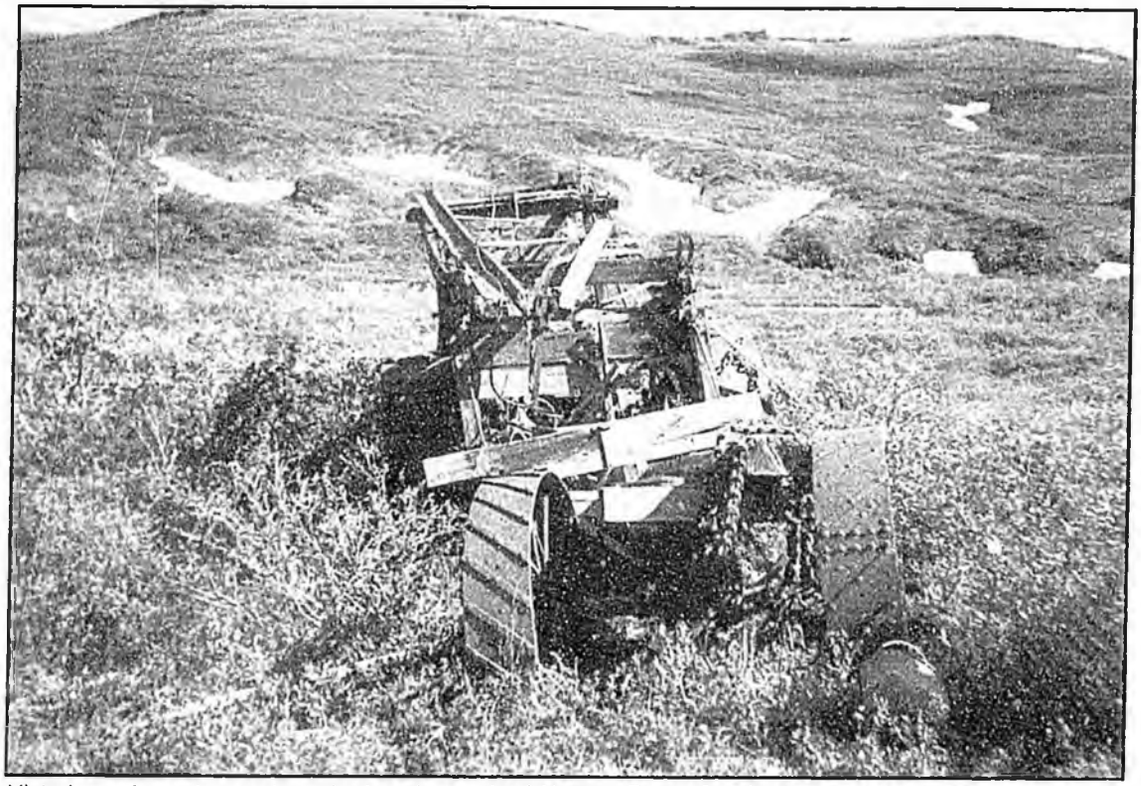
Alaska Minerals Commission 2/16/00

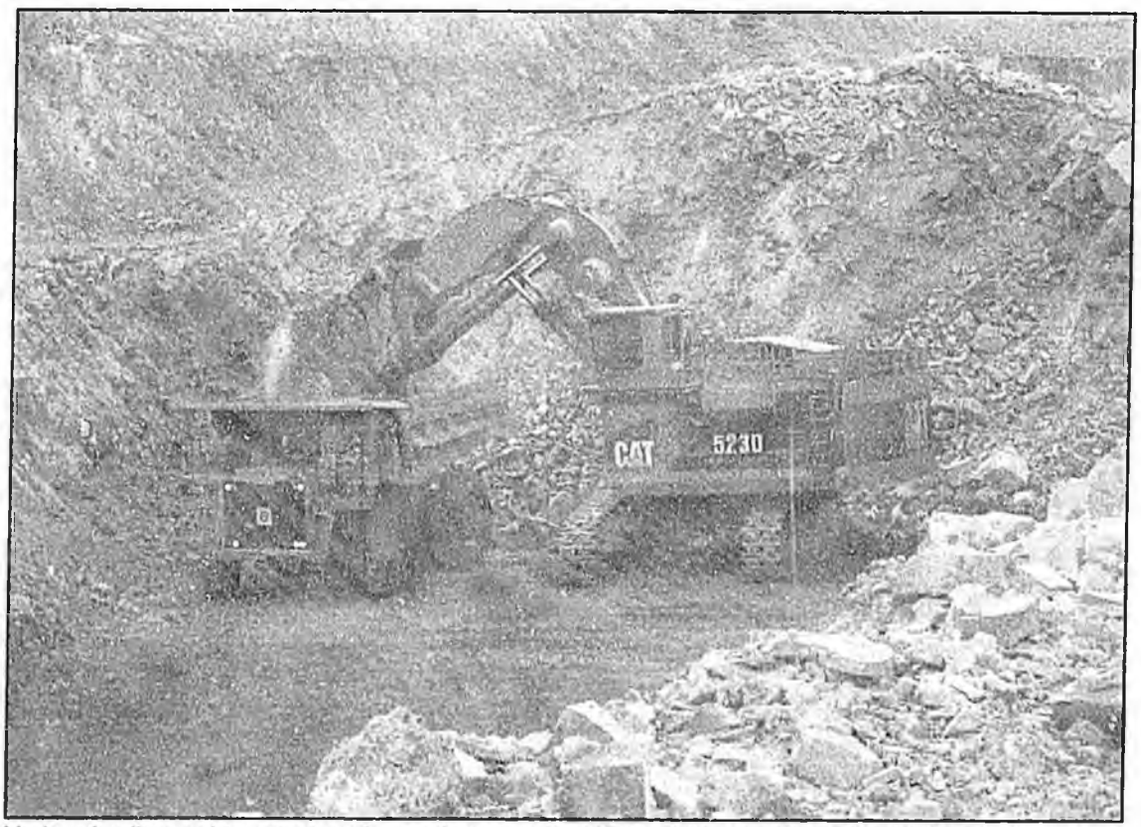
REPORT OF THE Alaska Minerals Commission

JANUARY 2000

The Alaska Minerals Commission was created by the 14th Legislature and signed into law on June 6, 1986. The enabling legislation instructs the Commission to make recommendations to the Governor and Legislature on ways to mitigate constraints, including governmental constraints, on the development of minerals, including coal, in the state.



Historic equipment on patented mine site north of Nome. Photo Credit: Sitnasuak Native Corporation



Modern loading and transport equipment in use at Fort Knox, Fairbanks. Photo Credit: Tom Irwin

ALASKA MINERALS COMMISSION

DECEMBER 1999

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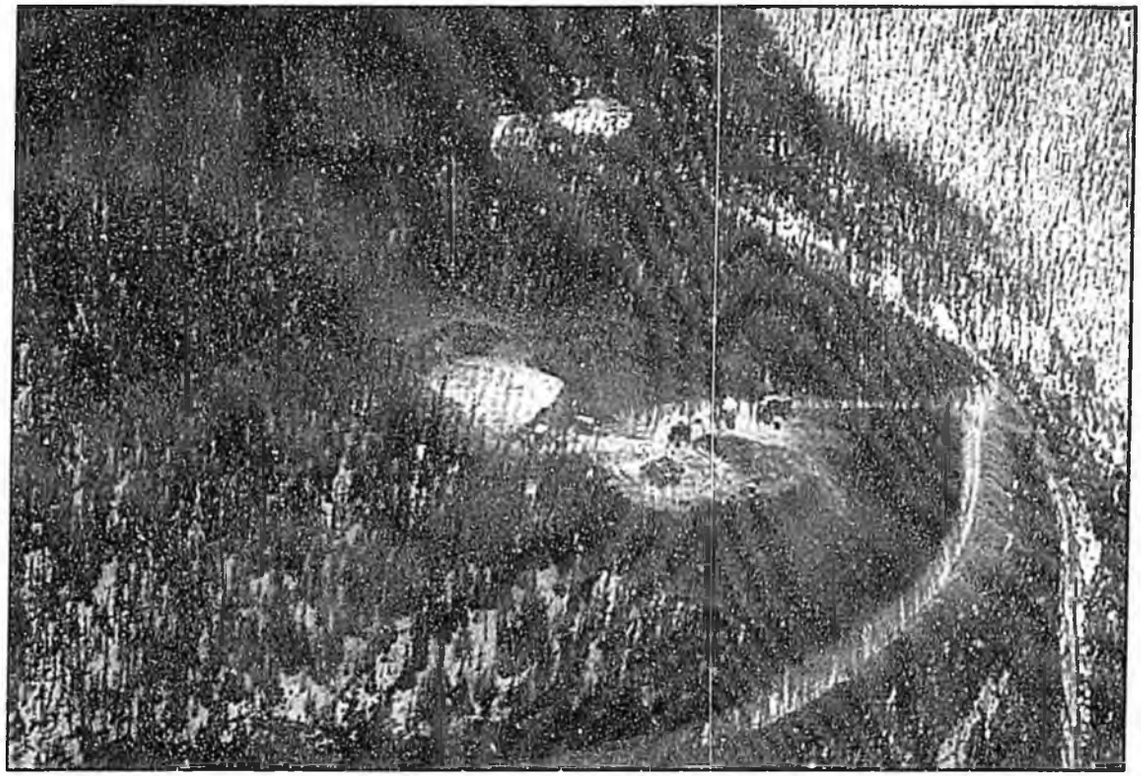
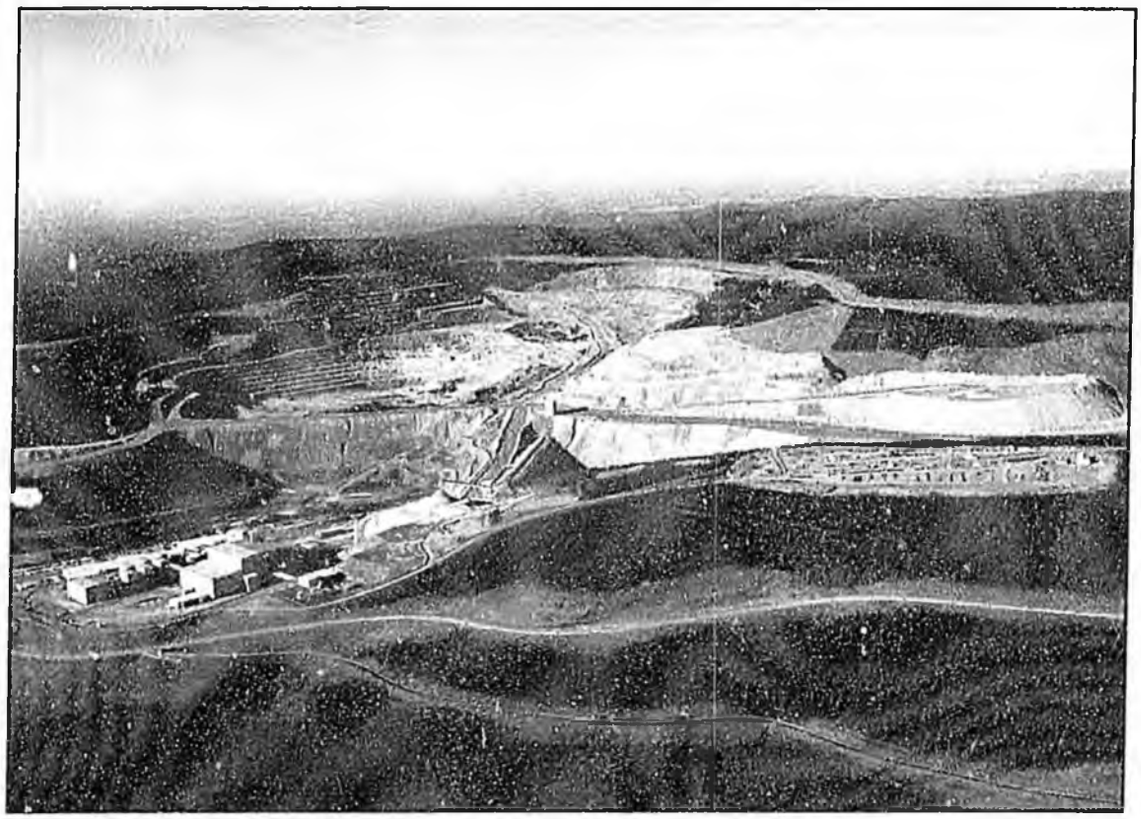


Aerial view of portal pad construction, Pogo claim area, northeast of Fairbanks. Photo Credit: Karl Hanneman



Aerial view of Fort Knox, Fairbanks. Photo Credit: Steve McGroarty, DNR, DMLW

FOREWORD

The Alaska Minerals Commission again wishes to thank the Governor and the Legislature for implementing several of our recommendations during 1999, (see Recommendations Already Implemented). Partly as a result of the responsive actions of the Governor and the Legislature over the last few years, the global mining industry presently considers Alaska a favorable place to do business and is demonstrating its growth potential.

The Alaska Minerals Commission was created by the 14th Legislature and signed into law on June 6, 1986. The enabling legislation instructs the Commission to make recommendations to the Governor and Legislature on ways to mitigate constraints, including governmental constraints, on the development of minerals, including coal, in the state.

The Commission has presented reports to the Governor and Legislature annually since January, 1987, and is authorized to do so until February, 2004. Commission members are appointed by the Governor, the President of the Senate, and the Speaker of the House. The current members are representatives of placer, hard rock, and coal mining industries and come from diverse areas of the state.

During 1999, the Commission held meetings in Fairbanks and Anchorage, and several members met with the Governor, Commissioners of various departments, the President of the Senate, the Speaker of the House, and with legislative committees in Juneau. All Commission meetings are open to the public, and members encourage comments from all interested parties at any time.

Following the Executive Summary, this report contains background information in Part A on the main issue, water quality permits, followed by the related recommendations. Subordinate to the main issue are some of the recommendations from last year, as Part B.

On behalf of the members of the Commission, I would like to express our appreciation to those members of the public, to the Alaska Miners Association, to the Resource Development Council, and to the many government agencies and private organizations that contributed to the preparation of the report. The Commission wishes to thank Commissioner Deborah B. Sedwick of the Department of Community and Economic Development and Dick Swainbank, and Frankie Pillifant of the Division of Trade and Development who have provided excellent administrative and professional support to the Commission.

Irene Anderson
Chair

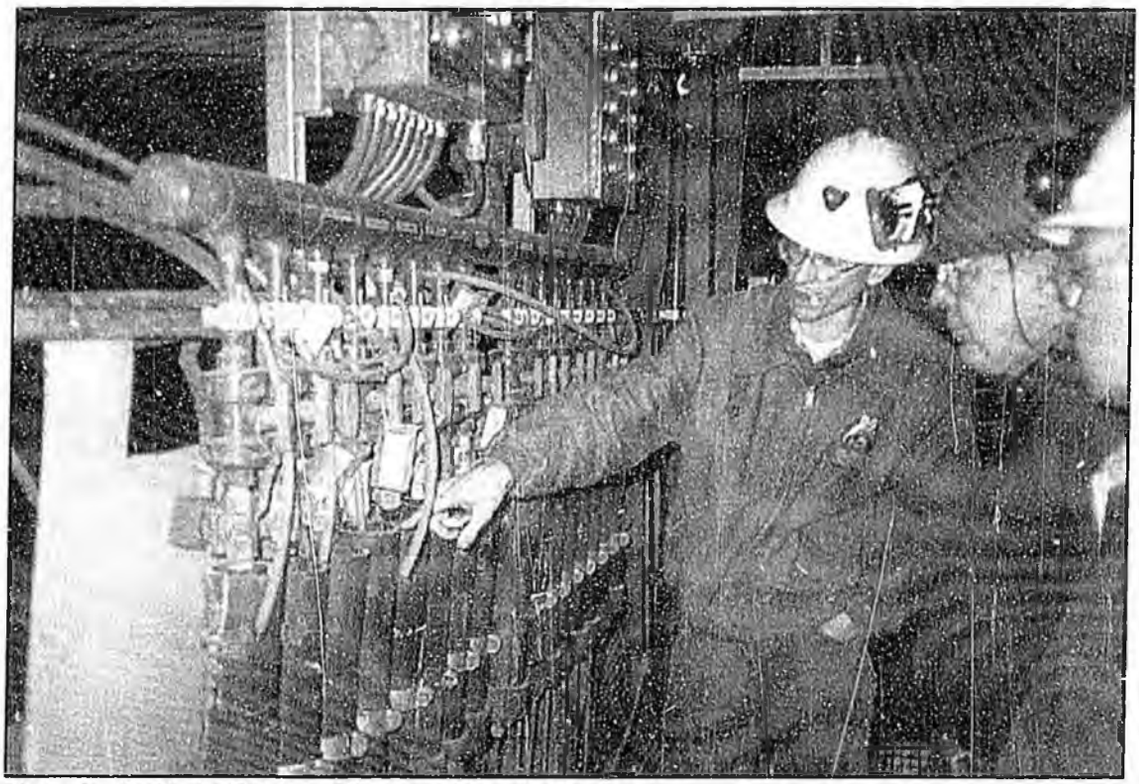


Photo Credit: Alaska Division of Trade and Development

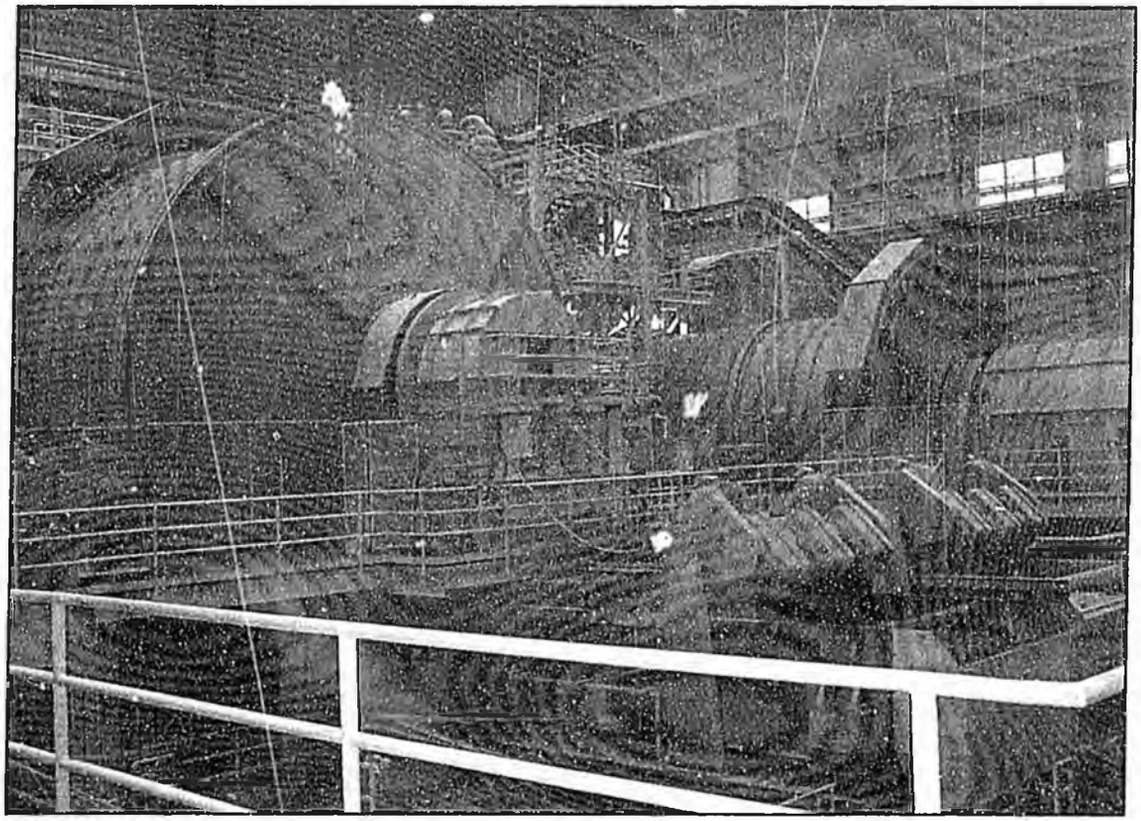


Photo Credit: Tom Irwin

Inside view of various mining operations

ALASKA MINERALS COMMISSION
2000 REPORT TO THE GOVERNOR AND ALASKA STATE LEGISLATURE

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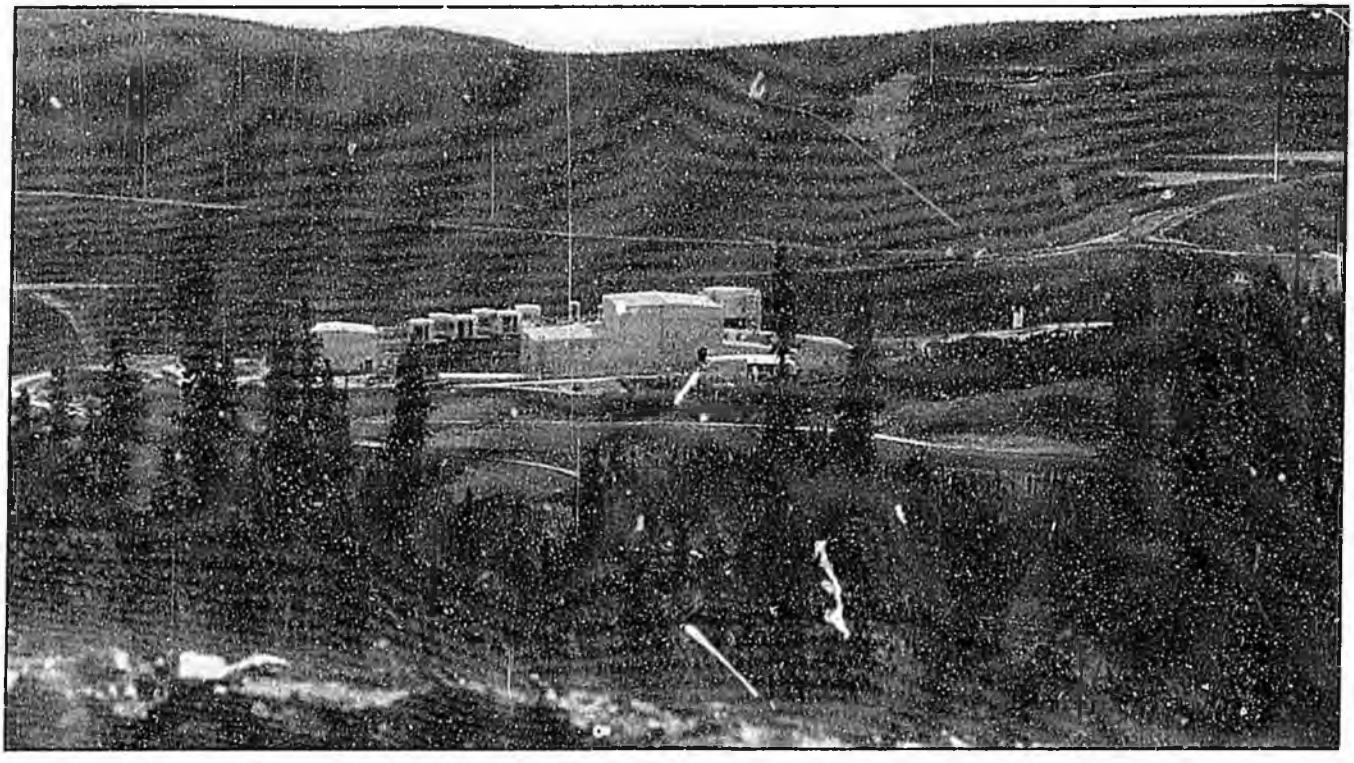


Fort Knox, Fairbanks, Alaska. Photo Credit: Alaska Division of Trade and Development

EXECUTIVE SUMMARY

This millennium report departs substantially from the past issues due to the overwhelming importance of the permitting issues that have been a staple of the recommendations for several years. These issues have been addressed as "User Fees," "Mixing Zones," and "NPDES Primacy" in past reports, but are consolidated in this version as Part A in what we hope is a comprehensive whole.

We do not wish to suggest that other issues in Part B, such as continuation of the critical geophysical surveys, are of no importance, but unless the state is able to issue permits for mining operations, possibly with variances that recognize the need for Alaska-specific conditions, then Alaska will no longer be viewed as an attractive area for exploration investment.

For convenience, the other issues which are still important to the Commission, are consolidated in abbreviated form as Part B. Copies of the 1999 Report that contain the full rational for the recommendations as "Findings" are available from the Juneau staff.

Industry Overview

Despite record low prices for metals and coal, the total value of Alaska's mineral industry in 1999 is estimated to remain above a billion dollars, mainly because of the increased production at the Red Dog and Greens Creek mines. Several medium-sized mines (Illinois Creek, Nixon Fork, Alaska Gold Company) and a number of smaller placer mines were closed in 1999.

Exploration expenditures declined to about $45 million from $58 million in 1998, but there was a flurry of activity near Red Dog, where a new, deep zone of mineralization was discovered, and near the Pogo gold deposit north of Delta, where the orebody was expanded, and other zones of gold ore were explored. Exploration for gold continued near Fairbanks and near Delta Junction. Gold-silver-lead-zinc-copper deposits were the focus of exploration in the Alaska Range and in southeast Alaska. There was little development activity reported in the state in 1999.

The State Division of Geological & Geophysical Surveys released the results of the 1998 surveys in the Fortymile River and Livengood areas, and contracted for a new survey in the area northwest of Pogo. It also participated in a joint federal-state-private survey of parts of Prince of Wales Island which was released in August.

The State Division of Mining, Land & Water Management continued its cooperative studies with the U.S. Geological Survey of the Fortymile and Goodpaster River drainages to provide baseline water quality data.

Preliminary estimates of the value of the industry in 1999 suggest $45 million for exploration, $18 million for development, and about $986 million in production, for an overall value of about $1.049 billion. These values are likely to change as more information becomes available.

Recommendations Already Implemented

During 1999 several of the recommendations from the January 1999 Alaska Minerals Commission Report were effected, or there was substantial progress made in their implementation. These were:

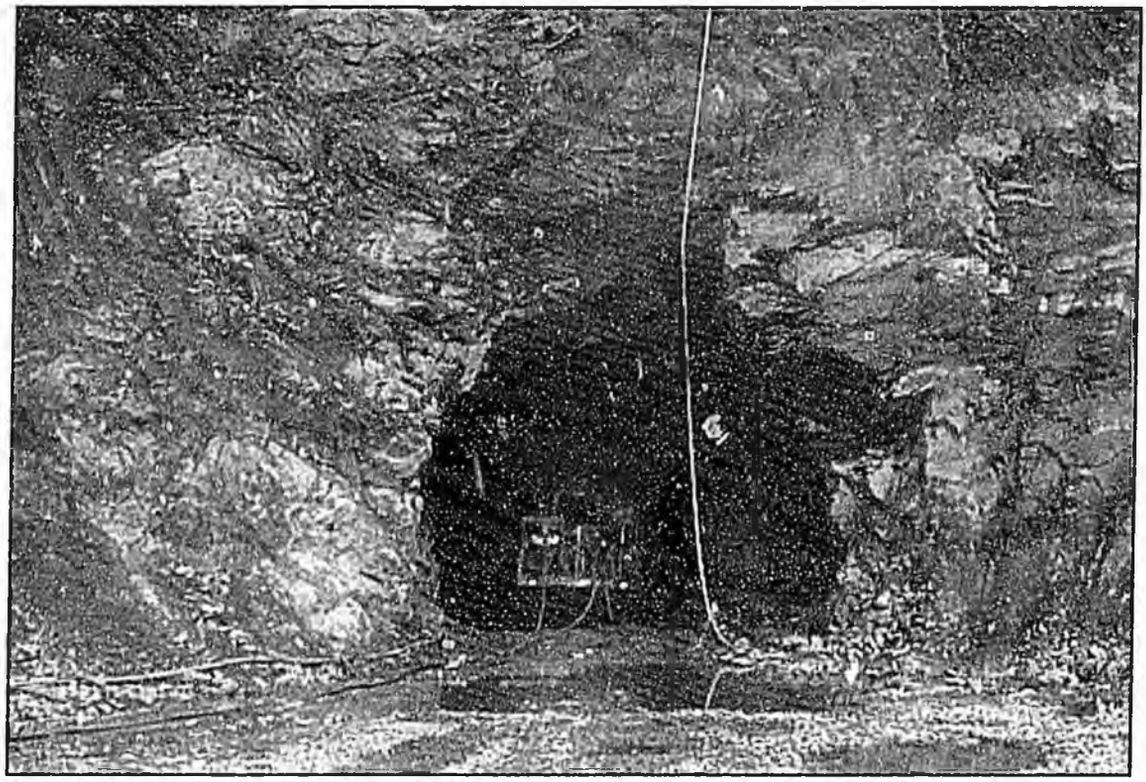
- Baseline Data,
- Natural Conditions, and
- Recorders Office Technology Upgrade.

The second part of the Baseline Data Issue, that urged cooperation of the Department of Environmental Conservation with the Division of Mining, Land & Water Management, still needs more work. Regrettably funding was cut for the Citizen's Advisory Commission on Federal Areas and for the core RS2477 work group.

Since the first report in 1987 there have been numerous other recommendations of the Alaska Minerals Commission that have been implemented, including:

- Passage of Alaska Mineral Policy Act (1988).
- Addition of the Department of Commerce to the Resource Cabinet (1992).
- Exemption of minerals from municipal in-situ taxation (1992).
- Funding for airborne geophysical surveys (1992-1998).
- Creation of a task force for RS2477 trail inventory (1993).
- Restriction of Mineral Closing Orders (1993).
- Protection for claimants on state-selected land (1994).
- Extending terms of permits when legal impediments prevent use (1994).
- Selection of lands with high mineral potential (1994).
- Passage of the Exploration Incentives Act (1995).
- Passage of the Diminutive Discharge Bill (1995).
- Providing more flexible work hours for miners (1996).
- Allowing coal mines access to the state bonding pool (1996).
- Assertion of RS2477 rights-of-way (1997).
- Resolution of the Mental Health Lands issue (1997).
- Legislative Resolve No. 31 was passed in support of the federal "American Lands Sovereignty Protection Act of 1997."
- Funding for the AMEREF program (1987-1998).
- Funding for the Citizen's Advisory Commission on Federal Areas (1991-1998).
- The Citizen's Advisory Commission on Federal Areas (CACFA) was extended until 2008. (1998).
- Funding was provided to the Recorders Offices to update equipment (1998).
- Funding was provided to continue state services important to miners in Nome (1998).
- Funding was provided for the airborne geophysics program (1998).
- Funding was provided for the Alaska Mineral and Energy Resource Education Fund (AMEREF)(1998).
- Establishment of a rational water quality standard for arsenic (1998).
- Establishment of a joint State/industry/Alaska Science &Technology Foundation effort to study Alaska specific baseline water quality issues such as total dissolved solids (TDS) (1998).
- The Alaska Minerals Commission was authorized to continue until February 2004 (1998).

The Commission can not take sole credit for requesting resolution of many of these issues, but partly as a result of the responsive actions of the Governor and the Legislature over the past few years, the global mining industry presently considers Alaska as a favorable place to do business. This perception is enhanced by the excellent potential for the discovery of world-class mines in a large, under-explored state with a regulatory environment that is not oppressive.



Ground view of portal construction at Pogo site, northeast of Fairbanks. Photo Credit: Karl Hanneman

Marking zones at Kennecott Greens Creek Mine, near Juneau, Alaska.
Photo Credit: Alaska Division of Trade and Development

PART A

A CRISIS IN ALASKA'S ABILITY TO ISSUE PERMITS

FINDING

A crisis has developed in Alaska because the Department of Environmental Conservation (ADEC) has lost most of its technically competent permit writers. This affects Alaskan projects including seafood processors, pulp mills, oil field development, both rural and municipal sewage plants, as well as mines. At risk is the ability of the public and private sectors to improve infrastructure, foster economic development, and enhance the quality of life in Alaska. The disintegration of ADEC permitting capabilities has resulted from a lack of understanding among Alaska residents and policy makers about the importance of this function.

In an effort to shift expenditures out of the General Fund in recent years, Alaska policy makers authorized ADEC's Water Quality Program to collect user fees in the form of Reimbursable Service Agreements, whereby a company agrees to pay permit fees directly to the agency. As the funding from these reimbursable agreements provided increased revenue to ADEC over the years, the policy makers correspondingly reduced the General Funds appropriated for the Water Quality Program. Recently part of ADEC's water quality division was funded by agreements such as Kensington, AJ, Red Dog, Ketchikan Pulp, Fort Knox, Donlin Creek, and Badami. As these projects were completed, canceled, or postponed, the fees paid to ADEC by these projects stopped.

In 1999, the policy makers chose not to replace the lost revenue with General Funds. Further unallocated cuts in general funds for ADEC resulted in policy decisions that led to a reduction in staff from fourteen to a current level of four. As a result, the State of Alaska is no longer capable of reliably processing permits for activity ranging from seafood processing, pulp mills, oil industry seawater processing, rural and municipal sewage treatment plants, or mining industry expansions.

While the mining industry has readily demonstrated its willingness to use reimbursable agreements to pay the costs of permit processing, this fee system is not appropriate for Alaska. Quite simply, Alaska's industrial sector is not large enough to support ADEC's permitting program through fees on a sustaining basis. The experiment with reimbursable service agreements to support ADEC's core function has failed. ADEC's core permitting functions must be supported by General Funds.

The use of reimbursable agreements to fund agency personnel costs also has another inherent flaw. Under this system there is little incentive for agency personnel, whose salaries are funded by hourly service charges, to expeditiously complete the permit processing. This will be especially true at those times when there are few permit applicants. Alaska cannot hope to flourish with a permitting process designed with such obvious disincentives to be efficient.

The permitting requirements in Alaska and the rest of the nation are changing rapidly and the permitting workload in Alaska is destined to increase, not decrease. For example, industry regulation is continually becoming more technical, and EPA policy will soon require federal permits based on water quality standards for many rural sewage treatment systems that for years have been allowed to operate without them. Also, federal law requires Alaska to issue permits under the Clean Air Act. If ADEC does not remain actively involved in permit writing and certification of federal permits, Alaska will lose the opportunity to utilize the flexibility available to individual states in the implementation of the federal laws and regulations.

In order to process the air and water quality permits required by law, it is essential that the state employ a core group of qualified and experienced personnel within ADEC. Permits will become increasingly technical and subject to challenge by the EPA, other agencies, and environmental groups. ADEC personnel must have the technical background and professional experience to be able to make the judgements necessary to process and defend the permits. The only way to attract and retain this caliber of employee is to provide stable funding from General Funds.

Furthermore, in order to handle the workload during periods of high permitting demand, ADEC should have the ability to contract out portions of the permit process to qualified contractors. These contractors could be hired directly by the permittee to expedite the process. Contractors could provide both routine processing functions for the permittee as well as specialty expertise not available within ADEC. These contracts should be managed by the senior ADEC employees. The competitive structure and potential for repeat business would provide a market-driven incentive for contractors to provide efficient and technically accurate permit processing. ADEC would retain all discretion and approval authority.

RECOMMENDATIONS

The Governor and Legislature should provide sufficient support from the General Fund on a sustaining basis to allow ADEC to re-establish and maintain a core group of technically qualified and professionally experienced personnel to process, approve, and certify the water and air quality permits that are required by state and federal law for public and private projects.

The Governor and Legislature should authorize ADEC to use qualified third party contractors to assist in processing permits, when the expertise or workload requires it, using funding from ADEC or from permit applicants.

PART B

ADDITIONAL RECOMMENDATIONS

Issues Requiring State Action

BASELINE DATA

1 The Governor and Legislature should direct the Alaska Department of Environmental Conservation (DEC) to cooperate fully with the Division of Mining & Water Management and the U. S. Geological Survey in their effort to study baseline water quality conditions in the drainage of the Fortymile, Goodpaster, and other Alaskan waterbodies.

GEOPHYSICAL & GEOLOGICAL MAPPING

2 The Governor and the Legislature should invest $5 million per year (approximately 10% of what industry spent on exploration in 1999) for the next decade, preferably through foundation funding, in airborne geophysical surveys and complementary geological and geochemical surveys.

LEAD AGENCY

3 The Governor, by Executive Order, and the Legislature, by Resolution, should direct agencies such as the Department of Environmental Conservation, the Department of Fish & Game, and the Division of Governmental Coordination to confer with the mineral experts in the Department of Natural Resources before promulgating rules or regulations affecting mining as per A.S. 27.05.010(b).

RS 2477 ACCESS

4 The Legislature should fund a multi-year, multi-agency Capital Project of $300,000 annually for the Division of Land to work with the Department of Law and other agencies to aggressively pursue precedent-setting "quiet title" actions, and to preserve State's rights. The Governor should aggressively assert "quiet title" to the routes with the best documentation. Furthermore, the State should assert an access route pursuant to Title XI of the Alaska National interest Lands Conservation Act to test the process and set a precedent.

ROADS TO MINERAL-RICH AREAS

5 The Legislature should reserve a portion of the federal funds secured by the proposed increase in state gasoline taxes for the purpose of pioneer access to mineral-rich areas.

NAVIGABILITY

6 The Legislature should make funding available to continue a centralized, systematic navigability program within the Department of Natural Resources. Additionally, funding should be made available to the Department of Law to support any "quiet title" actions necessary to secure ownership of submerged lands.

MARKETING ALASKA

7 The Governor and Legislature should provide adequate budgetary support to maintain the positions and programs of the Division of Trade and Development, the Division of Mining & Water Management, and the Division of Geological & Geophysical Surveys.

SCHOOL OF MINERAL ENGINEERING

8 The Governor and Legislature should provide adequate budgetary support to the UAF School of Mineral Engineering.

EDUCATION AND RESEARCH

9 The Governor and the Legislature should appropriate $50,000 to the Division of Educational Support, Minerals and Energy Education Program, as the State's share of supporting the Alaska Mineral and Energy Resource Education Fund (AMEREF).

FEDERAL ISSUES OF STATE CONCERN
ANILCA PROVISIONS

ANILCA PROVISIONS

10 The Governor and Legislature, through the Attorney General's office, the State's Washington D.C. office, and the Congressional Delegation should insist that the federal administration:

(a) prohibit the creation of additional CSU lands in Alaska as required by Sections 101d and 1326b of ANILCA,

(b) provide access across Conservation System Units (CSU) as required by Title XI of the Alaska National Interest Lands Conservation Act (ANILCA), and

(c) exchange mineralized areas from existing CSU under the authority of Sections 103b and 1302h of ANILCA.

APPENDIX A
ENABLING LEGISLATION

Chapter 98
Session Laws of Alaska, 1986
As Amended by Chapter 12
Session Laws of Alaska, 1998

AN ACT

Relating to the Alaska Minerals Commission; and providing for an effective date.

Section 1. (a) The legislature finds that the minerals industries, including metallic minerals, industrial minerals, and hydrocarbons, have traditionally and continue to be the major source of wealth and income in the state.

(b) The legislature further finds that there are major constraints on the continued development of a diverse mineral industry in the state, including the Environmental Protection Agency's effluent guidelines, state water quality standards and improperly classified streams and rivers, restriction on surface access, complex and numerous permitting requirements, and limited access to minerals through mineral closing orders and restrictions on multiple use through state and federal land use plans.

Section 2. ALASKA MINERALS COMMISSION ESTABLISHED. (a) The Alaska Minerals Commission is established in the Department of Commerce and Economic Development.

(b) The Commission is composed of 11 members. The Commission shall be composed of individuals who have at least five years' experience in the various aspects of the minerals industries in the state. The Governor shall appoint five members of the Commission, one of whom must reside in a rural community. The President of the Senate shall appoint three members of the Commission. The Speaker of the House of Representatives shall appoint three members of the Commission. Each member serves at the pleasure of the appointing authority.

(c) The Commission shall make recommendations to the Governor and to the Legislature on ways to mitigate the constraints, including governmental constraints, on development of minerals, including coal, in the State.

(d) The Commission shall report its recommendations each year to the Governor and the Legislature during the first 10 days of the regular session of the Legislature.

Sec. 3. This Act is repealed February 1, 1994.*

Sec. 4. This Act takes effect immediately in accordance with AS 01.10.070(c)

*Note: The Act was amended to extend the life of the Commission to February 1, 2004.

ALASKA MINERALS COMMISSION
STATEMENT OF PURPOSE

The Alaska Minerals Commission was created by the 14th Legislature in Chapter 38 of the Session Laws of 1986 and was established to make recommendations to the Governor and to the Legislature on ways to mitigate constraints on the development of minerals in the State.

The minerals industry offers the greatest potential of any Alaska industry for expanding and diversifying the State's economic base; for increasing Statewide employment; and for generating new wealth to create businesses and provide revenues for State and local governments.

However, Alaska has a complex pattern of land ownership and management; has overlapping and uncertain regulatory requirements; has unique geographic, geologic and climatic conditions; and has an undeveloped transportation system.

To attract the capital necessary for the exploration and development of new mines; to ensure that mines can be developed feasibly and in a timely fashion; and to ensure that producing mines remain viable-constraints on the industry must be mitigated.

The Alaska Minerals Commission will prepare reports for the First and Second Sessions of the 15th Legislature and the First Sessio . of the 16th. Legislature, recommending to the Governor and to the Legislature the adoption of legislation and the implementation of administrative policy that will best accomplish the statement of policy found in Article VIII, of the Constitution of Alaska:

> "It is the policy of the State to encourage the settlement of its land and development of its resources by making them available for maximum use consistent with the public interest."

And the statement of policy found in the President's National Materials and Minerals Report to Congress of April 5, 1982.

> "It is the policy of this administration to decrease America's mineral vulnerability by taking positive action that will promote our national security, help ensure a healthy and vigorous economy, create American jobs, and protect America's national resources and environment."

The goals and recommendations of the Alaska Minerals Commission are to assure that the Legislature and the State administration endorse and promote development of a viable mining industry in the State.

MINERAL POLICY ACT

Sec. 44.99.110. Declaration of state mineral policy. The Legislature, acting under art. VIII, sec. 1 of the Constitution of the State of Alaska, in an effort to further the economic development of the state, to maintain a sound economy and stable employment, and to encourage responsible economic development within the state for the benefit of present and future generations through the proper conservation and development of the abundant mineral resources within the state, including metals, industrial minerals, and coal, declares as the mineral policy of the state that

(1) mineral exploration and development be given fair and equitable consideration with other resource use in the multiple use management of state land;

(2) mineral development be encouraged through reasonable and consistent non-duplicative regulations and administrative stipulations;

(3) mineral development and the entry into the marketplace of mineral products be considered in developing a statewide transportation infrastructure system;

(4) mineral development be encouraged through appropriate public information and education, scientific research, technical studies, and the University of Alaska program involvement;

(5) economic development with respect to the state mineral industry be encouraged with Pacific Rim nations (Sec.1 Ch. 138 SLA 1988)

This publication was released by the Department of Community and Economic Development. Its purpose is to report the findings and recommendations of the Alaska Minerals Commission to the Governor and to the Legislature of Alaska. It was produced at a cost of $.90 per copy and printed in Juneau, Alaska. This publication is required by Chapter 98, Session Laws of Alaska, as amended by Chapter 4, Session Laws of Alaska, 1993.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The Department of Environmental Conservation is a technical assistance, regulatory and grant-in-aid agency responsible for protecting the environment and public health. The agency administers programs for prevention and response to air, land, and water pollution; enforces standards of sanitation in public facilities; assures wholesome fish and dairy products for consumers; and provides financial and technical assistance to municipalities and local communities for water, sewer, and solid waste projects. It also has lead responsibility for oil spill management and oversees the disposition of the Oil and Hazardous Substance Release Response and Prevention Fund.

SIGNIFICANT ISSUES

- The Department of Environmental Conservation's FY01 budget request is $511,300 below the department's FY00 Management Plan. The reductions include $111,600 in general funds, $265,500 in federal funds, and $134,200 in other funds.

  Legislative Fiscal Analyst Comment: In December, the State of Alaska received $18.5 million from the federal spill liability fund created under the Oil Pollution Act of 1990 (OPA 90). OPA 90 specifies that the funds be used for petroleum related purposes. The $18.5 million is FY00 money and the legislature may wish to consider appropriating it in a supplemental bill.

- The Administrative BRU contains a decrease of two PFT positions and an overall funding reduction of $135,500. The reduction in funding is a combination of the cost associated with one of the two PFT position reductions and a one-time appropriation for Y2K of $75,000 in Oil/Haz Funds.

- The Environmental Health BRU requests an overall funding reduction of $122,300. The reduction is a result of a $172,300 (and 2 PFT positions) decrease associated with anticipated federal receipts in the Laboratory Services component that failed to materialize. The Drinking Water component requests one additional PFT position and an increase of $25,000 in federal receipts and in GF Match for work associated with the Safe Drinking Water Act.

  Legislative Fiscal Analyst Comment: The legislature denied the department's FY00 request for a $50,000 increase in GF Program Receipts and one PFT position for compliance with the Safe Drinking Water Act.

- A fund source change in the Food Safety & Sanitation component would replace $219,800 in federal receipts with Statutory Designated Program Receipts. The change would fund the replacement of three previously cut environmental health officers in Dutch Harbor, Tok, and Fairbanks. The additional staff would provide fresh/frozen seafood and other low risk inspections.

  Legislative Fiscal Analyst Comment: Statutory Designated Program Receipts are receipts received for projects initiated by a third party. The receipts described above may more appropriately be described as GF Program Receipts.

- The Air & Water Quality BRU includes no new funding increments or decrements from FY00 levels. However, seven PFT positions have been reduced in the Water Quality component due to reductions in the permitting program for processing state wastewater permits and certifying federal permits.

- The Contaminated Sites Program BRU contains a decrease of $90,800 in Storage Tank Assistance Funds due to the expiration of contractual administrative support services for the Board of Storage Tank Assistance.

  Legislative Fiscal Analyst Comment: The Contaminated Sites Program received a special appropriation (associated with SB 128) for $185,000 in Oil/Haz Funding and $200,000 in Storage Tank Assistance Funds. The departmental fiscal note associated with SB 128 projected a second-year reduction of $70,000 in Storage Tank Assistance Funds.

- The Local Emergency Planning Committees BRU includes a reduction of $162,700 in Oil/Haz Funds. The statutory maximum funding level for this component is three percent of the estimated annual balance in the prevention account. The request reduces funding to the maximum statutory level.

- The Facility Construction & Operations BRU has a fund source change from GF Match to federal receipts totaling $118,000 due to a reduction in GF Match requirements.

ORGANIZATIONAL CHANGES

- Statewide Public Services is a separate appropriation rather than a component under the Environmental Health appropriation.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION FUNDING SUMMARY

	General Purpose	Federal Restricted	Other Funds	Total
FY00 Conference Committee	**12,070.3**	**14,612.8**	**20,711.7**	**47,394.8**
FY00 Fiscal Note			3.0	3.0
Special Appropriation			460.0	460.0
FY00 Authorized	**12,070.3**	**14,612.8**	**21,174.7**	**47,857.8**
FY00 Management Plan	**12,070.3**	**14,612.8**	**21,174.7**	**47,857.8**
One Time Item			(148.0)	(148.0)
FY01 Adjusted Base	**12,070.3**	**14,612.8**	**21,026.7**	**47,709.8**
Fund Source Change	(118.8)	(101.0)	219.8	0.0
Increment	25.0	25.0	73.0	123.0
Decrement	(17.8)	(189.5)	(279.0)	(486.3)
FY01 Governor Request	**11,958.7**	**14,347.3**	**21,040.5**	**47,346.5**

Position Summary	PFT	PPT
FY00 Authorized	**479**	**5**
FY01 Governor Request	**464**	**5**
Net Change	**(15)**	**0**

Department Budget Summary by BRU

All dollars in thousands

	FY1999 Actuals				FY2000 Authorized				FY2001 Governor			
	General Funds	Federal Funds	Other Funds	Total Funds	General Funds	Federal Funds	Other Funds	Total Funds	General Funds	Federal Funds	Other Funds	Total Funds
Formula Expenditures												
None.												
Non-Formula Expenditures												
Administration	1,304.4	1,068.3	4,388.4	6,761.1	1,235.9	1,068.3	2,130.9	4,435.1	1,218.1	1,051.1	2,030.4	4,299.6
Environmental Health	6,519.3	2,438.7	372.3	9,330.3	6,505.6	3,562.0	371.6	10,439.2	6,530.6	3,194.9	591.4	10,316.9
Statewide Public Services	192.7	806.0	699.3	1,698.0	202.6	806.6	742.3	1,751.5	202.6	806.6	742.3	1,751.5
Air and Water Quality	3,110.3	3,441.3	3,034.3	9,585.9	2,984.4	3,245.3	3,151.5	9,381.2	2,984.4	3,245.3	3,151.5	9,381.2
Non-Pt Source Pollution Contrl	0.0	0.0	0.0	0.0	0.0	1,715.4	0.0	1,715.4	0.0	1,715.4	0.0	1,715.4
Spill Prevention and Response	0.0	2,459.2	11,916.8	14,376.0	0.0	8.5	7,344.4	7,352.9	0.0	8.5	7,344.4	7,352.9
Contaminated Sites Program	0.0	0.0	0.0	0.0	0.0	3,068.9	4,019.5	7,088.4	0.0	3,068.9	3,928.7	6,997.6
Local Emergency Planning Comm	0.0	0.0	0.0	0.0	0.0	0.0	543.4	543.4	0.0	0.0	380.7	380.7
Facility Constr. & Op.	1,130.7	977.4	2,291.4	4,399.5	1,141.8	1,137.8	2,871.1	5,150.7	1,023.0	1,256.6	2,871.1	5,150.7
Totals	**12,257.4**	**11,190.9**	**22,702.5**	**46,150.8**	**12,070.3**	**14,612.8**	**21,174.7**	**47,857.8**	**11,958.7**	**14,347.3**	**21,040.5**	**47,346.5**

Funding Source Summary

All dollars in thousands

Funding Sources	FY1999 Actuals	FY2000 Authorized	FY2001 Governor
1002 Federal Receipts	11,190.9	14,612.8	14,347.3
1003 General Fund Match	3,148.9	3,200.1	2,995.1
1004 General Fund Receipts	6,862.7	5,731.3	5,824.7
1005 General Fund/Program Receipts	2,232.2	3,138.9	3,138.9
1007 Inter-Agency Receipts	4,149.7	894.9	893.2
1018 Exxon Valdez Oil Spill Settlement	119.5	630.2	630.2
1036 Commercial Fishing Loan Fund	175.0	175.0	175.0
1052 Oil/Hazardous Response Fund	12,387.5	12,553.6	12,296.7
1053 Investment Loss Trust Fund	13.6		
1061 Capital Improvement Project Receipts	2,331.8	2,218.5	2,218.0
1075 Alaska Clean Water Loan Fund	431.6	455.3	455.3
1079 Storage Tank Assistance Fund	786.5	1,054.7	961.5
1093 Clean Air Protection Fund	1,986.3	2,139.6	2,137.9
1100 Alaska Drinking Water Fund	200.4	518.4	518.4
1108 Statutory Designated Program Receipts	134.2	534.5	754.3
Totals	**46,150.8**	**47,857.8**	**47,346.5**

Position Summary

	FY2000 Authorized	FY2001 Governor
Permanent Full Time	479	464
Permanent Part Time	5	5
Non Permanent	4	4
Totals	**488**	**473**

Alaska's Mineral Industry 1999: A Summary

by
R.C. Swainbank[1] and D.J. Szumigala[2]

INTRODUCTION

This summary of Alaska's mineral industry for 1999 is made possible by information provided through phone interviews and replies to questionnaires sent to the mineral industry in Alaska, and compiled by the Department of Natural Resources (DNR), Division of Geological & Geophysical Surveys (DGGS), with Department of Community & Economic Development's (DCED) Division of Trade & Development (DTD). Estimates used in this summary are conservative due to incomplete data. Employment data for the mineral industry is not available at this time.

Preliminary estimates for the value of Alaska's mineral industry in 1999 are $48 million invested in exploration and $26 million in development projects; the products were valued at $1,014 million, of which $911 million consisted of metals. Thus the overall value of the industry was $1,088 million, five percent higher than the 1998 Alaska mineral industry value. The value of the Alaska mineral industry from 1981 to the present is tabulated in table 1.

Exploration highlights include the discovery at depth of a new, zinc-rich orebody north of the Red Dog Mine near Kotzebue, and expansion of the gold mineralized zone at the Pogo property east of Fairbanks. Other exploration programs in the Pogo area identified new gold-rich areas requiring further exploration and drilling.

Red Dog Mine near Kotzebue increased production of lead, zinc, and silver, and continues to be the world's largest producer of zinc. Greens Creek Mine near Juneau remains one of the largest producers of silver in the U.S., and continues to produce significant lead, zinc, copper, and gold. Fort Knox Mine near Fairbanks is Alaska's largest gold producer, with an average daily production of approximately 1,000 ounces of gold.

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

	Exploration (expenditure)	Development (expenditure)	Production (value)	Total
1981	$ 76.0	$ 26.4	$ 188.6	$ 291.0
1982	45.0	41.6	196.4	283.0
1983	34.1	27.8	232.4	294.3
1984	22.8	53.6	199.4	275.8
1985	9.2	34.1	226.6	269.9
1986	8.9	24.3	198.5	231.7
1987	15.7	100.3	202.4	318.4
1988	45.5	275.0	232.2	552.7
1989	47.8	134.3	277.0	459.1
1990	63.3	14.3	533.0	610.6
1991	39.9	25.6	546.5	612.0
1992	30.2	30.0	560.8	621.0
1993	30.3	27.7	448.7	506.7
1994	31.1	44.9	507.5	583.5
1995	34.3	148.6	537.2	720.1
1996	44.6	394.0	590.4	1,029.0
1997	57.8	168.4	936.2	1,162.4
1998	57.3	55.4	920.2	1,032.9
1999[a]	48.0	26.0	1,014.0	1,088.0
TOTAL	**$741.8**	**$1,652.3**	**$8,548.0**	**$10,942.1**

SOURCE: Alaska's mineral industry reports published annually by DGGS.
[a]Preliminary estimates.

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EXPLORATION

Estimated minimum exploration expenditures throughout Alaska during 1999 were $48.2 million, down 16 percent from the $57.3 million invested in 1998. Alaska's exploration sector fared quite well, considering the massive reductions (20–30 percent) in exploration budgets worldwide. Exploration expenditures in Alaska by commodity for the past 18 years are listed in table 2. Sixty-nine percent of exploration expenditures were spent in the eastern interior region of Alaska. The Goodpaster mining district was the hub of exploration activity as companies conducted initial exploration programs on claims staked around the Pogo property in 1998.

About 8,800 new state mining claims and 230 new federal claims were staked in Alaska in 1999. The Noatak district was the most active area for new claim locations, followed by staking in the Big Delta Quadrangle in the Goodpaster and Richardson mining districts.

Northern Region

Cominco Alaska Inc. had a large diamond drill program in 1999 and announced a new large, flat-lying zinc–lead–silver deposit located about 6 miles north of Red Dog Mine. Drill intercepts up to 240 feet thick with 20 percent zinc and 5 percent lead were found at approximately 2,200 feet below the surface in holes spaced between 800 and 900 feet apart. Mineralization is open in all directions except to the southeast. Eight of nine core holes drilled to target depth intersected significant massive sulfide mineralization. Two holes were stopped short of target depth and will be completed next year. Best mineralized intercepts include 30 percent zinc and 6 percent lead between 2,227 and 2,280 feet in hole 806; 15 percent zinc and 5 percent lead between 2,182 and 2,202 feet in hole 808; 18 percent zinc and 5 percent lead between 2,229 and 2,459 feet in hole 809; and 20 percent zinc, 5 percent lead, and 4 ounces per ton silver between 2,160 and 2,400 feet in hole 810. The new discovery occurs on state-owned lands, unlike the present mine which is located on NANA Regional Corp. (First Nation) lands. Over 5,500 new state mining claims were staked to cover this potential new deposit that would need to be mined from an underground facility.

Cominco is also considering drilling to evaluate the potential for natural gas in shale deposits near Red Dog Mine. Cost savings from using natural gas instead of imported diesel could make marginal deposits profitable and reduce environmental risks.

Western Region

Exploration was quite active on the Seward Peninsula during 1999. NovaGold Resources Inc. drilled the Anvil Creek area north of Nome in a $500,000 program funded by Kennecott Exploration Co. in a region with

Table 2. *Reported exploration expenditures in Alaska by commodity, 1982–99*

	Base metals	Polymetallic[a]	Precious metals	Industrial minerals	Coal and peat	Other	Total
1982	$31,757,900	$ N/A	$ 10,944,100	$ --	$ 2,900,000	$ 15,300	$ 45,617,300
1983	9,758,760	N/A	20,897,555	2,068,300	1,338,454	70,000	34,133,069
1984	4,720,596	N/A	14,948,554	270,000	2,065,000	279,500	22,283,650
1985	2,397,600	N/A	6,482,400	--	270,000	--	9,150,000
1986	1,847,660	N/A	6,107,084	170,000	790,000	--	8,914,744
1987	2,523,350	N/A	11,743,711	286,000	1,150,000	31,000	15,734,061
1988	1,208,000	N/A	41,370,600	160,200	2,730,000	--	45,468,800
1989	3,503,000	N/A	43,205,300	125,000	924,296	5,000	47,762,596
1990	5,282,200	N/A	57,185,394	370,000	321,000	97,000	63,255,594
1991	4,789,500	N/A	34,422,039	92,000	603,000	2,000	39,908,539
1992	1,116,000	3,560,000	25,083,000	25,000	425,000	--	30,209,000
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	31,193,614
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	4,100,000	3,000,000	41,050,000	2,000	50,000	--	48,202,000
TOTAL	**$81,084,566**	**$78,943,161**	**$483,160,743**	**$4,549,000**	**$16,927,750**	**$1,437,800**	**$666,103,020**

[a]Polymetallic deposits considered as a separate category for the first time in 1992.
N/A = Not available.
-- Not reported.

more than 3 million ounces of historic placer gold production. Rich placer production from Anvil Creek overlies a flexure in a major structural feature—the Anvil Creek shear zone. The shear zone is coincident with quartz–carbonate–sulfide stockwork veins and pervasively silicified schist along the valley bottom. At least 7,000 feet of reverse-circulation drilling was completed in 32 holes. Drill intercepts included multiple 5-foot intervals averaging up to 0.277 ounces per ton gold, with northwest-trending drill fences spaced from 2,000 to 4,000 feet apart. Kennecott withdrew from the joint-venture agreement after drilling results did not meet expectations.

NovaGold optioned part of its Rock Creek gold deposit nearby to Viceroy Resource Corp. and continued to act as operator on the project. A reverse-circulation drilling program included twinning previous holes and the recent results are 59 percent higher than previous results. Other highlights from the drilling include intercepts of 135 feet with 0.07 ounces per ton gold (including 40 feet with 0.186 ounces per ton gold), 150 feet with 0.071 ounces per ton gold (including 35 feet with 0.114 ounces per ton gold), and 145 feet with 0.04 ounces per ton gold (including 15 feet with 0.114 ounces per ton gold).

NovaGold Resources Inc. also announced a 2-million-ounce placer gold resource on its Nome patented mining claims in marine beach and alluvial deposits. The resource was estimated using a modified polygonal method with data derived from 7,248 churn drill holes and over 70 years of historic production records. NovaGold believes that alternative stripping and mining methods, as well as improvements in fine gold recovery, could reduce overall mining costs and significantly enhance revenues.

Farther north at Mt. Distin, Consolidated Aston Resources Ltd. drilled 24 reverse-circulation holes for a total of 6,244 feet at several prospects. Consolidated Aston is party to an exploration agreement and option to lease with Bering Straits Native Corp. (First Nation) and its subsidiary, Golden Glacier Inc. Drilling results are interpreted to reveal a strongly disseminated gold system that is tabular, crudely stratiform, and meta-sediment hosted. The mineralized zone is up to 285 feet thick, and can be traced along strike for at least 1,640 feet and down dip 330 feet. Gold assay results are remarkably consistent, with many holes mineralized over their entire length. For example, hole MDRC-99-13 averaged 0.012 ounces per ton gold from collar to 308 foot depth, and hole MDRC-99-11 averaged 0.010 ounces per ton gold from collar to 308 foot depth. Gold grades and thickness appeared to increase down-dip. Consolidated Aston believes that the pattern of mineralization is consistent with a leakage halo emanating from a down-dip mineralized source along the main structural trend. The company also conducted a phase 2 core-drilling program on the Fred Creek gold target.

Altar Resources explored its Divide gold prospects and several base-metal showings. Two shallow Winkie drill holes at the Bulk Gold prospect confirmed the presence of anomalous gold up to 1,285 parts per billion, with 9,310 parts per million arsenic, and 7,170 parts per million antimony.

Viceroy Alaska, a division of Viceroy Resources Corp., conducted exploration at the Illinois Creek Mine near Galena as part of its evaluation of the deposit.

North Star Exploration Inc. discovered a new gold–silver epithermal prospect approximately 80 miles southwest of Galena on the west side of the Yukon River. North Star's Kaiyah prospect consists of 80 State claims and 17 State prospecting sites totaling 5,920 acres. Host rocks include sandstone, shale, and conglomerate of the Koyukuk terrane adjacent to the Poison Creek caldera. Volcanic rocks include intermediate to felsic ash flow tuffs, massive basaltic andesite, and a small area of siliceous sinter. Anomalous gold and silver values occur in outcropping silicified sedimentary units cut by radial faults immediately east of the caldera rim. Structural analysis from fused Landsat and total field magnetic data suggests that the caldera system may extend over 12 miles in diameter.

North Star collected 236 rock samples at Kaiyah, and 46 samples contained over 100 parts per billion gold. Gold values ranged up to 10.4 parts per million and silver values ranged up to 13.6 ounces per ton. Arsenic and bismuth values are elevated with higher precious-metal values, and mercury occurs in the low parts per million range. Silica veining was mapped in a structurally bounded zone that is 9,000 feet long and averages 4,000 feet wide. The upper part of the mineralized system consists of vuggy silica with open spaces lined by comb quartz; 300–400 feet lower in the system, silicification is characterized by stockwork veinlets and quartz flooding as a dense silicified matrix.

Eastern Interior Region

The biggest news from the Fairbanks district was the announcement that Kinross Gold Corp. completed acquisition of Newmont Exploration's rights in the 1.3-million-ounce True North gold project. Kinross paid $28 million to buy back 100 percent interest in the deposit. The property had been part of a joint venture between Newmont and La Teko Resources; the latter company was recently acquired by Kinross. Newmont had expended about $19 million at the True North property since taking over project management in 1995. Kinross immediately began evaluating the deposit with respect to trucking ore to the Fort Knox mill. True North

ore grades are nearly three times that of Fort Knox ore. Production from True North is projected to increase annual production through the Fort Knox mill by about 100,000 ounces of gold. Kinross also acquired the adjacent Whiskey Gulch property from Silverado Gold Mines Ltd. in exchange for a net smelter royalty based on gold price at production.

Kinross Gold and 20 percent joint venture partner Teryl Resources announced drilling results for their Main Gil and North Gil prospects where indicated and inferred resources stand at 10.7 million tons grading 0.040 ounces per ton (433,000 ounces of gold). Drilling consisted of five diamond core holes (3,911 feet) and nine reverse-circulation holes (4,038 feet). Highlights of drilling at Gil North include 65 feet grading 0.041 ounces per ton and 75 feet grading 0.043 ounces per ton. Significant intercepts at the Main Gil prospect included 40 feet grading 0.068 ounces per ton and 120 feet grading 0.036 ounces per ton. Geophysical data interpretation indicated previously unknown geologic structures with east-west and northeast trends, and exploration targets on the east side of Slippery Creek and in All Gold Creek. Soil sampling outlined new areas with anomalous gold values in the North Gil area and in the eastern portion of the Gil Venture claim block. Kinross and Teryl also conducted some exploration on the West Ridge property abutting the southern boundary of the True North property. Kinross conducted a limited reverse-circulation drilling program on the Amanitaville property south of Fort Knox Mine, with best drill intercepts of 50 feet of 0.08 ounces per ton of gold, 50 feet of 0.29 ounces per ton of gold, and 90 feet of 0.04 ounces per ton of gold.

Kinross Gold initiated diamond core and reverse-circulation drilling on their newly acquired Ryan Lode deposit in the Fairbanks district. The drilling was conducted to better define and confirm previously stated resources totaling 2.4 million ounces grading 0.056 ounces per ton, with a defined reserve of 820,000 ounces of gold in 14.6 million tons of rock. Kinross has also voluntarily begun $100,000 worth of site remediation at Ryan Lode to address perceived environmental problems that occurred prior to their acquisition of the property.

The Goodpaster mining district to the east of Fairbanks was the locus of most exploration activity during 1999. The Pogo deposit, a 5.2-million-ounce gold prospect being evaluated by Teck Corp. and partner Sumitomo Metal Mining, was the largest exploration project in Alaska during 1999. An underground exploration permit from state and federal agencies was received in March and development work immediately began on the adit. Plans are to dig approximately 5,200 feet into the hillside (Pogo Ridge) hosting the Liese 1 zone orebody. The adit will intersect the Liese 1 zone, the uppermost of three known mineralized zones on the project. Access to the Liese 1 zone will allow collection of a bulk sample for metallurgical testing purposes, obtain geotechnical data, and test continuity of ore bodies. Drilling from the Liese 1 level will attempt to better define the deep Liese 3 zone previously intersected in two holes drilled from the surface. Teck had excavated approximately 3,000 feet of the adit by the end of 1999 and drilled a shaft pilot hole to 2,500 feet.

Teck also conducted a $2.6 million surface exploration on the 1,200-claim Pogo property. Sixty-four diamond core holes, totaling 50,000 feet, were drilled in 1999, including 32,000 feet of infill definition drilling around the Liese zone, 7,000 feet of geotechnical drilling, and 4,000 feet of exploration drilling. Teck announced a new orebody, the "North Zone," located approximately 800 feet northwest of the Liese zone. The North Zone, consisting of two north-trending, east-dipping quartz veins, was discovered on surface and intersected in the planned shaft pilot hole. Other exploration drill footage targeted the southeast extension of the main Liese zone mineralization and the Sonora Creek prospect 5 miles southeast of the main deposit area. The Sonora Creek soil grid reportedly has higher gold anomalies than the original Liese soil anomaly.

Numerous companies staked land around the Pogo deposit in 1998, and though depressed gold prices hindered financing necessary to complete exploration programs, several 1999 programs identified interesting gold targets in the Goodpaster region. Avalon Development Corp. managed joint exploration programs for nine different companies in the Goodpaster district. Their work revealed that in some places in the Goodpaster area, ten parts per billion gold may be a significant value to pursue with further geochemical sampling.

Western Keltic Mines Inc. struck a deal with Barrick Gold Corp. on five of Western Keltic's and Rimfire Minerals Corp.'s properties (California, Surf, Big Bend, Boogie, and Central Creek) in the Goodpaster district. Barrick has the option of earning a 51 percent interest in any of the five properties. Exploration in 1999 consisted of geological mapping, prospecting, and geochemical sampling of soils and rocks on the Boundary prospect along the northern border of the California and Surf properties, on the southeastern part of the Surf property, and in the Beverly Creek area of the California property. Western Keltic collected over 3,400 soil, 375 rock, and 285 stream-sediment samples for geochemical analysis. This work resulted in the discovery of large multi-element soil geochemical anomalies and zones of gold-bearing quartz-veined boulders, with values of up to 0.72 ounces per ton of gold.

The Boundary prospect has a 2,300-foot-long soil anomaly with gold values ranging from 10 to 40 parts per billion associated with anomalous arsenic, bismuth, tellurium, antimony, and tungsten. The southeast Surf soil anomaly extends over 2.7 miles in a northwest-southeast direction and contains gold values up to 70 parts per billion with associated anomalous arsenic, bismuth, antimony, and tungsten. The Beverly Creek area has anomalous gold values in stream-sediment samples with an undefined extent.

Hyder Gold Inc. optioned five properties from Rimfire Minerals Corp. in the Pogo area. A Phase I program of contour soil sampling, stream-sediment sampling, prospecting, and reconnaissance geological mapping was completed. Coincident gold (up to 310 parts per billion), arsenic, bismuth, and antimony anomalies outlined a 1.8-mile by 0.9-mile area on the Eagle property and quartz-veined float on the Bou property. A Phase II program of systematic grid-based soil sampling, detailed geological mapping, and further prospecting on these properties identified gold mineralization (up to 0.17 ounces per ton of gold) related to quartz veinlets cutting Cretaceous granite. Elsewhere, Blackstone Resources terminated its option on Rimfire's Falcon property due to lack of financing.

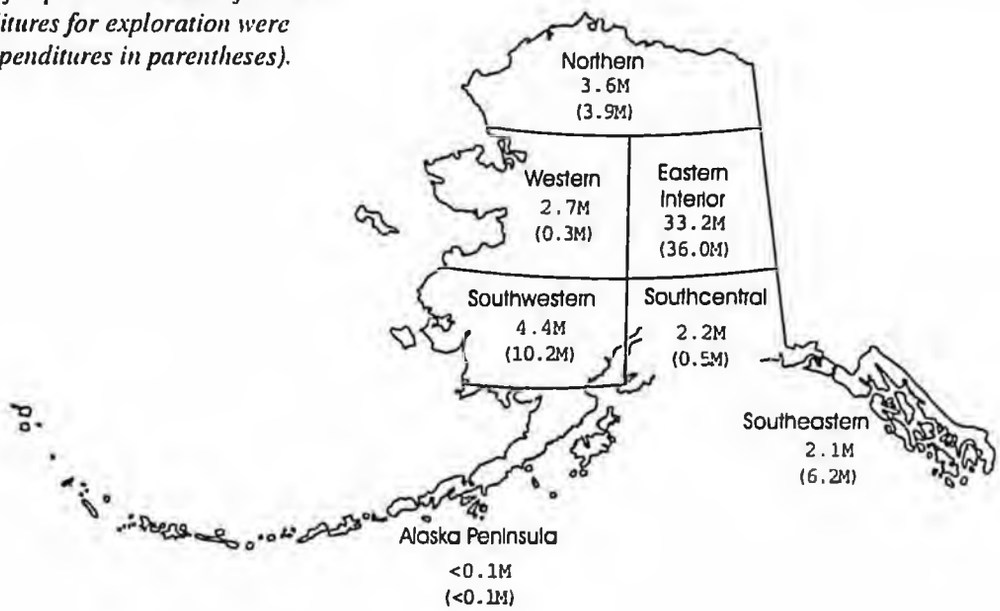
Copper Ridge Explorations Inc. acquired five properties from KGE Management Ltd., which acquired the properties from Kinross Gold immediately after the closing of the Kinross–La Teko Resources merger. Alaskan properties include Discovery Gulch in the Circle mining district and Ogopogo in the Goodpaster mining district. Discovery Gulch had been under option to Camnor Resources Ltd., but Camnor terminated its option after a five-hole (1,520 feet) reverse-circulation drilling program in 1999 with the best intercept of 20 feet of 0.03 ounces per ton of gold in sericite–chlorite–carbonate alter gra-nodiorite with quartz veins containing up to 5 percent pyrite and 1 percent arsenopyrite. Copper Ridge conducted a soil auger sampling to test two significant gold-in-soil anomalies. Copper Ridge Explorations also acquired the right to earn 100 percent of the McKenzie claim block in the Circle district.

Copper Ridge's Ogopogo project 1999 exploration program involved collecting 121 stream-sediment samples. Gold values in stream sediments ranged up to 214 parts per billion and coarse fraction samples returned gold values up to 1,608 parts per billion. Other anomalous elements include arsenic, antimony, and tungsten. A subsequent soil geochemical survey collected 325 samples and identified three targets with gold values up to 273 parts per billion and anomalous arsenic, bismuth, lead, antimony, and tellurium. Kinross Gold acquired the Northern Cross prospect from Copper Ridge Explorations. The Northern Cross prospect lies 2 miles north of the Pogo deposit and is host to bismuth and tungsten pan concentrate anomalies from streams underlain by rocks similar to those which host the Pogo deposit.

Almaden Resources Corp. and partner Williams Creek Exploration Ltd. conducted stream-sediment, coarse-fraction sampling and prospecting programs on the Sonora property. Five drainages were defined by gold values up to 40 parts per billion gold, with a background of less than five parts per billion gold.

Camnor Resources Ltd. and Oromin Exploration Ltd. conducted soil sampling, mapping, and prospecting

Regional distribution of exploration dollars for 1999. Statewide total expenditures for exploration were $48.2 million (1998 expenditures in parentheses).



on the 6-square-mile South Salcha project 25 miles northwest of the Pogo property. The work program consisted of 27 line-miles of soil sampling, geologic mapping, and rock sampling. Three linear, east-west-trending anomalies defined by greater than 20 parts per billion gold soil anomalies occur at or near contacts between intrusive and gneissic rocks. The anomalies are 650 feet wide and vary from 2,600 to 4,600 feet long, with soil samples assays up to 140 parts per billion gold.

Valerie Gold Resources Ltd. entered into two option agreements to acquire an interest in the Octo property northwest of Pogo. Geologic mapping and geochemical surveys were completed, after which Valerie dropped its option.

Troymin Resources Ltd. collected over 400 stream-sediment and coarse-mineral-fraction samples from several creeks on five claim blocks southeast of Pogo. Gold values up to 500 parts per billion, associated with anomalous bismuth, arsenic, molybdenum, and copper, were found at several areas.

NovaGold Resources Inc. identified three half-mile-scale drill targets on its 48-square-mile Caribou Creek project, located 25 miles northwest of the Pogo property. Each area contains highly anomalous gold, arsenic, antimony, and bismuth in surface rock chip and soil geochemical samples. Follow-up sampling on the No Grub Zone identified anomalous gold in soil values up to 0.03 ounces per ton of gold and rock chip samples with up to 0.11 ounces per ton of gold. Rock chip sampling in the newly identified Headwaters Zone returned values of up to 0.06 ounces per ton of gold. The northeast trending Caribou Zone had values in rock chip samples up to 0.07 ounces per ton of gold. A detailed aeromagnetic and radiometric geophysical survey was flown over the Caribou Creek Project area during the month of August and results are currently being processed. The 1999 Caribou project exploration program was funded by Kennecott Exploration Co. as part of a joint-venture agreement with NovaGold, but Kennecott elected to discontinue funding after the 1999 season.

Ventures Resource Corp. and equity partner Teck Corp. completed 8,000 feet of diamond drilling in ten holes on the Carrie Creek portion of the Veta property in the Goodpaster district. The best drill intercept was 23 feet of 0.03 ounces per ton of gold. The final two 1999 drill holes were relocated 2 miles south to test the newly discovered Serpentine zone. Drill core from the Serpentine zone contained altered, fractured, and veined rock. Extensive soil sampling augmented the drilling program at the Carrie Creek prospect. Results from the North Veta Area program (comprising the north-central segment of the Veta property) defined clusters of stream-sediment gold anomalies, with values ranging from 30 to greater than 1,000 parts per billion gold, and highest panned concentrate values in the ounces per ton range. Sumitomo had a major program including drilling at the nearby Black Mountain prospect.

Ventures also signed an exploration option agreement with Kennecott Exploration Co. on Ventures' 950-square-mile Champion property in the Fortymile mining district. Kennecott will focus its efforts on exploration for intrusive-related gold deposits. The agreement provided Kennecott the exclusive option to secure a joint venture with Ventures prior to October 31,1999.

International Bravo Resource Corp. made a joint-venture agreement with Zeus Exploration, an affiliate of North Star Exploration Inc., for the Divide, West Pogo, and Central gold prospects near Teck's Pogo property and Venture Resources' Veta property. Rock samples from a quartz vein and stockwork zone measuring 950 feet by 2,300 feet at the Divide property assayed up to 0.17 ounces per ton gold, 1.1 percent copper and 3,860 parts per million bismuth. The West Pogo property has a wolframite–bismuthinite–scheelite vein prospect hosted by igneous rock and values up to 995 parts per billion gold and 2,190 parts per million bismuth have been reported from samples collected there. Three other tungsten- and bismuth-bearing quartz veins occur near the schist–pluton contact on the West Pogo property.

International Bravo also signed a letter of intent to acquire 51 percent interest in three other North Star Exploration properties known as the Highway Village Black properties and Bravo acquired an option from Hunter Exploration Group in ten property blocks in the Pogo and Fairbanks areas. Fairfield Minerals Ltd. conducted a field program of geochemical sampling and prospecting on the Rock Creek and Shawnee properties northeast of Pogo. Stream-sediment and soil samples indicated weak but anomalous gold values ranging from 10 to 40 parts per billion at several areas. Other companies conducting initial exploration programs in the Goodpaster mining district include Blue Desert Mining on the Mojave property, Snowfield Resources Ltd. on the Boulder Creek property, Camflo Resources Ltd. on the Gobi property, Newmont Alaska Ltd. on the property north of Pogo, and Achieva Development Corp. on its Shaw Creek property.

Golden Phoenix Alaska joined the flurry of claim staking in the emerging Uncle Sam area of the Richardson district southwest of the Pogo deposit. Other companies in the new staking fray were WGM Inc./ Sumitomo, On-Line Exploration, and Anglo Alaska Gold.

Newmont Alaska Ltd. optioned the Gold Dust property in the Circle mining district from Great Quest Metals Ltd. Previous drilling on the property intercepted one zone containing 0.027 ounces per ton of gold over a width of 180 feet. Newmont controls approximately 60 square miles of properties in the district.

Tri-Valley Corp. reached final agreement with Placer Dome Exploration Inc. on the 36-square-mile Buck and Buckeye portions of Tri-Valley's 51-square-mile Richardson project in the Richardson mining district. Placer Dome conducted a geologic mapping and geochemical survey using a broad-base soil auger sample grid. Several coincident gold, bismuth, tellurium, and tungsten anomalies were identified and three diamond drill holes were drilled in the area of one of the anomalies. Placer Dome notified Tri-Valley that it would proceed with the second year of exploration in 2000. Tri-Valley continued exploration on the retained 14.5-square-mile portion of the claim block that includes the Democrat Dike lode prospect and on a promising high-grade placer prospect. Previous bulk sampling at the Democrat prospect yielded over 3,000 rough ounces of lode gold from 30,000 tons of partially crushed ore. Three Russian geologists from TsNIGRI continued evaluation of this mineralized dike system and identified a new gold-bearing zone. Ten square miles of 160-acre prospecting sites were staked to cover the trend. In the same area, Kennecott Exploration optioned ground from Golden Phoenix Minerals Inc. and conducted district-wide exploration.

Grayd Resource Corp. identified a significant gold-bearing zone on the Rumble Creek property west of Tok. Sampling of the White Gold trend outlined gold-bearing silicification zones up to 55 feet wide along the 5-mile trend. Gold values up to 1.79 ounces per ton, along with anomalous arsenic and antimony values, are associated with northeast-trending silicified structures with quartz-sericite and carbonate alteration envelopes. Grayd also worked on the Dan-IC gold property in the Delta district. Grayd signed agreements late in the year to acquire 100 percent control of the Delta and Rumble Creek properties.

Grayd optioned its Dry Creek prospect in the Bonnifield district south of Delta to Atna Resources Ltd. Atna funded a 14-hole, 10,260-foot diamond drill program. Twelve drill holes tested the DC North base metal, massive-sulfide mineralized horizon over a 13,500-foot strike length and two holes tested a large alteration zone underlying the DC North horizon. No exploration was carried out in the WTF area or on the Anderson Mountain property. Drilling results are highlighted by discovery of a possible new zone 2,500 feet to the west of the Fosters zone along the DC North horizon. DC99-65 intersected 5.5 feet of massive sulfide averaging 7.9 percent zinc, 4.0 percent lead, 3.74 ounces per ton silver, and 0.014 ounces per ton of gold. DC99-63, drilled in the Fosters zone d .vn-dip of DC98-60, averaged 4.3 percent zinc, 2.0 percent lead, 2.07 ounces per ton silver and 0.014 ounces per ton of gold over 160 feet. DC99-64 intersected 10.5 feet grading 5.3 percent zinc, 1.8 percent lead, and 0.82 ounces per ton silver within a pyritic host rock with a true width of 100 feet. DC99-66 in the Discovery zone, intersected 56 feet of 2.07 percent zinc, 0.77 percent lead, and 0.13 ounces per ton silver. Drilling results did not meet Atna's objective of defining a large deposit and Atna terminated its option with Grayd.

The 1999 exploration program at the Cirque property in the Bonnifield district by Camnor Resources Ltd. and Oromin Exploration Ltd. consisted of geological mapping and reconnaissance diamond drilling. Four drill holes were completed on the Discovery zone and two holes were drilled on the Dol zone, for a total of 1,020 feet. The best volcanogenic-massive-sulfide mineralization intercepts were from hole 99-1 drilled on the Discovery zone, with 18 feet at 64 feet depth grading 0.08 ounces per ton of gold, 2.17 ounces per ton silver, and 11.55 percent combined zinc–lead–copper, and a second lens with a 6.6-foot width at 93.8 feet depth grading 0.027 ounces per ton of gold, 1.39 ounces per ton silver, and 11.49 percent combined zinc–lead–copper. The Discovery zone is interpreted to be a west-striking, moderately north-dipping zone plunging shallowly to the east. The Discovery zone has been traced for 2,300 feet along strike to the west and remains open along strike and down dip to the north. Mineralization at the Dol zone is interpreted to represent mineralization distal to a vent source localized in dolomite.

Cambior Exploration worked in the Livengood area. Cusac Gold Mines Ltd. signed an agreement to acquire an 80 percent working interest in the Moran Dome project, a 200-claim block covering 8,000 acres in the Melozitna mining district, located about 110 miles northwest of Fairbanks. The area contains historic placer mining areas, and stream-sediment sampling of local creeks outlines five anomalous regions, with samples in excess of 10,000 parts per billion gold.

Pacific Bay Minerals Ltd. acquired the TRIB property in the Ladue River area near the Canadian border. Limited lode exploration has identified anomalous gold values in quartzite and quartz breccias. Nearby, Achieva Development Corp. optioned a 50 percent interest in the Ladue claims to Luminex Ventures Inc. late in the year.

The State's Division of Geological & Geophysical Surveys awarded an airborne geophysical contract to Dighem for about 950 square miles of the Salcha and Goodpaster mining districts. For the first time, the DGGS survey will include radiometric data, which have proven useful for delineating rock types and alteration. Survey results will be released in early February 2000. DGGS conducted geological mapping and geochemical sampling in the area around Chicken as part of ground-truthing airborne geophysical surveys released earlier in

the year. This work is part of a planned three-year study of the Fortymile mining district.

Southcentral Region

Atna Resources Ltd. concluded a deal in early 1999 to earn 100 percent interest in the Caribou Dome Property. The Caribou Dome Property (previously known as the Denali Copper or Pass Creek prospect) is located in south-central Alaska, approximately 160 miles northeast of the city of Anchorage. The project site is several miles east of the former Valdez Creek acer mine.

The Caribou Dome Property consists of 20 federal unpatented lode mining claims, ten millsite claims and 20 State of Alaska mining claims totalling approximately 1,258 acres. Previous work delineated 550,400 tons of mineralized material with an average grade of 5.84 percent copper within three of the nine known sulfide lenses. Atna conducted geochemical, geological, and geophysical surveys followed by a three-hole 2,442-foot diamond drill program to expand the potential size of the deposit. Geophysical surveys included induced polarization (IP), mise-a-la-masse, and ground magnetics. The IP survey defined two significant anomalies beyond previously known mineralization; a strong 700-foot-long chargeability high trending westward from the No. 2 Zone, and a second 600-foot-long anomaly south of and parallel to the eastern mineralized trend. Hand trenching extended the main mineralized trend 500 feet farther to the east. Chip samples from the new trench exposures assayed up to 6.7 percent copper over 2 feet.

Highlights of the 1999 core drilling program included 5 feet of 5.9 percent copper from 1,059 to 1,064 feet (CD99-101) and 5 feet of 6.3 percent copper from 309 to 310 feet (CD99-102). Both drill intercepts were hosted in finely bedded pyrite and chalcopyrite within a calcareous argillite sequence. Results from the 1999 surface exploration and diamond drill program indicate good potential exists for expanding the areas of known mineralization of this prospective but complex property.

Usibelli Coal Mine Inc. was granted exploration permits for the Wishbone Hill property. The most coal that Usibelli can haul out of the area under the two-year exploration permit is 250 tons. Exploration trenches can be up to 30 feet wide and 250 feet long. Usibelli plans to drill 50 core holes.

Shear Minerals Ltd. entered into a letter of intent with Shulin Lake Mining Inc. that allows Shear the right to earn a 50 percent interest. The property contains a large 2–3 mile diameter circular positive magnetic anomaly that is interpreted to be a high-level intrusive. Historic to recent placer gold is known in the region. Recent work by the property vendors indicates the presence of gold and diamond indicator minerals in the drainage surrounding the anomaly. Shear will investigate the property for kimberlitic/lamproitic intrusions, and base and precious metal potential.

Nevada Star Resource Corp. recently acquired approximately 8,000 acres of mining claims in the Nikolai nickel–platinum–copper belt in the southern Alaska Range. M.A.N. Resources Inc. will conduct the exploration for platinum-group-element mineralization under a lease agreement with Nevada Star. The Eureka Creek Project area is approximately 100 miles south-southeast of Fairbanks, and 156 miles northeast of Anchorage. Previous work identified platinum-group-element enriched sulfide concentrations in net textures at the base of the Tangle Lake and Landmark Gap ultramafic complex rocks and as disseminated nickel–copper sulfide mineralization in exposures along Broxson Gulch, Rainy Creek, Eureka Creek, and northern portions of the claim block. Meridian Geoscience Ltd. conducted a helicopter-borne magnetic–EM (electromagnetic) survey over the Tangle Lake trend consisting of approximately 960 line-miles of survey coverage and the South Flank trend consisting of 780 line-miles of coverage. Geological mapping included regional and detailed mapping to ascertain the distribution, orientation, and structural setting of important host lithologies. Identified targets are planned to be tested by ground geophysical surveys.

Fort Knox Gold Resources Inc. entered into an agreement with Inco Ltd. and American Copper & Nickel Co. Inc. to increase its ownership from 20 to 100 percent in the Nikolai platinum–palladium–nickel property. Mineralization occurs in layered ultramafic–mafic intrusions and is primarily hosted by gabbro/norite, clinopyroxenite, and serpentinized dunite/wehrlite units. Mineralization varies from weakly disseminated to net-textured sulfides in ultramafic rocks and disseminated to massive sulfides in gabbronorite. The predominant sulfide phases are pyrrhotite, pentlandite and chalcopyrite. Platinum and palladium values are elevated in weakly mineralized intrusive rocks and reach as high as 0.45 ounces per ton platinum and 0.08 ounces per ton palladium in grab samples of massive sulfides. Core drilling near the Cantwell prospect intersected 17 feet of 3–5 percent sulfides with assay values of 0.020 ounces per ton platinum, 0.026 ounces per ton palladium, 0.8 percent nickel, and 0.5 percent copper.

Fort Knox Gold also exercised an option to acquire 100 percent interest in the Gunsite property, approximately 90 mile north of Anchorage in the Talkeetna Mountains. Potential copper-gold porphyry mineralization will be tested by an IP geophysical survey in the Prescott Point area.

Southwestern Region

Placer Dome Exploration Inc. cut back its exploration staff and continued evaluation of its 11.5-million-ounce gold resource at Donlin Creek near Flat with one core-drilling rig. Placer Dome confirmed the grade of the deposit. Placer Dome also conducted a small exploration program on Calista's Stuyahok prospect. Unfortunately, Placer Dome closed its Anchorage office during 1999, but continued exploring in southwestern Alaska and the Richardson district in the eastern interior region. A pre-feasibility study at Donlin Creek was postponed due to dismal gold prices.

Two companies new to Alaska also optioned land in the area. Fjordland Resources Ltd. optioned the Kisa prospect from Cominco Inc. The Kisa prospect is believed to be similar to NovaGold Resources' 1-million-ounce Shotgun gold deposit. Poseidon Minerals Ltd. acquired lease rights to earn a 100 percent interest in the Ganes Creek and Colorado Creek properties, formerly under option to Placer Dome. Ganes Creek occupies a large regional northeast-trending structure and the best placer gold on the property appears to occur at the intersections of related west-northwest and west-southwest structures. Over 260,000 ounces of placer gold has been produced from the Ganes Creek drainage, with much of the gold coarse, angular, and associated with quartz gangue. The Colorado Creek area has produced over 50,000 ounces of placer gold and the creek occupies a large, linear, north-northwest drainage interpreted as a deep-rooted regional structure. Poseidon conducted a mobile metal ion soil geochemical survey on both properties.

Southeastern Region

Kennecott Exploration continued exploration in and around the Greens Creek Mine. Abacus Minerals continued to assess the Niblack Mine near Ketchikan, and received a $2.5 million long-term, non-convertible, low-interest loan from the Economic and Development Assistance Fund in Ketchikan, Alaska. The funds are planned for further exploration and development at Niblack. A large group of claims was staked in the Wrangell Narrows area near Petersburg following an airborne geophysical survey sponsored by the State of Alaska, the federal government, several local communities, and Sealaska Corp.

Rubicon Minerals succeeded in outlining massive-sulfide mineralization with a ten-hole, 6,153-foot diamond core drilling and mapping program at its Palmer prospect near Haines. A new massive sulfide showing named the RW zone is 600 feet from the Lower Jarvis zone and 1,600 feet from the Upper Main zone along the same stratigraphic horizon. The RW zone was extended by drilling to 680 feet up dip on sections 170 feet apart, with mineralization open in all directions. Drill results include 8.3 feet grading 5.85 percent zinc, 1.89 percent copper and 1 ounce per ton silver. Two holes drilled to test the MHC prospect did not intersect significant mineralization. The Cap showing was not tested in the 1999 program, but remains a target for future drilling. Another new high-grade surface mineralized zone was discovered 150 feet above and in the stratigraphic hanging wall to the Main zone mineralization. Two grab samples assayed up to 18.75 percent zinc, 0.28 percent copper, and 0.56 ounces per ton silver.

Santoy Resources Ltd. signed an agreement with Stealth Ventures Ltd. to acquire 100 percent interest in the Salt Chuck copper, palladium, gold, and silver deposit located on Prince of Wales Island. First-year work commitments were minimal under the deal. Santoy compiled previous work data to better define a future exploration program.

DEVELOPMENT

Development expenditures in 1999 were about $26 million, mainly at Cominco's Red Dog Mine, at Kinross Gold's Fort Knox Mine, at Coeur Alaska's Kensington Mine and at Kennecott/Hecla's Greens Creek Mine. This drop from the $55.4 million reported for 1998 mainly reflects the fact that the Production Rate Increase Project at the Red Dog mine was almost complete by the end of 1998, and by 1999 the mine was performing at the expected rate.

Development at Red Dog mine near Kotzebue was mainly at the port site, with drainage projects and modification of the conveyor system, as well as modification of the flotation system at the mine site, 52 miles inland. There is a possibility that the port will be modified in the future to allow direct loading of ships rather than the present system of lightering concentrates with barges to ships anchored offshore.

At Fort Knox gold mine near Fairbanks, pit dewatering and random waste disposal accounted for most of the development reported, but about 8,000 feet of in-pit development drilling confirmed additional reserves.

At Greens Creek Mine west of Juneau, Kennecott drove about 5,000 feet of development drifts to access the new ore reserves, and at Coeur's Kensington Mine north of Juneau mining optimization studies continued throughout the year.

Kvaerner Environmental continued its closure of the A-J Mine in downtown Juneau.

PRODUCTION

At the time of writing (mid-January) only preliminary estimates of the statewide mineral production are available. Estimated mineral production is given in table 3. As in the past few years, zinc is by far the most valuable commodity produced in the state, accounting for 68 percent of the value of all metals, followed by gold (16 percent), silver (10 percent), and lead (6 percent).

Estimated metal production was 638,267 tons of zinc ($625 million), 122,892 tons of lead ($56 million), 500,000 ounces of gold ($140 million), 16.5 million ounces of silver ($86 million), and about 2,100 tons of copper ($3 million). Other material produced included 1.56 million tons of coal, an estimated 1.8 million tons of rock, and about 10 million tons of sand and gravel.

Cominco's Red Dog Mine produced 575,115 tons of zinc, 99,705 tons of lead, and an estimated 6 million ounces of silver in 1999, accounting for almost 70 percent of all metal produced in Alaska, and when exploration and development are included, the Red Dog Mine area accounts for a full 59 percent of the total value of Alaska's mineral industry.

Kennecott's Greens Creek Mine produced an estimated 63,000 tons of zinc, 23,000 tons of lead, 81,000 ounces of gold and 10.2 million ounces of silver from about 570,000 tons of ore milled.

Kinross Gold's Fort Knox Mine produced 352,000 ounces of gold. A 1999 report commissioned by the Fairbanks North Star Borough showed that Fort Knox Mine creates 260 direct, and 312 indirect jobs in Fairbanks; it spends over $35 million annually on local goods and services; it has an annual $107 million impact on the local economy; and it pays the borough $4.4 yearly in revenue.

Usibelli Coal Mine near Healy produced 1.56 million tons of coal in 1999, about half of which was exported to KEPCO in Korea through the port of Seward.

Unfortunately the underground Nixon Fork Mine near McGrath was forced to go into care and maintenance in May, but produced about 9,900 ounces of gold and almost 700 tons of copper in 1999 before closing. Likewise the Illinois Creek open-pit mine near Galena was on care and maintenance for the year, but produced about 6,600 ounces of gold and 62,000 ounces of silver as the existing heaps were rinsed.

Production from all of the placer mines in the state has not yet been fully accounted for, but appears to be in excess of 50,000 fine ounces.

Table 3. *Estimated mineral production in Alaska, 1997–99*[a]

	Quantity			Estimated values[b]		
Metals	**1997**	**1998**	**1999**	**1997**	**1998**	**1999**
Gold (ounces)	590,516	594,191	504,200	$207,287,000	$174,621,000	$140,500,000
Silver (ounces)	14,401,165	14,856,000	16,459,000	70,710,000	82,154,000	85,588,000
Copper (tons)	1,720	1,900	2,100	3,543,000	2,850,000	3,234,000
Lead (tons)	88,560	102,887	122,892	49,593,000	49,386,000	56,530,000
Zinc (tons)	419,097	549,348	638,267	494,888,000	505,400,000	625,502,000
Subtotal				**$826,021,000**	**$814,411,000**	**$911,354,000**
Industrial minerals						
Jade and soapstone (tons)	2.0	2.0	2.0	$ 25,000	$ 25,000	$ 25,000
Sand and gravel (million tons)	13.8	12.40	10.0	51,913,000	57,280,000	46,193,000
Rock (million tons)	3.2	1.64	1.8	20,000,000	14,041,000	15,410,000
Subtotal				**$ 71,938,000**	**$ 71,346,000**	**$ 61,628,000**
Energy minerals						
Coal (tons)	1,446,000	1,339,000	1,560,000	$ 38,048,000	$ 35,233,000	$ 41,048,000
Peat (cubic yards)	38,500	38,000	38,000	192,000	190,000	190,000
Subtotal				**$ 38,240,000**	**$ 35,423,000**	**$ 41,238,000**
TOTAL				**$936,199,000**	**$920,180,000**	**$1,014,220,000**

[a]Production data from DGGS questionnaires, phone interviews with mine and quarry operators, Alaska Department of Transportation and Public Facilities, and federal land management agencies.

[b]Values for selected metal production based on average prices for each year; for 1999—gold ($278.70/ounce) unless other value provided by operator; silver ($5.20/ounce); copper ($0.71/lb); zinc ($0.23/lb); lead ($0.49/lb). All other values provided by mine operators. Value rounded to nearest $1,000.

Selected significant production sites in Alaska, 1999.

DRILLING

Tables 4 and 5 summarize the drilling activity in the state during 1999 by region and type of drilling. Drilling data is preliminary, with many placer operations not reporting activity at this time. Drilling totals continue the decline begun in 1998 due to slumping metal prices and difficulty in raising venture capital.

Table 4. *Drilling footage reported in Alaska, 1982–99*

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[b]	45,670	585,628
1999[c]	6,600	--	6,600	--	454,154	368,136	86,018	460,754

[a]Core and rotary drilling not differentiated prior to 1987.
[b]108,022 feet of core drilling was underground.
[c]Preliminary footage reported.
-- = Not reported.
Note: Blasthole drilling not reported. Approximately 2,500,000 feet in 1998.

Table 5. *Drilling footage by region in Alaska, 1999*

Type of drilling	Northern	Western	Eastern interior	South-central	South-western	South-eastern	TOTAL
Placer subtotal	--	--	**6,600**	--	--	--	**6,600**
Coal subtotal	--	--	--	--	--	--	--
Hardrock core	95,100	2,100	112,406	2,442	29,201	126,887	**368,136**[a]
Hardrock rotary	--	31,054	49,964	5,000	--	--	**86,018**
Hardrock subtotal	**95,100**	**33,154**	**162,370**	--	**29,201**	--	**454,154**
TOTAL (feet)	**95,100**	**33,154**	**168,970**	**7,442**	**29,201**	**126,887**	**460,754**

- - = Not reported.
[a]108,022 feet of core drilling was underground.
Note: Blasthole drilling not reported.
No drilling footage reported for Alaska Peninsula in 1999.

GOVERNMENT ACTIONS

In 1999 the State Division of Geologic & Geophysical Surveys (DGGS) contracted for an airborne geophysical survey of about 1,000 square miles northwest of the Pogo deposit, and included radiometrics with the standard electromagnetic and magnetic components. The results are expected early this year. Another magnetic/electromagnetic survey of parts of Prince of Wales Island in southeastern Alaska was completed in 1999 with funding from the U.S. Bureau of Land Management, the Ketchikan Gateway Borough, the Cities of Coffman Cove and Helm Bay and the Alaska State Mental Health Land Office, with additional survey data from previous years provided by the Sealaska Native Corp.

A team of geologists from DGGS began investigations in the Fortymile area, which had been the subject of a 1998 airborne survey. A preliminary geologic map of the Eagle A-2 Quadrangle will be released later this year. Field mapping will continue in 2000.

The State Division of Mining, Land & Water Management, working with the U.S. Geological Survey, continued its studies of the natural water quality for baseline studies in the Fortymile and Goodpaster River drainages east of Fairbanks.