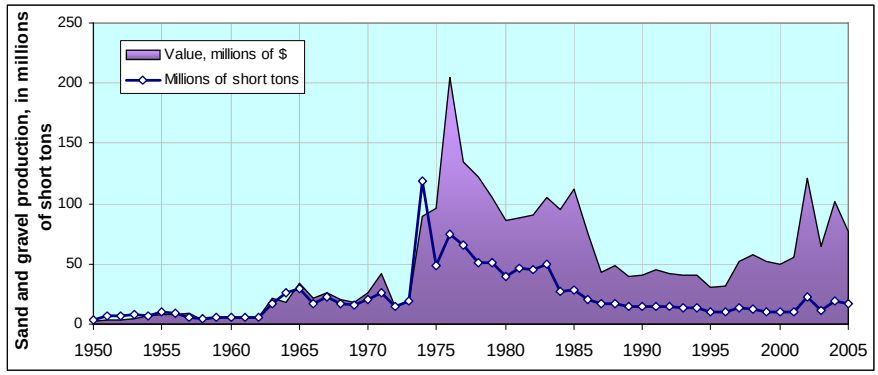


Figure 24. *Sand and gravel production in Alaska 1950–2005.*

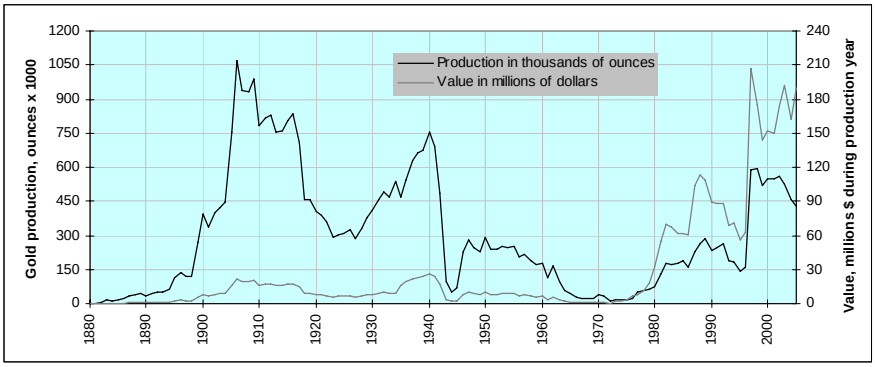


Figure 25. *Amount of value of gold production in Alaska, 1880–2005.*

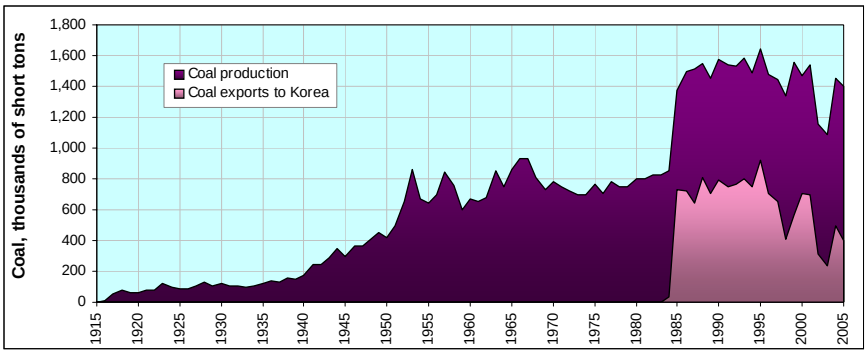
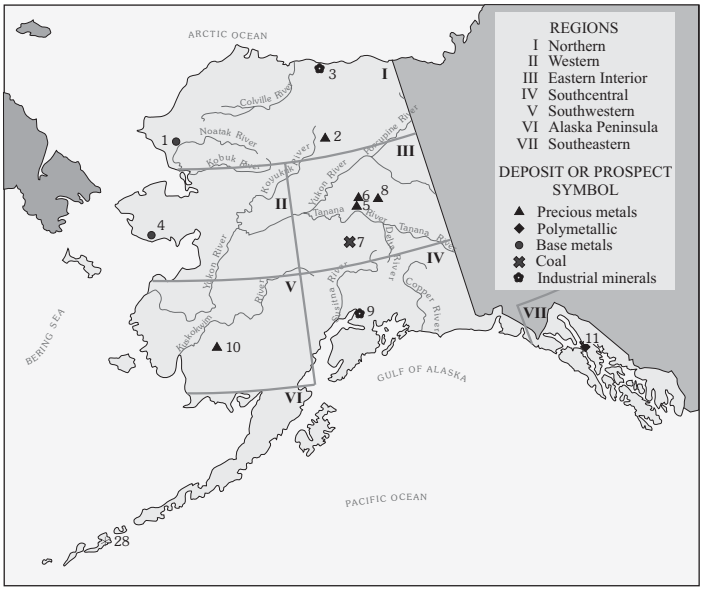


Figure 26. *Coal production in Alaska, 1915–2005, including exports to Korea.*



I Northern Region
1. Teck Cominco Alaska Inc. Red Dog Mine, Noatak district—zinc–lead–silver (germanium)
2. Gold placer mines—gold
3. Prudhoe Bay and Kuparuk pits (numerous)—sand and gravel

II Western Region
4. Nome—placer gold, sand and gravel

III Eastern Interior Region
5. Polar Mining Inc., Fairbanks district—gold–silver–screened aggregate
6. Kinross Gold Corp. Fort Knox Mine, Fairbanks district—gold–silver; placer mines
7. Usibelli Coal Mine Inc., Bonnifield district—coal
8. Earth Movers of Fairbanks Inc., Fairbanks district—gold placer

IV Southcentral Region
9. Palmer–Anchorage district—sand and gravel

V Southwestern Region
10. Nyac Mining Co., Nyac district—gold–silver

VI Alaska Peninsula Region

VII Southeastern Region
11. Kennecott Minerals Co./Hecla Mining Co., Greens Creek Mine, Juneau–Admiralty district—silver–zinc–gold–lead–copper

Figure 27. *Selected production projects, 2005.*

sand and gravel in 2005 was 16.6 million tons, down by 2.96 million tons from 2004. Rock production was 2.8 million tons, down from the 7.3 million tons in 2004. These numbers reflect some shortfall in reporting, but mainly reflect curtailments or reductions in production.

Coal production from Usibelli Coal Mine in 2005 was 1,402,174 tons, down slightly from 2004 at 1,450,000 tons. Exports were reported to be 503,000 tons. Shipments to Korea were 400,000 tons, and to Chile 103,000 tons for power plant use. The balance of the production was consumed by local power plants.

Peat production was 62,532 cubic yards compared to 208,032 cubic yards in 2004. The major difference in volume is due to cut-backs; however, at least three significant producers refused to or otherwise did not report production.

The export of minerals was $603 million in 2005, the highest recorded export value on record (table 15, fig. 29). This amount exceeds last year's value by $98 million.

NORTHERN REGION

Teck Cominco Ltd.–NANA Regional Corp.'s Red Dog Mine near Kotzebue in northwestern Alaska milled 3,402,831 tons in 2005, 153,218 tons more than in 2004 (fig. 30, table 16). Ore grade for 2005 was 21.7 percent zinc and 5.6 percent lead compared to 2004 values of 22.0 and 6.0 percent, respectively. Resulting zinc metal production for 2005 was higher than in 2004 as a result of higher volume of ore treated; 626,112 tons of zinc and 112,766 tons of lead in concentrate was produced compared to 2004 values of 610,900 tons of zinc and 128,970 tons of lead. Silver production credits were 1,970,000 ounces compared to a production in 2004 of 7,222,270 ounces. The method of reporting silver in 2004 and prior years was to credit 56.0 ounces per ton of lead in concentrate. The 2005 silver production numbers were taken from Teck's annual report and reflect the credit to Red Dog for this

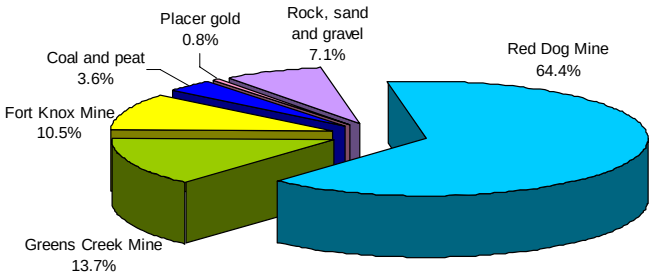


Figure 28. *Alaska mineral production by sector, 2005.*

Table 10. *Average metal prices, 1994–2005*

	Gold $/oz	Silver $/oz	Copper $/lb	Lead $/lb	Zinc $/lb
1994	386.00	5.41	1.05	0.35	0.45
1995	395.00	5.43	1.33	0.34	0.48
1996	387.60	5.19	1.03	0.37	0.49
1997	330.76	4.91	1.03	0.28	0.59
1998	293.88	5.53	0.75	0.24	0.46
1999	278.70	5.20	0.71	0.23	0.49
2000	279.10	4.96	0.82	0.21	0.51
2001	271.04	4.37	0.71	0.22	0.40
2002	310.06	4.61	0.71	0.21	0.35
2003	363.38	4.88	0.81	0.23	0.38
2004	409.72	6.67	1.29	0.40	0.47
2005	444.74	7.32	1.61	0.43	0.63

metal, but gives no consideration for the smelter or other deductions and charges. Employment was 449 persons including contract personnel. More than 50 percent of the employees are NANA shareholders. Operating costs increased 16 percent in 2005 as a result of escalating fuel, reagent, and grinding media costs. Capital expenditures were $28 million during the year. The operation reported a $268 million profit for 2005.

A shallow gas exploration program returned positive preliminary results. A follow-up program is planned for 2006 to determine the economic potential of natural gas as a replacement for the 14 million gallons of diesel fuel used for power generation.

The Red Dog Mine near Kotzebue in northwestern Alaska produces the highest quantity of zinc in the world and dominates Alaska's mineral production value. Red

Table 11. *Reported refined gold production, number of operators, and industry employment in Alaska, 2003–2005*[a,b]

Region	Number of operators			Production in ounces of gold			Number of employees		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
Northern	6	6	3	8,051	198	60	36	8	3
Western	6	11	16	15,063	16,546	12,649	13	28	61
Eastern Interior	40	42	37	403,379	351,937	339,414	342	459	453
Southcentral	6	4	11	650	262	385	3	2	64
Southwestern	6	3	3	1,833	1,346	1,511	7	1	14
Alaska Peninsula	0	0	0	0	0	0	0	0	0
Southeastern[c]	2	3	2	99,215	96,196	73,014	297	267	252
TOTAL	**66**	**69**	**72**	**528,191**	**466,485**	**427,031**	**698**	**765**	**845**

[a]2005 production includes 402,120 ounces of gold from hardrock mines and 24,911 ounces of gold from placer sources.
[b]Includes recreation numbers (operators, ounces, employees) for 2005 and is calculated on the basis of full-time-equivalent employment.
[c]Includes employment from Greens Creek, which is a polymetallic producer with a strong gold component.

Table 12. *Production for selected Alaska placer gold mines, 1999–2005*

Mine size	1999	2000	2001	2002	2003	2004	2005
				Number of mines			
Small[a]	38	60	33	43	58	60	50
Medium[b]	13	14	5	4	4	5	20
Large[c]	7	4	4	2	2	3	1
TOTAL	**58**	**78**	**42**	**49**	**64**	**68**	71
				Production in ounces[d]			
Small[a]	4,710	8,981	5,048	9,931	8,124	7,621	6,783
Medium[b]	13,218	15,186	6,234	4,739	4,976	4,504	17,822
Large[c]	52,300	22,147	11,559	7,711	10,500	15,950	- -[e]
TOTAL	**70,228**	**46,314**	**22,841**	**22,381**	**23,600**	**28,074**	**24,605**

[a]<650 oz gold/yr.
[b]650-2,500 oz gold/yr.
[c]>2,500 oz gold/yr.
[d]Does not include recreationally produced gold.
[e]2005 production combined with "Medium" producers.

Dog accounted for 48.7 percent of the annual value of Alaska's mineral industry. The mine is 100 percent owned and operated by Teck Cominco Alaska under an agreement with NANA Regional Corp., a Native development corporation. The mine comprises a number of sedimentary-hosted exhalative (SEDEX) lead–zinc sulfide deposits hosted in Mississippian- to Pennsylvanian-age sedimentary rocks. The ore bodies are lens shaped and occur within structurally controlled (thrust faults) plates. The sulfide mineralization consists of semi-massive to massive sphalerite, pyrite, marcasite, and galena. The mining method employed is conventional drill and blast open pit mining. The main pit has an expected life of seven years at current rates of production. Additional reserves have been identified in the vicinity of the processing facilities sufficient to extend the life of the operation by an additional 16 years for a total mine life of 23 years. The mineral processing facilities employ conventional grinding and sulfide flotation methods to produce zinc and lead concentrates. The shipping season at Red Dog is restricted to approximately 100 days per year because of sea ice conditions and Red Dog's sales are seasonal with the majority of sales in the last five months of each year. Concentrate is stockpiled at the port facility and is typically shipped between July and October. The shipping season was completed on October 21, 2005, with a total of 1.1 million tons of zinc concentrate and 220,000 tons of lead concentrate shipped from the mine.

Teck Cominco pays NANA Regional Corp. Inc. an annual advance royalty equal to the greater of 4.5 percent of Red Dog Mine's net smelter return or $1 million. After the company recovers certain capital expenditures including an interest factor, Teck Cominco will pay to NANA 25 percent of net proceeds of production from the Red

Table 13. *Reported sand and gravel production and industry employment in Alaska by region, 2005*

Region	Companies and agencies reporting[a]	Tons	Estimated unit value ($/ton)[b]	Total value	Estimated number of employees
Northern	9	1,282,728	$4.33	$ 5,558,488	27.4
Western	20	699,005	5.35	3,738,146	5.5
Eastern Interior	29	7,191,121	4.70	33,811,618	281.9
Southcentral	32	7,111,595	4.50	32,018,289	78.5
Southwestern		0		0	
Alaska Peninsula	1	13,050	3.07	740,000	
Southeastern	9	322,510	4.25	1,370,004	6.7
TOTAL	**100**	**16,620,009**	**$4.61**	**$76,536,545**	**400.0**

[a]From 67 returned questionnaires, more than 100 telephone surveys, follow-up fax questionnaires, more than 100 e-mails to probable producers, etc. Data were also returned from the Alaska Railroad, Alyeska Pipeline Service Co., DML&W, USFS, USBLM, regional corporations, and others.
[b]Values are based on estimates from producers.

Table 14. *Reported rock production and industry employment in Alaska by region, 2005*[a]

Region	Companies and agencies reporting[b]	Tons	Estimated unit value ($/ton)[c]	Total value	Estimated number of employees
Northern	4	21,412	$12.00	$ 256,944	1.2
Western	4	151,726	22.86	3,468,102	3.7
Eastern Interior	6	523,542	10.22	5,353,009	27.0
Southcentral	13	600,284	7.57	4,541,501	33.4
Southwestern	1	52,500	2.38	125,000	0.6
Alaska Peninsula		0		0	
Southeastern	5	1,453,708	6.06	8,802,877	81.8
TOTAL	**30**	**2,803,172**	**$8.04**	**$22,547,433**	**147.7**

[a] Includes shot rock, crushed stone, D-1, riprap, and modest quantities of ornamental stone.
[b]From 22 returned DGGS questionnaires, more than 100 telephone surveys, follow-up fax questionnaires, more than 100 e-mails to probable producers, etc. Data were also returned from the Alaska Railroad, Alyeska Pipeline Service Co., DML&W, DOT&PF, USFS, USBLM, regional corporations, and others.
[c]Values are based on estimates from producers, from historic records, etc.

Dog Mine, increasing in 5 percent increments every fifth year to a maximum of 50 percent. Advance royalties previously paid will be recoverable against the 25 percent royalty on net proceeds. Teck Cominco paid $16.953 million to NANA in 2005.

Silverado Gold Mines Ltd. resumed underground development efforts at the Nolan Creek property during the latter part of the year. The property is approximately 6 miles northwest of Wiseman, Alaska, on the south flank of the Brooks Range. Effort was directed at development of the Swede Channel, an elevated deeply buried channel on the east side of Nolan Creek. Approximately 900 feet of the channel was developed to produce approximately 2,900 bank cubic yards of gold-bearing gravel. Ore resource estimates based on drilling and conventional polygonal methods of determination indicated 5,000 bank cubic yards of resource with a grade of 0.275 ounce per bank cubic yard in the channel. An additional 3,200 bank cubic yards of gravel was mined from other undefined portions of the Swede Channel, bringing the total stockpile to 6,100 bank cubic yards; the latter mined increment had no grade estimate. The gold is very coarse and returns elevated prices of collector/jewelry values up to twice, even more, the prevailing spot price. Washing of the ore will be undertaken during the summer months of 2006.

Three other placer operations, one a recreational mining enterprise, reported operating in the northern region during the year as opposed to six placer operations during 2004.

Rock, sand, and gravel production from the region was marginally higher in 2005 compared to 2004. Nine operations were reported to have produced 1,282,728 tons of sand and gravel compared to three operations having produced 1,253,510 tons in 2004. Rock production was from one producer with production of 21,412 tons compared to one producer in 2004 with a production of 15,525 tons.

WESTERN REGION

American Reclamation Group, LLC continued and completed reclamation and closure of the Illinois Creek project during the year. No gold production was reported. Employment in 2005 was estimated at 4.4 persons, a drop from the 2004 estimate of 5.7 persons. All operable equipment was purchased by Alaska Gold and moved from the property for use at the Rock Creek/Big Hurrah project.

Sixteen placer operations reported production in the region for 2005 compared to 11 for 2004. Reported production was 12,649 ounces compared to a production of 16,546 ounces for 2004. Employment was reported or estimated to be 61 employees compared to 28 for 2004; the 2005 numbers include recreational miners (these numbers were not included in 2004 totals).

Sand and gravel production from the region was reported to be 699,000 tons from 20 operations. This compared to 2.1 million tons for 2004. Employment was estimated to be 5.5 persons.

Table 15. *Alaska international mineral exports*

	Export value (millions)
1996	$249
1997	$369
1998	$317
1999	$359
2000	$293
2001	$329
2002	$380
2003	$414
2004	$505
2005[a]	$603

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

[a]Includes mineral/metal ores and concentrates, coal, and unwrought, nonmonetary gold exports.

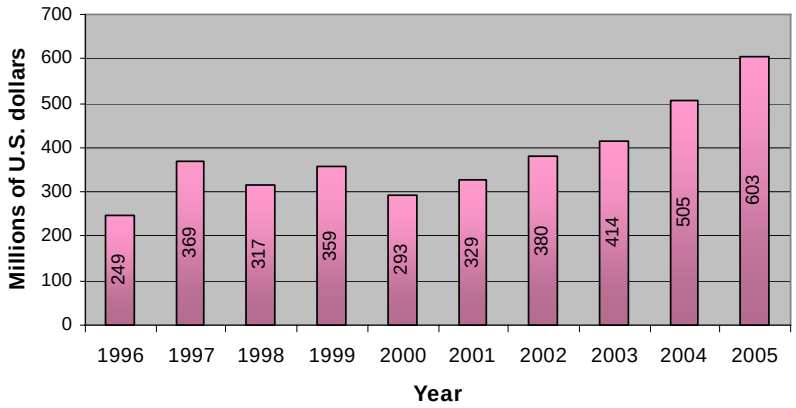


Figure 29. *Alaska international mineral exports, 1996–2005.*

Rock production for the region was reported to be 152,000 tons from four operations. This compares to 3.2 million tons for 2004 from three operations. Employment for 2005 was estimated to be 3.7 persons compared to 182 for 2004.

EASTERN INTERIOR REGION

Fairbanks Gold Mining Inc. (FGMI), a wholly owned subsidiary of Kinross Gold Corp., is the operator of Fort Knox Mine, located approximately 15 miles northeast of Fairbanks. FGMI recovered 329,320 ounces of gold dur-

Figure 30. *Overview of Red Dog Mine. The employee housing complex with crushing and mill facilities are in the foreground; the open-pit mine is behind the buildings. Photo provided by Teck Cominco Alaska Inc.*

Table 16. *Red Dog Mine production statistics, 1989–2005*[a]

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

[a]Revised slightly from Special Report 51, *Alaska's Mineral Industry 1995,* based on new company data.
[b]Totals for years 1990 through 1995 include bulk concentrate.
[c]Estimate calculated at 56 ounces per ton of lead metal produced to 2004, as reported credit for 2005, net of treatment charges.
- - = No data.

ing 2005, down 9,014 ounces from the 338,334 ounces produced in 2004. The shortfall is primarily due to continued curtailment of the True North Mine that has been sidelined for the present to continue with accelerated stripping at Fort Knox. The Fort Knox mill averaged 39,400 tons per day feed rate during 2005. Annual mill throughput was 14,384,842 tons, giving a recoverable head grade of 0.0229 ounces per ton. Fairbanks Gold mined 13.23 million tons of ore and 5.86 million tons of low-grade ore to stockpile. Total mined material for 2005 amounted to 63,248,000 tons, including 44,162,000 tons of stripped material. Employment averaged 411 persons during the year. See table 17 for further information.

Production for 2006 is forecast to be lower than 2005, with improved recovery rates expected to be offset by lower grades. The Fort Knox Mine had year-end proven and probable reserve of 90,579,000 tons of ore with a grade of 0.02157 ounces of gold per ton. In addition, the project had a measured and indicated resource of 48,862,000 tons of ore with a grade of 0.0176 ounces per ton.

During 2005, Kinross conducted a comprehensive review of its assets and investments. The True North and Gil deposits were reclassified from reserves to resources and Kinross elected to withdraw from the Ryan Lode project.

Usibelli Coal Mine (UCM) mined for the entire year at their Two Bull Ridge site. Total coal production for 2005 amounted to 1,402,174 tons. Exports were reported to be 502,758 tons; 102,925 tons of this was sent to Chile, the balance (399,833 tons) went to Korea. Production for 2004 was 1,450,000 tons. Shipments to Korea were down by 96,167 tons from 2004. Employment was reported to be 95 persons.

Usibelli Coal achieved a very significant safety accomplishment of no lost time injuries for a record period at its operation. The record extended from January 27, 2004, through 2005 to April 3, 2006. Collectively, the mine had achieved 797 days of continuous operations without a lost time injury. This safety record is one of the lowest in the Alaska and the country's mining industry. Low severity and frequency rates have been experienced by the 95-person work force during the past five years. Usibelli Coal Mine will be entitled to the Sentinels of Safety Award presented by the Mine Safety and Health Administration, U.S. Department of Labor. Final determination of the award is anticipated later in 2006.

Placer gold production was reported to be 10,094 ounces from the region for 2005. This compares to 13,603 ounces produced during 2004. Although gold prices have improved, the number of operators decreased slightly due to high operating costs. The numbers for operators in 2005 versus 2004 are 37 versus 41, respectively.

Sand and gravel production amounted to a reported 7.2 million tons for 2005 from 29 operations. This compares to a reported production of 4.3 million tons from 21 operations in 2004. Employment was reported or estimated to be 282.

Rock production amounted to 524,000 tons for the year compared to a production of 1.1 million tons for 2004. Employment was reported to be 27 persons.

Peat (top soil) production was reported to be 15,500 cubic yards; however, reporting deficiencies are noted for this region, possibly under-reporting by a factor of 100 percent. Only one full time job is credited to this effort, but is believed to be light due to the reporting shortfall and allocation to other commodities.

SOUTHCENTRAL REGION

Rock, sand, gravel, and peat (top soil) continue as the most valuable commodities produced for this region. Southcentral was the largest producer of these products, with 49 operators reporting for the year. Sand and gravel production amounted to 7.11 million tons and provided 79 full-time jobs. This compares to a production of 8.823

Table 17. *Fort Knox Mine production statistics, 1996–2005*

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

[a]True North started production in 2001 and suspended production in 2004.

million tons in 2004 and an employment of 167 persons. Rock production was 600,000 tons in 2005 and provided 33 full-time jobs. This compares to a production of 1.1 million tons and 50 full-time jobs for 2004.

Peat production amounted to 47,000 cubic yards, providing five full-time jobs. This compares to 161,000 cubic yards and three full-time jobs for 2004. The production shortfall for 2005 is believed to be due to a reporting deficiency and to some of 2003's production being allocated to 2004, making 2004 an exaggerated year. A correction for the 2004 volume allocation indicates that production was about the same in both years, but is still believed to be short of actual production by at least 25 percent. At least two operations did not report.

Placer gold production for this region was 385 ounces from 11 operations including recreational mines. Total employment amounted to 64 employees including recreational operators and employees.

SOUTHWESTERN REGION

Placer gold production from the southwestern region amounted to 1,511 ounces and employment was 14 persons. Three operators conducted mining activity in this region for 2005. This compares to a production of 1,346 ounces and one full-time employee for 2004.

Southwestern region rock, sand, and gravel production was reported from one operation during the year. This compares to five operations reporting in 2004. This difference is believed to be a reporting shortfall rather than a reduction in production.

ALASKA PENINSULA REGION

Rock, sand, and gravel production for the Alaska Peninsula region was reported from one operation. No other mining activity was reported from the region; however, exploration in the region appears to be reviving.

SOUTHEASTERN REGION

The southeastern region reported polymetallic, rock, sand and gravel, and placer gold production for 2005. Total mineral industry production employment for the region was approximately 341 full-time jobs.

Greens Creek Mine, a Kennecott Minerals Co.–Hecla Mining Co. joint venture in southeastern Alaska, is a polymetallic volcanogenic massive-sulfide deposit (silver, zinc, gold, lead, and copper) and one of the largest silver producers in the world. It produces a silver–gold doré and sulfide concentrates containing zinc, lead, and minor copper; copper is no longer reported. Greens Creek is operated by Kennecott Minerals Co., which owns 70.3 percent; Hecla Mining Co. owns the remaining 29.7 percent.

Production at Greens Creek Mine dropped slightly from the record levels of 2004 (table 18). The Greens Creek polymetallic mine reported a mill throughput of 717,600 tons of ore, 88,200 tons less than in 2004. Recoverable grade of the ore was 0.1014 ounces of gold per ton, 13.52 ounces of silver per ton, 2.59 percent lead, and 8.13 percent zinc. Metal production totaled 9.7 million ounces of silver, 72,800 ounces of gold, 58,350 tons of zinc, and 18,600 tons of lead. Reserves at the end of 2005 are 7,479,448 tons of ore grading 14.36 ounces of silver per ton, 0.116 ounces of gold per ton, 10.24 percent zinc, and 3.89 percent lead.

Currently, Greens Creek mines approximately 2,200 tons of ore per day from underground operations. Ore from the underground trackless mine is milled at the mine site. The mill produces gold doré from gravity concentrates, lead, zinc, and bulk concentrates. Generally, the mine ships concentrates to Korea, Japan, Mexico, and Canada for smelting and metals recovery. Gold doré produced from the gravity circuit is shipped to the U.S. for refining; this is approximately 20 percent of the recovered gold.

Rock, sand, and gravel operations produced 1.776 million tons of material during the year. Fourteen operations reported production. Production was lower than in 2004 by 1.185 million tons and four fewer operations. The shortfall and reduced number of operations is the result of curtailments and reporting shortfalls. Employment was reported to be 89 full-time jobs compared to 83 in 2004.

No peat production was reported during the year.

The Calder calcium carbonate deposit, located on the northwest side of Prince of Wales Island, was sold by Sealaska Corp. and SeaCal LLC to Select Resources Corp. Inc., a subsidiary of Tri-Valley Corp. Select Resources has renamed the asset the Admiral Mine. The deposit consists of 13.9 million tons of drill-proven and probable reserves and 12.5 million tons of possible resources of high-chemical-grade, high-brightness, high-whiteness calcium carbonate. Potential users of this product include paper, plastics, and paint filler, whitener, extender, and loader markets. An additional 20 million tons of possible resources of slightly lower quality calcium carbonate may have use in chemical applications and as off-white fillers, loaders, and extenders. According to Select Resources, the mine is considered to be in the top 1 percent of high-grade calcium carbonate deposits in the world. The purchase also includes all associated infrastructure and equipment that the previous owner installed at a cost exceeding $20 million. The current mine covers only 15 acres; the entire property covers 572 acres of patented mining ground, and includes all operating permits and tideland leases. Less than 10 percent of the gross acreage has been explored and Select Resources believes additional resources may yet be discovered.

Table 18. *Greens Creek Mine production statistics, 1989–2005*

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

[a]No copper credits in 2003, 2004, and 2005.
[b]Partial-year production.
[c]No production in 1994 and 1995 due to mine closure.
[d]Fifteen (15) of this number for 2005 was assigned to development effort.
- - Not reported.

RECREATIONAL MINING

Recreational mining in Alaska is becoming a more prevalent industry. Production numbers are not believed to be large and are very difficult to obtain. The identity of recreational miners is not sought and reports are believed to be very inadequate. Reports are sought from the commercial ventures, but not always received. Production numbers are reported in the placer gold production in tables 11 and 12 and amounted to 307 ounces for the year. Employment numbers provided in this report are educated guesses; they include commercial enterprise employment plus miner time at the sites and also estimates of time involved by unorganized recreational miners in pursuit of the activity. Some spectacular nuggets are found by the recreational miner because of the methods used in finding gold (fig. 31). Dredge activity on some of Alaska's streams used screens to separate the oversize material from the finer materials to enhance recovery. This sizing of materi-

Figure 31. *Jesse with 25 ounce, 2.5 ounce, and 1.9 ounce gold nuggets found with Garrett Infinium detector at Moore Creek. Photo courtesy of Moore Creek Mining LLC.*

als resulted in discharge of large nuggets to the tailings piles left behind. Additionally, collection of placer gold was not too efficient in the dredge recovery process; this has provided an exceptional opportunity for the recreational miner. Spoil piles have become the target of many of the recreational miners (fig. 32).

Steve Herschback of Alaska Mining and Diving has provided an informative Web site about recreational mining opportunities: www.akmining.com/mine/recsites.htm. There are at least eight commercial operations that provide recreational mining opportunities. The ventures provide the right to mine, along with varying degrees of services and facilities depending on the need, which in turn is driven by the remoteness and access of the site. Charges for mining are moderate to high, depending on the site and services provided. The Web site lists eight sites with contact information. The site also lists other locations available to the recreational miner.

Figure 32. *Metal detecting for gold nuggets at Moore Creek, southwestern Alaska. Photo courtesy of Moore Creek Mining LLC.*

DRILLING

Drilling was conducted during all phases of mining (exploration, development, and production) on various projects across Alaska during 2005 (fig. 33). Tables 19–21 summarize the drilling activity in the state during 2005 by region and type of drilling. More than 637,600 feet of drilling was completed on mining projects in 2005. Drilling totals for 2005 are 592,497 feet of core drilling, 41,780 feet of reverse-circulation drilling, and 3,360 feet of placer auger/churn drilling. There was no drilling reported for coal operations. The 2005 drilling footage increased 14 percent from the 2004 value.

Major drill programs were conducted in most areas of the State. The largest drilling programs were in southwestern Alaska, with drilling by Placer Dome Inc. on the Donlin Creek property, by Northern Dynasty Minerals Ltd. at the Pebble property, and by Liberty Star Gold Corp. on the Big Chunk property. In southeastern Alaska, Kennecott Minerals Co. had the largest program, including development definition drilling and surface and underground exploration drilling at Greens Creek Mine. Other drilling programs in southeastern Alaska were conducted by Coeur Alaska Inc. at the Kensington and Jualin properties, by Freegold Ventures Ltd./Pacific North West Capital Corp./Lonmin PLC at the Union Bay property, by Niblack Mining Corp. on the Niblack property, and by Quaterra Resources Inc. at the Duke Island property. A major drilling program was conducted in the eastern Interior region by Kinross Gold Corp. (Fairbanks Gold Mining Inc.) in the Fairbanks mining district including Fort Knox Mine. In southcentral Alaska, major drilling programs were con-

Figure 33. *Core drilling at the Democrat property, Richardson mining district. Photo courtesy of Select Resources Corp.*

ducted by Kennecott Exploration Co. at the Whistler property, by Piper Capital Inc. on the Golden Zone property, and by Anglo American Exploration (USA) Inc. on the MAN property. AngloGold Ashanti (USA) Exploration Inc. drilled at several properties including the LMS and Terra projects. NovaGold Resources Inc. drilled at the Rock Creek, Big Hurrah, Khotol, and Arctic properties in the northern and western regions. Teck Cominco Alaska Inc. drilled in the Red Dog area and on the Pogo property, and St. Andrew Goldfields Ltd./Mystery Creek Resources Inc. continued underground drilling at the Nixon Fork property.

Table 19. *Companies reporting significant drilling programs in Alaska, 2005.*

Alaska Range Minerals Corp. (bC Metals Corp.)
Anglo American Exploration (USA) Inc.
AngloGold Ashanti (USA) Exploration Inc.
Canaco Resources Inc.
Coeur Alaska Inc.
Earth Movers of Fairbanks Inc.
Full Metal Minerals Ltd.
Fury Explorations Ltd.
Golconda Resources Ltd. & Shulin Lake Mining Co. & Shear Minerals Ltd.
Kennecott Exploration Co.
Kennecott Minerals Co. & Hecla Mining Co.
Kinross Gold Corp. (Fairbanks Gold Mining Inc.)
Liberty Star Gold Corp.
Lonmin PLC & Freegold Ventures Ltd. & Pacific North West Capital Corp.
Niblack Mining Corp.
Northern Dynasty Minerals Ltd.
NovaGold Resources Inc.
Piper Capital Inc.
Placer Dome Inc.
Quaterra Resources Inc.
Roberts Mining
Select Resources Corp. (Tri Valley Corp.)
St. Andrew Goldfields Ltd. & Mystery Creek Resources Inc.
Teck Cominco Alaska Inc.
TNR Gold Corp.

Table 20. *Drilling footage by region in Alaska, 2005*

Type of drilling	Northern	Western	Eastern Interior	South-central	South-western	South-eastern	TOTAL
Placer subtotal	- -	60	3,300	- -	- -	- -	3,360
Coal subtotal	- -	- -	- -	- -	- -	- -	- -
Hardrock core	15,762	76,926	87,127	74,732	158,430	179,520	592,497
Hardrock rotary	- -	- -	26,560	200	15,020	- -	41,780
Hardrock subtotal	**15,762**	**76,926**	**113,687**	**74,932**	**173,450**	**179,520**	**634,277**
TOTAL (feet)	**15,762**	**76,986**	**116,987**	**74,932**	**173,450**	**179,520**	**637,637**

- - = Not reported.
Drill footages do not include sand and gravel drilling.
No drilling reported for Alaska Peninsula in 2005.

GOVERNMENT ACTIONS

Geologists from the Minerals Resources Section of the Alaska Division of Geological & Geophysical Surveys (DGGS) mapped and sampled 131 square miles around the historic Liberty Bell Mine near Healy (fig. 34). Geochemical data from this work was released in November. A 1:50,000-scale geologic map will be available in late 2006.

DGGS released a series of new 1:50,000-scale surficial and bedrock geologic maps of the Council and Big Hurrah areas of the southern Seward Peninsula as part of an integrated program following up the airborne geophysical survey results previously released by DGGS in 2003 and fieldwork conducted in 2004.

DGGS released new trace-element geochemical data from reanalysis of archived stream-sediment pulps originally collected in 1982 near the town of Livengood. DGGS found 952 of the 1,597 stream-sediment samples collected in 1982 and AngloGold Ashanti North America Inc. paid for the new geochemical analyses. This data complements data collected over 130 square miles of the central Livengood Quadrangle in 2001 and 2003 by DGGS.

DGGS released a 210-square-mile airborne magnetic and electromagnetic geophysical survey in the southern Goodpaster region of the Big Delta Quadrangle in early 2005 (table 22). DGGS funded and acquired airborne magnetic and electromagnetic geophysical surveys for 944

Table 21. *Drilling footage reported in Alaska, 1982–2005*

Year	Placer Exploration	Placer Thawing	TOTAL PLACER	TOTAL COAL	TOTAL HARDROCK	Hardrock Core[a]	Hardrock Rotary[a]	TOTAL FEET
1982	30,000	94,000	**124,000**	**80,000**	**200,000**	- -	- -	**404,000**
1983	23,000	30,000	**53,000**	**12,000**	**180,500**	- -	- -	**245,500**
1984	31,000	98,000	**129,000**	**25,700**	**176,000**	- -	- -	**330,700**
1985	46,000	34,000	**80,000**	**8,700**	**131,700**	- -	- -	**220,400**
1986	32,400	227,000	**259,400**	**28,800**	**50,200**	- -	- -	**338,400**
1987	50,250	130,000	**180,250**	**19,900**	**115,100**	95,600	19,500	**315,250**
1988	152,000	300,000	**452,000**	**26,150**	**353,860**	223,630	130,230	**832,010**
1989	97,250	210,000	**307,250**	**38,670**	**332,230**	242,440	89,790	**678,150**
1990	78,930	105,000	**183,930**	**18,195**	**760,955**	648,600	112,355	**963,080**
1991	51,247	130,000	**181,247**	**16,894**	**316,655**	205,805	110,850	**514,796**
1992	6,740	65,000	**71,740**	**12,875**	**359,834**	211,812	148,022	**444,449**
1993	25,216	- -	**25,216**	- -	**252,315**	124,325	127,990	**277,531**
1994	21,000	- -	**21,000**	**8,168**	**438,710**	347,018	91,692	**467,878**
1995	27,570	- -	**27,570**	- -	**415,485**	363,690	51,795	**443,055**
1996	61,780	- -	**61,780**	**8,500**	**658,857**	524,330	134,527	**729,137**
1997	38,980	- -	**38,980**	**13,998**	**704,510**	523,676	180,834	**757,488**
1998	33,250	- -	**33,250**	**2,300**	**549,618**	505,408	45,670	**585,168**
1999	6,727	- -	**6,727**	- -	**448,797**	369,863	78,934	**455,524**
2000	15,480	- -	**15,480**	- -	**546,268**	418,630	127,638	**561,748**
2001	1,100	- -	**1,100**	**36,151**	**316,068**	240,318	75,750	**353,319**
2002	1,250	- -	**1,250**	- -	**488,902**	385,290	103,612	**490,152**
2003	10,108	- -	**10,108**	**2,000**	**370,634**	270,456	100,178	**382,742**
2004	107,526	- -	**107,526**	- -	**451,652**	415,628	36,024	**559,178**
2005	3,360	- -	**3,360**	- -	**634,277**	592,497	41,780	**637,637**

[a]Core and rotary drilling not differentiated prior to 1987.
- - = Not reported.

square miles of highly prospective areas for mineral deposits in the Fairbanks, Circle, Richardson, and Goodpaster mining districts. The survey maps and data were released in 2006. Geophysical surveys (induced electromagnetic conductivity and total magnetic field) funded by the U.S. Bureau of Land Management for 1,450 square miles of mineral-rich lands in the southern National Petroleum Reserve–Alaska (NPR-A) were flown in 2005 and released by DGGS in early 2006 (table 23). The NPR-A surveys included 6,000 line miles flown at quarter-mile spacing with sensors 200 feet above the ground, with the area around the Drenchwater Creek Sedex-type lead–zinc–silver deposit flown at one-eighth mile line spacing. These data, all historic DGGS publications, and most U.S. Geological Survey publications about Alaska's geology and resources are available for download at no charge at the DGGS Web site (http://www.dggs.dnr.state.ak.us).

To date, with an investment of $6 million, in excess of 6.1 million acres (more than 9,500 square miles) of Alaska were flown for detailed geophysical surveys and about 2.7 million acres of 1:63,360-scale geologic maps were produced as part of the State-funded Alaska Airborne Geophysical/Geological Mineral Inventory (AGGMI) Program. Federal monies through the STATEMAP Program fund some of the geologic mapping within the AGGMI Program.

The State of Alaska, through DGGS, funded an airborne geophysical survey for the Alaska Highway corridor from slightly west of Delta Junction to slightly east of the Alaska–Yukon border. The survey was acquired and processed by Fugro Airborne Surveys and managed by Stevens Exploration Management Corp. Aeromagnetic and electromagnetic data were acquired for 3,045 square miles, approximately a 16-mile-wide swath centered on the Alaska Highway. The survey was released in early 2006 and preliminary surficial and bedrock geologic mapping studies are planned for the 2006 field season.

The national U.S. Bureau of Land Management (BLM) Sustainable Mineral Development Reclamation Award in the small operator category was presented to Jim Olmstead, a placer miner on Gold Creek along the Dalton Highway. The award recognizes his conscientious and timely reclamation that has maintained a stable channel and flood plain by replicating the original stream channel, through match-

Figure 34. *DGGS geologists examining metamorphic rock outcrop in the Liberty Bell area near Healy. Photo by David Szumigala.*

ing existing grade and channel widths to adjacent undisturbed areas. Forrest Hayden, Al Hopen, and the American Reclamation Group LLC were awarded the 2005 annual state reclamation awards by the Alaska Department of Natural Resources (DNR). Forrest Hayden placer mined on Squaw Creek in the Fortymile mining district, Al Hopen placer mined on Cleary Creek in the Fairbanks mining district and the American Reclamation Group mined the Illinois Creek Mine in the Kaiyuh mining district. American Reclamation Group reclaimed the bankrupt Illinois Creek gold–silver mine, a State-owned facility after the bankruptcy, by successfully heap-leaching the remaining ore and then reclaimed the heap leach and mine site to closure standards without use of State funds, All mine buildings were also removed from the site and mining equipment sold to other mine operators in the state.

The U.S. BLM began its scoping process for the Area Plan and Environmental Impact Statement for approximately 9.2 million acres of land in the southern NPR-A. BLM also issued an amended Integrated Activity Plan and Environmental Impact Statement (EIS) for northeast NPR-A. A draft EIS was released for the 7.1 million acres of BLM-managed land in the East Alaska Resource Management Plan (RMP). The BLM issued a draft RMP/EIS for the Ring of Fire Area, 1.3 million acres of BLM-managed lands in southeastern, southcentral, Alaska Peninsula, and the Aleutian Islands. The BLM issued a Decision Record in July 2005 to amend all Resource Management Plans, Management Framework Plans, and National Petroleum Reserve–Alaska Integrated Activity Plan for all BLM-managed lands in Alaska to update direction for wildland fire and fuels management.

The U.S. Geological Survey (USGS), in cooperation with other agencies, continued a 5-year project titled "Tintina metallogenic province integrated studies on geological framework, mineral resources, and environmental signatures," and continued a project titled "Regional geologic and mineral deposit data for Alaskan economic development." The economic development project focuses on the Seward Peninsula and the central part of southwestern Alaska. The USGS collected stream-sediment, heavy-mineral-concentrate, and stream-water samples from more than 400 locations in the Taylor Mountains Quadrangle. Gold was observed in 85 of the 427 panned-concentrate samples collected in 2005. The work also included reconnaissance geologic mapping and three ground magnetic traverses. The USGS also continued studying the base-metal resource potential of the Nome Group on the Seward Peninsula with limited fieldwork in 2005.

The U.S. Bureau of Land Management (BLM) continued mineral investigations in the Aniak Mining District, southwestern Alaska. BLM geologists visited 184 mineral localities and collected 645 samples (fig. 35). The BLM worked in cooperation with the USGS, DGGS, the Geological Society of America, and Calista Native Corp. The BLM also initiated fieldwork in the Taylor Mountains Quadrangle in cooperation with ongoing USGS studies.

The USGS, DGGS, and BLM continued a number of cooperative projects under the Minerals Data and Information Rescue in Alaska (MDIRA) program. DGGS-managed, MDIRA-funded projects include compilation of Alaska bedrock and surficial geology map index, compilation of DGGS lithochemical data, compilation of Alaska geochronological data, and building a comprehensive database system at DGGS. DGGS continued working on a project to make all U.S. Geological

Table 22. *Detailed state airborne geophysical surveys and follow-up geologic ground-truth mapping as of December 2005*[a]

Nome District western core area	494 sq. miles	Airborne geophysical/ground-truth geological mapping
Nyac District core area	183 sq. miles	Airborne aeromagnetic mapping
Circle District core area	338 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Valdez Creek District	75 sq. miles	Airborne geophysical mapping
Fairbanks District	626 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Richardson District	137 sq. miles	Airborne geophysical mapping
Rampart/Manley-Tofty	1,017 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Upper Chulitna District	364 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Petersville-Collinsville District	415 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Iron Creek District	689 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Ruby District	591 sq. miles	Airborne geophysical mapping/industry contributed and published geologic map
Fortymile District	1,036 sq. miles	Airborne geophysical mapping/ground-truth geologic maps
Livengood District	229 sq. miles	Airborne geophysical mapping/ground-truth geologic maps
Salcha River/North Pogo	1,032 sq. miles	Airborne geophysical mapping/ground-truth geologic maps
Southeast extension of Salcha River–Pogo	91 sq. miles	Airborne geophysical mapping
Liberty Bell	276 sq. miles	Airborne geophysical mapping/ground-truth geologic mapping
Broad Pass	304 sq. miles	Airborne geophysical mapping
Council	618 sq. miles	Airborne geophysical mapping/ground-truth geologic mapping
South extension of Salcha River–Pogo	210 sq. miles	Airborne geophysical mapping
Liscum[b]	67 sq. miles	Airborne geophysical mapping (expected winter 2006)
Black Mountain	222 sq. miles	Airborne geophysical mapping (expected winter 2006)
East Richardson	224 sq. miles	Airborne geophysical mapping (expected winter 2006)
Northeast Fairbanks	405 sq. miles	Airborne geophysical mapping (expected winter 2006)
Alaska Highway Corridor[c]	3,116 sq. miles	Airborne geophysical mapping (expected winter 2006)
Total: 14 years $7.9 million	**12,759 sq. miles**	**2.2% of Alaska's total area**

[a]Projects funded by the Alaska State Legislature. Projects concentrate on state, Native, state-selected, and Native-selected lands and are managed by DGGS.
[b]Project funded by the Alaska State Legislature and through an agreement with AngloGold Ashanti (USA) Exploration Inc.
[c]Project funded by the Alaska State Legislature as a $2 million Capital Improvement Project to assess the geologic hazards and resource potential along the proposed natural gas pipeline corridor.
Note: Surveys listed above are complete except where noted. Additional areas will be scheduled for surveying at later dates contingent on future funding.

Table 23. *Detailed federally funded airborne geophysical survey work as of December 2005*[a]

Wrangell/Stikine[b]	1,111 sq. miles	Airborne geophysical mapping
Koyukuk/Wiseman	533 sq. miles	Airborne geophysical mapping
Ketchikan[c]	605 sq. miles	Airborne geophysical mapping
Aniak	1,240 sq. miles	Airborne geophysical mapping
Delta River	603 sq. miles	Airborne geophysical mapping
Sleetmute	641 sq. miles	Airborne geophysical mapping
Southern NPR-A	1,447 sq. miles	Airborne geophysical mapping (released 2006)
Total: 8 years $3.72 million	6,180 sq. miles	1.1% of Alaska's total area

[a]Projects funded mainly by U.S. Bureau of Land Management with contributions by DGGS, local and state governments, and private corporations. Projects concentrate mainly on federal land. Data are released through DGGS.
[b]Major funding came from BLM and the City of Wrangell.
[c]Major funding came from BLM and Ketchikan Gateway Borough. Sealaska Corp., Alaska State Mental Health Land Trust Office, the City of Coffman Cove, and the City of Thorne Bay also contributed funds. Sealaska Corp. also contributed previously acquired geophysical data.

Survey Bulletins and Professional Papers for Alaska viewable and retrievable online through the DGGS Web site. DGGS continued a similar project that will include Alaska-related USGS Open-File Reports, Miscellaneous Field Studies, Geologic Quadrangle Maps, Miscellaneous Investigations/Geologic Investigations, Mineral Investigations Resources Maps, and various other short-series USGS publications. Other MDIRA-funded projects are in progress at other divisions of DNR, the University of Alaska Fairbanks, and with private contractors.

The State of Alaska is working to finalize land transfers from the federal government (BLM) to Alaska Native allottees, Alaska Native corporations, the State of Alaska, municipalities, the Alaska Mental Health Land Trust, and the University of Alaska. The state's BLM Conveyance Project is working to accelerate the remaining land transfers by 2009, the 50th anniversary of Alaska statehood and the deadline imposed by federal Senate Bill 1466. The State has about 14.5 million acres of General Grant entitlement remaining as of November 2005 and about 34 million acres of selected lands. DNR agencies have identified about 20 million acres of land as moderate–high to high potential for minerals, oil and gas, surface resources, or access corridors. About 6 million acres are dual selected by both State agencies and Native corporations; these dual selections introduce uncertainty of final ownership for these lands. DGGS reviewed 1990's selection priorities and reprioritized lands based on new geologic information, new mineral deposit models, and other information. The reprioritization process was multiphase and iterative. DGGS reviewed existing geologic and mineral deposit information using MapInfo GIS software, including geologic maps, geophysical data, locations of 7,000 mineral occurrence sites categorized by mineral deposit model (Alaska Resource Deposit Files; http://ardf.wr.usgs.gov/) geochemical samples (e.g., DGGS web geochemistry, http://www.dggs.dnr.state.ak.us/webgeochem/index.jsp), State and Native selected lands, and current federal and state mining claims, as well as results from DGGS probabilistic modeling created for the 1992 mineral endowment estimation for selected areas. On September 28, 2005, a final State Ownership Priority List (OPL) of 18 million acres was submitted to BLM by DNR, after review by the DNR Commissioner's Office. Most of the 18 million acres of Alaska lands included on the new ownership priority list have moderate to high potential for mineral and energy resources. Future work will include prioritizing remaining State land selections as needed to complete State land entitlement.

After more than 5 years of work, the U.S. Army Corps of Engineers released the Draft EIS and Draft Feasibility Report for improvements to the DeLong Mountain Transportation System (DMTS), the Red Dog Mine port, and associated facilities. The report includes a proposal to build a longer loading trestle to about 1,600 feet into the Bering Sea, dredging a turning basin on the north side of the trestle, and dredging a slot from the turning basin to about 4 miles into deeper water in the Bering Sea. The proposed

Figure 35. *John Hoppe, BLM geologist, examining tourmaline-cemented breccia and quartz–tourmaline–sulfide veins at the Breccia Prospect, Lime Hills Quadrangle during mineral investigations in the Aniak mining district. Photo by David Szumigala.*

project would allow direct loading and unloading of large ocean-going ships rather than the current process of using intermediate barges. The Red Dog Mine and area villages would likely benefit from lower transportation costs of fuel and supplies.

Governor Murkowski appointed Mike Menge as the new Acting DNR Commissioner in November. Other appointments include Ed Fogels as Acting Deputy Commissioner for all department operations other than oil, gas, and pipeline issues, Kenneth Griffin as Acting Deputy Commissioner responsible for oil and gas issues, Robert Swenson as Acting Director of DGGS, Dick Mylius as Acting Director of the Division of Mining, Land, & Water, Tom Crafford as Acting Project Manager for the Large Mine Permitting Project, and Rick Fredericksen as Acting Manager for the Mining Resources Section. The transition has worked smoothly, with attention to permitting needs continuing unhindered.

The University of Alaska named Dennis Steffy as the statewide lead for all mining, process technology, industrial process instrumentation, and mechanical technology training. Steffy has been the director of the Mining and Petroleum Training Service (MAPS), a program established by the University of Alaska in 1979 and now a division of Kenai Peninsula College at the University of Alaska Anchorage.

The Alaska Department of Environmental Conservation reported in April 2005 that it had 1,748 active permits for placer mining, including 1,254 permits for suction dredges at or less than six inch capacity, 154 permits for suction dredges at six to ten inch capacity, and permits for 340 mechanized placer mining operations.

The Alaska Industrial Development and Export Authority (AIDEA) signed a reimbursement agreement with Cash Minerals Ltd. for a feasibility study, completed in December, for shipping coal through the Skagway Ore Terminal. According to the review conducted by Sandwell Engineering Inc., the existing terminal can be modified to receive, store, reclaim, and load coal into ocean-going bulk carriers for an estimated cost of $7.75 million. Cash Minerals is planning to ship 1.3 million tons of coal annually from the Division Mountain Mine in the Yukon Territory, Canada, to Pacific Rim markets through Skagway.

Homer Electric Association (HEA) entered into a Letter Agreement with the Alaska Industrial Development and Export Authority (AIDEA) related to the restart of the State-owned Healy Clean Coal Plant. Under terms of the agreement, HEA and AIDEA will undertake preliminary development activities, including an engineering review and physical inspection to determine the current condition of the plant. The review was expected to take 4 months, after which a scope of work would be developed.

The Alaska Department of Transportation & Public Facilities (DOT) hired a contractor to begin a yearlong study of the feasibility of building a road northeast of Fairbanks that would link Chena Hot Springs Resort along Chena Hot Springs Road and Arctic Hot Springs Resort on the Steese Highway. DOT also hired a contractor to complete a detailed reconnaissance study of a road or rail line to establish a second entrance to Denali National Park and Preserve. DOT is building several roads along State rights of way to provide access to the Kensington gold project near Juneau. A 2.5-mile road costing nearly $1 million was built from the current north end of the Juneau road system to a ferry terminal at Cascade Point. A 4.9-mile road project expected to cost $1.1 million was put to bid for access from Slate Creek Cove to the Kensington mill site on the west side of Berners Bay. The money to build the roads comes from the state's industrial roads program.

The State-owned Alaska Railroad made $12.7 million in profits during 2005 on total revenue of $144 million. The railroad hauled 8.16 million tons of freight in 2005. Revenue from shipping freight, the railroad's core business, was up 9 percent from the prior year, totaling $94.5 million. The railroad increased gravel shipments in 2005.

The mineral industry paid a total of $37.4 million to the state of Alaska and Alaska municipalities in 2005 (table 24). These payments increased by almost $11 million (41 percent) above 2004 values. Mining license taxes almost doubled from 2004, largely due to profitability of Red Dog Mine. Mining companies were the largest taxpayers in the City and Borough of Juneau and the Fairbanks North Star, Denali, and Northwest Arctic boroughs, with total payments of almost $12 million. Teck Pogo Inc. also paid the City of Delta Junction $500,000 as part of a payment in lieu of taxes (PILT) agreement in 2005. Teck Alaska Inc., operator of the Red Dog Mine, paid the Alaska Industrial Development & Export Authority annual user fees for use of the State-owned road and port, the DeLong Mountain Regional Transportation System. The AIDEA payment in FY05 totaled $17.7 million. Teck Cominco Ltd. paid NANA Regional Corp. $16.95 million in FY05 as a net smelter royalty, a 56 percent increase over the FY04 payment of $10.88 million. Calista Corp. received $465,000 in mineral revenues from lode mineral agreements at Donlin Creek and Nyac, and placer mining leases on Crooked Creek and the Tuluksak River.

More than 4.6 million acres of Alaska were covered in wildfires during 2005, following the record-breaking 6.4 million acres burned in 2004. Mining and construction projects were adversely affected by the fires and the smoke that obscured large portions of the State throughout much of the summer.

2006 OUTLOOK

The 2006 outlook is positive for Alaska's mining industry. Sustained strong metal prices will continue to

Table 24. *Revenues paid to the State of Alaska and municipalities by Alaska's mineral industry, 2000–2005*[a]

	2000	2001	2002	2003	2004	2005
State mineral rents and royalties[a]						
State claim rentals	$ 1,975,376	$ 1,736,522	$ 1,908,228	$ 2,129,440	$ 2,657,939	$ 3,308,752
Production royalties	6,175	1,933	23,447	39,512	49,813	46,662
Annual labor	79,907	103,274	124,741	224,519	226,191	332,439
Subtotal	**$ 2,061,458**	**$ 1,841,729**	**$,056,416**	**$ 2,393,471**	**$ 2,933,943**	**$ 3,687,853**
State coal rents and royalties						
Rents	233,249	198,545	256,927	237,912	236,532	257,112
Royalties	1,482,803	1,168,043	860,633	1,064,208	1,239,257	1,476,250
Bonus	372,000	0	0	0	0	129,880
Offshore Prospecting Permits	0	0	0	0	0	0
Subtotal	**$ 2,088,052**	**$ 1,366,588**	**$ 1,117,560**	**$,302,120**	**$ 1,475,789**	**$ 1,863,242**
State material Sales						
Mental Health	33,928	118,545	151,993	134,512	76,267	129,409
Division of Land	449,343	1,515,769	1,595,708	542,311	467,360	944,905
SPCO	41,395	12,894	24,725	208,309	112,047	46,877
Subtotal	**$ 524,666**	**$ 1,647,208**	**$ 1,772,426**	**$ 885,132**	**$ 655,674**	**$ 1,121,191**
State mining miscellaneous fees						
Filing fees	5,400	3,000	3,000	4,700	1,300	8,465
Penalty fees	0	0	450	0	26,110	20,280
Explore incentive app filing fee	0	0	0	0	0	0
Bond pool payment	50,100	53,866	45,208	44,878	35,426	32,331
Surface coal mining app fee	1,830	3,700	2,530	1,005	3,116	3,150
APMA mining fees	18,550	13,175	11,975	15,113	14,550	17,131
Subtotal	**$ 75,880**	**$ 73,741**	**$ 63,163**	**$ 65,696**	**$ 80,502**	**$ 81,357**
State corporate income tax[b]	285,815	18,665	33,719	133,452	120,868	
Mining License Tax[c-g]	1,857,134	486,430	384,264	3,244,683	10,317,245	18,637,996
State Total	**$ 6,893,005**	**$ 5,434,361**	**$ 5,427,548**	**$ 8,024,554**	**$15,584,021**	**$25,391,639**
Payments to Municipalities	**9,196,500**	**9,763,220**	**9,703,208**	**10,510,048**	**10,999,663**	**11,975,892**
TOTAL	**$16,089,505**	**$15,197,581**	**$15,130,756**	**$18,534,602**	**$26,583,684**	**$37,367,531**

[a]Includes upland lease and offshore lease rentals.
[b]Preliminary data for 2005 will not be available until much later in the year.
- timing of returns may distort data
- only subchapter C corporations pay income tax.
- this report may not reflect 100% of the returns received in a year.
- data from 2003 through 2005 has been updated to reflect new definitions. Data prior to and including 2002 uses old definitions.

[c]Includes metals, coal and material.
[d]Mining license tax has been adjusted to reflect some changes to the accounting system for years 1999 to 2004; payments are made in the year following report end date, but not adjusted to final until the next succeeding year. Final numbers for 2005 will not be available until 2007.
[e]Totals are by fiscal year in which the payments are received.
[f]Data may not match earlier reports.
[g]2005 numbers are preliminary and are subject to revision.

improve the bottom line for Alaska's metal producers and increase funds available for exploration. Exploration expenditures are expected to remain at current levels through 2006 as the mineral industry seeks to replace depleted mineral reserves. Alaska's rich mineral endowment will continue to attract junior and major mining companies. The Pebble and Donlin Creek advanced exploration projects are expected to remain the largest exploration projects into the near future.

Development expenditures will be slightly lower due to commissioning of the Pogo project, although construction continued at Coeur Alaska's Kensington project with commissioning expected in 2007. Construction expenditures will be incurred at Alaska Gold's Rock Creek and Big Hurrah projects but the magnitude of this effort will not be large. Stripping continues at Fort Knox Mine but commissioning of construction of a valley heap leach facility has been delayed due to permitting uncertainties. Nixon Fork construction will be incurred but will not be significant. No other significant development expenditures are expected.

Production quantities should improve slightly for 2006. The Pogo Mine poured its first doré bar on February 12, 2006, and continued operation through the year. Full production will not be attained due to tailings filtering restrictions and underground commissioning delays. A third filter has been ordered for Pogo but will not be received in time to enhance production for 2006. The Nixon Fork Mine should begin production during the 2006 but will not be to full capacity due to limited development and inability to process the tailings reserve. The large producing mines, Red Dog, Fort Knox, Usibelli Coal, and Greens Creek, are expected to continue at about the same or slightly higher level compared to 2005. A further decay in placer gold output is expected due to operating costs failing to significantly offset gains made by the gold price. The rock, sand, and gravel production numbers will probably remain about the same level and no significant improvement in prices are expected. Metal prices have improved and should serve to further complement the added production to produce a value in the order of 15 to 20 percent higher than in 2005.

APPENDIX A

New claims staked in Alaska 2001-2005

Quad no.	Quadrangle name[a]	New federal mining claims					New state mining claims				
		2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
18	De Long Mountains	0	0	0	0	0	79	0	0	0	0
23	Phillip Smith Mountains	0	0	0	0	0	0	1	0	0	0
26	Noatak	0	0	0	0	0	112	0	0	0	0
27	Baird Mountains	10	0	0	0	0	0	8	0	60	20
28	Ambler River	0	0	0	0	0	0	0	0	0	313
29	Survey Pass	0	0	0	0	0	0	0	0	0	68
30	Wiseman	12	12	45	16	14	6	14	54	13	13
31	Chandalar	7	15	26	16	25	14	26	90	25	13
36	Selawik	0	0	0	0	0	2	0	0	0	0
37	Shungnak	0	0	0	0	0	14	0	0	0	0
38	Hughes	0	0	0	0	0	1	0	0	3	0
39	Bettles	15	3	15	0	12	0	0	0	0	0
43	Teller	0	0	0	0	0	96	60	2	20	36
44	Bendeleben	0	0	0	0	0	17	52	53	226	55
45	Candle	27	0	0	0	0	51	48	11	290	148
47	Melozitna	0	0	0	0	0	11	0	0	0	0
48	Tanana	0	0	1	0	0	27	43	32	64	45
49	Livengood	0	0	0	0	0	54	151	111	168	89
50	Circle	0	0	0	0	0	111	136	180	185	126
52	Nome	0	0	0	0	0	38	13	13	9	7
53	Solomon	0	0	0	0	0	25	11	6	45	48
55	Nulato	0	0	0	0	0	32	0	40	0	66
56	Ruby	0	0	0	0	0	0	0	1	9	0
58	Fairbanks	0	0	0	0	0	55	49	114	127	70
59	Big Delta	0	0	0	0	0	112	110	478	694	988
60	Eagle	0	0	0	0	0	90	58	78	294	230
64	Ophir	0	0	0	0	0	3	40	14	43	1
65	Medfra	0	0	0	0	0	1	12	6	0	0
67	Healy	0	0	0	0	0	73	139	15	237	149
68	Mt. Hayes	47	36	21	24	253	268	175	471	208	84
69	Tanacross	0	0	0	0	0	46	0	20	33	0
73	Iditarod	0	0	0	0	0	8	28	13	213	1
74	McGrath	0	0	0	0	0	23	117	0	142	0
75	Talkeetna	0	0	0	0	0	65	81	171	333	178
76	Talkeetna Mountains	0	0	0	0	0	17	37	0	78	234
77	Gulkana	0	2	8	0	0	0	0	0	0	0
78	Nabesna	0	0	0	0	0	0	0	0	1	1
81	Russian Mission	0	0	0	0	0	0	5	0	0	0
82	Sleetmute	0	0	0	0	0	0	6	28	6	6
83	Lime Hills	0	0	0	0	0	4	0	5	272	271
84	Tyonek	0	0	0	0	0	2	0	57	656	113
85	Anchorage	0	0	0	0	0	35	48	104	86	79
86	Valdez	0	0	0	0	0	0	9	1	4	1
91	Bethel	0	0	0	0	0	0	0	0	8	8
92	Taylor Mountains	0	0	0	0	0	0	0	2	110	26
93	Lake Clark	0	0	0	0	0	8	2	501	522	866
95	Seward	16	17	21	10	18	5	14	6	21	7
96	Cordova	0	1	0	0	0	0	0	0	0	0
97	Bering Glacier	0	0	0	0	0	3	0	0	0	0
101	Goodnews Bay	0	0	0	0	0	0	0	0	12	0
102	Dillingham	0	0	0	0	0	87	0	34	16	147
103	Iliamna	0	0	0	0	0	134	36	720	1239	318
104	Seldovia	0	0	0	0	0	0	0	0	3	0
109	Skagway	0	0	0	0	0	12	1	1	0	4

Quad no.	Quadrangle name[a]	New federal mining claims 2001	2002	2003	2004	2005	New state mining claims 2001	2002	2003	2004	2005
112	Juneau	0	33	68	0	0	1	6	6	6	2
114	Sitka	0	0	9	0	0	0	0	0	0	0
116	Port Alexander	0	0	0	0	0	0	0	0	0	0
117	Petersburg	6	141	39	0	1	1	0	3	0	0
118	Bradfield Canal	0	0	0	0	0	0	2	0	0	0
119	Craig	223	0	380	0	83	7	0	3	2	2
120	Ketchikan	0	0	0	0	0	0	2	0	2	0
121	Dixon Entrance	0	5	0	0	13	0	0	0	0	0
122	Prince Rupert	95	4	30	0	0	11	0	0	0	0
128	Bristol Bay	0	0	0	0	0	0	0	0	0	10
130	Karluk	0	0	0	0	0	5	18	0	18	0
131	Kodiak	0	0	0	0	0	0	0	0	0	1
133	Chignik	0	0	0	0	0	0	0	0	0	6
135	Trinity Islands	0	0	0	0	0	0	13	11	391	383
136	Kaguyak	0	0	0	0	0	0	0	0	0	71
	TOTALS	**464**	**261***	**663**	**66**	**419**	**1,766**	**1,571**	**3,459**	**6,965**	**5,304**

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

[a]Unlisted quadrangles did not have any staked mining claims between 2001 and 2005.

*Eight federal claims extend over two quadrangles.

APPENDIX B
Prospecting sites in Alaska 1999–2005

Quad no.	Quadrangle name[a]	1999 New	1999 Total	2000 New	2000 Total	2001 New	2001 Total	2002 New	2002 Total	2003 New	2003 Total	2004 New	2004 Total	2005 New	2005 Total
18	De Long Mountains	27	27	72	99	0	99	0	91	0	91	0	91	0	91
26	Noatak	0	0	1	1	0	1	0	1	0	0	0	0	0	0
27	Baird Mountains	0	32	0	32	0	22	0	22	0	22	0	22	0	22
30	Wiseman	0	29	11	13	0	13	0	13	0	2	0	2	0	2
31	Chandalar	14	24	0	23	0	11	0	11	0	11	0	11	0	11
36	Selawik	1	7	0	7	3	7	0	7	0	7	0	7	0	7
38	Hughes	1	10	0	8	0	8	0	8	0	8	0	8	0	8
41	Fort Yukon	0	0	0	0	3	3	0	0	0	0	0	0	0	0
43	Teller	0	0	15	15	0	15	0	15	0	0	0	0	0	0
44	Bendeleben	7	136	0	60	0	44	0	37	0	37	0	37	0	37
45	Candle	6	26	32	46	0	38	0	32	0	0	0	0	0	0
47	Melozitna	144	336	0	144	0	128	0	0	0	0	0	0	0	0
48	Tanana	97	337	27	123	2	107	0	30	4	8	0	7	12	19
49	Livengood	20	147	24	123	0	36	7	15	7	22	0	22	3	25
50	Circle	82	443	32	302	5	138	9	92	1	69	0	68	3	71
52	Nome	21	83	37	102	1	87	0	66	0	30	0	30	0	30
53	Solomon	10	40	0	28	0	23	0	13	0	14	0	14	0	14
55	Nulato	22	26	6	32	0	30	0	16	0	2	0	2	0	2
56	Ruby	8	95	0	48	0	11	0	3	0	3	0	3	0	3
57	Kantishna River	0	4	0	4	0	4	0	4	0	4	0	4	0	4
58	Fairbanks	19	105	0	72	2	32	2	21	10	26	19	45	0	45
59	Big Delta	967	3,152	405	2,823	2	914	0	556	1	510	20	177	16	193
60	Eagle	27	282	76	316	0	142	1	108	0	32	5	37	1	38
64	Ophir	1	39	177	182	0	182	0	181	0	181	1	106	0	106
65	Medfra	2	10	0	3	0	1	0	1	2	3	0	3	0	3
67	Healy	16	597	13	101	0	48	0	34	0	26	8	34	0	34
68	Mt. Hayes	25	408	46	322	8	269	0	256	33	289	2	291	0	291
69	Tanacross	155	219	0	185	0	147	2	2	0	2	0	2	0	2
73	Iditarod	16	180	0	165	4	169	3	152	0	152	0	152	0	152
74	McGrath	16	158	52	65	0	65	0	57	0	5	2	7	0	7
75	Talkeetna	19	282	58	93	0	84	27	80	0	54	0	54	0	54
76	Talkeetna Mountains	2	94	4	81	0	50	4	52	38	86	2	88	66	154
77	Gulkana	0	8	3	3	0	3	0	3	0	3	0	3	0	3
78	Nabesna	0	0	4	4	0	4	0	4	0	4	0	4	0	4
81	Russian Mission	0	46	0	46	0	46	0	46	0	46	0	46	0	46
82	Sleetmute	0	46	0	26	0	26	0	26	0	26	0	26	0	26
84	Tyonek	0	14	0	0	0	0	0	0	4	4	0	4	0	4
85	Anchorage	10	64	3	62	0	61	1	54	0	51	0	51	4	55
86	Valdez	0	16	25	41	0	41	0	41	0	26	0	26	0	26
91	Bethel	18	22	0	18	0	10	0	0	0	0	0	0	0	0

APPENDIX B
Prospecting sites in Alaska 1999-2005

Quad no.	Quadrangle name[a]	1999 New	1999 Total	2000 New	2000 Total	2001 New	2001 Total	2002 New	2002 Total	2003 New	2003 Total	2004 New	2004 Total	2005 New	2005 Total
92	Taylor Mountains	0	32	0	0	0	0	0	0	0	0	0	0	0	0
95	Seward	2	5	0	2	0	2	0	0	0	0	0	0	0	0
97	Bering Glacier	0	2	0	2	0	0	0	0	0	0	0	0	0	0
102	Dillingham	0	44	0	0	0	0	0	0	0	0	0	0	0	0
104	Seldovia	0	0	0	1	0	1	0	1	0	1	0	1	0	1
105	Blying Sound	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	Skagway	0	4	0	0	0	0	0	0	0	0	0	0	0	0
117	Juneau	0	5	0	5	0	5	0	5	0	5	0	5	0	5
128	Trinity Islands	0	17	14	28	0	0	5	5	0	5	0	5	0	5
136	Craig	0	0	4	4	0	4	0	4	0	4	0	4	0	4
TOTALS		**1,755**	**7,652**	**1,142**	**5,860**	**27**	**3,131**	**61**	**2,165**	**101**	**1,871**	**59**	**1,499**	**105**	**1,604**

Source: Data provided by Alaska Department of Natural Resources Land Records Information Section.
[a]Unlisted quadrangles did not have any prospect sites staked during 1999-2005.

APPENDIX C

Selected significant mineral deposits and mineral districts in Alaska[a]

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

Alaska-Juneau, 100, (fig. C-3).
Anderson Mountain, 54, (fig. C-1).
Aniak district, 84, (fig C-3).
Apex-El Nido, 104, (fig. C-3).
Apollo-Sitka mines, 86, (fig. C-3).
Arctic, 9, (fig. C-1).
Avan Hills, 12, (fig. C-3).
Baultoff, 75, (fig. C-2).
Bear Mountain, 21, (fig. C-2).
Big Creek/Ladue, 58, (fig. C-1).
Big Hurrah, 32, (fig. C-3).
Binocular and other prospects, 72, (fig. C-1).
Bohemia Basin, 103, (fig. C-3).
Bokan Mountain, 122, (fig. C-3).
Bonanza Creek, 45, (fig. C-2).
Bond Creek, 73, (fig. C-2).
Bonnifield district massive sulfide deposits, 54, (fig. C-1).
Bornite, 8, (fig. C-1).
Brady Glacier, 98, (fig. C-3).
BT, 54, (fig. C-1).
Buck Creek, 23, (fig. C-2).
Calder Mine, 133, (fig C-2).
Canwell and Nikolai Complex, 140 (fig. C-3)
Cape Creek, 22, (fig. C-2).
Carl Creek, 74, (fig. C-2).
Casca VABM, 53, (fig. C-1).
Castle Island, 111, (fig. C-1).
Chandalar mining district, 17, (fig. C-3).
Chichagof, 101, (fig. C-3).
Chistochina, 68, (figs. C-2, C-3).
Circle mining district, 52, (fig. C-3).
Claim Point, 82, (fig. C-3).
Coal Creek, 63, (fig. C-2).
Copper City, 119, (fig. C-1).
Cornwallis Peninsula, 110, (fig. C-1).
Council mining district, 33, (fig. C-3).
Delta massive sulfide belt, 55, (fig. C-1).
Denali prospect, 67, (fig. C-1).
Dolphin, 49e, (fig. C-3).
Donlin Creek, 137, (fig. C-3).
Drenchwater, 3, (fig. C-1).
Dry Creek, 54, (fig. C-1).
Duke Island, 141 (fig. C-3)
Eagle Creek, 34, (fig. C-3).
Ear Mountain, 25, (fig. C-2).
Ellamar, 78, (fig. C-1).
Ernie Lake (Ann Creek), 15, (fig. C-1).
Esotuk Glacier, 20, (fig. C-2).
Fairbanks mining district, 49, (fig. C-3).
Fairhaven/Inmachuk district, 39, (fig. C-3).
Fort Knox, 49a, (fig. C-3).
Fortymile mining district, 60, (fig. C-3).
Frost, 7a, (fig. C-1).
Funter Bay mining district, 99, (fig. C-3).
Galena Creek, 21a, (fig. C-1).
Gil Claims, 49f, (fig. C-3).
Ginny Creek, 4, (fig. C-1).
Golden Zone mine, 64, (figs. C-1, C-3).
Goodnews Bay, 85, (fig. C-3).
Grant Mine, 49c, (fig. C-3).
Greens Creek, 105, (fig. C-1).
Groundhog Basin, 112, (fig. C-1).
Haines Barite/Palmer, 95, (fig. C-1).
Hannum, 27, (fig. C-1).
Hirst Chichagof, 101, (fig. C-3).
Horsfeld, 76, (fig. C-2).
Hot Springs mining district, 47, (figs. C-2, C-3).
Hyder mining district, 117, (figs. C-1, C-2).
Iditarod district, 43, (fig. C-3).
Illinois Creek, 132, (figs. C-1, C-3).
Independence, 79, (fig. C-3).
Independence Creek, 28, (fig. C-1).
Inmachuk River, 39, (fig. C-3).
Innoko-Tolstoi mining district, 44, (fig. C-3).
Ivanof, 88, (fig. C-2).
Jimmy Lake, 94, (fig. C-1).
Johnson River, 125, (fig. C-3).
Jualin, 128, (fig. C-3).
Jumbo, 118, (fig. C-1).
Kaiyah, 138, (fig. C-3).
Kantishna mining district, 61, (fig. C-3).
Kasaan Peninsula, 114, (fig. C-1).
Kasna Creek, 92, (fig. C-1).
Kemuk Mountain, 123, (fig. C-3).
Kennecott deposits, 71, (fig. C-1).
Kensington, 127, (fig. C-3).
Kivliktort Mountain, 5a, (fig. C-1).
Klery Creek, 14, (fig. C-3).
Klukwan, 96, (fig. C-3).
Kougarok Mountain, 26, (fig. C-2).
Koyukuk-Hughes mining district, 42, (fig. C-3).
Koyukuk-Nolan mining district, 16, (fig. C-3).
Latouche, Beatson, 80, (fig. C-1).
Liberty Bell, 54, (fig. C-1).
Lik, 1, (fig. C-1).
Livengood-Tolovana mining district, 48, (fig. C-3).
Lost River, 24, (fig. C-2).
Lucky Shot, 79, (fig. C-3).
McLeod, 124, (fig. C-2).
Mertie Lode, 99, (fig. C-3).
Midas mine, 77, (fig. C-1).
Mike deposit, 90, (fig. C-2).
Mirror Harbor, 102, (fig. C-3).
Misheguk Mountain, 13, (fig. C-3).
Mosquito, Peternie, 56, (fig. C-2).
Mt. Prindle, 50, (fig. C-3).
Nabesna mine, 69, (fig. C-3).
Niblack, 121, (fig. C-1).
Nim prospect, 65, (fig. C-1).
Nimiuktuk River, 126, (fig. C-1).
Nixon Fork, 135, (fig. C-3).
Nome mining district, 30, (fig. C-3).
Nunatak, 97, (fig. C-2).
Omalik, 35, (fig. C-1).
Omar, 7, (fig. C-1).
Orange Hill, 73, (fig. C-2).
Pebble Copper, 129, (fig. C-1).
Placer River, 38, (fig. C-2).
Pleasant Creek, 53, (fig. C-1).
Pogo, 130, (fig. C-3).
Poovookpuk Mountain, 40, (fig. C-2).
Porcupine Lake, 18, (fig. C-2).
Purcell Mountain, 41, (fig. C-2).
Pyramid, 87, (fig. C-2).
Quartz Creek, 37, (fig. C-1).
Quartz Hill, 120, (fig. C-2).
Red Bluff Bay, 109, (fig. C-3).
Red Devil, 83, (fig. C-3).
Red Dog, 2, (fig. C-1).
Red Mountain, 82, (fig. C-3).
Rex deposit, 91, (fig. C-2).
Rock Creek, 31, (fig. C-3).
Rua Cove, 81, (fig. C-1).
Ruby mining district, 46, (fig. C-3).
Ryan Lode, 49b, (fig. C-3).
Salt Chuck, 115, (fig. C-3).
Sheep Creek, 54, (fig. C-1).
Shotgun Hills, 131, (fig. C-3).
Shulin Lake, 139 (fig. C-3)
Sinuk River region, 29, (fig. C-1).
Slate Creek, 59, (fig. C-3).
Sleitat Mountain, 93, (fig. C-2).
Smucker, 11, (fig. C-1).
Snettisham, 107, (fig. C-3).
Snipe Bay, 113, (fig. C-3).
Solomon mining district, 33, (fig. C-3).
Spirit Mountain, 70, (fig. C-3).
Stampede mine, 62, (fig. C-3).
Story Creek, 5, (fig. C-1).
Sumdum, 106, (fig. C-1).
Sun, 10, (fig. C-1).
Taurus, 57, (fig. C-2).
Three Castle Mountain, 53, (fig. C-1).
Tracy Arm, 108, (fig. C-1).
True North, 49d, (fig. C-3).
Twin Mountain, 51, (fig. C-2).
Union Bay, 116, (fig. C-3).
Valdez Creek district, 66, (fig. C-3).
Vinasale Mountain, 134, (fig. C-3).
Virginia Creek, 54, (fig. C-1).
Von Frank Mountain, 136, (fig. C-3).
War Baby, 79, (fig. C-3).
Weasel Mountain, Bee Creek, 89, (fig. C-2).
Whoopee Creek, 6, (fig. C-1).
Willow Creek, 79, (fig. C-3).
Wind River, 19, (fig. C-1).
Windy Creek, 36, (fig. C-2).
Zackly, 67a, (fig. C-1).

[a]This generalized summary does not describe all of the 7,000 known mineral occurrences in Alaska.

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

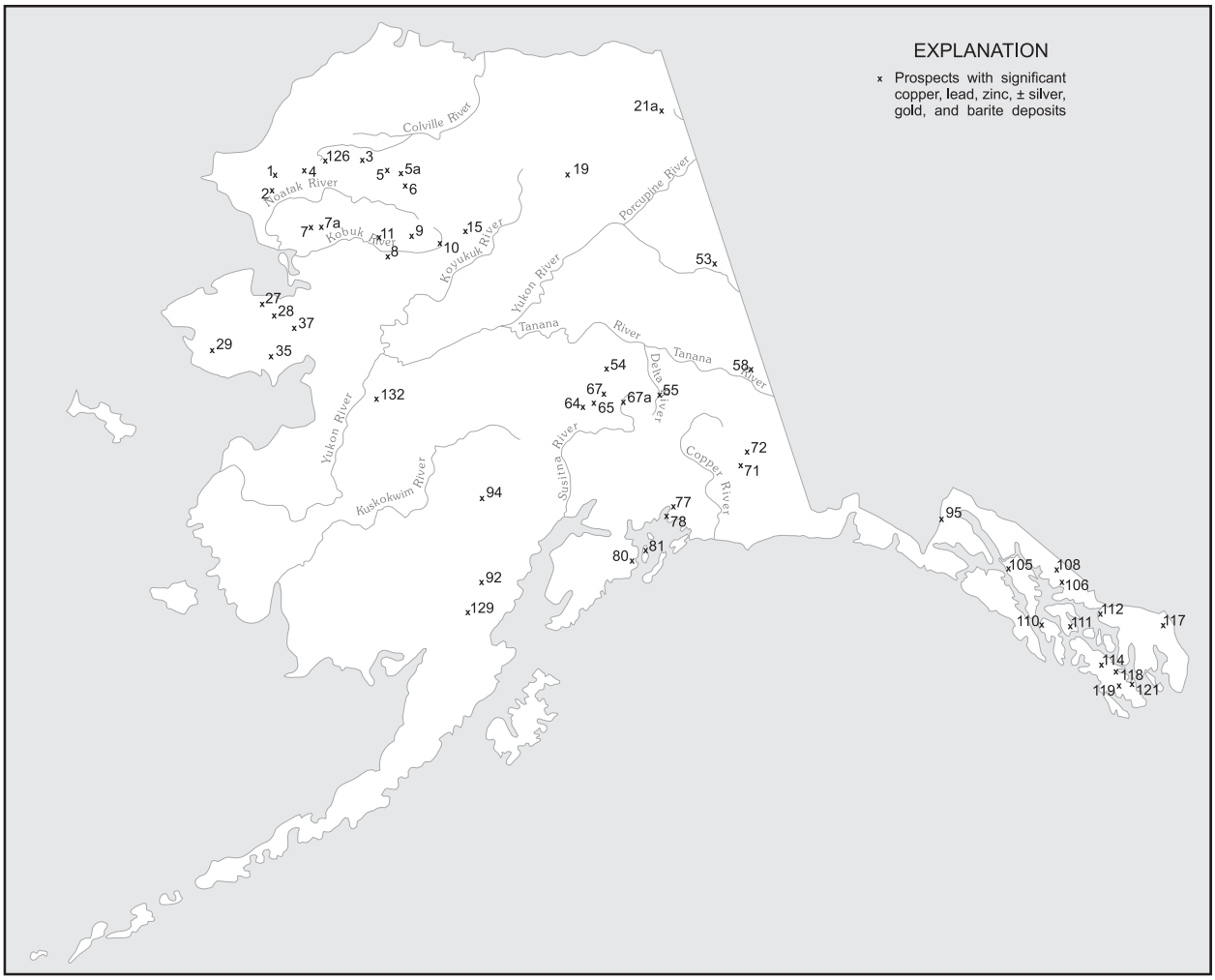


Figure C-1. *Significant copper, lead, zinc with credits of silver, gold, and barite deposits in Alaska, 2004.*

Map no.

1 **Lik**—Major stratabound massive sulfide (Zn–Pb–Ag–Ba) deposit in black shale and chert. Proven reserve (Lik) estimate of 24 million tons of 9% Zn, 3.1% Pb, and 1.4 oz/ton Ag (fig. C-1).

2 **Red Dog**—At least five major stratabound massive sulfide deposits hosted in Pennsylvanian or Mississippian shale; similar to locality 1. Mining from 1989 to 2005 produced 7.1 million tons of Zn, 1.2 million tons of Pb, and 66.8 million oz Ag. Deposits, with announced reserves from 2000, include: (a) The Main deposit at Red Dog contains 46.2 million tons of proven ore grading 19.2% Zn, 5.2% Pb, with 2.92 oz/ton Ag. (b) The Aqqaluk deposit contains probable, indicated, and inferred reserves of 73.0 million tons grading 15.2% Zn, 4.03% Pb, and 2.17 oz/ton Ag. (c) The Qanaiyaq (formerly named Hilltop) deposit with an indicated reserve is 10.6 million tons grading 17.8% Zn, 5.5% Pb, and 3.41 oz/ton Ag. (d) Inferred resource in the Paalaaq deposit is 14.3 million tons of 15.0% Zn, 4.0% Pb, and 2.63 oz/ton Ag. (e) Anarraq deposit discovered in 1999 has an inferred reserve of 19.0 million tons of 15.8% Zn, 4.8% Pb, and 2.07 oz/ton Ag (fig. C-1).

3 **Drenchwater**—Mississippian and Pennsylvanian shales and cherts contain three stratabound base metal occurrences spatially related to acid volcanics. The lowest unit, a siliceous mudstone, contains a 2 ft layer with up to 23% Zn. An overlying gray chert contains up to 11% Zn and up to 5% Pb with some Ag in fracture fillings. At the top of the overlying tuffaceous layer, Ag-bearing Zn and Pb mineralization outcrops discontinuously for at least 6,500 ft, and contains up to 26% Zn and 51% Pb in grab samples (fig. C-1).

4 **Ginny Creek**—Epigenetic, disseminated Zn–Pb–Ag deposits with barite in sandstone and shale of Late Devonian through Early Mississippian Noatak Sandstone . Random grab samples of float contain 0.3% to 3.0% Zn and highly variable amounts of Pb and Ag (fig. C-1).

5 **Story Creek**—Epigenetic replacement deposits of Zn–Pb–Ag–Cu–Au hosted in brecciated zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Grab samples of high-grade material contain up to

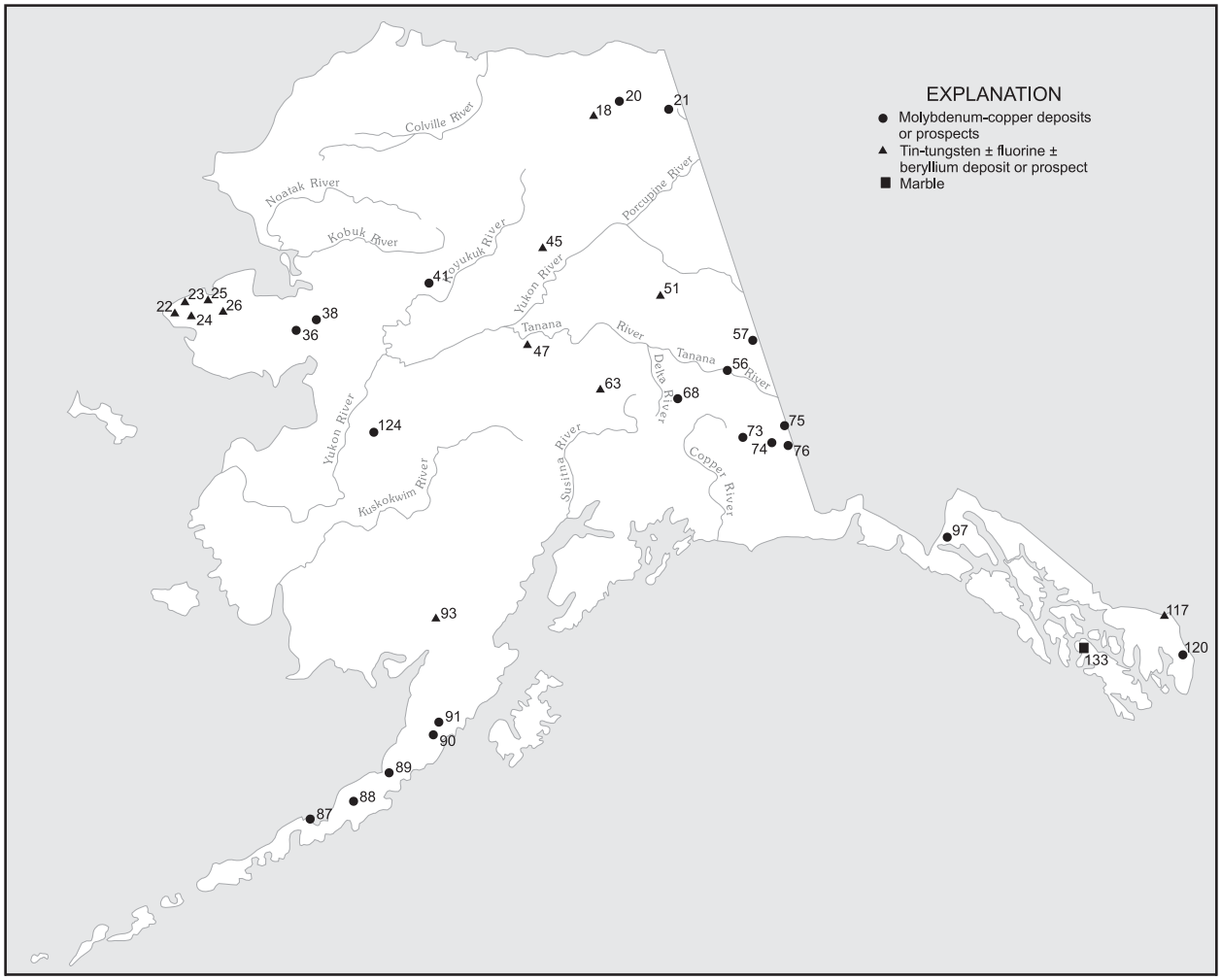


Figure C-2. *Significant molybdenum–copper and tin–tungsten with credits of fluorite and beryllium deposits in Alaska, 2004.*

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

5a **Kivliktort Mountain**—Mineralized float is widespread on the north flanks of the mountain, apparently spatially related to the contact between shales at the base of the hills and coarse-grained siliceous clastic rocks on the upper slopes. Rock samples containing up to 30% Zn have been reported (fig. C-1).

6 **Whoopee Creek**—Epigenetic replacement deposits of Zn–Pb–Cu–Ag–Au–Cd in breccia zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Random grab samples of mineralized material contain 0.24% Cu, 0.37% Cd, 46% Zn, 44% Pb, 0.14 oz/ton Au, and 14.8 oz/ton Ag (fig. C-1).

7 **Omar**—Epigenetic replacement deposits of Paleozoic age; include bedded barite occurrences. Grab samples contain 15.3% Cu, 0.15% Pb, 0.95% Zn, 0.05% Co, and 0.3 oz/ton Ag. BLM estimates 35 million tons of 4% Cu (fig. C-1).

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

8 **Bornite**—Major stratabound Cu–Zn deposit in brecciated carbonate rock of Devonian age; 5.0 million ton orebody contains 4.0% Cu and accessory Zn and Co. Larger reserve estimate of 40 million tons of about 2% Cu and undisclosed amount of Zn and Co. At grade of 1.2% Cu, reserves are 100 million tons (fig. C-1).

9 **Arctic**—Major volcanogenic (Cu–Zn) massive sulfide deposit hosted in sequence of metarhyolite, metatuff, and graphitic schist of Devonian age; indicated reserves of 40 million tons grade 4.0% Cu, 5.5% Zn, 0.8% Pb, 1.6 oz/ton Ag, and 0.02 oz/ton Au (fig. C-1).

10 **Sun**—Major (Cu–Pb–Zn–Ag) massive sulfide deposit in sequence of middle Paleozoic metarhyolite and metabasalt. Average grades are 1 to 4% Pb, 6 to 12% Zn, 0.5 to 7% Cu, 3 to 11 oz/ton Ag (fig. C-1).

11 **Smucker**—Middle Paleozoic volcanogenic massive sulfide deposit; 3,000 ft long and up to 190 ft wide; contains significant tonnage of Cu–Pb–Zn ore that

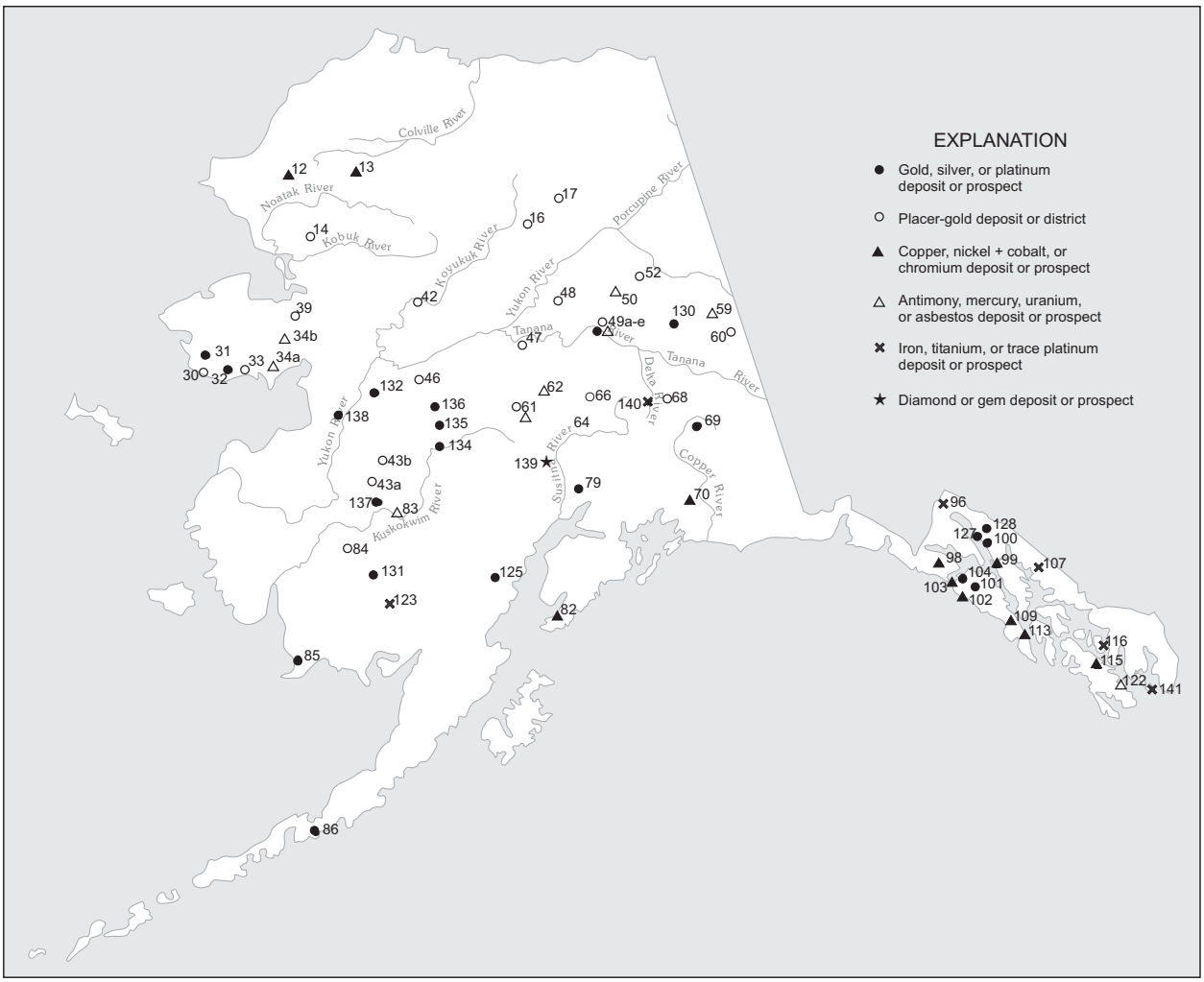


Figure C-3. *Significant gold, silver, platinum, and strategic mineral deposits in Alaska, 2004.*

grades 1.5% Pb, 5 to 10% Zn, 3 to 10 oz/ton Ag, with minor Au (fig. C-1).

12 **Avan Hills**—Disseminated chromite in layered ultramafic rocks; grab samples contain up to 4.3% Cr with 0.015 oz/ton PGM (fig. C-3).

13 **Misheguk Mountain**—Chromite occurrences similar to those in Avan Hills (fig. C-3).

14 **Klery Creek**—Lode and placer Au deposits worked intermittently from 1909 through 1930s. Total production through 1931, mostly from placer deposits, estimated at 31,320 oz Au (fig. C-3).

15 **Ernie Lake (Ann Creek)**—Stratabound massive sulfide occurrence in metarhyolite, metatuff, and marble. Gossan zones strongly anomalous in Cu–Pb–Zn and Ag (fig. C-1).

16 **Koyukuk–Nolan mining district**—Major placer Au district; from 1893 to 2005 produced an estimated 345,751 oz Au. Gold placers in Nolan Creek mined on surface and underground, both sources of large gold nuggets. Significant deep placer reserves remain (fig. C-3).

17 **Chandalar mining district**—Major Au-producing district; substantial production in excess of 66,086 oz Au through 2004 from lode and placer sources; lode Au found in crosscutting quartz veins that intrude schist and greenstone. Active development of placer deposits and lodes in progress. Inferred lode reserves estimated to be 45,000 tons with grade of 2 oz/ton Au (fig. C-3).

18 **Porcupine Lake**—Stratiform fluorite occurrences and argentiferous enargite, tetrahedrite associated with felsic volcanic rocks of late Paleozoic age. Reported grades of up to 30% fluorite (CaF_2) reported, with grab samples of 4.8% Cu (fig. C-2).

19 **Wind River**—Stratabound Pb–Zn massive sulfide prospects; reported grades of up to 5% Pb (fig. C-1).

20 **Esotuk Glacier**—Disseminated Mo–Sn–W–Pb–Zn mineralization in skarns associated with Devonian(?) schistose quartz monzonite. Grab samples contain up to 0.08% Sn and 0.15% W (fig. C-2).

21 **Bear Mountain**—Major stockwork Mo–W–Sn occurrence in intrusive breccia. Rock samples containing up to 0.8% Mo and 0.6% W occur within a 35-acre area

where soil samples average more than 0.2% MoS_2, and an adjacent 25-acre area where rubble contains wolframite has soils averaging greater than 0.12% WO_3. Rubble crop in this area indicates a Tertiary porphyry system as the source of the Mo and W (fig. C-2).

21a **Galena Creek**—Steeply dipping veins contain up to 21% Cu, 3.5% Zn, and 1.3% Pb with 5.5 oz/ton Ag on the east side of the creek, and on the ridge west of the creek a large area of disseminated mineralization and veinlets contains predominantly Zn (fig. C-1).

22 **Cape Creek**—Major placer Sn producer. More than 500 tons Sn produced from 1935 to 1941; from 1979 to 1990, produced 1,040 tons Sn. Derived from Cape Mountain in contact zone of Cretaceous granite and limestone (fig. C-2).

23 **Buck Creek**—Major placer Sn producer. More than 1,100 tons Sn produced from 1902 to 1953 (fig. C-2).

24 **Lost River**—Major Sn, fluorite, W, and Be deposit associated with Cretaceous Sn granite system. More than 350 tons Sn produced from skarn and greisen lode sources. Measured reserves amount to 24.6 million tons that grade 0.15% Sn, 16.3% CaF_2, and 0.03% WO_3, based on 45,000 ft of diamond drilling (fig. C-2).

25 **Ear Mountain**—Placer Sn district and Sn–Cu–Au–Ag–Pb–Zn skarn mineralization of Cretaceous age. Area also anomalous in U (fig. C-2).

26 **Kougarok Mountain**—Sn deposit hosted in quartz–tourmaline–topaz greisen of Cretaceous age. Grades may average 0.5% Sn and 0.01% Ta and Nb, but a high-grade resource of 150,000 tons grading 1% + Sn was identified, with incrementally higher tonnage at lower grades (fig. C-2).

27 **Hannum**—Stratiform, carbonate-hosted Pb–Zn–Ag massive sulfide deposit of mid-Paleozoic age in heavily oxidized zone that ranges from 30 to 150 ft thick. Mineralized zone reported to assay up to 10% Pb, 2.2% Zn, 0.04 oz/ton Au, and 1.76 oz/ton Ag (fig. C-1).

28 **Independence Creek**—Pb–Zn–Ag massive sulfide deposit; high-grade ore shipped in 1921 contained 30% Pb, 5% Zn, up to 150 oz/ton Ag. Mineralization restricted to shear zone in carbonates (fig. C-1).

29 **Sinuk River region**—Several Pb–Zn–Ag–Ba–F bearing massive sulfide deposits and layered Fe deposits in carbonate and metavolcanic rocks of Nome Group. Mineralized zones extend for over 8,000 ft along strike (fig. C-1).

30 **Nome mining district**—Major placer Au producer. Production from 1897–2005 in excess of 4,994,974 oz Au, all from placers. Past Sb and W production (fig. C-3).

31 **Rock Creek**—550,000 oz Au resource, with about 11.79 million tons grading 0.059 oz/ton Au in vein swarms and stringers in an area 1,500 ft long, 500 ft maximum width and 300 ft deep (fig. C-3).

32 **Big Hurrah**—Epigenetic vein deposit in black slate and metasedimentary rocks of the Solomon schist. Deposit contains some W mineralization and has produced over 27,000 oz Au from nearly 50,000 tons milled ore. Proven, inferred, and indicated reserves total 104,000 tons that grade 0.61 oz/ton Au, 0.55 oz/ton Ag, and credits of WO_3 (fig. C-3).

33 **Solomon and Council mining districts**—Major placer Au districts; produced over 1,046,513 oz through 2005. Three structurally controlled Au deposits in Bluff area—Daniels Creek, Saddle, and Koyana Creek—contain minimum inferred reserves of 6.5 million tons grading 0.1 oz/ton Au (fig. C-3).

34a **Eagle Creek**—U prospect in Cretaceous Kachauik alkalic intrusive rocks. Highly anomalous U concentrations up to 1,000 ppm reported (fig. C-3).

34b **Death Valley (Boulder Creek)**—Sandstone-type U prospect with predominantly epigenetic mineralization. Over 11,000 feet of drilling defined a minimum reserve of 1 million pounds of U_3O_8 with average grade of 0.27% U_3O_8 and 9.9 foot thickness within 200 feet of surface (fig. C-3).

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

36 **Windy Creek**—Disseminated Mo–Pb–Zn mineralization in quartz veins and skarn with reported values as high as 0.15% Mo (fig. C-2).

37 **Quartz Creek**—Significant Pb–Zn–Ag mineralization; reported grades of 15% combined Pb–Zn and 10 oz/ton Ag (fig. C-1).

38 **Placer River**—Significant Mo–F mineralization disseminated in intrusive rocks. Reported values of 0.2% Mo (fig. C-2).

39 **Fairhaven/Inmachuk district**—Placer deposits with 348,089 oz production from 1902–2005; significant reserves remaining in a large ancestral channel system. Large base metal sulfide concentrations and U values in concentrates (fig. C-3).

40 **Poovookpuk Mountain**—Porphyry Mo mineralization. Reported grades of up to 0.25% Mo (fig. C-2).

41 **Purcell Mountain**—Mo and Ag occurrences associated with Cretaceous alkalic igneous plutons, alaskite, and bostonite dikes (fig. C-2).

42 **Koyukuk–Hughes mining district**—Production of 283,104 oz Au from 1930 to 2005, mainly from Alaska Gold Co. dredge at Hogatza; dredge reactivated in 1981, but deactivated in 1984, and reactivated again in 1990. Non-float mechanized operation on Utopia Creek produced significant amount of placer Au from 1930 to 1962 (fig. C-3).

43 **Iditarod district**—Major placer Au district; produced 1,563,006 oz Au through 2005. Significant reserves of lode Au and lode W at Golden Horn deposit Chicken Mountain, and other known lodes in region associated with shear zones and monzonite intrusive rocks of Late Cretaceous age (fig. C-3).

44 **Innoko–Tolstoi mining district**—Major placer Au district with significant lode Au–Sb–Hg potential; lode sources are Late Cretaceous volcanic-plutonic complexes and dike swarms that intrude Mesozoic

flysch; mining district produced 729,097 oz Au through 2005, almost all from placer deposits (fig. C-3).

45 **Bonanza Creek**—Skarn-type W mineralization along intrusive contact; no published information available (fig. C-2).

46 **Ruby mining district**—Placer Au–Sn district; produced more than 477,526 oz Au from 1931 to 2005; mining district also contains Pb–Ag prospects with grades reportedly as high as 82 oz/ton Ag (fig. C-3).

47 **Hot Springs mining district**—Placer Au–Sn district; produced more than 579,845 oz Au and over 720,000 lb cassiterite through 2005. Includes Eureka and Tofty subdistricts. Magnetite-rich, niobium-bearing carbonatite sill in the Tofty area contains geochemically anomalous Nb, REE, P, and Y (figs. C-2, C-3).

48 **Livengood–Tolovana mining district**—Placer Au district; produced more than 529,513 oz Au since discovery in 1914 to 2005. Substantial reserves remain mainly on Livengood Bench, a Pliocene ancestral channel (fig. C-3).

49 **Fairbanks mining district**—Nationally ranked Au-producing district; largest producer in Alaska. Produced about 8,193,092 oz Au from placer deposits (1902–2005). Major lode Au and lode Sb producer; produced more than 3,647,449 oz Au and over 2000 tons Sb from veins and shear zones through 2005. Production of W exceeded 4,000 short ton units since 1915, all derived from skarn near Cretaceous quartz monzonite (fig. C-3).

49a **Fort Knox**—Disseminated Au deposit within granodiorite/quartz monzonite pluton near Fairbanks. Proven and probable reserves as of December 31, 2004, open at depth, are 1,953,000 oz of Au in 90.58 million tons of rock at an average Au grade of 0.022 oz/ton. Measured and indicated resources are 53.85 million tons grading 0.018 oz/ton Au containing 948,000 ounces of gold. Fairbanks Gold Mining Inc. at Fort Knox and True North mines produced 3,342,901 oz of Au from 1996 to 2005 (fig. C-3).

49b **Ryan Lode**—Based on a 0.015 oz/ton cutoff, total reserves in the metasediment-hosted Ryan Lode and subparallel igneous-hosted Curlew Shear are 822,200 oz of Au in 14.6 million tons of rock. A geologic resource of about 2.4 million oz occurs within the total shear zone system (fig. C-3).

49c **Grant Mine**—Series of subparallel Au-bearing quartz veins in schist and quartzite of Ester Dome based on exploration in 1990. Indicated reserves one of the O'Dea vein system are 212,000 tons of 0.36 oz/ton Au. Other similar vein systems are found nearby (fig. C-3).

49d **True North**—Au occurs in siderite-quartz veins in carbonaceous quartzite and schist within a terrane containing eclogitic rocks. Proven and probable reserves as of December 31, 2002 are 305, 748 oz Au in 7.12 million tons of rock at a grade of 0.043 oz/ton Au, with measured and indicated resource of 37,086 oz Au at grade of 0.041 oz/ton Au in 907,201 tons of rock. 11.04 million tons of 0.04 oz/ton ore were processed at Fort Knox mill from 2001 through 2004 (fig. C-3).

49e **Dolphin—**Mineralized intermediate intrusion contains anomalous Au, As, Bi and Sb. Discovery hole in 1995 intercepted 330 ft of 0.049 oz/ton Au (fig. C-3).

49f **Gil Claims**—Gold occurs in two calc-silicate zones within Paleozoic schist units. Gold enrichment occurs along iron-stained shears and within quartz-calcite veinlets. Drilling identified an in-place Au resource of 433,000 oz at an average grade of 0.04 oz/ton Au (fig. C-3).

50 **Mt. Prindle**—Significant U-rare-earth mineralization in Mesozoic alkaline igneous rocks. Rock geochemical values of up to 0.7% U; up to 15% rare-earth elements reported (fig. C-3).

51 **Twin Mountain**—Significant W mineralization associated with skarn development along contact zone of quartz monzonite stock of Cretaceous age (fig. C-2).

52 **Circle mining district**—Currently one of Alaska's largest producing placer Au districts; produced more than 1,068,860 oz Au since discovery in 1893 to 2005. Has significant potential for Sn, W, and Au mineralization from variety of lode sources (fig. C-3).

53 **Three Castle Mountain, Pleasant Creek, Casca VABM**—Stratabound Pb–Zn massive sulfide mineralization. Reported grades of up to 17% Zn and 2% Pb (fig. C-1).

54 **Bonnifield district massive sulfide deposits (Anderson Mountain, Dry Creek, Sheep Creek, Virginia Creek, BT, Liberty Bell)**—Significant volcanogenic Cu–Pb–Zn–Ag massive sulfide deposits of Devonian to Mississippian age. Potential for high-grade deposits reported. Includes Liberty Bell stratabound Au–B deposit and mineralization in Sheep Creek; latter contains Sn as well as base metals (fig. C-1).

55 **Delta massive sulfide belt**—Contains at least 30 known volcanogenic massive sulfide deposits and occurrences. Grades from 0.3 to 1.1% Cu, 1.7 to 5.7% Zn, 0.5 to 2.3% Pb, 0.7 to 2.0 oz/ton Ag, and 0.018 to 0.061 oz/ton Au; estimated potential reserve of 40 million tons for all deposits. Recent exploration has identified several gold prospects associated with silicified structures in the White Gold trend (fig. C-1).

56 **Mosquito, Peternie**—Porphyry Mo prospects of early Tertiary age; reported grades of up to 0.17% Mo (fig. C-2).

57 **Taurus**—Significant major porphyry Cu–Au prospect of Paleocene age. East Taurus Zone contains inferred reserves of 140 million tons grading about 0.30% Cu and 0.01 oz/ton Au, and 0.03% Mo (fig. C-2).

58 **Big Creek/Ladue**—Stratabound Pb–Zn–Ag massive sulfide prospects in metavolcanic rocks (fig. C-1).

59 **Slate Creek**—At least 55 million tons of 6.3%, high-quality chrysotile asbestos in serpentinized ultramafic rocks of Permian(?) age (fig. C-3).

60 **Fortymile mining district**—Major placer Au district. Produced over 554,026 oz placer and very minor lode Au since discovery in 1883 to 2005, the longest continuous production of Au (120 years) of any Alaskan mining district (fig. C-3).

61 **Kantishna mining district**—Major placer Au and lode Ag–Au–Pb–Zn–Sb–W district. Produced 99,307 oz placer and lode Au, about 307,000 oz lode Ag, and 2,500 tons Sb from shear zones and vein deposits hosted in metamorphic units of Yukon-Tanana terrane. Nearly 90 lode deposits have been identified; potential

exists for significant Ag–Au–Pb–Zn resources. Metalliferous stratabound base metal deposits occur in schist and quartzite (fig. C-3).

62 **Stampede mine**—Major Sb deposit; produced more than 1,750 tons Sb from large shear zone in poly-metamorphic rocks of Yukon–Tanana terrane (fig. C-3).

63 **Coal Creek**—Greisen-hosted Sn–Cu–W deposit in "McKinley" age pluton (55 million years old). Reported reserves of 5 million tons of ore that grade 0.28% Sn and 0.3% Cu with credits of W, Ag, and Zn (fig. C-2).

64 **Golden Zone mine**—Major Au–Cu–Ag deposits in Late Cretaceous breccia pipe and skarn deposits. Produced more than 1,581 oz Au, 8,617 oz Ag, and 21 tons Cu. The Golden Zone deposit contains measured and indicated resources of approximately 2 million tons, grading 0.106 oz/ton Au, 0.47 oz/ton Ag and 0.12 % Cu (utilizing a 0.05 oz/ton Au cut-off grade), and contains approximately 214,800 ounces of gold, 948,000 ounces of silver and 24,000 pounds of copper. (figs. C-1, C-3).

65 **Nim Prospect**—Porphyry Cu–Ag–Au deposit of Late Cretaceous age. Reported grades of up to 5.0% Cu and 9 oz/ton Ag (fig. C-1).

66 **Valdez Creek district**—About 509,430 oz Au production through 2005. Cambior Alaska Inc., the largest placer mine in Alaska, operated in this district until September 1995 (fig. C-3).

67 **Caribou Dome** (**Denali)**—Ten identified stratabound Cu deposits in volcanic sedimentary rocks of Triassic age. Proven and probable ore is 700,000 tons grading 6% Cu with Ag credits, with indicated resources that may contain 2 million tons ore over strike length of 4,000 feet (fig. C-1).

67a **Zackly**—Disseminated Cu and Au in garnet-pyroxene skarn and marble. Reserves are estimated at 1.4 million tons grading 2.6 percent Cu and 0.175 oz/ton Au (fig. C-1).

68 **Chistochina**—Porphyry Cu prospects of Tertiary age and placer Au district; produced more than 182,175 oz Au and small amount Pt from placer deposits through 2005(figs. C-2, C-3).

69 **Nabesna mine**—Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(?) age; produced over 66,500 oz Au from about 88,000 tons of ore from 1930 to 1941 (fig. C-3).

70 **Spirit Mountain**—Massive and disseminated Cu–Ni mineralization in mafic-ultramafic complex (fig. C-3).

71 **Kennecott deposits**—Major stratiform Cu–Ag massive sulfide deposits localized near contact between Chitistone Limestone and Nikolai Greenstone of Triassic age; contained some of highest grade Cu lodes mined in North America. From 1911 to 1938, produced more than 600,000 tons Cu and 10 million oz Ag from 4.8 million tons ore. Some reserves remain (fig. C-1).

72 **Binocular and other prospects**—Kennecott-type Cu–Ag massive sulfide deposits (fig. C-1).

73 **Bond Creek–Orange Hill**—Two major porphyry Cu–Mo deposits of Late Cretaceous age; reported inferred reserves of 850 million tons ore that grade 0.3 to 0.5% Cu and 0.03% Mo (fig. C-2).

74 **Carl Creek**—Porphyry Cu prospect in altered intrusive complex; similar to locality 73 (fig. C-2).

75 **Baultoff**—Porphyry Cu prospect in altered intrusive rocks; inferred reserves of 145 million tons of 0.20% Cu; similar to locality 73 (fig. C-2).

76 **Horsfeld**—Porphyry Cu prospect of Late Cretaceous age (fig. C-2).

77 **Midas mine**—Significant stratabound Cu (Ag–Au–Pb–Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Orca Group. Produced more than 1,650 tons Cu from 49,350 tons ore (fig. C-1).

78 **Ellamar**—Stratabound Cu–Zn–Au massive sulfide deposit in sediment of Eocene(?) Orca Group. Produced more than 8,000 tons Cu, 51,307 oz Au, and 191,615 oz Ag from about 301,835 tons ore (fig. C-1).

79 **Willow Creek, Independence, Lucky Shot, War Baby**—Major lode Au deposits (Ag–Cu–Pb–Zn–Mo) in veins cutting Mesozoic quartz diorite. Produced more than 606,400 oz Au from lode sources and about 55,600 oz Au from associated placer deposits (fig. C-3).

80 **Latouche, Beatson**—Major stratabound Cu–Zn–Ag massive sulfide deposits in Orca Group sedimentary rocks and mafic volcanic rocks. Produced more than 10,250 tons Cu from 6 million tons ore. Inferred reserves of 5 million tons ore that grade 1% Cu, 1.5% Pb+Zn (fig. C-1).

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

82 **Red Mountain and Claim Point**—Significant Cr occurrences associated with Jurassic layered ultramafic complexes at Red Mountain near Seldovia. More than 39,951 tons of metallurgical-grade ore shipped through 1976; huge low-grade Cr resource may remain, of which 30 million tons grade 5.1% Cr_2O_3 (fig. C-3).

83 **Red Devil**—Major Hg–Sb deposit; high-grade epithermal Hg–Sb deposit hosted in shear zones in Kuskokwim Group sedimentary rocks. More than 35,000 flasks Hg produced from 75,000 tons ore (fig. C-3).

84 **Aniak district**—Significant placer Au district with 588,433oz Au produced through 2005, mainly from the Nyac and Donlin Creek areas (fig. C-3).

85 **Goodnews Bay**—Major placer Pt district; estimated to have produced over 555,000 oz refined PGE metals from 1934 to 1976; one of the largest known PGE metal resources in United States. Possible resources of 60 million yd^3 of deep, PGE-bearing gravels remain. Lode source believed to be Alaskan-type zoned ultramafic complex of Jurasssic or Cretaceous age. Possible significant offshore placer potential (fig. C-3).

86 **Apollo–Sitka mines**—Major lode Au deposits; produced more than 107,600 oz Au from ore that averaged about 0.22 oz/ton Au. Inferred reserves are 748,000 tons grading 0.76 oz/ton Au, 2.16 oz/ton Ag, with base metal credits (fig. C-3).

87 **Pyramid**—Late Tertiary porphyry Cu–Mo deposit; inferred reserves of 125 million tons ore that grade 0.4% Cu and 0.03% Mo reported (fig. C-2).

88 **Ivanof**—Late Tertiary porphyry Cu prospect; grades of up to 0.72% Cu reported. Potential for large tonnages (fig. C-2).

89 **Weasel Mountain, Bee Creek**—Porphyry Cu–Mo prospect of late Tertiary to Quaternary age; grades of up to 0.48% Cu and 0.035% Mo reported. Potential for moderate tonnages of low-grade mineralization (fig. C-2).

90 **Mike deposit**—Porphyry Mo prospect of late Tertiary age; grades up to 0.21% Mo. Potential for large tonnages of low-grade Mo mineralization (fig. C-2).

91 **Rex deposit**—Porphyry Cu prospect similar to locality 90; grades up to 0.3% Cu. Potential for moderate reserves of low-grade mineralization (fig. C-2).

92 **Kasna Creek**—Major stratiform Cu–Pb–Zn and skarn-sulfide deposits of Mesozoic age in mafic, volcanic, and sedimentary rocks; reported reserves of over 10 million tons ore that grade more than 1% Cu (fig. C-1).

93 **Sleitat Mountain**—High-grade east-west-trending, Sn–W–Ag topaz–quartz greisen system hosted in 59-million-year-old granite and in hornfels. Zone up to 3,000 ft long and 500 ft wide. One drill-hole with 85 ft of 1.8% Sn, and 0.4% W. Inferred resources up to 106,000 tons Sn in 29 million tons ore (fig. C-2).

94 **Jimmy Lake**—Complex Cu–Ag–Sn mineralization of late Tertiary(?) age; reported grades of up to 105 oz/ton Ag and 3% Cu (fig. C-1).

95 **Haines Barite/Palmer**—Major stratiform Ba–Pb–Zn–Cu–Ag deposit in pillow basalt-dominated section of Paleozoic or Triassic age; consists of 48- to 60-ft-thick zone of 60% barite with upper zone (2 to 8 ft thick) of massive sulfides that contain 2% Pb, 3% Zn, 1% Cu, up to 4 oz/ton Ag, and 0.12 oz/ton Au. Estimated to contain 750,000 tons of 65% barite with Zn and Ag credits (fig. C-1).

96 **Klukwan**—Major Fe–Ti deposits in zoned ultramafic complex of Mesozoic age; reported to contain 3 billion tons of material grading 16.8% Fe and 1.6 to 3.0% Ti (fig. C-3).

97 **Nunatak**—Porphyry Mo deposit; reported reserves of 2.24 million tons ore grading 0.067% Mo, 0.16% Cu, and 129.5 million tons of 0.026% Mo, 0.18% Cu (fig. C-2).

98 **Brady Glacier**—Major Ni–Cu deposit in layered gabbro–pyroxenite complex of Tertiary age. Proven reserves of 100 million tons ore that grade 0.5% Ni, 0.3% Cu reported and about 0.03% Co; also contains PGE concentrations (fig. C-3).

99 **Mertie Lode and Funter Bay mining district**—Contains substantial reserves of lode Au mineralization. Past production totaled about 15,000 oz Au. Deposits also contain significant Ni–Cu and Pb–Zn–Ag mineralization. Funter Bay deposit contains reported reserves of 560,000 tons that grade 0.34% Ni, 0.35% Cu, and 0.15% Co in gabbro-pipe system (fig. C-3).

100 **Alaska–Juneau**—Major lode Au deposit that consists of 100- to 300-ft-wide zone that contains en echelon, Au–bearing quartz veins in metamorphic rocks; produced more than 3.52 million oz Au from 88.5 million tons ore from 1893 to 1944. Reserves (all categories) of 105.7 million tons of 0.05 oz/ton Au (fig. C-3).

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

102 **Mirror Harbor**—Ni–Cu mineralization in layered gabbro complex of Mesozoic age; reported proven reserves of 8,000 tons of 1.57% Ni and 0.88% Cu and reported inferred reserves of several million tons ore that grade 0.2% Ni and 0.1% Cu (fig. C-3).

103 **Bohemia Basin**—Major Ni–Cu–Co mineralization in layered mafic complex similar to locality 102; reported reserves of 22 million tons ore that grade 0.33 to 0.51% Ni, 0.21 to 0.27% Cu, and 0.02% Co, all of which are recoverable with standard flotation technology (fig. C-3).

104 **Apex–El Nido**—Significant lode Au–W deposits occurring as cross-cutting veins in graywacke; produced more than 50,000 oz Au (fig. C-3).

105 **Greens Creek**—Major sediment-hosted Pb–Zn–Cu–Ag–Au volcanogenic massive sulfide deposit of Devonian or Triassic age. Production from 1989 to 1993 and 1996 to 2005 is 761,340 tons of Zn, 281,501 tons of Pb, over 8,600 tons of Cu, 126.5 million oz of Ag, and 919,281 oz of Au. 2005 probable reserve estimate is 7.05 million tons grading 10.3% Zn, 3.93% Pb, 14.75 oz/ton Ag, and 0.115 oz/ton Au. Inferred resources are 5.07 million tons grading 6.8% Zn, 2.5% Pb, 0.115 oz/ton Au, and 10.13 oz/ton Ag. (fig. C-1).

106 **Sumdum**—Volcanogenic Cu–Pb–Zn massive sulfide deposit in Mesozoic metamorphic complex with potential strike length of over 10,000 ft. Inferred reserves of 26.7 million tons ore that grade 0.57% Cu, 0.37% Zn, and 0.3 oz/ton Ag reported (fig. C-1).

107 **Snettisham**—Fe–Ti deposit in mafic zoned intrusive complex; reported grades of about 18.9% Fe and 2.6% Ti (fig. C-3).

108 **Tracy Arm**—Stratabound Cu–Zn–Pb massive sulfide prospect in Mesozoic schist; over 1,100 ft long and up to 12 ft thick. Reported grades of 1.5% Cu, 3.9% Zn, 0.76 oz/ton Ag, and 0.013 oz/ton Au (fig. C-1).

109 **Red Bluff Bay**—Significant chrome mineralization in Mesozoic ultramafic complex (probably ophiolite); reported reserves of 570 tons of material that grade 40% Cr and 29,000 tons that grade 18 to 35% Cr (fig. C-3).

110 **Cornwallis Peninsula**—Volcanogenic Cu–Pb–Zn–Ag–Ba massive sulfide deposit of Triassic(?) age; reported grades of up to 20% Pb–Zn and 23 oz/ton Ag (fig. C-1).

111 **Castle Island**—Stratiform barite deposit of Triassic age hosted in carbonate and pillow basalt; about 856,000 tons of raw and refined barite produced from 1963 to 1980; also contains Zn, Pb, and Cu sulfides. Reported to be mined out (fig. C-1).

112 **Groundhog Basin**—Area with several massive sulfide prospects in Mesozoic schist and gneiss whose origins are possibly plutonic associated. Reported grades of up

to 8% Pb, 29 oz/ton Ag, and 0.5 oz/ton Au. Sn has also been recently identified. Area also contains potential for porphyry Mo deposits (fig. C-1).

113 **Snipe Bay**—Ni–Cu deposit in zoned mafic-ultramafic complex; inferred reserves of 430,000 tons of 0.3% Ni, 0.3% Cu, and 0.13 oz/ton Ag reported (fig. C-3).

114 **Kasaan Peninsula**—Major skarn-type Cu–Fe-Au massive sulfide deposit of Jurassic age; area has produced over 14,000 tons Cu, and 55,000 oz Ag. Reported reserves of 4 million tons ore that grade 50% Fe and less than 2% Cu (fig. C-1).

115 **Salt Chuck**—Cu–PGM–Ag–Au deposit in contact zone between pyroxenite and gabbro within Alaskan-type zoned mafic-ultramafic pluton. From 1900 to 1941, 2,500 tons Cu, over 20,000 oz PGM, and Au and Ag credits were produced from 325,000 tons ore (fig. C-3).

116 **Union Bay**—Significant Fe–Ti-(V) mineralization in zoned, Ural-Alaska type ultramafic complex At least 7 zones of PGE–magnetite hydrothermal mineralization associated with pyroxene veins that crosscut magmatic layering (fig. C-3).

117 **Hyder mining district**—Area produced more than 25,000 tons high-grade W–Cu–Pb–Zn–Ag ore from 1925 to 1951 from crosscutting ore shoots in Texas Creek granodiorite of Tertiary age. Area contains potential for porphyry Mo–W mineralization and massive sulfide–skarn Pb–Ag–Au–W deposits (figs. C-1, C-2).

118 **Jumbo**—Cu–Fe–Mo–Ag skarn deposit; produced more than 5,000 tons Cu, 280,000 oz Ag, and 7,000 oz Au from 125,000 tons ore. Zoned magnetite–Cu skarns are associated with epizonal granodiorite pluton of Cretaceous age. Reported reserves of 650,000 tons ore that grade 45.2% Fe, 0.75% Cu, 0.01 oz/ton Au, and 0.08 oz/ton Ag (fig. C-1).

119 **Copper City**—Stratiform Cu–Zn–Ag–Au massive sulfide deposit in late Precambrian or earliest Paleozoic Wales Group. Reported grades of up to 12.7% Cu, 2.7% Zn, 2.5 oz/ton Ag, and 0.2 oz/ton Au (fig. C-1).

120 **Quartz Hill**—A porphyry Mo deposit hosted in a 25-million-year-old composite felsic pluton. Probable reserves are 232 million tons with a grade of 0.22% MoS_2, and possible reserves are 1.2 billion tons with 0.12% MoS_2 (fig. C-2).

121 **Niblack**—Volcanogenic Cu–Pb–Au–Ag massive sulfide deposit hosted in Precambrian(?) Wales Group or Ordovician to Silurian Descon Formation; produced more than 700 tons Cu, 11,000 oz Au, and 15,000 oz Ag. Resource of 2.78 million tons at 3.22% Zn, 1.70% Cu, 0.93 oz/ton Ag and 0.081 oz/ton Au. (fig. C-1).

122 **Bokan Mountain**—Numerous U–Th prospects associated with Jurassic peralkaline intrusive complex; from 1955 to 1971, produced more than 120,000 tons ore that graded about 1% U_3O_8. Contains inferred reserves of about 40 million tons of 0.126% Nb and up to 1% REE metals (fig. C-3).

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

124 **McLeod**—Porphyry Mo deposit that contains quartz-molybdenite fissure veins in quartz-feldspar porphyry. Chip samples contain up to 0.09% Mo (fig. C-2).

125 **Johnson River**—Epigenetic(?) quartz-sulfide stockwork or massive sulfide deposit hosted in volcaniclastic, pyroclastic, and volcanic rocks of Jurassic Talkeetna Formation. Deposit has drilled-out reserves at a $45/ton cutoff with no cut of high Au assays, 1,099,580 tons grading 0.32 oz/ton Au, 0.24 oz/ton Ag, 0.76% Cu, 1.17% Pb, and 8.37% Zn (fig. C-3).

126 **Nimiuktuk River**—Small hill of massive, high-grade barite estimated to contain at least 1.5 million tons barite. Widespread stream-sediment Ba anomalies in area indicate further barite potential (fig. C-1).

127 **Kensington**—Stockwork quartz veins in sheared and chloritized quartz diorite produced 10,900 tons grading 0.18 oz/ton Au prior to 1930. Recent estimates indicate at least 4.21 million tons grading 0.25 oz/ton Au for 1,050,000 oz Au of proven and probable reserves. Subparallel Horrible vein system contains 3.93 million tons grading 0.11 oz/ton Au (fig. C-3).

128 **Jualin**—Five quartz-fissure veins in Cretaceous quartz diorite, more than 15,000 ft of underground workings; produced 48,387 oz Au, mainly prior to 1930. Reserves estimated at 1.07 million tons of 0.349 oz/ton Au (fig. C-3).

129 **Pebble (Copper)**—Cu–Au porphyry with several known centers. The Pebble West deposit has a measured and indicated resource of 1.79 billion tons grading 0.35% Cu, 0.011 oz/ton Au and 0.018 % Mo at a 0.50% Cu equivalent cutoff. The 2006 resource contains 20.5 million ounces of gold and 12.7 billion pounds of copper, making this the world's 3rd largest Cu-Au porphyry deposit. The new Pebble East deposit has an inferred resource of 2.02 billion tons grading 0.60% Cu, 0.011 oz/ton Au and 0.038 % Mo at a 0.60% Cu equivalent cutoff. The 2006 resource contains 24.3 billion pounds of copper and 22.1 million ounces of gold. Mineralized system extends over 35 square mile area and includes other Cu–Au–Mo porphyry, Cu–Au skarn, and Au vein prospects (fig. C-1).

130 **Pogo**—Au hosted in at least three sub-parallel and tabular, gently dipping, quartz vein zones hosted by Paleozoic gneisses intruded by Cretaceous felsic plutonic rocks. Au in the 3 ft to 60 ft thick quartz bodies has a strong correlation with Bi. A mining reserve for the Liese L1 and L2 zones is 7.7 million tons at an average grade of 0.47 oz/ton, for a total of 3.63 million oz at a 0.1 oz/ton cut-off grade. Other high-grade Au targets have been identified along an 8-mi-long trend southeast of the Liese zones (fig. C-3).

131 **Shotgun**—Quartz stockwork and breccia Au–Cu–As mineralization in a Late Cretaceous rhyolite (granite porphyry) stock. A preliminary, inferred Au resource of 980,000 oz (36.11 million tons at an average grade of 0.027 oz/ton Au) at a 0.016 oz/ton Au cut-off grade,

with initial metallurgical tests indicating >90% Au recovery by cyanide leaching (fig. C-3).

132 **Illinois Creek**—Au–Ag–Cu–Pb–Zn–Bi–As-bearing, Fe–Mn oxide (gossan) shear zone crosscutting dolomitic quartzite localized near Cretaceous granitic pluton. Shear zone averaged 148 ft wide, with a drill-defined east-west strike length of 11,600 ft. Produced approximately 143,860 oz Au and 755,600 oz Ag from 1997 to 2004. Past ore grade of 0.076 oz/ton Au and 1.6 oz/ton Ag (figs. C-1, C-3).

133 **Calder Mine**—Seven recrystallized carbonate units exposed at the apex of a large regional antiform. Drilling has identified 13 million tons of chemically homogenous, high-brightness, high-whiteness marble with a purity of 98 to 99% calcium carbonate. Potential resource of 80 million tons of high-value calcium carbonate (fig. C-2).

134 **Vinasale Mountain**—Intrusion-hosted Au deposit. Au occurs as disseminated and veinlet mineralization, with arsenopyrite and pyrite in quartz-dolomite hydrothermal breccias, magmatic breccias, and zones of phyllic and silicic alteration hosted within a 69 Ma quartz monzonite stock. Inferred resource of 14.35 million tons grading 0.067 oz/ton Au, with an 0.03 oz/ton cut-off grade was for the Central zone (fig. C-3).

135 **Nixon Fork**—Au–Cu skarn deposits; Historic Nixon Fork mine produced 59,500 oz Au from Late Cretaceous skarns associated with quartz monzonite-Devonian limestone contact zones. Underground mining resumed in October 1995, with 137,748 oz of Au, 1,050 tons of Cu, and significant Ag produced through mine closure in 1999 (fig. C-3). April 2005 ore reserves are 25,787 tons grading 1.07 oz/ton Au (measured), 80,000 tons grading 0.91 oz/ton (indicated), and 166,400 tons grading 0.37 oz/ton (inferred).

136 **Von Frank Mountain**—Au and very weak Cu mineralization are associated with chalcopyrite, pyrite, and rare molybdenite within a zone of quartz stockwork veining hosted in a 69 Ma quartz-diorite stock. The stock is a cupola of the larger Von Frank Pluton. Drill intercepts include up to 429 ft wide with an average grade of 0.013 oz/ton Au. Higher-grade intercepts include 0.035 oz/ton Au up to 135 ft (fig. C-3).

137 **Donlin Creek**—Au mineralization associated with disseminated pyrite and arsenopyrite, sulfide veinlets, and quartz-carbonate-sulfide veinlets in sericite-altered Late Cretaceous to early Tertiary rhyodacitic porphyry dikes and sills. Au mineralization is structurally controlled, refractory, and occurs along a 4–mile long, 1–mile wide zone. Measured and indicated resource on January 2006 estimated at 14.8 million oz of Au grading 0.080 oz/ton Au and an inferred resource of 13.6 million oz Au grading 0.079 oz/ton Au at a 0.035 oz/ton Au cut-off grade. Considered the 25th largest gold resource in the world (fig. C-3).

138 **Kaiyah**—Au–Ag epithermal prospect in silicified Koyukuk sedimentary rocks adjacent to Poison Creek caldera. Polymetallic sulfides in quartz veins, with some veins over 100 feet thick, and silicification are associated with pervasive advanced argillic, and sericite alteration (fig. C-3).

139 **Shulin Lake**—Micro-and macro-diamonds occur in interbedded volcaniclastic and tuffaceous rocks containing olivine and pyroxene. Discovered by tracing diamond indicator minerals in placer gravels. Possibly lamproitic intrusions with up to 1-mile diameter circular aeromagnetic anomalies (fig. C-3).

140 **Canwell and Nikolai Complex**—Ni–Cu–PGE semi-massive to massive sulfide prospects hosted in mafic and ultramafic rocks of the Nikolai intrusive/extrusive complex. Five mafic-ultramafic intrusions in the central Alaska Range are comagmatic with the Nikolai flood basalts (fig. C-3).

141 **Duke Island**—Cu–Ni–PGE disseminated, semi-massive, and massive sulfides associated with 2 zoned, Ural-Alaska type ultramafic bodies (fig. C-3).

APPENDIX D

State and federal agencies and private interest groups involved in mineral development activities, 2005

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

STATE OF ALASKA AGENCIES

OFFICE OF THE GOVERNOR
International Trade
550 West 7th Avenue, Suite 1700
Anchorage, Alaska 99501
(907) 269-7450
(907) 269-7461 (fax)
email: Margy_Johnson@gov.state.ak.us

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

DEPARTMENT OF COMMERCE, COMMUNITY & ECONOMIC DEVELOPMENT
State Office Building, 9th Fl.
P.O. Box 110800 (mailing)
Juneau, AK 99811-0800
(907) 465-2500
(907) 465-5442 (fax)
http://www.commerce.state.ak.us

Function: Promotes economic development in Alaska.

Office of Economic Development
State Office Building, 9th Fl.
P.O. Box 110801
Juneau, AK 99811-0801
(907) 465-5478
(907) 465-3767 (fax)

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

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

Alaska Industrial Development & Export Authority (AIDEA)
813 W. Northern Lights Blvd.
Anchorage, AK 99503
(907) 269-3000
(907) 269-3044 (fax)
http://www.aidea.org

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

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PO Box 111800
Juneau, AK 99811-1800
(907) 465-5009 Public Information
(907) 465-5070 (fax)
(907) 465-5065 Commissioner's Office

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

Department of Environmental Conservation
Anchorage Office
555 Cordova St.
Anchorage, AK 99501-2617
(907) 269-7500
(907) 269-7600 (fax)
Permits/Compliance Assistance
1-800-510-2332 (inside Alaska only)
email: compass@dec.state.ak.us

Department of Environmental Conservation
Fairbanks Office
610 University Ave.
Fairbanks, AK 99709-3643
(907) 451-2360
(907) 451-2187(fax)
(907) 451-2184 TTY
http://www.dec.state.ak.us

DEPARTMENT OF FISH AND GAME
P.O. Box 115526
Juneau, AK 99811-5526
(907) 465-4100
(907) 465-2332
http://www.state.ak.us/adfg

DEPARTMENT OF NATURAL RESOURCES
Office of the Commissioner
400 Willoughby Ave., Ste. 500
Juneau, AK 99801-1724
(907) 465-2400
http://www.dnr.state.ak.us

Alaska Coastal Management Program
302 Gold St., Ste. 202
Juneau, AK 99801

(907) 465-3562
(907) 465-3075 (fax)

Function: Conducts coordinated State review of permits for mining projects within Alaska's Coastal Management Zone. Provides project design information to applicants 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
550 W. 7th Ave., Ste. 1660
Anchorage, AK 99501-3568
(907) 269-7470
(907) 269-3981 (fax)

Alaska Mental Health Trust Land Office
718 L St., Suite 202
Anchorage, AK 99501
(907) 269-8658
(907) 269-8905 (fax)
http://www.mhtrustland.org

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

Office of Habitat Management & Permitting
Headquarters & Juneau Area Office
PO Box 111050
Juneau, AK 99811-1050
(907) 465-4105
(907) 465-4759(fax)

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

Operations Manager & Fairbanks Area Office
1300 College Rd.
Fairbanks, AK 99701-1551
(907) 459-7289
(907) 456-3091 (fax)

Anchorage Area Office
550 W. 7th Ave., Ste. 1420
Anchorage, AK 99501
(907) 269-8690
(907) 269-5673 (fax)

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

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

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

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

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

Function: Establishes guidelines to manage mining in state forests.

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

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

Division of Geological & Geophysical Surveys
3354 College Rd.
Fairbanks, AK 99709-3707
(907) 451-5010
(907) 451-5050 (fax)
email: dggs@dnr.state.ak.us
http://wwwdggs.dnr.state.ak.us

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

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

Division of Mining, Land & Water
550 W. 7th Ave., Ste. 1070
Anchorage, AK 99501
(907) 269-8600

(907) 269-8904 (fax)
http://www.dnr.state.ak.us/mlw

A. Mining

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

B. Land

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

C. Water Management

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

Mining Information:
Anchorage (907) 269-8642
Fairbanks (907) 451-2793

All other Land & Water Information:
Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2740
(907) 451-2751 (fax)

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

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

Division of Parks and Outdoor Recreation
550 W. 7th Ave., Ste.1310
Anchorage, AK 99501-3565
(907) 269-8700

Function: Manages approximately 3,000,000 acres of state park lands primarily for recreational uses, preservation of scenic values, and watershed. Responsible for overseeing mining access, recreational mining activity, and valid mining-claim holdings within state park lands. The Office of History and Archaeology reviews mining permit applications on all lands within the state for impacts to historic resources.

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

Southeast Regional Office
400 Willoughby Ave., 5th Fl.
Juneau, AK 99801-1724
(907) 465-4563

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

DEPARTMENT OF PUBLIC SAFETY
P.O. Box 111200
Juneau, AK 99811-1200
(907) 465-4336
http://www.dps.state.ak.us

Alaska Bureau of Wildlife Enforcement
5700 East Tudor Rd.
Anchorage, AK 99507-1225
(907) 269-5509

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

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

Tax Division
State Office Bldg., 11th Fl., Entrance B
P.O. Box 110420 (mailing)
Juneau, AK 99811-0420
(907) 465-2320
(907) 465-2375 (fax)
email: fish_excise@revenue.state.ak.us
http://www.tax.state.ak.us

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

UNIVERSITY OF ALASKA

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

Function: Provides undergraduate and graduate education in geology and geophysics and conducts basic and applied research in geologic sciences. For undergraduate studies, the department

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

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

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

Mineral Industry Research Laboratory (MIRL)
College of Engineering and Mines
P.O. Box 757240
Duckering Building, Room 403
University of Alaska Fairbanks
Fairbanks, AK 99775-7240
(907) 474-6746
(907) 474-5400 (fax)

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

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

Function: Teaching research and public service; support of the mineral industry.

Mining and Petroleum Training Service
Kenai Peninsula College/UAA
155 Smith Way, Ste. 101
University of Alaska Anchorage
Kenai Peninsula College
Soldotna, AK 99669
(907) 262-2788
(907) 262-2812 (fax)
email: mapts@alaska.net
http://www.alaska.net/~mapts

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

FEDERAL AGENCIES

U.S. DEPARTMENT OF THE INTERIOR
Office of the Secretary
1689 C St., Ste. 100
Anchorage, AK 99501-5151
(907) 271-5485
(907) 271-4102

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

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

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

Energy Branch (907) 271-5608
Solid Minerals Branch (907) 271-5608

Division Functions:

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

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

Solid Minerals Branch Functions:

The Branch maintains mining claim and mineral patent case files and electronic public minerals records related to those files. It adjudicates federal mining claim recordation filings, annual assessment affidavits, and timely payment of annual claim holding fees. It also adjudicates mineral survey and patent

applications, and serves contest complaints for all federal lands in Alaska. The Branch conducts mineral assessments that aid environmentally sound development of a viable mineral industry in Alaska. Emphasis is on field programs that identify the type, amount, and distribution of mineral deposits in Alaska. Field information is augmented by studies of economic feasibility, and economic and environmental effects of mineral development. Information is provided to government agencies to aid land-planning and land-use decisions, and to the private sector to identify targets of opportunity for further exploration and/or development.

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

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

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

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

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

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

Juneau Office
John Rishel Mineral Information Center
100 Savikko Rd.
Mayflower Island
Douglas, AK 99824
(907) 364-1553
(907) 364-1574 (fax)
email: cdewitt@ak.blm.gov
http://juneau.ak.blm.gov

Function: As a part of the minerals branch, in addition to the assessments and studies described above, the Mineral information Center has a special library which contains 20,000 geologic and minerals publications, and provides a variety of information services; plus displays of Alaskan rocks, minerals, and mining artifacts.

U.S. Fish and Wildlife Service
Region 7 Office
Mail Stop 361
1011 East Tudor Rd.
Anchorage, AK 99503
(907) 786-3542
http://alaska.fws.gov/

Function: Administers the federal public lands in national wildlife refuges, issues special-use permits for activities on refuges, reviews permits and applications for various mining activities on all private and public lands and waters, and provides information to regulatory agencies on fish and wildlife and their habitat. Makes recommendations to regulatory agencies to mitigate adverse environmental impacts.

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

U.S. Fish and Wildlife Service
Juneau Fish and Wildlife Field Office
3000 Vintage Blvd., Ste. 201
Juneau, AK 99801-7100
(907) 586-7240
(907) 586- 7154 (fax)

U.S. Fish and Wildlife Service
Anchorage Fish and Wildlife Field Office
605 West 4th Ave., Rm. G-61
Anchorage, AK 99501
(907) 780-1160
(907) 586-7099 (fax)

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

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

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

U.S. Geological Survey
Alaska Science Center
Geographic Science Office
Earth Science Information Center
4230 University Dr., Suite 101

Anchorage, AK 99508-4664
(907) 786-7011

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

National Park Service
Alaska Regional Office
Natural Resources Science Team
240 W. 5th Ave.
Anchorage, AK 99501
(907) 644-3571
(907) 644-3809 (fax)

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

U.S. DEPARTMENT OF LABOR
Mine Safety and Health Administration
Physical Addres:
222 W. 8th Ave A-35
Anchorage, AK 99513
(907) 271-1250
(907) 271-1252 (fax)
email: bowen.ayers@dol.gov

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

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

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

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

U.S. DEPARTMENT OF AGRICULTURE
Forest Service
Regional Office, R.L.M.
P.O. Box 21628
Juneau, AK 99802-1628
(907) 586-7869
(907) 586-7866 (fax)
email: jkato@fs.fed.us
http://www.fs.fed.us/
http://www.fs.fed.us/r10earth/

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

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

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

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

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

U.S. DEPARTMENT OF THE ARMY
Corps of Engineers
Regulatory Branch
2204 3rd St.
P.O. Box 6898
Elmendorf Air Force Base, AK 99506-6898
(907) 753-2712
(907) 753-5567 (fax)
(800) 478-2712 (in Alaska only)
http://www.poa.usace.army.mil/reg

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

COOPERATIVE STATE–FEDERAL AGENCIES

Alaska Public Lands Information Center
250 Cushman St., Ste. 1A
Fairbanks, AK 99701
(907) 456-0527
(907) 456-0514 (fax)
(907) 456-0532 (TDD for hearing impaired)
http://www.nps.gov/aplic

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

Alaska Departments of Natural Resources, Fish and Game, and Community and Economic Development.

BOARDS AND COMMISSIONS

Alaska Minerals Commission
Irene Anderson, Chair
c/o Bering Straits Native Corp.
P.O. Box 1008
Nome, AK 99762
(907) 443-5252
(907) 443-4317
(907) 443-2985 (fax)
email: irene@beringstraits.com

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

CHAMBERS OF COMMERCE

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

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

Anchorage Chamber of Commerce
441 West 5th Ave., Ste. 300
Anchorage, AK 99501
(907) 272-2401
email: info@anchoragechamber.org
http://www.anchoragechamber.org

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

Greater Fairbanks Chamber of Commerce
800 Cushman St., Suite 114
Fairbanks, AK 99701-4665
(907) 452-1105
(907) 456-6968(fax)
email: staff@fairbankschamber.org
http://www.fairbankschamber.org

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

PUBLIC INTEREST GROUPS AND ASSOCIATIONS

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

AMA BRANCHES

Anchorage	Juneau
Denali	Kenai
Fairbanks	Nome

Please contact AMA for current contacts

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

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

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

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

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

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

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

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

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

ORGANIZED MINING DISTRICTS

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

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

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

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

Livengood-Tolovana Mining District
Rose Rybachek
P.O. Box 60306
Fairbanks, AK 99706-0301

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

MINERAL EDUCATION PROGRAMS

ALASKA MINERAL AND ENERGY RESOURCE EDUCATION FUND (AMEREF)
121 W. Fireweed Ln., Ste. 250
Anchorage, AK 99503
(907) 276-5487
(907) 276-3887 (fax)
email: kits@ameref.org
http://www.ameref.org

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

NATIVE REGIONAL CORPORATIONS

AHTNA INC.
Land & Resource Group
P.O. Box 649
Glennallen, AK 99588-0649
(907) 822-8132
(907) 822-3495 (fax)
email: kmartin@ahtna-inc.com
http://www.ahtna-inc.com/

Anchorage Office
406 W. Fireweed, S uite 104
Anchorage, AK 99503
(907) 868-8235
(907) 868-8234 (fax)

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

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

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

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

Anchorage Office
Matt Ganley
10315 Main Tree Dr.
Anchorage, AK 99507
(907) 632-7197
(907) 868-0126 (fax)
email: matt@beringstraits.com

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

CALISTA CORP.
301 Calista Court, Ste. A
Anchorage, AK 99518-3028
(907) 279-5516
(907) 279-8430 (fax)
http://www.calistacorp.com/

CHUGACH ALASKA CORP.
560 E. 34th Ave.
Anchorage, AK 99503-4196
(907) 563-8866
(907) 561-6961 (fax)
email: rrogers@chugach-ak.com
http://www.chugach-ak.com/

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

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

KONIAG INC.
104 Center Av., Suite 205
Kodiak, AK 99615
(907) 4862530
(907) 486-3325 (fax)
http://www.koniag.com/

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

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

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

APPENDIX E
Alaska Mining Websites

Mining and Exploration Companies

Alaska Earth Sciences Inc.	http://www.aes.alaska.com
Anchorage Sand and Gravel Co. Inc.	http://www.anchsand.com
Anglo American plc	http://www.angloamerican.co.uk/
AngloGold Ashanti Ltd.	http://www.anglogold.com
Avalon Development Corp.	http://www.avalonalaska.com
bcMetals Corp.	http://www.bcmetalscorp.com/
BHP Billiton Ltd.	http://www.bhpbilliton.com/
Bravo Venture Group Inc.	http://www.bravoventuregroup.com
Browns Hill Quarry	http://www.brownshill.com
Canaco Resources Inc.	http://www.canaco.ca/
CanAlaska Ventures Ltd.	http://www.canalaska.com
Century Mining Corp.	http://www.centurymining.com
Clark–Wiltz Mining	http://www.clark-wiltz.com/
Coeur d'Alene Mines Corp. (Coeur Alaska Inc.)	http://www.coeur.com
Copper Ridge Explorations Inc.	http://www.copper-ridge.com
Exclusive Paving Inc.	http://www.exclusivepaving.com/
Freegold Ventures Ltd.	http://www.freegoldventures.com
Full Metal Minerals Ltd.	http://www.fullmetalminerals.com
Geocom Resources Inc.	http://www.geocom-resources.com
Geoinformatics Exploration Inc	http://www.geoinformex.com
Geologix Explorations Inc.	http://www.geologix.ca
Golconda Resources Ltd.	http://www.golcondaresources.com
Grayd Resource Corp.	http://www.grayd.com
Great Northwest Inc.	http://www.grtnw.com/
Greens Creek Mining Co.	http://www.greenscreek.com/
Hecla Mining Co.	http://www.hecla-mining.com
Hidefield Gold Plc.	http://www.hidefield.co.uk/s/Home.asp
Kennecott Exploration Co.	http://www.kennecottexploration.com
Kennecott Minerals Co.	http://www.kennecottminerals.com
Kinross Gold Corp.	http://www.kinross.com
Lafarge North America Inc.	http://www.lafargenorthamerica.com/wps/portal/
Liberty Star Gold Corp.	http://www.libertystargold.com
Linux Gold Corp.	http://www.linuxgoldcorp.com
Little Squaw Gold Mining Co.	http://www.littlesquawgold.com
Lonmin Plc	http://www.lonmin.com
Max Resource Corp.	http://www.maxresource.com/s/ContactUs.asp
Metallica Resources Inc.	http://www.metal-res.com/
Midas Resources Ltd.	http://www.midasresources.com.au/
Moore Creek Mining LLC	http://www.moorecreek.com/index.html
Nevada Star Resource Corp.	http://www.nevadastar.com
Niblack Mining Corp.	http://www.niblackmining.com/s/Home.asp
Northern Associates Inc.	http://www.alaskaexploration.com
Northern Dynasty Minerals Ltd.	http://www.northerndynastyminerals.com
NovaGold Resources Inc.	http://www.novagold.net
Pacific North West Capital Corp.	http://www.pfncapital.com
Piper Capital Inc.	http://www.pipercapitalinc.com/s/Home.asp
Placer Dome Inc.	http://www.placerdome.com
Quaterra Resources Inc.	http://www.manexresourcegroup.com/quaterra
Red Diamond Mining Co.	http://home.gci.net/~rdmc/reddiamondmining/
Rimfire Minerals Corp.	http://www.rimfire.bc.ca
Rio Tinto Ltd.	http://www.riotinto.com/
Rubicon Minerals Corp.	http://www.rubiconminerals.com
Santoy Resources Ltd.	http://www.santoy.ca

Select Resources Corp. (Tri-Valley Corp.)	http://www.tri-valleycorp.com
Shear Minerals Ltd.	http://www.shearminerals.com
Silverado Gold Mines Ltd.	http://www.silverado.com
Sisyphus Consulting	http://www.sisyphus-consulting.com
St. Andrew Goldfields Ltd.	http://www.standrewgoldfields.com
Sumitomo Metal Mining Co. Ltd	http://www.sumitomocorp.co.jp/english/section_e/shigen/index.shtml
Teck Cominco Ltd.	http://www.teckcominco.com
Teryl Resources Corp.	http://www.terylresources.com
TNR Gold Corp.	http://www.tnrgoldcorp.com
Tonogold Resources Inc.	http://www.tonogold.com/s/Home.asp
Triex Minerals Corp.	http://www.triexminerals.com/s/Home.asp
Usibelli Coal Mine Inc.	http://www.usibelli.com
Western Keltic Mines Inc.	http://www.keltic.com
Western Warrior Resources Inc.	http://www.westernwarrior.ca
WGM Inc.	http://www.wgm.com

Alaska Native Corporations

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

General

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

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

MDIRA Portal Home Page	http://akgeology.info
Alaska Geology Map Indexer	http://maps.akgeology.info
Alaska Mining Claims Information System	http://akmining.info
Alaska Resource Data Files	http://ardf.wr.usgs.gov
DGGS Publications On-Line	http://www.dggs.dnr.state.ak.us/pubs/pubs
Digital Index of Geological Information	http://imcg.wr.usgs.gov/digi.html
DNR Sites Related to Mining Applications and Forms	http://www.dnr.state.ak.us/mlw/forms
Guide to Alaska Geologic and Mineral Information	http://wwwdggs.dnr.state.ak.us/scan1/ic/text/IC44.PDF
Land Records Web Application	http://plats.landrecords.info/index.html
NURE Data	http://imcg.wr.usgs.gov/nuredata.html
On-Line Annual Payments	https://www.dnr.state.ak.us/cc_payment/LAS_Form.cfm
RASS, PLUTO Geochemistry Data	http://geopubs.wr.usgs.gov/open-file/of99-433
State Map Library	http://www.dnr.state.ak.us/lris/gis_maplib/maplib_start.cfm
State Recorder's Office Search	http://www.dnr.state.ak.us/ssd/recoff/search.cfm
State Uniform Commercial Code (UCC) Documents Search	http://www.dnr.state.ak.us/ssd/ucc/search.cfm

APPENDIX F

U.S. Customary Units/Metric Units Conversion Chart

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

Temperature conversions:
From degrees Fahrenheit to degrees Celsius, subtract 32 and multiply by 5/9.
From degrees Celsius to degrees Fahrenheit, multiply by 9/5 and add 32.

SOURCE: *Minerals Today,* February 1993, U.S. Bureau of Mines.

APPENDIX G
Primary metals production in Alaska, 1880-2005[a]

Year	Gold[b] (oz)	Gold[b] (m$)	Silver (oz)	Silver (t$)	Mercury (flask[c])	Mercury (t$)	Antimony (lb)	Antimony (t$)	Tin (lb)	Tin (t$)	Lead (tons)	Lead (t$)	Zinc (tons)	Zinc (t$)	Platinum (oz)	Platinum (t$)	Copper (lb)	Copper (m$)	Chromium (tons)	Chromium (t$)
1880-1899	1,153,889	23.85	496,101	329.0	--	--	--	--	--	--	250	17.0	--	--	--	--	--	--	--	--
1900	395,030	8.17	73,300	45.5	--	--	--	--	--	--	40	3.4	--	--	--	--	--	--	--	--
1901	335,369	6.93	47,900	28.6	--	--	--	--	--	--	40	3.4	--	--	--	--	250,000	0.04	--	--
1902	400,709	8.28	92,000	48.5	--	--	--	--	30,000	8.0	30	2.5	--	--	--	--	360,000	0.04	--	--
1903	420,069	8.68	143,600	77.8	--	--	--	--	50,000	14.0	30	2.5	--	--	--	--	1,200,000	0.16	--	--
1904	443,115	9.16	198,700	114.9	--	--	--	--	28,000	8.0	30	2.5	--	--	--	--	2,043,586	0.28	--	--
1905	756,101	15.63	132,174	80.2	--	--	--	--	12,000	4.0	30	2.6	--	--	--	--	4,805,236	0.75	--	--
1906	1,066,030	22.04	203,500	136.4	--	--	--	--	68,000	38.6	30	3.4	--	--	--	--	5,871,811	1.13	--	--
1907	936,043	19.35	149,784	98.8	--	--	--	--	44,000	16.8	30	3.2	--	--	--	--	6,308,786	1.26	--	--
1908	933,290	19.29	135,672	71.9	--	--	--	--	50,000	15.2	40	3.4	--	--	--	--	4,585,362	0.61	--	--
1909	987,417	20.41	147,950	76.9	--	--	--	--	22,000	7.6	69	5.9	--	--	--	--	4,124,705	0.54	--	--
1910	780,131	16.13	157,850	85.2	--	--	--	--	20,000	8.3	75	6.6	--	--	--	--	4,241,689	0.54	--	--
1911	815,276	16.85	460,231	243.9	--	--	--	--	122,000	52.8	51	4.5	--	--	--	--	27,267,778	3.40	--	--
1912	829,436	17.14	515,186	316.8	--	--	--	--	260,000	119.6	45	4.1	--	--	--	--	29,230,491	4.82	--	--
1913	755,947	15.63	362,563	218.9	--	--	--	--	100,000[d]	44.1[d]	6	0.6	--	--	--	--	21,659,958	3.35	--	--
1914	762,596	15.76	394,805	218.3	--	--	--	--	208,000	66.6	28	1.3	--	--	--	--	21,450,628	2.85	--	--
1915	807,966	16.70	1,071,782	543.3	--	--	520,000	W	204,000	78.8	437	41.1	--	--	--	--	86,509,312	15.14	--	--
1916	834,068	17.24	1,379,171	907.4	--	--	1,200,000	W	278,000	121.0	820	113.2	--	--	8	0.7	119,654,839	29.50	--	--
1917	709,049	14.66	1,239,150	1,020.6	--	--	500,000	W	200,000	123.3	852	146.6	--	--	53	5.5	88,793,400	24.40	1,100	W
1918	458,641	9.48	847,789	847.8	--	--	540,000	W	136,000	118.0	564	80.1	--	--	284	36.6	69,224,951	17.10	1,100	W
1919	455,984	9.42	629,708	705.3	--	--	--	--	112,000	73.4	687	72.1	--	--	569	73.7	47,220,771	8.80	--	--
1920	404,683	8.37	953,546	1,039.7	--	--	--	--	32,000	16.1	875	140.0	--	--	1,478	160.1	70,435,363	13.00	--	--
1921	390,558	8.07	761,085	761.1	45	1.5	--	--	8,000	2.4	759	68.3	--	--	40	2.7	57,011,597	7.40	--	--
1922	359,057	7.42	729,945	729.9	--	--	--	--	2,800	0.9	377	41.5	--	--	29	2.8	77,967,819	10.50	--	--
1923	289,539	5.98	814,649	668.1	--	--	--	--	3,800	1.6	410	57.4	--	--	--	--	85,920,645	12.60	--	--
1924	304,072	6.29	669,641	448.6	2	0.3	--	--	14,000	7.1	631	100.9	--	--	28	2.6	74,074,207	9.70	--	--
1925	307,679	6.36	698,259	482.4	44	3.6	W	W	28,600	15.4	789	140.6	--	--	10	1.2	73,055,298	10.30	--	--
1926	324,450	6.70	605,190	377.0	22	1.7	W	W	16,000	10.4	778	124.4	--	--	3,570	274.5	67,778,000	9.49	--	--
1927	286,720	5.97	350,430	215.0	--	--	--	--	53,400	34.0	1,008	127.0	--	--	--	--	55,343,000	7.25	--	--
1928	331,140	6.85	351,730	187.0	--	--	--	--	82,000	41.0	1,019	118.0	--	--	120	9.0	41,421,000	5.96	--	--
1929	375,438	7.76	472,900	252.0	4	0.5	--	--	77,200	35.0	1,315	166.0	--	--	475	32.0	40,570,000	7.13	--	--
1930	408,983	8.47	408,570	157.3	--	--	--	--	29,400	9.3	1,365	136.5	--	--	--	--	32,651,000	4.24	--	--
1931	459,000	9.51	352,000	102.0	15	1.2	--	--	8,200	2.0	1,660	126.0	--	--	393	14.0	22,614,000	1.88	--	--
1932	493,860	10.20	234,050	66.0	8	0.5	--	--	--	--	1,260	75.6	--	--	--	--	8,738,500	0.55	--	--
1933	469,286	9.70	154,700	55.0	--	--	--	--	5,800	2.3	1,157	85.6	--	--	605	18.6	29,000	0.02	--	--
1934	537,281	8.78	154,700	100.0	--	--	--	--	8,200[d]	4.3[d]	839	62.1	--	--	2,555	85.6	121,000	0.06	--	--
1935	469,495	16.43	286,600	206.0	--	--	--	--	98,800	49.8	815	65.2	--	--	8,685	259.6	15,056,000	1.25	--	--
1936	540,580	18.92	484,306	375.0	--	--	--	--	226,000	105.0	941	86.6	--	--	5,654	241.9	39,267,000	3.72	--	--
1937	627,940	21.98	494,340	382.0	--	--	962,000	147.6	372,000[d]	202.3[d]	823	97.1	--	--	9,823	313.4	36,007,000	4.74	--	--
1938	662,000	23.17	479,853	310.0	8	0.6	444,000	54.8	210,000	89.1	994	91.5	--	--	41,000	2,460.0	29,760,000	2.98	--	--
1939	676,780	23.68	201,054	136.5	--	--	210,000	25.9	66,000	38.0	937	88.1	--	--	33,900	2,034.0	278,500	0.04	--	--
1940	755,900	26.45	191,679	136.3	156[d]	130.9	306,000	42.8	92,000	52.0	840	72.0	--	--	28,886	1,093.0	110,000	0.02	--	--
1941	692,314	24.23	199,700	142.0	W	W	774,000	87.3	93,600[d]	61.0[d]	742	58.0	--	--	22,630	813.0	144,000	0.02	--	--
1942	487,657	17.07	135,200	96.0	W	W	316,000	41.0	5,600	2.5	523	44.0	--	--	22,000	779.0	48,000	0.01	--	--
1943	99,583	3.49	31,700	22.0	786	153.4	368,000	33.3	2,000[d]	1.0[d]	200	22.0	--	--	27,900	1,020.0	54,000	0.01	5,564	186.3
1944	49,296	1.73	15,240	10.8	841	165.0	70,080	30.0	--	--	44	5.8	--	--	33,616	2,017.0	4,000	0.01	1,845	64.6
1945	68,117	2.38	9,983	6.2	275	180.0	W	W	--	--	11	1.8	--	--	22,949	1,377.0	10,000	0.01	--	--
1946	226,781	7.93	41,793	26.3	699	68.7	W	W	--	--	115	25.0	--	--	22,882	1,418.7	4,000	0.01	--	--
1947	279,988	9.79	66,150	46.3	127	10.6	52,000	16.1	2,000	2.2	255	76.5	226	0.15	13,512	1,351.2	24,000	0.06	--	--
1948	248,395	8.69	67,341	58.7	108	7.8	88,000	29.3	10,000	10.8	317	88.9	226	0.15	13,741	1,209.2	28,000	0.07	--	--
1949	229,416	8.03	36,056	32.4	102	7.9	88,000	31.3	114,000	100.8	49	11.2	226	0.15	17,169	1,545.2	7,700	0.02	--	--
1950	289,285	10.13	52,638	48.0	W	W	W	W	158,000	170.3	144	27.5	--	--	W	W	12,000	0.03	--	--
1951	239,628	8.38	32,870	29.8	28	W	1,718,000	2,061.6	138,000	198.0	21	7.2	--	--	W	W	2,000	0.01	--	--
1952	240,571	8.42	31,825	28.7	40	W	740,000	1,406.0	180,000	243.9	1	0.3	--	--	W	W	--	--	W	W
1953	253,771	8.88	35,387	32.1	1,023	270.0	W	W	98,000	105.9	--	--	--	--	17,489	1,696.4	--	--	W	W

APPENDIX G, *cont'd*

Year	Gold (oz)	Gold (m$)	Silver (oz)	Silver (t$)	Mercury (flask[b])	Mercury (t$)	Antimony (lb)	Antimony (t$)	Tin (lb)	Tin (t$)	Lead (tons)	Lead (t$)	Zinc (tons)	Zinc (t$)	Platinum (oz)	Platinum (t$)	Copper (lb)	Copper (m$)	Chromium (tons)	Chromium (t$)
1954	248,511	8.70	33,694	31.8	1,046	276.0	- -	- -	398,000	409.9	- -	- -	- -	- -	18,790	1,615.9	8,000	0.02	2.953	208.0
1955	249,294	8.73	33,693	30.4	43	12.0	- -	- -	172,000	182.5	1	0.3	- -	- -	17,253	1,466.5	2,000	0.01	7,082	625.3
1956	204,300	7.33	26,700	24.1	3,414	837.0	134,400	150.0	- -	- -	1	0.3	- -	- -	17,934	1,829.3	- -	- -	7,200	711.5
1957	215,467	7.54	28,862	26.0	5,461	1,349.0	71,120	80.0	- -	- -	9	3.0	- -	- -	15,479	1,377.6	- -	- -	4,207	431.0
1958	186,000	6.53	24,000	22.0	3,380	774.0	- -	- -	- -	- -	- -	- -	- -	- -	10,284	647.9	10,000	0.03	- -	- -
1959	171,000	5.99	22,000	20.0	3,750	852.0	- -	- -	- -	- -	- -	- -	- -	- -	10,698	770.3	72,000	0.04	- -	- -
1960	180,000	6.30	23,000	21.0	4,450	938.0	W	W	- -	- -	- -	- -	- -	- -	13,352	1,054.8	82,000	0.04	- -	- -
1961	114,228	3.99	- -	- -	4,080	816.0	- -	- -	- -	- -	- -	- -	- -	- -	16,133	1,274.5	184,000	0.06	- -	- -
1962	165,142	5.78	- -	- -	3,843	711.0	- -	- -	- -	- -	- -	- -	- -	- -	12,520	951.5	- -	- -	- -	- -
1963	99,000	3.48	6,100	9.0	400	76.0	W	W	- -	- -	5	1.1	- -	- -	12,322	961.1	- -	- -	- -	- -
1964	58,000	2.05	7,200	6.0	303	95.0	46,400	60.3	- -	- -	- -	- -	- -	- -	13,010	1,522.2	22,000	0.01	- -	- -
1965	43,000	1.51	5,000	6.0	180	104.0	46,400	60.3	- -	- -	14	4.0	- -	- -	10,365	1,368.2	64,000	0.03	- -	- -
1966	27,325	0.96	7,000	9.0	185	101.0	16,000	19.2	- -	- -	19	4.3	- -	- -	9,033	1,273.7	- -	- -	- -	- -
1967	22,948	0.80	6,000	9.0	161	79.0	20,000	22.0	- -	- -	- -	- -	- -	- -	7,888	1,238.4	W	W	- -	- -
1968	21,000	0.81	3,000	6.5	156	78.0	6,000	6.0	- -	- -	- -	- -	- -	- -	8,433	1,652.9	- -	- -	- -	- -
1969	21,227	0.88	2,000	4.2	238	100.0	94,000	100.0	- -	- -	2	0.5	- -	- -	8,500	2,321.2	- -	- -	- -	- -
1970	38,400	1.38	4,000	7.0	3,100	1,260.0	365,000	410.0	- -	- -	- -	- -	- -	- -	6,015	925.1	W	W	- -	- -
1971	34,000	1.36	2,000	4.0	675	285.0	68,000	74.0	34,000	47.0	- -	- -	- -	- -	5,407	625.6	- -	- -	- -	- -
1972	8,639	0.56	1,000	2.0	125	44.0	160,000	185.0	W	W	- -	- -	- -	- -	6,478	985.5	- -	- -	- -	- -
1973	15,000	1.86	13,200	22.0	70	52.5	420,000	515.0	10,000	12.0	6	2.0	- -	- -	5,524	964.5	- -	- -	- -	- -
1974	16,000	2.56	1,500	3.5	70	52.5	80,000	95.0	W	W	- -	- -	- -	- -	4,351	1,067.0	- -	- -	- -	- -
1975	14,980	3.35	6,000	25.0	- -	- -	120,000	145.0	22,000	60.0	- -	- -	- -	- -	3,726	623.3	- -	- -	- -	- -
1976	22,887	6.90	6,500	24.0	- -	- -	160,000	165.0	W	W	14	6.0	- -	- -	3,212	515.2	- -	- -	8,000[d]	1,200.0[d]
1977	50,000	7.80	8,000	20.0	- -	- -	W	W	W	W	- -	- -	- -	- -	6,891	1,119.8	- -	- -	- -	- -
1978	60,000	12.00	6,000	50.0	- -	- -	W	W	W	W	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1979	65,000	18.00	6,500	93.0	- -	- -	100,000	125.0	100,000	830.0	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1980	75,000	32.00	7,500	111.0	- -	- -	- -	- -	120,000	984.0	31	29.0	- -	- -	- -	- -	- -	- -	- -	- -
1981	134,200	55.20	13,420	111.3	W	W	- -	- -	106,000	700.0	- -	- -	- -	- -	900	200.0	- -	- -	- -	- -
1982	175,000	69.90	22,000	198.0	- -	- -	- -	- -	198,000	1,365.0	- -	- -	- -	- -	W	W	- -	- -	- -	- -
1983	169,000	67.60	33,200	332.0	- -	- -	22,400	45.0	215,000	1,100.0	- -	- -	- -	- -	W	W	- -	- -	- -	- -
1984	175,000	62.13	20,000	159.0	5	1.5	135,000	225.8	225,000	400.0	- -	- -	- -	- -	W	W	- -	- -	- -	- -
1985	190,000	61.18	28,500	171.0	27	10.0	65,000	98.0	300,000	650.0	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1986	160,000	60.80	24,000	134.4	12	2.8	45,000	67.5	340,000	890.0	- -	- -	- -	- -	W	W	- -	- -	- -	- -
1987	229,707	104.51	54,300	391.0	- -	- -	- -	- -	288,000	460.0	- -	- -	- -	- -	W	W	- -	- -	- -	- -
1988	265,500	112.84	47,790	282.0	W	W	- -	- -	300,000	950.0	- -	- -	- -	- -	25	13.8	- -	- -	- -	- -
1989	284,617	108.70	5,211,591	27,300.0	- -	- -	- -	NR	194,000	672.0	9,585	7,700.0	19,843	29,400.0	- -	- -	- -	- -	- -	- -
1990	231,700	89.20	10,135,000	50,675.0	- -	- -	- -	- -	57,000	200.0	44,220	30,954.0	181,200	253,680.0	- -	- -	- -	- -	- -	- -
1991	243,900	88.29	9,076,854	39,110.0					6,800	22.1	69,591	33,403.7	278,221	278,221.0	15	5.3	- -	- -	- -	- -
1992	262,530	88.46	9,115,755	34,913.0	- -	- -	- -	- -	1,500	5.9	68,664	31,585.0	274,507	301,957.7	- -	- -	- -	- -	- -	- -
1993	191,265	68.64	5,658,958	24,333.0	- -	- -	- -	- -	21,000	50.6	38,221	13,759.6	268,769	236,516.7	3	1.2	- -	- -	- -	- -
1994	182,100	70.29	1,968,000	10,391.0	- -	- -	- -	- -	- -	- -	36,447	25,512.9	329,003	296,102.7	5	2.1	- -	- -	- -	- -
1995	141,882	56.04	1,225,730	6,655.0	- -	- -	- -	- -	- -	- -	58,098	34,428.6	359,950	345,552.0	1	0.4	- -	- -	- -	- -
1996	161,565	62.62	3,676,000	19,078.0	- -	- -	- -	- -	- -	- -	70,086	52,284.0	366,780	361,646.0	2	0.8	780,000	0.80	- -	- -
1997	590,516	207.29	14,401,165	70,710.0	- -	- -	- -	- -	- -	- -	88,560	49,593.0	419,097	494,888.0	- -	- -	3,440,000	3.54	- -	- -
1998	594,191	174.62	14,856,000	82,154.0	- -	- -	- -	- -	- -	- -	102,887	49,386.0	549,348	505,400.0	- -	- -	3,800,000	2.85	- -	- -
1999	517,890	144.26	16,467,000	85,628.0	- -	- -	- -	- -	- -	- -	125,208	57,596.0	643,642	630,769.0	- -	- -	4,200,000	3.00	- -	- -
2000	546,000	152.39	18,226,615	90,404.0	- -	- -	- -	- -	- -	- -	123,224	51,754.0	669,112	682,494.0	- -	- -	2,800,000	2.30	- -	- -
2001	550,644	149.25	16,798,000	73,408.0	- -	- -	- -	- -	- -	- -	127,385	56,049.0	634,883	507,907.0	- -	- -	2,800,000	1.99	- -	- -
2002	562,094	174.28	17,858,183	82,326.0	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	3,200,000	2.27	- -	- -
2003	528,191	191.93	18,589,100	95.3	- -	- -	- -	- -	- -	- -	162,479	64,279.0	714,769	536,348.0	- -	- -	- -	- -	- -	- -
2004	456,508	192.34	16,947,270	113.1	- -	- -	- -	- -	- -	- -	150,796	120,636.8	680,015	651,432.2	- -	- -	- -	- -	- -	- -
2005	427,031	189.92	11,670,000	85.4	- -	- -	- -	- -	- -	- -	131,366	115,230.4	684,462	862,108.0	- -	- -	- -	- -	- -	- -
Other[d]	- -	- -	- -	- -	1,438	- -	- -	- -	- -	- -	- -	- -	- -	- -	71,946	17,091.9	- -	- -	- -	- -
TOTAL	**38,808,353**	**3,611**	**211,898,916**	**713,726**	**42,392**	**9,911**	**11,070,800**	**6,655**	**7,287,700**	**12,524**	**1,579,579**	**858,675**	**7,792,385**	**7,477,097**	**740,494[e]**	**82,908**	**1,395,615,532**	**245**	**39,051**	**3,427**

[a]From published and unpublished state and federal documents.
[b]Gold production adjusted to be consistent with mining district production totals.
[c]76-lb flask.
[d]Not traceable by year.
[e]Crude platinum; total production of refined metal is about 575,000 oz.
W = Withheld.
- - = Not reported.
t$ = Thousand dollars.
m$ = Million dollars.

APPENDIX H

Production of industrial minerals, coal, and other commodities in Alaska, 1880-2005

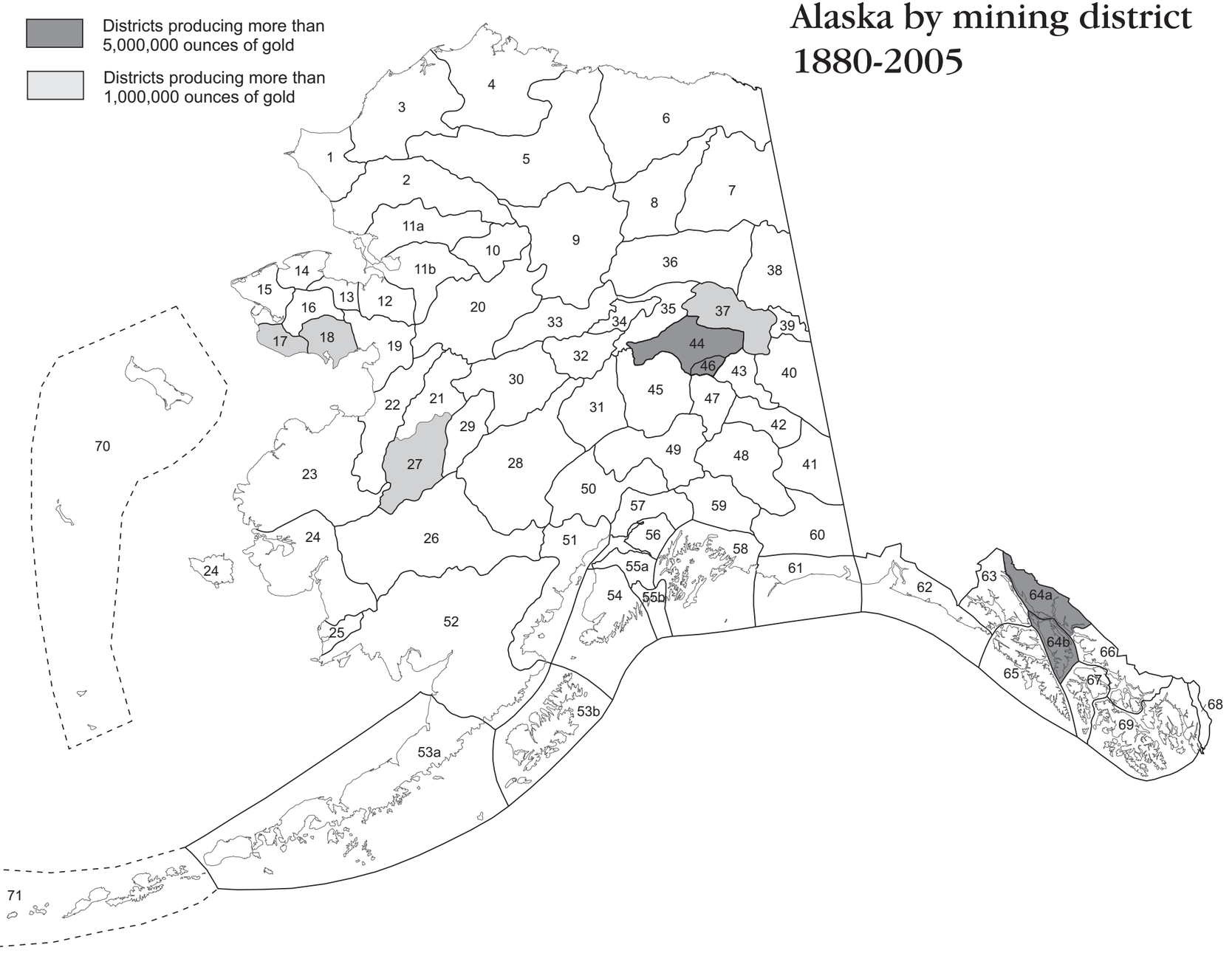
Year	Coal		Sand and gravel		Rock[a]		Barite		Other[b]
	s. tons	m$	s. tons	m$	s. tons	m$	s. tons	t$	$
1880-1899[c]	19,429	0.14	- -	- -	7,510	0.04	- -	- -	- -
1900	1,200	0.02[d]	- -	- -	510	0.01	- -	- -	- -
1901	1,300	0.02[d]	- -	- -	700	0.01	- -	- -	500
1902	2,212[d]	0.02[d]	- -	- -	800	0.01	- -	- -	255
1903	1,447	0.01	- -	- -	920	0.01	- -	- -	389
1904	1,694	0.01	- -	- -	1,080	0.02	- -	- -	2,710
1905	3,774	0.02	- -	- -	970	0.02	- -	- -	740
1906	5,541	0.02	- -	- -	2,863	0.03	- -	- -	19,965
1907	10,139	0.05		- -	3,899	0.03	- -	- -	54,512
1908	3,107[d]	0.01[d]	- -	- -	2,176	0.03	- -	- -	81,305
1909	2,800	0.02	- -	- -	1,400	0.01	- -	- -	86,027
1910	1,000[d]	0.01[d]	- -	- -	W	W	- -	- -	96,408
1911	900[d]	0.01[d]	- -	- -	W	W	- -	- -	145,739
1912	355[d]	0.01[d]	- -	- -	W	W	- -	- -	165,342
1913	2,300	0.01	- -	- -	W	W	- -	- -	286,277
1914	1,190	0.01	- -	- -	W	W	- -	- -	199,767
1915	1,400	0.03	- -	- -	W	W	- -	- -	205,061
1916	12,676	0.05	- -	- -	W	W	- -	- -	326,731
1917	54,275	0.27	- -	- -	W	W	- -	- -	203,971
1918	75,816	0.41	- -	- -	W	W	- -	- -	171,452
1919	60,894	0.35	- -	- -	50,014	0.29	- -	- -	214,040
1920	61,111	0.36	- -	- -	37,044	0.27	- -	- -	372,599
1921	76,817	0.49	- -	- -	59,229	0.31	- -	- -	235,438
1922	79,275	0.43	- -	- -	54,251	0.30	- -	- -	266,296
1923	119,826	0.76	- -	- -	83,586	0.41	- -	- -	229,486
1924	99,663	0.56	- -	- -	35,294	0.26	- -	- -	348,728
1925	82,868	0.40	- -	- -	32,193	0.19	- -	- -	454,207
1926	87,300	0.46	- -	- -	33,283	0.20	- -	- -	423,000
1927	104,300	0.55	- -	- -	41,424	0.22	- -	- -	- -
1928	126,100	0.66	- -	- -	63,347	0.31	- -	- -	- -
1929	100,600	0.53	- -	- -	54,766	0.26	- -	- -	194,000
1930	120,100	0.63	- -	- -	66,234	0.33	- -	- -	157,300
1931	105,900	0.56	- -	- -	59,175	0.29	- -	- -	108,000
1932	102,700	0.53	- -	- -	54,167	0.27	- -	- -	223,400
1933	96,200	0.48	- -	- -	56,291	0.28	- -	- -	- -
1934	107,500	0.45	- -	- -	64,234	0.36	- -	- -	46,155
1935	119,425	0.50	- -	- -	74,049	0.38	- -	- -	46,755
1936	136,593	0.57	- -	- -	76,379	0.38	- -	- -	45,807
1937	131,600	0.55	- -	- -	50,057	0.25	- -	- -	147,048
1938	159,230	0.62	- -	- -	189,090	0.21	- -	- -	125,302
1939	143,549	0.60	42,332	0.02	- -	- -	- -	- -	- -
1940	170,174	0.88	515,011	0.10	- -	- -	- -	- -	- -
1941	241,250	0.97	530,997	0.09	- -	- -	- -	- -	1,367,000
1942	246,600	0.99	W	W	- -	- -	- -	- -	1,124,000
1943	289,232	1.84	W	W	- -	- -	- -	- -	- -
1944	352,000	2.37	712,496	0.50	- -	- -	- -	- -	2,350,309
1945	297,644	1.87	W	W	- -	- -	- -	- -	5,910,704
1946	368,000	2.36	W	W	- -	- -	- -	- -	2,005,241
1947	361,220	2.55	W	W	219,000	1.00	- -	- -	5,927,319
1948	407,906	2.79	W	W	67,341	0.33	- -	- -	1,257,699
1949	455,000	3.60	W	W	W	W	- -	- -	7,181,886
1950	421,455	3.03	3,050,020	2.38	W	W	- -	- -	2,100,000
1951	494,333	3.77	6,818,000	3.54	W	W	- -	- -	3,600,000
1952	648,000	5.77	6,817,800	3.54	W	W	- -	- -	9,052,000
1953	861,471	8.45	7,689,014	5.08	47,086	0.17	- -	- -	1,231,350
1954	666,618	6.44	6,639,638	6.30	283,734	0.47	- -	- -	1,572,150
1955	639,696	5.76	9,739,214	8.24	265,740	0.29	- -	- -	1,552,427
1956	697,730	6.37	9,100,000	8.30	50,000	0.02	- -	- -	1,551,500
1957	842,338	7.30	6,096,000	8.79	528,000	1.95	- -	- -	2,751,000
1958	759,000	6.93	4,255,000	3.87	615,000	2.07	- -	- -	695,000
1959	602,000	5.88	5,600,000	5.10	54,000	0.20	- -	- -	1,338,000

Year	Coal		Sand and gravel		Rock[a]		Barite		Other[b]
	s. tons	m$	s. tons	m$	s. tons	m$	s. tons	t$	$
1960	669,000[d]	5.95[d]	5,892,000	5.35	80,000	0.30	- -	- -	975,000
1961	650,000[d]	5.87[d]	5,241,000	4.19	- -	- -	- -	- -	- -
1962	675,000[d]	6.41[d]	5,731,000	5.36	- -	- -	- -	- -	- -
1963	853,000	5.91	16,926,000	22.01	W	W	W	W	2,589,000
1964	745,000	5.01	26,089,000	18.49	W	W	W	W	4,912,000
1965	860,000[d]	5.88[d]	29,959,000	33.93	W	W	W	W	5,296,000
1966	927,000	6.95	17,457,000	21.79	W	W	44,000	350	6,167,000
1967	930,000	7.18	22,300,000	26.25	W	W	W	W	4,924,000
1968	812,000[d]	5.03[d]	17,515,000	20.73	W	W	91,000	W	4,117,000
1969	728,000[d]	4.65[d]	16,205,000	18.62	1,954,000	3.90	90,000	850	5,163,000
1970	786,000[d]	5.28[d]	20,375,000[d]	26.07[d]	6,470,000	10.01	134,000	1,875.00	7,994,000
1971	748,000[d]	5.05[d]	26,391,000	41.99	2,658,000	5.07	102,000	1,075.00	- -
1972	720,000[d]	6.26[d]	14,187,000	15.21	652,000	3.01	W	W	- -
1973	700,000[d]	6.23[d]	19,350,000	19.01	5,967,000	12.00	112,000	1,792.00	12,846,000
1974	700,000	7.34	118,740,000[d]	240.94[d]	5,484,000	12.95	110,000	1,895.00	14,495,000
1975	766,000	7.81	48,145,000	95.78	8,877,000	26.65	2,000	30	12,731,000
1976	705,000	8.00	74,208,000[d]	204.73[d]	6,727,000	20.09	W	W	14,019,000
1977	780,000[d]	12.00[d]	66,126,000	134.25	4,008,000	17.47	- -	- -	14,486,000
1978	750,000	15.00	51,100,000	122.00	3,437,000	14.65	22,000	750	- -
1979	750,000	16.00	50,900,000	104.90	3,650,000	15.45	20,000	800	930,000
1980	800,000	16.00	40,000,000	86.00	3,700,000	15.40	50,000	2,000.00	97,500
1981	800,000	17.60	46,000,000	88.20	4,200,000	19.30	- -	- -	256,000
1982	830,000	18.00	45,000,000	91.00	3,400,000	15.60	- -	- -	150,000
1983	830,000	18.00	50,000,000	105.00	5,270,000	25.00	- -	- -	242,000
1984	849,161	23.75	27,000,000	95.00	2,700,000	16.00	- -	- -	875,875
1985	1,370,000	39.73	28,184,080	112.06	2,500,000	12.00	- -	- -	559,000
1986	1,492,707	40.10	20,873,110	75.76	4,200,000	20.32	- -	- -	384,800
1987	1,508,927	42.35	16,696,374	42.66	1,805,000	11.62	- -	- -	388,400
1988	1,551,162	44.30	17,264,500	48.75	3,600,000	24.65	- -	- -	389,000
1989	1,452,353	41.46	14,418,000	39.88	2,914,000	20.34	- -	- -	1,492,000
1990	1,576,000	44.99	15,013,500	40.82	3,200,000	22.1	- -	- -	400,000
1991	1,540,000	39.00	14,160,011	45.45	3,000,000	22.5	- -	- -	462,000
1992	1,531,800	38.30	14,599,746	42.2	2,900,000	22.97	- -	- -	430,000
1993	1,586,545	38.10	13,162,402	40.64	3,561,324	26.21	- -	- -	465,000
1994	1,490,000	36.75	13,518,321	40.95	3,843,953	27.04	- -	- -	459,500
1995	1,640,000	41.30	9,847,550	30.89	2,811,152	22.13	- -	- -	182,500
1996	1,481,000	38.00	9,890,463	32.2	3,000,045	23.56	- -	- -	200,000
1997	1,446,000	38.05	13,800,000	51.91	3,200,000	20.00	- -	- -	217,000
1998	1,339,000	35.23	12,363,450	57.28	1,636,200	14.04	- -	- -	215,000
1999	1,560,000	41.05	10,600,000	52.42	1,640,000	18.01	- -	- -	- -
2000	1,473,355	38.77	10,600,000	49.86	5,200,000	36.59	- -	- -	- -
2001	1,537,000	48.11	10,360,000	55.22	3,091,000	27.18	- -	- -	- -
2002	1,158,000	37.40	22,412,000	120.7	3,152,000	31.44	- -	- -	- -
2003	1,088,000	38.08	11,868,001	64.14	861,382	10.41	- -	- -	175,000
2004	1,450,000	50.75	19,576,092	101.51	7,312,050	106.21	- -	- -	2,732,554
2005	1,402,174	49.08	16,620,009	76.54	2,803,172	22.55	- -	- -	809,642
Other[d]	- -	- -	- -	- -	2300000[e]	W	79,000	W	- -
TOTAL	**62,282,509**	**1,194**	**1,244,270,102**	**2,924**	**141,152,604**	**787**	**856,000**	**11,417**	**181,479,068**

[a]Building stone production figures for 1880-1937 are for the southcentral and interior regions of Alaska only. Contains limestone 2004.
[b]Includes 2.4 million lbs of U_3O_8 (1955-71); 505,000 tons gypsum (1905-26); 286,000 lbs WO_3 (intermittently 1916-80); 94,000 lbs asbestos (1924-44); 540,000 lbs graphite (1917-18 and 1942-50); and undistributed amounts of zinc, jade, peat, clay, soapstone, miscellaneous gemstones, and other commodities (1880-1993).
[c]Production not traceable to a specific year or period.
[d]When state (territorial) and federal figures differ significantly, state figures are used. Figures for sand and gravel production in 1974 show state estimates (118,740,000 short tons; $240.94m) and federal (421,614,000 short tons - $88.96m). The federal estimate was not added to total production.
[e]Marble quarried on Prince of Wales Island, southeastern Alaska (1900-41).
m$ - million of dollars.
t$ - thousands of dollars
- - Not reported
W - Withheld.

Total gold production in Alaska by mining district 1880-2005

	Mining districts[a]	Production (in refined troy ounces)		
		Total production	Placer	Lode
1	Lisburne district	0	0	0
2	Noatak district	7,800	7,800	0
3	Wainwright district	0	0	0
4	Barrow district			0
5	Colville district	0	0	0
6	Canning district	0	0	0
7	Sheenjek district	0	0	0
8	Chandalar district	66,086	48,686	17,400
9	Koyukuk district	345,751	345,751	0
10	Shungnak district	15,000	15,000	0
11	Kiana & Selawik districts	40,600	40,600	0
12	Fairhaven district (Candle subdistrict)	253,720	253,720	0
13	Fairhaven district (Inmachuk subdistrict)	348,089	348,089	0
14	Serpentine district	4,220	4,220	0
15	Port Clarence district	42,351	42,351	0
16	Kougarok district	178,001	178,001	0
17	Nome (Cape Nome) district	4,994,974	4,994,974	0
18	Council district	1,046,513	1,019,513	27,000
19	Koyuk district	84,172	84,172	0
20	Hughes district	283,104	283,104	0
21	Kaiyuh district	149,703	5,400	144,303
22	Anvik district[b]	7	7	0
23	Marshall district	124,506	124,506	0
24	Bethel district	42,945	42,945	0
25	Goodnews Bay district	29,700	29,700	0
26	Aniak district	588,433	588,433	0
27	Iditarod district	1,563,006	1,560,076	2,930
28	McGrath district	330,205	133,306	196,899
29	Innoko district	729,097	728,941	156
30	Ruby district	477,526	477,526	0
31	Kantishna district	99,307	91,401	7,906
32	Hot Springs district	579,845	579,845	0
33	Melozitna district	12,089	12,089	0
34	Rampart district	196,877	196,877	0
35	Tolovana district	529,513	529,513	0
36	Yukon Flats district	0	0	0
37	Circle district	1,068,869	1,068,869	0
38	Black district	0	0	0
39	Eagle district	52,000	52,000	0
40	Fortymile district	554,026	554,026	0
41	Chisana district	144,500	78,000	66,500
42	Tok district	280	280	0
43	Goodpaster district	2,350	2,050	300
44	Fairbanks district	11,840,541	8,193,092	3,647,449
45	Bonnifield district	84,672	77,972	6,700
46	Richardson subdistrict of Fairbanks district[c]	120,940	118,640	2,300
47	Delta River district	6,740	6,740	0
48	Chistochina district	182,175	182,175	0
49	Valdez Creek district	509,430	507,849	1,581
50	Yentna district	197,694	197,694	0
51	Redoubt district	105	105	0
52	Bristol Bay Region	1,570	1,570	0
53	Kodiak district (53b)–Alaska Peninsula Region (53a)	112,400	4,800	107,600
54	Homer district	16	16	0
55	Hope & Seward districts	132,496	67,496	65,000
56	Anchorage district[d]	167	167	0
57	Willow Creek district	666,175	57,175	609,000
58	Prince William Sound district	137,715	15	137,700
59	Nelchina district	14,115	14,115	0
60	Nizina district	148,500	148,500	0
61	Yakataga district	18,040	18,040	0
62	Yakutat district[e]	13,200	2,200	11,000
63	Juneau district (partial)	82,064	82,064	0
64	Juneau (64a) & Admirality (64b) districts	8,707,321	80,000	8,627,321
65	Chichagof district	770,000	0	770,000
66	Petersburg district	15,000	15,000	0
67	Kupreanof district	0	0	0
68	Hyder district	219	219	0
69	Ketchikan district	62,000	4,000	58,000
70	Bering Sea Region	0	0	0
71	Aleutian Islands Region	0	0	0
	Unknown (Undistributed)[f]	29	29	0
	TOTAL	**38,808,490**	**24,301,445**	**14,507,045**
	Total production (troy ounces)	**38,808,490**		**(1,207.1 tonnes)**



[a]Mining district names and boundaries revised slightly from those defined by Ransome and Kerns (1954) and Cobb (1973). Sources of data: U.S. Geological Survey, U.S. Bureau of Mines, and Alaska Territorial Department of Mines records 1880-1930; U.S. Mint records 1930-1969; State of Alaska production records 1970-2006. Entries of "0" generally mean no specific records are available.
[b]Included in Marshall district.
[c]Not included in total for Fairbanks district.
[d]Most placer gold production included in Willow Creek district.
[e]Includes lode production from Glacier Bay area and placer production from Lituya Bay area.
[f]Production that cannot be credited to individual districts due to lack of specific records or for reasons of confidentiality.

Above. *The main ore body at the Red Dog zinc–lead–silver mine. Photo provided by Teck Cominco Alaska Inc.*

Right. *Drilling at the Golden Zone property during 2006. Photo courtesy of Piper Capital Inc.*

Bottom. *Reclamation seeding at the True North Mine, Fairbanks Mining District. Photo provided by Fairbanks Gold Mining Inc.*

Front Cover. *Drilling on the Ben Zone, Terra gold project, western Alaska Range. Fish Creek Glacier is in the background. Chris Nikolai and other Layne Christensen Co. drillers completed 12 drill holes on the project. Exploration continued into 2006 by International Tower Hill Mines Ltd., in joint venture with AngloGold Ashanti (USA) Exploration Inc. Photo provided by AngloGold Ashanti (USA) Exploration Inc.*