SENATE RESOURCES 1979-80

1979-1980

SENATE RESOURCES COMMITTEE

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ALASKA FISH PROCESSING INFORMATION (SB 140 , SB 222)

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AK FISH PROCESSING INFO

SB 140

SB 222

STATE OF ALASKA

OFFICE OF THE GOVERNOR

JAY S. HAMMOND, GOVERNOR

STATE POLICY DEVELOPMENT AND PLANNING

POUCH AD — JUNEAU 99811
PHONE 465-3512

ALASKA FISH PROCESSING INDUSTRY INFORMATION PACKET

CONTENTS:

1. Summary of Special Meetings of April 17 and 18, with Attachments
2. Memorandum with List of :Alaska Based Processors"
3. Memorandum on General Fisheries Employment and NEFCC Operations in Alaska
4. Memorandum regarding Proposed Legislation with Attachments and Notice of Legislative Hearings on such Legislation and Other Related Matters

STATE
of ALASKA

MEMORANDUM

TO: Distribution List

DATE: April 21, 1980

FILE NO:

TELEPHONE NO: 465-3573

FROM: David L. Allison
Policy and Program Specialist II
Division of Policy Development
and Planning

SUBJECT: For Your Information:
- Attached Work Draft Copy of Proposed Legislation CSSB 140 and CSSB 222
- Legislative Hearings Information

This legislation was drafted by legislators and legislative staff in response to the financial problems currently affecting the seafood processing industry in Alaska. The drafts were developed during and after consultation with trustees of the Alaska Renewable Resources Corporation and representatives of several other administration agencies, offices and departments.

A legislative hearing on the revised drafts of this legislation is tentatively scheduled to be held at 3:00 p.m. on Monday, April 21, 1980. The hearing is tentatively scheduled to discuss 1) overall 1980 Alaska seafood pack financing problems; 2) impact of financial problems on processing the 1980 Bristol Bay red salmon runs; and 3) the specific problems and opportunities arising from the New England Fish Company's financial difficulties.

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Legislative Assistant

Original sponsor:
(((must be on all CS's)))

Funding Information (((appropriation bills only)))
General Fund $
Other Funds $
BY

IN THE HOUSE / SENATE

CS $ BILL NO. 140

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to financial assistance by the Alaska Renewable Resources Corporation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. Loans by the Alaska Renewable Resources Corporation to be used exclusively for purchase of the 1980 salmon pack may be made in an amount not to exceed $60,000,000.00. Such loans may exceed the limitations prescribed in AS 37.12.180 (b)(1) without specific legislative approval and do not require the detailed proposal presented in AS 37.12.080 (a)(1), provided:

A. The borrower must have offices in Alaska.

B. The loans must be for a term not exceeding six (6) months.

The authority to make loans under this section expires January 1, 1981.

* Section 2. The Alaska Renewable Resources Corporation may use an amount not to exceed $15,000,000.00 for the purpose of ~~investments into Cuba providing financial assistance for~~ purchasers of the 1980 salmon pack. This assistance may be in any manner authorized in AS 37.12.080 but does not require the detailed proposal presented in AS 37.12.080(a) and may exceed the limitation presented in AS 37.12.080 (b)(1) without specific legislative approval.

* Section 3. The loans authorized by section 1 of this Act may be made only from appropriation made for the purpose and all money appropriated for the purpose shall be repaid to the ~~state.~~ fund. ~~The financial assistance authorized by section 2 of this Act may be made only from appropriations for the purpose but money appropriated for this purpose need not be repaid to the state.~~

* Section 4. The legislature finds that the Alaska Renewable Resources Corporation has complied with all requirements for an investment of $3,500,000.00 in Ball Brothers, Inc, an Alaska Corporation, except for the requirement in AS 37.12.080 (b) that no financial assistance of more than $1,500,000.00 may be provided to a single project or applicant unless the legislature has approved the investment by Concurrent Resolution. The legislature further finds that approval of the investment is in the public interest. Notwithstanding the provisions of AS 37.12.080 (b) requiring approval by Concurrent Resolution the investment in the amount of $3,500,000.00 is approved and the Corporation is authorized to make the proposed investment in Ball Brothers, Inc, An Alaska Corporation.

* Section 5. This Act takes effect immediatly in accordance with AS 01.10.070 (c).

Original sponsor:
(((must be on all CS's)))

Funding Information (((appropriation bills only)))
General Fund $75,271,400.00
Other Funds
$75,271,400.00

BY _____

IN THE HOUSE / SENATE

CS S BILL NO. 222

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making supplemental appropriations to the Alaska Renewable Resources Corporation for providing financial assistance to aid in purchase of the 1980 salmon pack, for developing and screening project opportunities; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $60,000,000.00 is appropriated from the general fund to the Alaska Renewable Resources Corporation for loans to be used exclusively for purchases of the 1980 salmon pack as authorized in section 1 of Committee Substitute for Senate Bill 140.

* Section 2. The sum of $15,000,000.00 is appropriated from the general fund to the Alaska Renewable Resources Corporation for ~~financial assistance to~~ investments into purchasers of the 1980 salmon pack as authorized in section 2 of Committee Substitute for Senate Bill 140.

* Section 3. The sum of $271,400.00 is appropriated from the general fund to the Alaska Renewable Resources Corporation for the purpose of screening and developing project opportunities for the fiscal year ending June 30, 1980.

* Section 4. Sections 1 and 2 of this Act take effect on the effective date of a version of Committee Substitute for Senate Bill 140 which authorized the loans for which the appropriation in section 1 of the Bill is to be used and the financial assistance for which the appropriation in section 2 of this bill is to be used.

* Section 5. Section 3 of this Act takes effect immediatly in accordance with AS 01.10.070 (c).

STATE
of ALASKA

MEMORANDUM

TO: Distribution List

DATE: April 21, 1980

FILE NO:

TELEPHONE NO: 465-3573

FROM: David L. Allison
Policy and Program Specialist II
Division of Policy Development
and Planning

SUBJECT: Attached: 1) Memo on Fisheries Employment and Residency and 2) Memo on NEFCO Alaska Employment and Operations

Pursuant to request, analysts for the Department of Labor, section of Research and Analysis, prepared the attached memorandum of fisheries industry employment and residence based upon data accumulated and computed pursuant to a contract from the Bottomfish Coordinator, Office of the Governor. The complete report of results of the survey of persons fishing in Alaska (The Fishermen's Survey) and the survey of seafood processors operating in Alaska (The Processors Survey) are being printed and will be available, along with 3 additional seafood industry employment-related reports within the next several weeks.

The information contained in the second document attached hereto is approximate and is based upon information supplied to this office by NEFCO officials since 4/16/80. While not absolute, the information should assist in understanding the potential impact on Alaskan resident employment of the closure of NEFCO processing operations in Alaska. More specific and complete information should be available after 4/21/80 when the Chairman of the Board, the Development Officer and Alaska Operations Manager of NEFCO visit Juneau for administration and legislative meetings and hearings.

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of Commerce and Economic Development
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Keith Specking, Office of the Governor,
Legislative Assistant

NEFCO Alaska Plant	*Credit Line Required at Peak of Season (July in most areas)	*Number of Boats (and type or size)	*Number of Employees
1. Egegik 2. Sand Point 3. Uganik	$11 Million (Uganik cans fish for Peter Pan as well as NEFCO)	107 boats (most under 40 ft.) 25 set nets (45 add'l boats for Peter Pan and Seward fisheries)	160
4. Gibson Cove 5. Kodiak	$6 Million (Gibson Cove is NEFCO's white fish or bottomfish processing facility. A $2.5M Alaska Fishery Development Grant to establish a "model white fish processing plant" at Gibson Cove is tentatively approved and awaiting implementation)	18 crab boats 4 shrimp (convertible to white fish) 1 shrimp exclusively 1 white fish exclusively (vessels from 65 ft. to 98 ft.)	160 (on two shifts) + 12 salaried
6. Ketchikan Cold Storage/ buying station on Noyes Is.	$6.5 Million (This plant incorporates a joint venture canning operation with Whitney-Fidalgo)	55 boats	70
7. Seward 8. Homer 9. Nin'lchik	Existing Plus $5 Million NEFCO has ½ interest, Icicle Seafoods has other ½ interest. Plants operated as SEWARD FISHERIES	Unspecified	150
TOTALS: 9 Processing and Operations Locations	$27 MILLION ± .s	More than 231 vessels 25 set nets	552

*All figures regarding credit line, number of fishing vessels and set nets and number of employees are approximate and subject to change depending on availability of resource, cost and price of fish and other business factors.

MEMORANDUM State of Alaska

TO: Dave Allison, Division of Policy Development & Planning Office of the Governor

DATE: April 18, 1980

FILE NO:

TELEPHONE NO:

FROM: Barbara Baker, Labor Economist Research & Analysis BB

SUBJECT: Fisheries Employment & Residency

The Alaska Department of Labor breaks seafood employment into two major components: fish harvesting and non-agricultural (which includes processing, fish buyers and cold storages). The non-agricultural employment is based upon unemployment insurance contribution reports which are mandatory. Fish buyers are an exception to this and may be understated. Table 1, summarizes the total non-agricultural employment in the seafood industry. Table 2 is specific to the processing sector.

Employment data for the fish harvesting industry was compiled through the Fishermen's Survey. As Attachment A indicates, employment can not be compared to other employment estimates compiled due to methodologies and the marginal attachments many fishermen have to various fisheries. Based upon our survey data 13,353 people are annually engaged in fishing in Alaska.

Resident employment of the seafood industry has a large error factor. Attachment B indicates the possible range of resident employment in the fish harvesting industry, (based upon the various definitions of residency). According to our estimates between 65-82 percent of the fishermen are residents. Defining resident employment in the seafood processing industry is also difficult. Our only data source on residency was collected through the Processors Survey and may be biased by the high response from small independent processors. Attachment C, outlines the results. Over 30 percent of the respondents indicated that over 80 percent of their employees had lived in Alaska for at least 6 months and had intentions to remain. I have asked Doris Simon to call you on Monday - to provide you with her own experience egarding this issue. She has direct contact with many of the processors who are the largest employers of out-of-state workers.

If I can be of any further assistance, please contact me at your convenience.

Attachments

BB/lm

TABLE 1

*FISH PROCESSING EMPLOYMENT FOR CANNED & CURED, FRESH OR FROZEN PACKAGED, REFRIGERATED WAREHOUSING, & FISH WHOLESALERS (BUYERS) BY LABOR MARKET AREAS AND CENSUS DIVISIONS 1975 - 1978

Labor Market Areas and Census Divisions	1975	1976	1977	1978	Compound Growth Rate (1975-1978)
ANCHORAGE - MATANUSKA - SUSITNA.....	142	113	185	229	17.27%
Anchorage.....	142	113	185	229	
Mat-Su.....	0	0	0	0	
SOUTHEAST.....	810	930	1038	1163	12.98%
Angoon, Haines, Juneau.....	82	95	74	64	
Ketchikan, Outer Ketchikan.....	155	229	257	306	
Prince of Wales.....	64	37	41	77	
Sitka, Skagway-Yakutat.....	199	228	206	258	
Wrangell.....	310	341	460	463	
GULF COAST.....	1975	2547	2630	2721	11.27%
Cordova.....	217	298	277	276	
Kenai.....	409	442	402	477	
Kodiak.....	1116	1562	1575	1562	
Seward, Valdez.....	233	245	376	406	
SOUTHWEST.....	1235	1434	1583	2202	21.26%
Aleutian Islands.....	783	991	1130	1644	
Bethel.....	100	56	94	62	
Bristol Bay Borough.....	171	169	141	214	
Bristol Bay.....	123	140	131	182	
Kuskokwim, Wade Hampton.....	58	73	87	100	
INTERIOR - NORTHERN.....	38	4	59	49	8.84%
STATEWIDE - CENSUS DIVISION UNKNOWN					
TOTAL STATEWIDE.....	4200	5038	5495	6369	14.89%

*Employment data is provided by employers through unemployment insurance contribution reports. Compliance is mandatory except for fish buyers who may elect not to be covered. One hundred seventy-five fish buyers contributed to unemployment insurance in 1978.

TABLE 2

TOTAL FISH PROCESSING EMPLOYMENT AND WAGES
(FOR CANNED, CURED, FRESH, OR FROZEN PRODUCTION)

	Employment					Total Quarter Wages					Average Quarterly Earnings				
	1st QTR	2nd QTR	3rd QTR	4th QTR	Average Annual Emp.	1st QTR	2nd QTR	3rd QTR	4th QTR	Total Payroll	1st QTR	2nd QTR	3rd QTR	4th QTR	Average Annual Earnings
1979	3328	6841	11736			9916043	22683797	51482630			2980	3316	4387		
1978	3706	5975	9887	4400	5992	11151044	16836440	39586141	15223388	82797013	3009	2818	4004	3460	13818
1977	3036	5108	8278	4178	5150	8432093	14617047	29933814	12640844	65623798	2777	2862	3616	3026	10952
1976	2956	4773	7772	3902	4851	7384618	13459881	25675008	11412203	57931710	2498	2820	3304	2925	11942
1975	1921	3707	6507	3769	3976	4756512	7578216	17186674	9688127	39209529	2476	2044	2641	2570	9862
1974	2738	4052	6061	2869	3930	5118005	9134530	15380760	7829432	37462727	1869	2254	2538	2729	9533
1973	2717	3992	6745	3430	4221	4051401	7433688	14494381	7099860	33079330	1491	1862	2149	2070	7837
1972	1467	3343	6073	2632	3379	2333356	5616707	13307827	4785347	26043237	1591	1680	2191	1818	7707
1971	1676	2980	5963	2386	3251	2474244	5258739	15436065	4498664	27667712	1476	1765	2589	1885	8511
1970	1657	3634	6308	1885	3371	2332861	5807825	16021970	3606331	27768987	1408	1598	2540	1913	8238
1969	1410	2953	5400	1743	2876	1903856	4338051	11272235	3357582	20871724	1350	1469	2087	1926	7257
1968	1521	2513	5975	2002	3003	2042602	3950910	11558596	2892562	20444670	1343	1572	1934	1447	6808
1967	1837	2742	4782	2004	2841	2152483	3925643	8985500	2784028	17847654	1172	1432	1879	1389	6282
1966	1702	2841	5820	1996	3089	2035521	4147986	12160958	2887849	21232314	1196	1460	2090	1447	6874
1965	1219	2795	4932	1731	2669	1566793	4454176	12535192	2460580	21016781	1285	1594	2542	1421	7874

Employment:
Annual growth 1965 - 1978 = 6.42%
Annual growth 1975 - 1978 = 14.65%

Total Payroll:
Annual growth 1965 - 1978 = 11.12%
Annual growth 1975 - 1978 = 28.29%

Average Annual Earnings:
Annual growth 1965 - 1978 = 4.42%
Annual growth 1975 - 1978 = 11.90%

Attachment A

LABORFORCE, SOCIOECONOMIC, AND OTHER CHARACTERISTICS OF THE FISH HARVESTING INDUSTRY

Only limited information on the laborforce and socioeconomic characteristics of fishermen has been available in the past. This section represents one of the most comprehensive sources of voluntary information from fishermen. Information on employment, crew size, occupations, fishing experience, age, sex, race, residency, species and region fished, length of vessels, and income characteristics of fishermen is presented in this section.

FISHING EMPLOYMENT

Employment data compiled through survey results is not comparable to employment estimates for other industries produced by the Department of Labor. Sufficient data is not currenty available to compute average employment for fishermen. Survey data is a better indicator of total participation which includes fishermen who may be only marginally attached to various fisheries. Further analysis of employment data will be carried out as more current information is made available.

The most current fishing employment estimates comparable to other industries were developed through 1976 by Dr. George Rogers. These estimates appear in Part IV of the Bottomfish Labor Study, Alaska Fisheries Laborforce Statistics.

Respondents were asked to list their employment by month for 1978 and indicate those months in which they bottomfished. The following analysis will look at these responses in a statewide and regional profile. It should be noted that among the respondents who are actively bottomfishing, most are also attached to other fisheries of higher value, such as salmon, crab, or halibut.

STATEWIDE FISHING EMPLOYMENT

Total fishing employment was strong during the second and third quarters of 1978 (see Tables 1 and 2). Peak employment came in July coinciding with the height of the salmon season. The average size fishing crew is small (2.78). This is due to the large proportion of small sized vessels involved in fishing activities (40.6 percent of those who responded to the survey had vesels smaller than thirty feet). The survey data also shows that average crew size for vessels fishing in Alaska fluctuates from a peak of 3.45 persons per vessel in November to 2.59 in June. This fluctuation is attributed to large crab vessels fishing the winter months and smaller salmon vessels fishing during the summer. Preliminary estimates indicate that an annual average of 13,353 people are engaged in fishing in Alaska with participation peaking in July at 32,494.

SOURCE: FISHERMEN'S SURVEY

TABLE 1
PRELIMINARY ESTIMATES OF TOTAL
MONTHLY FISHING PARTICIPATION FOR 1978

JANUARY	4,150
FEBRUARY	4,150
MARCH	5,305
APRIL	9.421
MAY	16,739
JUNE	28,515
JULY	32,494
AUGUST	27,909
SEPTEMBER	15,572
OCTOBER	7,077
NOVEMBER	5,020
DECEMBER	3,887
annual average	13,353

*Estimates were derived by expanding survey employment totals to the universe and controlling them to an estimate of total peak fishing employment in July 1977. Peak fishing employment for July was estimated from survey crew size information and the actual number of vessels making landings in July, 1977.

Extrapolated survey data is inconsistent with information found in the Alaska Department of Labor's Statistical Quarterly. Only fishermen and crew who voluntarily elected coverage of unemployment insurance are counted in the Statistical Quarterly.

Attachment C

INDICATORS OF RESIDENCY

It is difficult to discuss resident employment due to the great confusion in definitions of "Alaska resident." Various criteria have been established within departments of state government throughout the years. During the Alaskan Oil Pipeline construction era, the Department of Labor defined a resident as one who lived in the state one year but was later changed to thirty consecutive days with intentions to remain and the maintaining of a permanent residence.

The Department of Revenue, however, presently uses a 12-month criterion as eligibility for a resident crew member's license. This issue becomes even further clouded when considering the unique circumstances of the fisherman. The nomadic nature of fishermen and seasonality of the industry may invalidate these residency tests, while their entire incomes may be tied to the Alaskan economy.

Because of these varying definitions, it is perhaps better to discuss indicators of resident fishing employment in Alaska. The Fishermen's Survey asked respondents to indicate how many crew, including themselves had lived in Alaska for at least six months and had intentions to remain. Respondents indicated that eighty percent met this definition. Although this may be overstated, it is very similar to the rate of residency indicated by mailing addresses of the respondents to the survey and of the total universe of vessel license holders in 1979. On the conservative end of the scale, the Department of Revenue indicated that 65.6 percent of the crew member licenses issued went to residents. When adjusting the survey responses to include only crew members, 77.5 percent residency was indicated. Obviously, there is a large margin of error with most of these figures when taking into account definitional differences, reliability of addresses to reflect residency, and bias in responding to the survey. One can conclude, however, that between 65.6 percent and 80 percent of those who responded to the survey are residents of Alaska.

Source: Fishermen's Survey

TABLE 15
INDICATORS OF RESIDENT EMPLOYMENT

	Residency	# of employees
Respondents to the survey who indicated they and their crew lived in the state for at least six months with intentions to remain	80.0%	10,682
Vessel license holders who responded to the survey with mailing addresses inside the state	82.1%	10,963
All ADF&G vessel license holders with mailing addresses inside the state (based on a universe of 15,497)	80.5%	10,749
Respondents to survey adjusted to include only crew	77.5%	10,349
Crew member licenses for 1978 - Department of Revenue (based on total issues of 21,841)	65.6%	8,760

* Based upon the annual average employment of 13,353

ATTACHMENT C

Residency of Employees

Overall, 27.4 percent of the 171 respondents to the survey indicated that up to 50 percent of their employees were residents of Alaska* while 43.1 percent said that over 50 percent were Alaska residents. The largest number of processors (31.5%) said that over 80 percent of their employees were residents.

Firms which are currently processing bottomfish showed proportionately more resident employees than other firms 54 percent indicated that over 50 percent of their employees were Alaska residents.

Table 23
PERCENT OF EMPLOYEES WHO HAVE LIVED IN ALASKA
FOR AT LEAST SIX MONTHS WITH INTENTIONS TO REMAIN
FOR ALL SURVEY RESPONDENTS BY PROCESSING STATUS

	Percent of Respondents		
Resident Employees by Percent	Total Respondents	Currently Processing Bottomfish	Not Currently Processing Bottomfish
None	2.3 %	0. %	2.6 %
1-10%	7.6	2.8	9.6
11-30%	6.4	2.8	7.0
31-50%	11.1	11.4	9.6
51-70%	2.9	5.7	2.6
71-80%	8.7	11.4	7.8
greater than 80%	31.5	37.1	32.4
No response	29.2	28.5	28.0
Total Respondents	171	35	114

*A resident was defined for the purpose of this survey as a person who has lived in Alaska for at least six months with intentions to remain.

SOURCE: PROCESSOR'S SURVEY

STATE
of ALASKA

MEMORANDUM

TO: See Distribution List

DATE: April 21, 1980

FILE NO:

TELEPHONE NO: 465-3573

FROM: David L. Allison
Policy and Program Specialist II
Division of Policy Development
and Planning

SUBJECT: "Alaska-Based" Processors

Herewith is a list composed of most of the seafood processors which can, at least arguably, be considered "Alaska-based" processors. This list was compiled by Bob Thorstensen of Icicle Seafoods and Seward Fisheries for Senator Clem Tillion and for Eric Eckholm of legislative staff on very short notice last week. Clarification of the ownership and residence status of these and other processing firms may be achieved through a review of data accumulated in the Department of Commerce and Economic Development and the Department of Revenue.

Mr. Thorstensen emphasized that these are not necessarily all of the Alaska-based processors nor are all of those listed here guaranteed to be Alaska-based under the standards which may be established for receipt of State financial assistance. Not all of the listed firms are necessarily having long- or short-term financial problems nor are all of these firms necessarily credit-worthy loan or investment risks.

The final determination of eligible companies would most likely be made on a case-by-case basis by the lending agency based upon statutory and regulatory guidelines established by the Legislature and the Governor.

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Director of Communications
Keith Specking, Office of the Governor,
Legislative Assistant

Annette Island Packing Co., Metlakatla
F.C. Phillips & Son, Ketchikan
Harbor Seafoods, Wrangell
Keku Canning Co., Kake (BIA)
Kake Fisheries (C.S.) (BIA Plant)
Alaska Glacier Seafoods (Petersburg)
Engstrom Brothers (Douglas & Dillingham)
Bayview Cold Storage, Cordova
Sitka Sound Seafoods, Sitka
Icicle Seafoods, Inc., Petersburg
Chugach Fisheries, Cordova
Diamond E. Fisheries, Egegik
Osmar Ocean Specialities, Ninilchik
Kodiak Island Seafoods, Kodiak
Ursin Seafoods, Kodiak
All Alaska, Inc., Kodiak
Seward Fisheries, Seward
Royal Pacific, Soldotna
Ocean Fresh Seafoods, Inc., Kodiak
Sea Catch, Soldotna
Salamatof Fisheries, Kenai
Keener, Bud, Soldotna
Mountain Village, Yukon
Bering Sea Fisheries
Ball Brothers, Dillingham
Dragnet Fisheries, Kenai
Kodiak Native Plant at Larson Bay

STATE
of ALASKA

MEMORANDUM

TO: See Distribution List

DATE: April 21, 1980

FILE NO:

TELEPHONE NO: 465-3573

FROM: David L. Allison
Policy and Program Specialist II
Division of Policy Development
and Planning

SUBJECT: Summary of Special Meetings Held Re: Fish Processing Financing on 4/17 and 4/18

Meetings were held on Thursday and Friday, April 17 and 18, to discuss

1. the implications of the New England Fish Company (NEFCO) closure of Alaska fish processing plants;

2. the increasing number of requests from smaller Alaska-based fish processing companies for financial assistance for seafood purchases during the 1980-81 season; and

3. the extent of the financing problems affecting the Alaska seafood industry, the causes of those problems and the appropriate action, if any, which should be taken by the State of Alaska if the problems prove to be real, extensive and of potential serious implications to the economy of the State.

There was a consensus that:

1. There is a real and present problem, but further inquiry is necessary to determine how pervasive the problems may be within the Alaska-based seafood processing industry.

2. Although the virtual collapse of the Japanese seafood market and the historically high interest rates are generally recognized as the predominant immediate causes of the current seafood industry problems, in consideration of the importance of that industry to the long-term economic health of the Alaska economy, it would be beneficial to determine the origin and longer-term development of the financial problems of NEFCO, other processors in Alaska and the seafood industry as a whole.

3. A number of appropriate responses are available to the State and that those responses include, but are not limited to, the following:

   a. Take no special action, but allow existing private and public sector facilities to respond in their normal course of business. Allow the marketplace to resolve the economic problems of the industry.

b. Expedite the processing of fishing industry-related loans through the State loan programs and the Commercial Fishing and Agriculture Bank (CFAB) and encourage private sector financial institutions to do the same.

c. Act as guarantor of existing or new loans extended to members of the fishing industry by private sector financial institutions.

d. Assist distressed companies to sell, lease or otherwise transfe some or all of their operation or equity interest to other, preferably Alaskan, business entities.

e. Establish a procedure and allocate new funds to CFAB and/or the Alaska Renewable Resources Corporation (ARRC) for a combination of debt and equity financing for Alaska-based processors and those non-resident controlled companies willing to convert to Alaska resident status.

f. Appropriate a new fund of money for distribution of interim financing loans to the seafood industry, without restrictions as to ownership or residency of applicant firms. Such a fund would be distributed through the private financial sector according to banking industry loan standards.

There was no concensus regarding which, if any, of the foregoing options would be preferable to the State, but that these options do constitute a reasonable range of activities within which a selective decision could be made.

4. Pending further consideration of the situation and further briefing during the week of April 21-April 25, the Division of Policy Development and Planning should continue to coordinate the accumulation and distribution of information regarding these issues among the affected and interested departments and personnel.

It was suggested that further information regarding the issues raised at the two meetings be accumulated and presented to the meeting participants and other appropriate parties at the earliest appropriate time.

At the meeting held on April 18 in the Governor's Conference Room, memoranda were received from Bob Waldrop, Special Assistant for natural resources and Commissioner Charles R. Webber, Department of Commerce and Economic Development in response to requests for comments extended during the 4/17/80 meeting. Copies of those memoranda are attached for your information and consideration.

Participants 4/17/80 Meeting

Senator Clem Tillion, Senate President
Jessie Dodson, Special Assistant,
Transportation and Commerce,
Office of the Governor
Bob Waldrop, Special Assistant,
Natural Resources, Office of
the Governor
Jim Edenso, Bottomfish Coordinator,
Office of the Governor
Reva Lafavour, International Fisheries,
Office of the Governor
Steve Penoyer, Director, Commercial
Fisheries, Department of Fish and Game
Charles Webber, Commissioner, Department
of Commerce and Economic Development
Tony Mecklenburg, Department of Commerce
and Economic Development
John Halterman, Deputy Director,
Division of Policy Development
and Planning, Office of the Governor
David Allison, Division of Policy
Development and Planning, Office
of the Governor

Participants 4/18/80 Meeting

Senator Bob Mulcahy, Kodiak
John Sund, Representative Gardiner's Office
Commissioner Charles Webber, Department of
Commerce and Economic Development
Bob Waldrop, Special Assistant
Jessie Dodson, Special Assistant
Eric Eckholm, Legislative Staff
Steve Penoyer, Department of Fish
and Game
John Halterman, Division of Policy
Development and Planning
Reva Lafavour, International Fisheries
Dick Reynolds, Department of Commerce
and Economic Development
Phil Daniels, United Fishermen of Alaska
Tom Singer, Division of Policy
Development and Planning
David Allison, Division of Policy
Development and Planning

Distribution List:

Charles Webber, Commissioner, Department of Commerce and Economic Development
Senator Clem Tillion
Senator Bob Mulcahy
Representative Terry Gardiner
Ronald Skoog, Commissioner, Department of Fish and Game
Steve Penoyer, Division of Commercial Fisheries, Department of Fish and Game
Carl Rosier, Deputy Commissioner, Program Management, Department of Fish and Game
John Sund, Speaker Gardiner's Office
Thomas Williams, Commissioner, Department of Revenue
Senator George Hohman
Keith Specking, Office of the Governor, Legislative Assistant
Jessie Dodson, Office of the Governor, Special Assistant for Commerce and Transportation
Robert Waldrop, Office of the Governor, Special Assistant for Natural Resources
Jim Edenso, Office of the Governor, Bottomfish Coordinator
Charles Meacham, Office of the Governor, 1980 Bristol Bay Planning Group, Director, International Fisheries and External Affairs
Frances Ulmer, Office of the Governor, Director, Division of Policy Development and Planning
Tom Singer, Office of the Governor, Analyst, Division of Policy Development and Planning
Bob Palmer, Office of the Governor, Special Projects, Alaska Fisheries Council
John Halterman, Office of the Governor, Deputy Director, Division of Policy Development and Planning
Ron Lehr, Office of the Governor, Director, Budget and Management
Bill Spear, Trustee, ARRC
Dick Reynolds, Commerce and Economic Development
Tony Mecklenburg, Commerce and Economic Development
Eric Eckholm, Legislative Staff
Senator Bill Sumner
Representative Nels Anderson
Bob Clarke, Office of the Governor, Director of Communications
Keith Specking, Office of the Governor, Legislative Assistant

MEMORANDUM State of Alaska

TO: Dave Allison
Division of Policy Planning
and Development

DATE: April 17, 1980

FILE NO:

TELEPHONE NO: 465-3500

FROM: Bob Waldrop
Special Assistant
to the Governor

SUBJECT: Financial Woes Besetting
Alaska's Fishing Industry

You asked that I respond to your recent memo pertaining to the financial problems facing the fishing industry. The following are a few shallow thoughts addressing the manner in which we might approach the subject.

Is the problem real, how widespread: A general inquiry should be initiated to assess the existence of the problem and the possibility that other processors and segments of the industry might also be facing similar financial difficulties.

What are the causes of the problem: Once it is determined that the situation is real and has the potential for growing, we will need to know as many as possible of the several factors contributing to the difficulty. Again, at this stage, the inquiry should be fast and undetailed.

What responses are available: Based on responses to the above questions, a summary listing might be compiled of all conceivable replies which might be made to alleviate the matter. Thought should be given to making the list broad, comprehensive, and not necessarily limited to only State actions nor only to aid directly to processors.

Who does the work: At this time, it would be my recommendation that first stage inquiries be conducted by a consultant under the direct and constant supervision of someone from the Governor's Office; yourself, Bob Palmer or myself. This person would rely on assistance and advice provided by Meacham, Webber, Edenso, Skoog, and possibly a couple of representatives from the Legislature.

RECEIVED
APR 22
POLICY DEVELOPMENT
& PLANNING

MEMORANDUM State of Alaska

TO: Dave Allison
Development Specialist
Division of Policy Development
and Planning
Office of the Governor

DATE: April 17, 1980

FILE NO:

TELEPHONE NO:

FROM: Staff, Division of Economic
Enterprise
Department of Commerce and
Economic Development

SUBJECT:

While the State has a legitimate concern over the fate of a major fish processing company in Alaska, the role the State must play is passive. The State traditionally seeks to create a climate where the renewable resources are protected and managed to insure the resources are perpetuated. The State has also recognized the need to encourage healthy economic activity within the State by establishing several loan programs available to residents of Alaska.

The criteria for these loan programs are explicit. To create viable economic activities within the State, in place loan officers and directors have the responsibility to review the criteria for granting the loan on an orderly basis.

The questions we must ask about NEFCO's needs for State support are based on very explicit criteria. Do they qualify as State residents? They do not.

If NEFCO decides to disband present corporate structure of Alaskan operations with the goal of merging present operations within State concerns or interests, they may qualify for State help.

The past record of NEFCO within the State has been less than spectacular. Since 1975, the company has been plagued with internal problems. The economic reverberations for the 1979 NW fishing season where overextension on the part of processors and Japanese concerns is being painfully telegraphed throughout the industry and is magnified in NEFCO's fiscal instability. The debt and losses of $5.6 million from the previous five years and the $11 million pretax loss in the final months of 1979 suggest a poor fiscal responsibility on part of this company.

Basic to the problem at hand is the State's need to reflect on the consequences of releasing subsidized loans to a failing company. Will this result in strengthening the goals and health of the industry or lead to a further demise of increasing failures. One company cannot be treated preferentially over the next.

The State should not become overly committed to this processing company until the company organizes internally. The State can play an intermediate role and arrange potential new partners becoming aware of NEFCO's assets, potentials and shortcomings. These new partners should be dedicated Alaskan residents and, perhaps, have interests that incorporate the State's view as to the potential for future healthy utilization of the groundfish stocks. This new planning and reorganization will not happen overnight and, perhaps, not in time for the Bristol Bay harvest. The new structural shakeup should be revealing and possess long range viability. A strong package then could be subject to review by existing loan programs (ARRC, CFAB, AIDA).

The State should not shy away from large financial loans to the seafood industry but, while it is difficult to predict the success of the venture in these unstable times, mapping out successful ventures for the seafood industry processing sector will need careful projections and considerations.

TAM/sl21N

SB

51

SB 51, relating to the confidential nature of certain reports required by the Department of Fish and Game

This bill extended the access to certain commercial fishing reports (fish tickets, etc.) to the individual and to the Department of Public Safety. Both currently are required to get court orders if they wish to examine these reports. In addition, reports which don't identify individuals could be made available to various research departments and organizations.

The committee was primarily concerned about the Department of Public Safety access and received some testimony concerning that. They also heard testimony from representatives of Fish and Game, Public Safety, and the Commercial Fisheries Entry Commission in general support of the bill.

The Public Safety representative indicated that the department rarely had to seek court orders, and the committee thought that that was not too great an inconvenience to protect the confidentiality.

The committee, after three hearings, adopted a committee substitute exempting the Department of Public Safety and allowing the National Marine Fisheries Service access to individual reports. (This latter was part of an amendment offered by Fish and Game.) The bill was moved out with two passes and four no recommendations.

March 8, 1979

SB 51, relating to the confidential nature of certain reports required by the Department of Fish and Game.

COMMITTEE hearings were held on the 22nd of January and the 5th and 16th of February. Testifiers at these hearings were: Carl Rosier, Deputy Commissioner, Department of Fish and Game; Rick Lauber, Pacific Seafood Processors Association; Bob Simon, Commercial Fisheries Entry Commission and Lt. Col. Roberts, Division of Fish & Wildlife Protection, Department of Public Safety.

To summarize - The current law does not allow access to certain commercial fishing reports without a court order. SB 51, as introduced by the Governor, extends access rights to the Department of Public Safety in consideration of the department's enforcement responsibilities, and grants other departments access rights for research and statistics projects.

The Resources Committee was primarily concerned about the Department of Public Safety access and received some testimony concerning that. They also heard testimony from representative of Fish and Game, Public Safety, and the Commercial Fisheries Entry Commission in general support of the bill.

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LISTED below are the basic differences between the current law, SB 51, and the amendment.

The current law renders required reports concerning the landings of fish, shellfish or fishery products, and some annual statistical reports as confidential and does not allow release in the form of individual records except to the Department of Revenue and Commercial Fisheries Entry Commission without obtaining a court order.

SB 51 extended access rights to the Department of Public Safety and granted the North Pacific Fisheries Management Council, and the National Marin Fisheries Service of the United States Department of Commerce access rights ~~for rights~~ for research.

CS for SB51 (Rules)

The ~~Proposed amendment~~ exempts the Department of Public Safety and allows access rights to the National Marine Fisheries Service only to assist them in carrying out their statutory responsiblities.

Aud. MR

Legislative

AMENDMENT

OFFERED IN THE SENATE: BY: Resources

TO: _____ SENATE BILL No. 51

HOUSE BILL No. _____

PAGE: 1 LINE: _____

line 15 - 19

Delete "A report through "responsibilities."

Replace with "A report may be released to the individual operator whose fishing activity is the subject of the report, the National Marine Fisheries Service as required for preparation and implementation of North Pacific Management Council fishery management plans, Department of Revenue, and the Commercial Fisheries Entry Commission to assist them in carrying out their statutory responsibilities."

line 20 - 22

Delete "the North Pacific Fisheries Management Council, the National Marine Fisheries Service of the United States Department of Commerce,"

line 22

Delete the comma after "Alaska"

March 8, 1979

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The Proposed amendment exempts the Department of Public Safety and allows access rights to the National Marine Fisheries Service only to assist them in carrying out their statutory responsiblities.

SB

140

(see file on AK Fish Process Info)

SB

222

(see file on AK Fish Process INFO)

SB
294

SUSITNA STATUS

Historical Background: The tremendous energy potential of the Susitna River has been known for many years. The Bureau of Reclamation and the Corps of Engineers, along with private institutions have conducted numerous studies of Susitna's potential. Both of the Federal agencies conducted reconnaissance level studies in the late 1940's and each published their findings in the early 1950's. The more specific and detailed early studies were performed by the Bureau of Reclamation. In fact, in a 1960 feasibility report, the Bureau of Reclamation outlined a plan of development in the Upper Susitna River Basin consisting of four high-head dams with a combined firm annual energy capability of roughly 6.3 billion kilowatt hours. The Bureau studies were backed up by limited foundation explorations for three of the four damsites (Devil Canyon, Vee and Denali were drilled, Watana was not drilled). However, with the discovery of Cook Inlet natural gas, the economic attractiveness of the Susitna project plummeted. With the formation of the international oil cartel and the dramatic rise in fuel costs during the 1970's, Congress requested that the Corps of Engineers re-evaluate the Bureau of Reclamation proposal for developing the Upper Susitna River and to report its recommendations and findings to Congress. Because of questionable foundation conditions at the upper two damsites (Vee and Denali), and the attendant environmental impact associated with those two projects, the Corps modified the proposed development by raising the height of the second upstream dam, Watana, and deleting the Vee and Denali dams. The two-dam Devil Canyon-Watana scheme of development would provide 6.1 billion kilowatt hours firm annual energy but at a lesser cost and environmental impact than the four dam scheme. The Corps evaluated a number of enery alternatives and concluded that coal fired generation and Susitna hydroelectric are the most feasible long range options for the railbelt energy demand. Of the two options, the economic attractivness of the Susitna project appears to be significantly greater than coal fired steam generation. In October 1977 dollars, the estimated construction cost of the two dam scheme and attendant transmission facilities is $2.1 billion. The average annual fuel rates from Susitna should be at least 30 percent less than that of its coal counterpart.

Project Description: The Upper Susitna River Basin is a 5810 square mile area bordered on the North and West by the Alaskan mountain range, and on the South by the Talkeetna Mountains. Primary wildlife within the basin consists of moose, bear, dall sheep, caribou, wolf, raptors, and resident fish. Anadromous fish do not migrate into the Upper Susitna, but they do spawn in the streams and sloughs downstream from the basin outlet. The river is glacially fed and averages 7.1 million acre feet of runoff annually. The plan of development includes an 810 foot high earthfill dam at the Watana site, a 635 foot high thin-arch dam at Devil Canyon and 365 miles of transmission line. The Watana project would inundate 43,000 acres of land and 54 miles of natural

river, and Devil Canyon would flood 7500 acres of land and 28 miles of river. In tandum, the projects would produce a total of 6.1 billion kilowatt hours of firm annual energy and an average of 0.8 billion kilowatt hours of annual secondary energy. It is estimated that Watana could be on line by 1990 and as demand dictates, presumably five years later, Devil Canyon would be brought on line. Based on the preliminary design, the two projects would be capable of withstanding the effects of an 8.5 magnitud earthquake with an epicenter of 40 miles from the project.

Present Status: The Corps of Engineers submitted their Susitna feasibility report to Congress in 1976. Pending the Chief of Engineers final report to Congress, the project was given conditional authorization to proceed to Phase I Advanced Engineering and Design as a federal project. (Section 160, Water Resources Development Act of 1976). Contained in the same Bill is Section 203 known as the Alaska Hydropower Development Fund. This section provides for a joint venture in developing hydropower projects in Alaska in which, for previously authorized hydropower projects, the Corps of Engineers would design and construct the project using state financing and the state would own and operate the project. Bradley Lake and Snettisham are the only authorized projects in the state which qualify for development under this program. Because the Office of Management and Budget (OMB) felt that there was insufficient field exploration to substantiate the project cost estimate contained in the Corps 1976 feasibility report, the Chief of Engineers did not make his final report to Congress. Thus, Susitna remains an unauthorized project, disqualifying it for particiapation under Section 203. However, in order to provide the necessary explorations the Corps has made $3.0 available for a 12 month foundation exploration program which should lead to final authorization of tne project. That 12 month effort began on January 1, 1978.

1978 Water Resources Development Act: Since Section 203, as it presently reads, makes it difficult for the State to provide the necessary financing for Phase I Studies, the Act will be amended under the 1978 Water Resources Development Act. State and federal personnel, along with their bond counsel and financial and legal advisors, have agreed upon the proper language which should be contained in Section 203. Also included in the pending bill will be direct authorization of the Susitna project thus making it eligible for Section 203 participation exclusive of the OMB desire for the $3.0 million twelve month exploration program. The bill should reach the Senate Water Resources Subcommittee in mid April. The House version of the bill will probably not contain the amending language for Section 203 nor direct authorization for Susitna. Thus, these items will have to be added in conference committee. Considering the other national issues, it is estimated that the bill will not be authorized before July, 1978. Thus the Phase I Studies could begin by the latter part of the 1978 field season.

Alaska Power Authority Action: It is the intention of the Alaska Power Authority to participate under Section 203 for the Phase I studies. Financing for the studies would come from the sale of municipal bonds; thus, the State would not be subjected to debt encumbrance. Should the $25,000,000 plus Phase I studies indicate that the project is not feasible, the Federal Government would repay the cost and interest of the bonds. At the conclusion of the Phase I studies, the State would have the option to proceed into construction with the Corps of Engineers or to use the services of a private engineering firm. Many of the studies to be conducted under Phase I would be managed by the Power Authority rather than the Corps of Engineers.

Plan of Study: The Alaska Power Authority made $100,000 available to the Alaska District Corps of Engineers in July, 1977 for the purpose of developing the Phase I Study program. The Corps submitted their first draft to the State in September, 1977. Based on the State's review comments, the Corps is now finalizing the Susitna Plan of Study.

Land Status: The Susitna project would flood roughly 50,000 acres of land of which 24,000 acres have been classified as power withdrawal lands. This land, along with most of the remainder needed for the two proposed dams and reservoirs, has been claimed by the Cook Inlet Native Corporation and four native villages. Until the land can be transferred to the Natives, the Bureau of Land Management retains custody for the Federal government. Prior to entry for Phase I studies, access permission would be necessary from either BLM or the Native Associations depending on the owners at that time. The Cook Inlet Region is presently negotiating with the four villages to trade them out of the Susitna land. Presumably, the region would then negotiate the Susitna land for possible excess military land on Fort Richardson. The State could then claim the Susitna land under the terms of the Statehood Act, if it so desired.

D-2 Classification: Although the Susitna River was included as one of twenty rivers that should be studied by the BLM for possible classification as a Wild and Scenic River in 1872, Susitna was dropped from the list during the early screening. It was suggested in the study, however, that Susitna should be studied further. The House Interior Subcommittee has drafted their version of the D-2 Land Classification Bill and has included Susitna as a river that should be studied for possible classification as a Wild and Scenic River. Despite this classification, provisions have been made to allow for Phase I studies by the Corps of Engineers. Construction, however, would not be permitted until completion of the Wild and Scenic River study. Furthermore, as long as the land belongs to the federal government, it is questionable whether Phase I studies could be conducted exclusive of the Corps of Engineers.

Funding: $5.45 million has been included in the federal appropriation for input to the Alaska Hydropower Revolving Loan Fund.

This is the estimated cost of financing the first year of the four year Phase I Study. However, since the total estimated cost is in excess of $25.0 million, it would be desirable that the entire amount be placed in the Fund. As a show of good faith, upon enactment of the 1978 Water Resources Development Act, the State, through the sale of revenue bonds, would make available the full study cost amount. This would be held in escrow and could only be used to finance the Phase I studies to the extent that matching funds are paid into the Federal Fund. This show of good faith should provide the leverage for the federal government to put up the remainder of matching funds needed for Phase I.

Agreement: A mutual agreement between the Alaska Power Authority and the Corps of Engineers would be developed and signed pursuant to passage of the 1978 Water Resources Omnibus Bill.

Official Business

Alaska State Legislature

Senate

Committee on Resources

Pouch V
State Capitol
Juneau, Alaska 99811

February 1, 1980

To: Resources Committee Members

From: Jens Zehbe, Staff Member

Regarding: Senate Bill 294

Senate Bill 294 relates to the Susitna Hydroelectric Project by providing a description and purpose of the project. It directs the Alaska Power Authority to prepare a preliminary and annual report about the project for the Governor and Legislature.

It amends the Alaska Power Authority Statutes by the addition of the following:

44.56.300 PROJECT DESCRIPTION- To generate, transmit and distribute electric power to Homer, Seward and Fairbanks which will:

1) minimize area electrical costs
2) minimize adverse environmental and social impacts
3) safeguard life and property

44.56.320 PRELIMINARY REPORT- The Authority shall prepare a report for the Governor and Legislature no later than 1/30/81. The report will list:

1) The proposed phases of construction with respective costs and completion dates of each phase.
2) Federal and state permits required before construction can begin. Expected dates they can be obtained.
3) Any other information the Authority deems necessary to inform the Governor and Legislature of the project's current status.

44.56.330 CONSTRUCTION, MAINTENANCE AND OPERATION- The Authority shall enter into a contract for construction consistent with the purpose of the project upon approval of the preliminary report.

44.56.340 ANNUAL REPORT- Commencing in 1982, the Authority shall prepare an annual report which explains in detail:

1) Status of construction
2) Completion dates of any phase in construction
3) Cost of each construction phase
4) The dates on which federal and state permits necessary for construction were obtained.

5) Federal and state permit requirements for continued construction of the project and expected dates they can be obtained.
6) Actual dates the permits described in (5) are obtained.
7) Any other information the Authority deems necessay to inform the Governor and Legislature about the current status of the project. This annual report shall be submitted no later than January 30 of each year.
8) In reference to the Annual Report sections 2-7, any deviation between the actual date and expected dates must be explained in the report.

44.56.350 PROJECT FINANCING- Shall be financed by appropriations from the general fund.

There is no fiscal impact. The report requirements can be accomplished by the existing staff of the Power Authority under present funding.

I. REQUEST

Bill/Resolution No. Senate Bill No. 294

Title An Act Relating to the Susitna River Hydroelectric Project; and providing for an effective date.

Requested by Senator Kerttula

Date 1/14/80

II. FISCAL DETAIL

Agency Affected Alaska Power Authority, Department of Commerce & Economic Development

Program Category Affected Economic Development

BRU, Program, or Subprogram(s) Affected Alaska Power Authority

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES	--	--				
200 TRAVEL	--	--				
300 CONTRACTUAL	--	--				
400 COMMODITIES	--	--				
500 EQUIPMENT	--	--				
600 LAND & STRUCTURES	--	--				
700 GRANTS, CLAIMS, ETC.	--	--				
TOTAL						

FUNDING (Thousands of Dollars)

GENERAL FUND	--	--				
FEDERAL FUNDS	--	--				
OTHER (Specify Fund Source)	--	--				

POSITIONS

FULL TIME	--	--				
PART TIME	--	--				
TEMPORARY	--	--				

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The report requirements of SB 294 can be accomplished by the existing staff of the Power Authority under present funding. The Susitna study program was funded in FY 80. The companion legislation, SB 295, would have a fiscal impact if it were possible to obtain construction authorization at a time for earlier than presently expected.

IV. DATE January 18, 1980 PREPARED BY Terry J. McGuire

AGENCY Alaska Power Authority

PHONE 277-7641

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. Senate Bill No. 294

Title An Act Relating to the Susitna River Hydroelectric Project; and providing for an effective date.

Requested by Senator Kerttula

Date 1/14/80

II. FISCAL DETAIL

Agency Affected Alaska Power Authority, Department of Commerce & Economic Development

Program Category Affected Economic Development

BRU, Program, or Subprogram(s) Affected Alaska Power Authority

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES	--	--				
200 TRAVEL	--	--				
300 CONTRACTUAL	--	--				
400 COMMODITIES	--	--				
500 EQUIPMENT	--	--				
600 LAND & STRUCTURES	--	--				
700 GRANTS, CLAIMS, ETC.	--	--				
TOTAL						

FUNDING (Thousands of Dollars)

GENERAL FUND	--	--				
FEDERAL FUNDS	--	--				
OTHER (Specify Fund Source)	--	--				

POSITIONS

FULL TIME	--	--				
PART TIME	--	--				
TEMPORARY	--	--				

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The report requirements of SB 294 can be accomplished by the existing staff of the Power Authority under present funding. The Susitna study program was funded in FY 80. The companion legislation, SB 295, would have a fisca impact if it were possible to obtain construction authorization at a time for earlier than presently expected.

IV. DATE January 18, 1980 PREPARED BY Terry J. McGuire

AGENCY Alaska Power Authority

PHONE 277-7641

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. Senate Bill No. 295 Title: An Act making special appropriations to the Alaska Power Authority for construction of the Susitna River hydroelectric project; and providing for an effective date. Date 1/14/80

Requested by Senator Kerttula

II. FISCAL DETAIL

Agency Affected Alaska Power Authority, Department of Commerce & Economic Development

Program Category Affected Economic Development

BRU, Program, or Subprogram(s) Affected Alaska Power Authority

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		300	300	200	200	300
200 TRAVEL						
300 CONTRACTUAL		12,700	8,700	3,800	3,800	10,700
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		13,000	9,000	4,000	4,000	11,000

FUNDING (Thousands of Dollars)

GENERAL FUND		13,000	9,000	4,000	4,000	11,000
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		7	7	4	4	7
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Amounts appropriated by SB 295 do not correspond exactly with anticipated funding needs for the present program of studies underway. Construction of the Project could not begin until a Federal Energy Regulatory Commission license and other state and federal permits are approved. However, elements of the Project could be initiated in advance of the FERC license. These elements could include transmission line interconnection of Anchorage and Fairbanks, acquisition of land in the Upper Susitna, and access road construction. Otherwise impacts on the Alaska Power Authority of SB 295 would be no greater than exist today under the existing study program. Major impacts after 1985, when construction could commence, would be experienced by the Power Authority. If the Project is feasible for construction, state participation in financing would be a secure state investment, however, the Project appears capable of being financed in the revenue bond market. This may change, of course, depending on market conditions which prevail at the time of revenue bond sales.

IV. DATE 1/18/80 PREPARED BY Terry J. McGuire

AGENCY Alaska Power Authority

PHONE 277-7641

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

Official Business

Alaska State Legislature

Senate

Committee on Resources

Agenda

Pouch V
State Capitol
Juneau, Alaska 99811

March 7, 1980
1:30 p.m.
Butrovich Room

SB 294- Susitna Hydoelectric Project

Persons Testifying

Governor Egan
Lee Wareham- Susitna Power Now, Inc.
Liz Gilbert- Susitna Power Now, Inc.
Dorothy Jones- Matanuska-Susitna Borough Assembly
Chuck Smith- Matanuska-Susitna Borough Assembly
Jim Ekstedt- MEA
Thomas Stahr- Anchorage Municipal Light and Power
Joe Geldhof- Alaska Conservation Society and Alaska Center for the Environment
Terry McGuire- form Energy and Power Development (Will be in the audience to answer any questions, does not necessarily want to testify)

Please Sign In — 3/7/80
SB-294

Name		Representing
Terry McGuire		Alaska Power Authority
EVE DISCHNER		SUSITNA POWER NOW!
Lyle Waldrop		IBEW - Susitna Power Now
Harry Reiner		Fbx Borough assembly
BEN HARDING	(NOT TESTIFYING)	Fbx North Star Borough
Jim Ehrtidt		Matsu Boro
Dorothy A. Jones		MAT-SU Boro - Susitna Pwr Now
Chuck Smith		Box 1385 - Wasilla
Charmaine Smith	(not testifying)	Box 1385, Wasilla
Russ Meyer		326 #1 Junior
RUFUS C. HINCHER		INECA [redacted]
Al Larson		Chickaloon Village
H A Kornfeind		N.E.C.A. 1830 2nd Ave Fbx AK
Tom Casken		IBEW LOCAL 1547
D.C. Shelley		Mobil Oil Corp.
Ken King		King & Knoc.
Clark King		"
Joseph Geldhof		ALASKA CONSERVATION SOCIETY
Bill Egan		230 Arlington Anch 99503
Mike Pitcher		FBKS. / BOARD State Bor. Assemb

SUSITNA HYDROELECTRIC PROJECT

S.B. 294- Senator Kertula

Bill amends A.S. 44.56 of the Alaska Power Authority be adding Article 6 Section 44.56.300-350

44.56.300 PROJECT DESCRIPTION- Susitna Hydroelectric Project consisting of two dams and related reservoirs, transmission lines and facilities and load centers as described in the June 1978 U.S. Army Corp of Engineers report.

44.56.310 PURPOSE OF PROJECT- To generate, transmit and distribute electric power to Homer, Seward and Fairbanks which will:

1) minimize area electrical costs
2) minimize adverse environmental and social impacts
3) safeguard life and property

44.56.320 PRELIMINARY REPORT- The Authority shall prepare a report for the governor and legislature no later than 1/30/81. The report will list:

1) The proposed phases of construction with respective costs and completion dates of each phase.
2) Federal and state permits required before construction can begin. Expected dates they can be obtained.
3) Any other information the Authority deems necessary to inform the governor and legislature of the project's current status.

44.56.330 CONSTRUCTION, MAINTENANCE AND OPERATION- The Authority shall enter into a contract for construction consistent with A.S. 44.56.310 upon approval of the preliminary report.

44.56.340 ANNUAL REPORT- Commencing in 1982 the Authority shall prepare an annual report which explains in detail:

1) Status of construction
2) Completion dates of any phase in construction
3) Cost of each construction phase
4) The dates on which federal and state permits necessary for construction were obtained.
5) Federal and state permit requirements for continued construction of the project and expected dates they can be obtained.
6) Actual dates the permits described in (5) are obtained.
7) Any other information the authority deems necessary to inform the governor and legislature about the current status of the project.

A) This annual report shall be submitted no later than January 30 of each year.

8) In reference to the Annual Report sections 2-7, any deviation between the actual date and expected dates must be explained in the report.

44.56.350 PROJECT FINANCING- Shall be financed by appropriations from the general fund.

THIS ACT TAKES EFFECT IMMEDIATELY

Fairbanks Environmental Center

218 DRIVEWAY
FAIRBANKS, ALASKA 99701
(907) 452-5021

February 15, 1980

TO: Honorable Committee Members

FROM: Jeff Weltzin

RE: S.B. 294,295, & 385

Recent debate on the energy future of Alaska's railbelt area has mainly focussed on the proposed Devil Canyon Upper Susitna Hydro-electric Project. The proponents of this project voice it's many advantages which when veiwed in retrospect seem to be the attributes of all hydro developments in general and not just the Susitna Hydro Project.

The benefit of the Susitna Hydro Project have been well publicized, but it's many impacts on downstream fisheries, wildlife habitat, the Alaskan Lifestyle, and the States economy have recieved little study or public exposure.

The railbelt area of Alaska is energy rich. There are numerous potential hydro sites within it. Many coal deposits with the most noticeable being the Healy fields and the Beluga fields just south west of Anchorage. Geothermal, wind, natural gas, solar, tidal, and conservation energy round out a most amazing variety of energy resources available to the railbelt area.

Fairbanks Environmental Center

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(907) 452-5021

The most evident conclusion is that we have great flexibility in choosing energy resources to be developed. This flexibility could allow us to evaluate the berefits and costs and choose energy devlop-ments that minimize social and environmental effects while still meeting our needs for electrical energy.

Which then brings us to the Fairbanks Environmental Centers main objection to S.B. 294,295 & 385. These bills make a mockery of any rational decision-making process to choose the best energy sources for the railbelt area. Instead, this proposed legislation totally usurp the feasibility study process and reduces this whole process to the traditional methods used for most hydro in the lower 48. It's called "pork barrel" or sometimes 'whole hog".

We at F.E C. cannot understand why these bills were introduced at this time when it quite evident that the feasibility study process which has just begun, has been designed to take the shortest amount of time possible. If the intention of these bills is to force negligence of this projects potential problems, then we would have no choice but to oppose in any way possible progress of this project until all the potential impacts have been adequately addressed.

A review of this projects potential impact show that the Susitna river is the highest producing river contributing to the Cook Inlet salmon fisheries

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In the winter the Susitna river runs clear allowing juvenile salmon to leave the dewatered tributaries and rear in the main channels. Fish and Game has stated that the proposed dams would ensure year-round siltations of the main channels producing potential dramatic adverse effects on salmon production.

The Susitna basin bordered by the Parks, Denali, and Richardson highways is one of the last major hunting area's where a hunter does not need to charter a plane to hunt. In 1979 5600 hunters applied to hunt caribou in this area. Twenty three percent of last years statewide moose take occured from from this same area. The proposed permanent access from both the Parks and Denali highways plus the transmission line corridor could have large impacts on this, the State's most heavily hunted region.

Recently, there has been a nationwide reduction of energy growth rates which also has occurred in Alaska. The need for Susitna Hydro's large block of electrical energy still has to be justified. Alternative hydro sites still have not been properly looked at.

The active Susitna fault goes right through the middle of the proposed Susitna hydro project. Five moderate earthquakes and many smaller ones occurred along this fault in the last six years. Many more earthquakes have been registered along the major Denali fault, which lies within 40 miles of the dam sites. Compounding this problem is the filling

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of reservoirs often induce earthquakes, sometimes of large magnitude. With the proposed Susitna reservoirs lying on either side of the active fault, the situation here could be particularly dangerous.

These potential adverse impacts plus the project's enormous price tag mandate a much more careful look then allowed by S.B. 294 & 295.

There is no need for the Anchorage/Fairbanks Intertie in the next ten years. The theoretical advantages of this intertie that would occur before the start-up of the Susitna project are very marginal. If the advantages of reserve-capacity sharing and the replacement of cheaper natural gas generation for more expensive production where very substantial, the utilities would have proposed this action years ago. Clearly, the intent of S.B. 385 is to take a back-door approach to getting the Susitna project started before the study phase is finished.

Communities along the corridor will not be able to hook-up to this express transmission line because of the .5 to .75 million dollar per substation cost, the only benefit of this proposal would be to Fairbanks. Fairbanks could replace 34 MW of peak oil-generated capacity with cheaper Anchorage capacity. No studies have been done to show that Anchorage utilities will indeed have the excess capacity on a regular basis to even ensure that this benefit will occur.

A much more reliable alternative to replacing Fairbanks expensive oil generation would be to take the proposed money for the intertie and

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(907) 452-5021

fund GVEA's proposed waste heat generation plans at Alyeska pump stations 7,8,9,&10. If all four stations were built, they would provide 28 MW of inflation proof capacity to Fairbanks.

The question of an intertie is premature. In light of the proposed extensive studies to be conducted by Acres American on this subject, it seems truely unwise to rush the intertie before we really know what is needed.

In conclusion, if the intent of this committee is to get Alaska on a renewable energy path and to avoid major social and environmental problems. We then suggest the following actions:

I. Postpone action on S.B. 294, 295, & 385 until the feasibility studies to be conducted by Acres American are finished.

2. Fund or help GVEA fund thier proposed waste-heat utilization project at pump stations 7,8,9, & 10.

3. Fund and direct the A.P.A. to begin preliminary feasibility studies of the Chakachatna river 60 miles S.W. of Anchorage. This potential hydro site could have a firm capacity of 300 to 400 MW and avoid the major environmental problems the Susitna project might have.

4. Fund and direct the A.P.A. to begin preliminary feasibility studies of hydro sites in the Interior region such as the Totatlanika river.



Fairbanks Environmental Center

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FAIRBANKS, ALASKA 99701
(907) 452-5021

Honorable committee members, please do not eliminate the great flexibility we have in developing our energy resources. The environmental community strongly support a renewable energy futurefor Alaska. We would support your efforts wholeheartedly if ybu choose other hydro sites for study along with the Susitna project. We have the time and tools to develop a model renewable power generation system for Alaska. But by reducing the decision making process to a simplistic one, where Susitna hydro is the only answer to Alaska's energy needs. you will destroy this opportunity and produce polarization of Alaska's citizenship.

Eve Dischner

how well she tha

professional manner

Please sign In:

Name	Address
Lee Thackam	205 Geffrey FBK
Liz Gilbert	P.O. Box 4-2825, Anchorage 99509
Tom Carlson	Box 63 Douglas 99824
Rufus C Hincher	3707 Arctic Blvd Anch 99503
Tom Stahr	6967 Kascar Anchorage 995050
Dorothy A. Jones	Box 109, Talkeetna, Ak 99676
Jim Mayhew Jr.	326 4th St Juneau
J A Kompkinds	1830 2nd Ave FBKs AK 99701
Bill Egan	2700 Arlington Dr Anch 99503
Chuck Smith	Box 1385 - Wasilla 99687
Austin Ward	106 Charles St. Fbks. AK 99701
Sean Kline	A.H.C. Juneau
Jim Ebell	Mat Su Boro. Palmer Ak.
Ike Waldrop Jr	IBEW, ANCHORAGE
Terry McGuire	A.P. Authority 333 W. 4th, Suite 31 Anch
Richard Peratrovich	Tlingit Haida REB Juneau Ak
Gene Dschner	1332 Hillcrest Dr. Anch

file C
SB 294
stuff

DURING SESSION:
POUCH V
JUNEAU ALASKA 99811
(907) 465-3701

OUT OF SESSION:
1016 WEST 6TH AVENUE
SUITE 18
ANCHORAGE ALASKA 99501
(907) 272-4841

BILL SUMNER

Alaska State Senator

DISTRICT 7-E

COMMITTEES:
RESOURCES
CHAIRMAN
FINANCE
RULES
COMMITTEE ON COMMITTEES
JOINT INTERIM COMMITTEE
ON GAS PIPELINE FINANCING

April 22, 1980

Roy M. Huhndorf, President
Cook Inlet Region, Incorporated
Post Office Drawer 4-N
Anchorage, Alaska 99509

Dear Mr. Huhndorf:

I appreciate your sharing with me your comments on the Susitna Hydroelectric project. I was especially pleased to read of the cooperation you are having with the Alaska Power Authority during its feasability studies on Cook Inlet Region and Village lands.

The suggested amendment to Senate Bill 294 has merit and unfortunately the bill has already passed out of Senate Resources and is now pending in the Senate Finance Committee. I have, however, taken the liberty of forwarding your suggestion to Senator Sackett for consideration in amending the bill in his committee. I encourage you to again let him know of your interest in the amendment as well.

Again, thanks for the comments. I appreciate the well-thought input.

Sincerely,

Bill Sumner

BILL SUMNER
Senator

BS/cf

CIRI COOK INLET REGION INC.

March 31, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
Juneau, AK 99811

Re: Senate Bill 294

Dear Senator Sumner:

Thank you for affording me the oppo tunity to comment on Senate Bill No. 294, "An Act relating to the Susitna River Hydroelectric project; and providing for an effective date." As you may be aware, Cook Inlet Region, Inc. and certain Cook Inlet Region Village Corporations are participating in the feasibility analysis for the Susitna Hydropower project and have executed an agreement with the Alaska Power Authority authorizing the Authority to enter upon Cook Inlet Region and Village lands to perform activities necessary for the study.

Included in our agreement with the Alaska Power Authority is a clause requiring the Authority and its agents to employ Alaska Natives enrolled in Cook Inlet Region, Inc. or the Cook Inlet Village Corporations and to afford them a preference on award of contracts, commitments or other activities where authorized by law in accordance with the Alaska Plan to Provide Equal Employment Opportunity in the Construction Industry, approved by the U. S. Department of Labor on March 31, 1972. (See attachment.) I recommend that Senate Bill No. 294 be revised to include a section providing that:

> It is the policy of the State of Alaska to implement meaningful training and employment opportunities for minorities, and in particular, Alaska Natives, during the construction and operation of the Susitna River Hydroelectric Project, as authorized by law. Accordingly, the Alaska Power Authority

CIRI BUILDING 2525 "C" STREET P.O. DRAWER 4-N ANCHORAGE ALASKA 99509 PHONE 274-8638 TELECOPIER 907-279-8836

> shall afford minorities, including, in particular, Alaska Natives, and Alaska Native business entities, a preference in the award of contracts and subcontracts in connection with the administration of those activities authorized herein.

I would appreciate your continuing to keep me posted on the status of Senate Bill No. 294. Thank you for your attention to this matter.

Sincerely yours,

COOK INLET REGION, INC.

Roy M. Huhndorf
President

RMH:JEB:cae
Attachment

To Senate Resources Committee,

As Resident and citizen of Alaska & America I strongly urge you as Elected or Appointed Public Representatives to consider strongly the great Benefits of the Susitina Hydro Project. With our Economy soaring downwards greatly influenced by our Dependence on foreign Resources.

What greater safer and more Renewable Resources the water & sun of which right here in our Backyard lies a vast Abundance.

I urge you to Approve for All peoples Benefits a project of such great importance. in times where energy is in such Demand and will continue to be. I hope when election time arrives I can vote again with Confidence that my leaders are Representing the majority Rather than the minority of Businessman or Conservationists looking for a cause or profit.

Sincerely

Dana Fridtun

FIDC

DR. WILLIAM R. WOOD
EXECUTIVE VICE PRESIDENT

FAIRBANKS INDUSTRIAL DEVELOPMENT CORPORATION
Phone 907 452-5400 619 Eleventh Avenue Fairbanks, Alaska 99701

March 5, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
Anchorage, Alaska

Dear Senator Sumner:

I am William R. Wood, Mayor of Fairbanks, and Executive Vice President of the Fairbanks Industrial Development Corporation. I am pleased to testify once more in behalf of Senate Bill 294 relating to the Susitna River hydroelectric project.

It has been my privilege to study the bill with considerable care and I am in strong support of the procedures outlined therein for accomplishing a preliminary report that will give the Legislature basic information it must have in hand regarding the proposed phases for the construction of the Susitna River hydroelectric project, as well as the costs related thereto, and the necessary Federal and State permits that must be obtained. The bill is well designed to expedite the project which is essential to the wellbeing of all residents of South-Central and Interior Alaska, with secondary benefits to all the rest of the state.

Of a thousand or more pieces of legislation that will come to the attention of the Senate and House this session, I would rank Senate Bill 294 among the top half dozen of vital concern to the State of Alaska. The City Council of Fairbanks has already endorsed the project, as well as the membership of the Fairbanks Industrial Development Corporation, a non-profit, public service group of business and professional leaders who employ more than 10,000 persons on a year around basis within Alaska on non-government jobs.

We are also deeply interested in Senate Bill 385 that would provide for the immediate construction of an intertie system joining the Anchorage area to the Fairbanks area. This bill merits your most serious consideration as well as Senate Bill 294.

Sincerely yours,

Bill Wood

William R. Wood
Executive Vice President, and
Mayor, City of Fairbanks

WRW/kb

CITY OF FAIRBANKS ALASKA

The Golden Heart City

OFFICE OF THE MAYOR

March 5, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
Anchorage, Alaska

Dear Senator Sumner:

I am Ruth Burnett, member of the Fairbanks City Council. I am pleased to testify once more in behalf of the Susitna River hydroelectric project.

I have had an opportunity to study Senate Bill 294 with some care and am in strong support of the objectives and goals contained therein. I join my colleagues on the Council, who have unanimously endorsed the Susitna project, in urging all possible support for this legislation.

I am also in very strong support of Senate Bill 385 that would provide for immediate construction of an intertie system between the Anchorage area and the Fairbanks area.

I urge your strong support of Senate Bill 385, as well as of Senate Bill 294.

Sincerely yours,

Ruth Burnett

Ruth Burnett
Member, City Council

410 CUSHMAN, FAIRBANKS, ALASKA 99701

3/7/85

4

Testimony of Thomas Stahr
Before the ALASKA STATE SENATE
RESOURCES COMMITTEE

testifying in favor of SB 254 25S 38S

Not too long ago any consideration of Susitna would center around the question of whether or not we would actually need the electrical energy it would produce. Now the situation is radically changed. The proper concern now is how will we continue to supply present energy demands if we do not build Susitna.

Conservation is again a serious issue, not as an alternative because serious examination shows this is not a realistic concept, but that Susitna will in it's self be a massive contribution toward conservation of oil and gas, and serious conservation will be necessary to ~~[illegible]~~ keep demands from exceeding what Susitna can produce.

In 1995 the utilities in the area which could be supplied by Susitna generated 2.5 Billion kwh. Military central station generation of over 385 million kwh brings the total to over 2.8 Billion kwh. Watana dam, the first stage of the Susitna project will only produce 3.1 Billion kwh.

Therefore the load for this stage of the project already exists without considering the other existing energy demands where renewable hydro power could be beneficially substituted for oil.

To produce the 2.5 billion kwh the area utilities consumed 35.4 trillion BTU's of fossil fuels. This is the energy equivalent of 6.2 million barrels of oil. Therefore even the first stage of susitna will achieve massive conservation of oil and gas.

If alaskans had to pay for this fuel at current world market prices the bill would be over 186 million dollars per year, which is approximately twice the total paid for electricity now. In term of electric rates world market fuel prices mean rates would, on the average, triple. It is inconceivable that by the 1990's when susitna is possible, that alaskan fuel prices will not be in excess of current world prices.

In regard to the complete susitna project the total output is slightly in excess of twice current electrical use. Since we are looking at 12 to 16 years for final completion even a small annual growth will close the gap. In fact a annual ~~growth~~ growth above the 4-7% range will result in demands in excess of capacity.

Since Alaskan historical growth rates are in the order of 13% it is clear that a great deal of conservation effort will be required to keep demand within the range of what Susitna can supply. Realistically this is the maximum we could possibly expect from serious conservation.

This brings what is perhaps the most critical issue. We must have some firm energy plans and goals and here I want to make it crystal clear I am not talking about the verbal hogwash that usually goes by the name of energy plans and policies.

The simple truth is that the world is running out of convenient and inexpensive oil and gas. Conservation alone is no answer, it can only buy us a little time. The only prudent approach is to make firm commitments to provide for our future energy needs by developing Susitna. We can then rationally use effective conservation measures as a bridge to that goal. A perfect example of this is the proposed Anchorage - Fairbanks tie line which complements the long term plan, conserves energy and more effectively utilizing existing power resources.

For the past Susitna you will find that the feasibility of most alternative energy schemes will be greatly by having Susitna as an energy

storage for the days when the sun does not shine and the wind does not blow. In the long run you will find a large hydropower project like sustina absolutely necessary to make significant use of ~~the~~ alternate energy sources

SENATE RESOURCES COMMITTEE
CHAIRMAN: BILL SUMNER
JUNEAU, AK.

MARCH 7, 1980

MR. CHAIRMAN AND COMMITTEE MEMBERS, I AM AUSTIN WARD OF FAIRBANKS, CURRENTLY PRESIDENT OF ALASKA ENERGY FOR AMERICA INC., AND MEMBER OF SUSITNA POWER NOW.

OVER 20 YEARS HAS PASSED SINCE MY INTEREST IN HYDRO POWER FIRST RECEIVED MY ATTENTION WITH THE RAMPART DAM PROJECT. SINCE THOSE EARLY YEARS, AND TO THIS DAY I HAVE WORKED FOR A RENEWABLE ENERGY SOURCE.

I WISH TO OPEN WITH A QUOTE, " RICH SEIFERT OF THE U.OF A. FBKS, INSTITUTE OF WATER RESOURCES" "SAYS IT NOW COSTS ABOUT $7.00 PER PEAK WATT TO GENERATE POWER FROM SOLAR CELLS(VOLTAIC PHOTO), BUT RECENT GOVERNMENT PROJECTIONS SAY IT WILL DROP TO .70¢ PER PEAK WATT BY THE MED-1980s.
BY COMPARISON, SEIFERT SAID THE COST PER PEAK WATT FROM THE 2 BILLION SUSITNA PROJECT WILL BE ABOUT 90¢ PER PEAK WATT.
BUT AS WITH THE TRANSISTOR AND PENCILLIN, SOLAR CELLS WILL ONLY BECOME FEASIBLE IF THE FEDERAL GOVERNMENT PUTS ITS WEIGHT INTO MAKING THE SC." WHAT MR. SEIFERT FAILED TO MENTION IS THE HIGH INFLATION RATE COULD RAISE THE PEAK PRICE OF SOLAR ENERGY FROM THE 70¢ LEVEL TO A HIGH THAT IS ANYONES GUESS. AND THATS ASSUMING THE GOVERNMENTS PROJECTIONS CAN BE MET.

ALASKA ENERGY FOR AMERICA INC., AND ITS MEMBERS SUSITNA POWER NOW AND ITS MEMBERS STRONGLY FAVOR THE CONSTRUCTION OF THE SUSITNA POWER PROJECT AS SOON AS PRACTICAL. SUPPORT FOR THE PROJECT DERIVES FOR THE KNOWLEDGE THAT ALASKA IS IN A POSITION TO ANSWER IT'S POWER NEEDS WITHOUT EXTENSIVE USE OF FOSSIL FUELS. THE SUSITNA PROJECT IS LOCATED SO THAT CLEAN, HYDROELECTRIC POWER CAN BE MADE AVAILABLE TO THE TWO LARGEST USER'S IN THE STATE, NAMELY FAIRBANKS AND ANCHORAGE. THE ADVANTAGE IS TWO FOLD: LESS WASTE OF FOSSIL FUELS, CLEANER AIR, THAT WILL DRAMATICALLY REDUCE WINTER ICE FOG IN FAIRBANKS, AND GIVE BOTH CITIES A CHANCE FOR CLEANER AIR.
OF SECONDARY INTEREST IN THE CONSTRUCTION OF SUSITNA POWER IS THE RESULTING RECREATION BENIFITS. AND THOSE BENIFITS WOULD BE AVAILABLE TO MANY DUE TO THE UNIQUE LOCATION OF SUSITNA, HALF WAY BETWEEN TWO POPULATION CENTERS, AND CLOSE TO HOME FOR MANY.

SENATE RESOURCES HEARING:
SENATOR SUMNER, CHRM.

(AUSTIN WARD)

IT MAKES MORE SENSE NOW THAN EVER BEFORE IN MANS HISTORY TO HARNESS THE FREE FLOWING ENERGY OF OUR RIVERS THROUGH THE USE OF MODERN CONSTRUCTION METHODS. WHEN WE ARE FACED WITH INFLATION, FACED WITH THE DWINDLING INVENTORY OF FOSSIL FUELS, IT SEEMS ALMOST INCONCEIVEABLE THAT WE SHOULD SIT BY, PAY THE HIGH PRICES FOR NONRENEWABLE FUELS WHEN ALL WE HAVE TO DO IS BUILD THE SUSITNA PROJECT THAT WILL STAND FOR GENERATION AFTER GENERATION PRODUCING PROWER AT LITTLE INCREASE IN COST FOR THE LIFE TIME OF THE DAMS.

IF SCIENCE COULD HARNESS THE ENERGY OF THE ENVIORMENTALISTS AND NAY SAYERS, WE WOULD'NT HAVE TO BUILD SUSITNA.

SINCERELY,

Austin D. Ward

AUSTIN G. WARD
FAIRBANKS, AK. 99701
106 CHARLES.

Senate Resource Committee

Subject: Susitna Hydro-Power Project & Railbelt Inter-Tye.

Gentlemen;

My name is Stephen A. Kerner and I am writing you in relation to the proposed Susitna Hydro electric project and the railbelt inter-Tye, I have lived in Alaska for 30 yrs. and, presently, enrolled in the third & fourth year Apprentice Wireman school (I.B.E.W.) here in Anchorage. I am for the building of the Hydro project even though I live in Fairbanks. The opportunities for employment, industry, recreation, and the eventual Low cost of electricity are to obvious to pass up. The President and all his men preach about conserving our resources (non renewable), and here is something with potential to please everyone from environmentalists to Industry.

I don't know what you people discuss in your committees, but I urge you to find a way to get this Project moving in accordance to the wishes of the people of Alaska.

Thank you for reading this,

Stephen A. Kerrces

March 4th, 1980

Senate Resource Committee
Susitna Hydro Power Project
Railbelt - Inter Tie

Dear Sir!

My name is Stanley Aarsund. I have been an Alaskan resident for more than eight years, since April 18th, 1971. I live at 1200 W. Dimond Blvd, Space 301, Anchorage, which is in Precinct 180, District 11.

There are several projects I've wanted the State to move on for years and one of them is the dams on the Susitna River. With all the coverage lately in the news about energy, or the shortage of it, people are probably aware that hydro power is the way to go, except the rivers in the lower 48 are getting tapped out. Here in Alaska we've hardly tapped our hydro potential. This Susitna dam Project has so many pluses going for it I don't see why we haven't started construction before.

It's a renewable resource, non-polluting, very cheap power once the dam is paid for; it will provide badly needed jobs. The Mat-Su borough has 20-25% unemployment. It will be a large recreational area and enhance wildlife. If we can sell cheap electrical power that reason will help bring in Industry and provide additional, long term, jobs for Alaskans.

Along with the Susitna project the Railbelt Inter-Tie should be built. Fairbanks has extreamly high electrical power rates due to the use of oil in electricity generation. This project should help bring down those costs as well as for the folks between Anchorage and Fairbanks. There's also the power line project between Valdez and Glenallen which should be completed.

So lets build these projects as soon as possible. Lets save all the natural gas

and oil that is now being used to produce electricity and make fertilizer and petroleum products from them here in Alaska or we could export the raw product. Hydro is clean energy, lets build the Susitna Hydroelectric project now.

Sincerely,

Stanley Hansmd

International Union of Operating Engineers

AFFILIATED WITH AFL-CIO

LOCAL 302 AND BRANCHES A, B, C AND D

FRANK T. POLSAK, *Business Manager*

JACK J. WILSON, *President*

ROD J. FRASER, *Financial Secretary*

Branch Offices:
WENATCHEE, WASHINGTON
YAKIMA, WASHINGTON
ANCHORAGE, ALASKA
FAIRBANKS, ALASKA
JUNEAU, ALASKA

WESTERN AVE. AND CLAY ST.
SEATTLE, WASHINGTON 98121
TELEPHONE: 622-6180

February 29, 1980

Senator Sumner
Capitol Building Rm. 12[illegible]
Pouch V
Juneau, Alaska 99811

RE: Susitna Power Project
SB 294

Sir:

The International Union of Operating Engineers, Local 302 (Alaska), which presently is composed of over 4000 members, has determined that the Susitna Power Project would be in the best interests of all of the people within our State. We would like the Legislature to not only know that we support the project but we also wish all practical speed in efforts to get it under construction.

Sincerely,

Roderick J Fraser

Roderick J. Fraser
Financial Secretary
I.U.O.E., Local 302

RJF/jch
cc: Susitna Power Now, Inc.

P.O. BOX 5109
NORTH POLE, ALASKA
99705



TOP OF THE WORLD
PHONE: 488-2281
AT YOUR SERVICE

2/4/80

Senator Bill Sumner
Senate Resources Committee
Pouch V
Juneau, Alaska 99811

Dear Senator Sumner;

The City Council of North Pole voted unanimously at the March 3, 1980 Council meeting to fully support the Susitna Project.

The City Council of North Pole believes that the Susitna Project will aid greatly in alleviating the tremendous energy costs experienced by the economically depressed Interior.

It is my hope that this will reach you in time for the hearing on Senate Bill 294.

Sincerely,

Carleta Lewis, Mayor
North Pole, Alaska

CAL/pe

RUSSELL B. LONG, LA., CHAIRMAN

HERMAN E. TALMADGE, GA.
ABRAHAM RIBICOFF, CONN.
HARRY F. BYRD, JR., VA.
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SPARK M. MATSUNAGA, HAWAII
DANIEL PATRICK MOYNIHAN, N.Y.

CARL T. CURTIS, NEBR.
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ROBERT J. DOLE, KANS.
BOB PACKWOOD, OREG.
WILLIAM V. ROTH, JR., DEL.
PAUL LAXALT, NEV.
JOHN C. DANFORTH, MO.

MICHAEL STERN, STAFF DIRECTOR
GORDON S. GILMAN, CHIEF MINORITY COUNSEL

United States Senate

COMMITTEE ON FINANCE

WASHINGTON, D.C. 20510

March 7, 1980

Hon. Bill Sumner
Chairman
Senate Resources Committee
Alaska State Senate

Dear Mr. Chairman:

I congratulate you and your committee for your continued interest in the economic welfare of Alaska and the future of energy supplies in our state. I regret that I am not able to join you for today's hearing, but hope that this letter will serve to state my position on this issue. As you know I have long been concerned over the growing power demands in Alaska and have sought ways in which to assure adequate supplies of reasonably priced power for our future.

My support for hydroelectric power, including the Susitna project, is well known. Because of my efforts the Susitna project feasibility studies were undertaken by the Army Corps of Engineers and the project was authorized for Phase I work by the federal government. However, the development of major hydroelectric projects by the federal government has all but stopped as a result of financial and environmental constraints in recent years. For that reason I am pleased to see the state of Alaska moving ahead with this important project.

Since early on I have felt that the state should own the Susitna project. If the state owns the project it can set the power rates and the benefits of Susitna can be spread among all the citizens of Alaska. In pursuit of this goal, as Chairman of the Senate Public Works Subcommittee, I authored an amendment to the 1976 Public Works Act which combined federal support for planning and construction with state ownership. While the Alaska Power Authority has opted to begin design and engineering work through a private contractor the federal option remains.

As a member of the Senate Finance Committee I offered a Committee amendment to the Windfall Profits Tax Bill (H.R.3919) which allowed the use of tax exempt bonds for financing of hydroelectric projects such as Susitna. This is a very controversial provision, but I prevailed in the Committee and the amendment was included in the Finance

Committee bill and the Senate version of Windfall Profits. Unfortunately, in the face of strong opposition from the Treasury Department and the House Conferees this provision was deleted from the Conference Committee version of the Windfall Profits Tax Bill. However, we will not be in a position to finance construction on the Susitna project before 1983 and I intend to raise the issue of tax exempt financing for large scale hydroelectric projects again before that date. I am confident that, at the appropriate time, we can prevail and that tax exempt financing will be available to finance the Susitna project, significantly reducing the cost of power from the dam.

Finally, I would like to encourage you in your efforts to move ahead on this project. I have said many times that the project should be constructed in the most expeditious manner and I have directed my efforts here in Washington toward that goal. If state financing is the quickest way to get the project built I am in full support of these efforts. The Susitna dam represents the best alternative for the future power demands of the railbelt. Let's move ahead.

With best regards,

Sincerely yours,

Mike

Mike Gravel

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

REPLY TO
ATTENTION OF:

NPAEN-LS

NOV 1978

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 West 4 Avenue
Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

Attached are budget figures required for the first twelfth effort of feasibility studies as outlined in the Susitna HydroPlan of Study. Figures are presented on a quarterly obligationule and as such, run higher than the expenditure schedule outli the Plan of Study.

This budget is based on the assumptions that:

1. Authorization for funding will be given by the State Legislature not later than 15 February 1979.

2. Funds will be provided to the Alaska District, of Engineers not later than 15 March 1979.

Sincerely,

JAY K. SOPER
Chief, Engineering

1 Incl
as

SUSITNA HYDROELECTRIC PROJECT

BUDGET FOR CALENDAR YEAR 1979

ACTIVITY CATEGORY	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	TOTAL
SURVEY	$35,000	$460,000	$490,000	$73,000	$1,058,000
HYDROLOGY	73,000	150,000	196,000	130,000	549,000
EENVIRONMENTAL	20,000	22,000	2,000	2,000	46,000
RECREATION	2,000	19,000	2,000	2,000	25,000
PLAN FORMULATION	16,000	30,000	13,000	*******	59,000
POWER STUDIES	10,000	30,000	******	*******	40,000
FOUNDATIONS & MATERIALS	200,000	921,000	1,390,000	320,000	2,831,000
DESIGN	65,000	223,000	116,000	179,000	583,000
REAL ESTATE	5,000	14,000	4,000	*******	23,000
CCULTURAL	5,000	82,000	2,000	2,000	91,000
FIELD CAMP	750,000	500,000	125,000	125,000	1,500,000
REPORTS, REVIEWS PUBLIC PARTICIPATION	5,000	14,000	4,000	******	23,000
BIOLOGICAL	10,000	262,000	649,000	223,000	1,144,000
POWER MARKET STUDIES	5,000	162,000	11,000	28,000	206,000
TOTALS	$1,201,000	$2,889,000	$3,004,000	$1,084,000	$8,178,000

8

****

2140 Sorbus Way
Anchorage, AK
March 5, 1980

Senator Bill Sumner
Chairman
Resources Committee
Pouch X
Juneau, AK.

Dear Senator Sumner,

It is my understanding the Resources Committee is reviewing two bills relating to the Susitna Power Project. I support the Susitna Power Project under the State of Alaska auspices and any action taken to expedite this p.oject to ensure it's timely completion would be beneficial to all Alaskans.

Sincerely,

Rebecca Ann Gottschalk



CITY OF KENAI

"Oil Capital of Alaska"

P. O. BOX 580 KENAI, ALASKA 99611
TELEPHONE 283 - 7535

March 18, 1980

Honorable John Sackett
Alaska State Senate
Pouch V
Juneau, AK 99811

Dear Senator Sackett:

In regard to SB 294, the Susitna Project, please accept this letter as evidence of strongest support. We need a future supply of power to meet major industrial plant siting in this area, a need accepted and endorsed by our citizens.

We ask for your quickest and hopefully most favorable consideration.

Sincerely,

Vincent O'Reilly
Mayor

VOR: jw

cc: Senator Bill Sumner

55



BUMPER STICKER PROCLAIMS SUSITNA DAM SUPPORT

Bob Penney, Anchorage co-chairman of Susitna Power Now, a new group promoting the Susitna hydroelectric power project, gets a chuckle with his group's bumper sticker. At the head table are, from left, Fairbanks co-chairman Lee Wareham; Alaska Power Authority official Eric Yould; state Sen. Bill Sumner, R-Anchorage; state Sen. Jay Kerttula, D-Palmer; Anchorage Mayor George M. Sullivan; state Rep. Bill Miles, D-Anchorge, and Penney.

Alaska Power Authority Executive Foresees Susitna Electricity By 1990

By SUSAN ANDREWS
Times Staff Writer

Electricity could be produced from the proposed Susitna River hydroelectric power project by 1990, Alaska Power Authority executive director Eric Yould said here Friday.

The Army Corps of Engineers says power couldn't be on line before 1995 but Yould told a meeting here of Susitna Power Now Inc. he thinks it is "entirely possible" that the project could be constructed within 10 years.

Susitna Power Now is a group of Alaskans from Fairbanks to Homer who are urging construction of two proposed dams on the upper Susitna River. The group includes mayors and utility managers and was organized at the urging of Anchorage Mayor George Sullivan and John Spencer, chief administrative officer for Anchorage municipal utilities.

An estimated 80 boosters, including state legislators Sen. Jay Kerttula of Palmer and Sens. Bill Sumner and Brad Bradley and Reps. Bill Miles and Chat Chatterton of Anchorage, attended an organizational meeting here Friday at the Anchorage Westward-Hilton.

They elected Bob Penney of Anchorage and Lee Wareham of Fairbanks as co-chairmen. The two had been acting chairmen.

Sumner and Miles, who are chairmen of the Senate and House resources committees respectively, stated their support for funding for the Susitna project.

Sumner said this will be a fast-paced legislative session that will adjourn in late May or early June and the Susitna project "will need some fast up-front support."

Sullivan urged that a 2½-year feasibility study of the Susitna project by Acres American Engineering Co. be shortened.

"Two years is a long time to study a project that has already been studied," Sullivan said. The Susitna

Yould supported a proposal by Bob Hufman, manager of Golden Valley Electric Association at Fairbanks, that the state go ahead with surveys and right-of-way purchases for the transmission line which will link Anchorage with Fairbanks.

Sullivan pointed out that the tie-in would save money now by eliminating the need for additional back-up generation in Anchorage or Fairbanks. Excess power in either city could be made available to one another.

One hundred miles separates the end of the Fairbanks power line at Healy and the beginning of the Matanuska Electric line, Hufman pointed out. He urged that the citizens' group put pressure on the Legislature to finance construction of the 100 miles of transmission line and build it to Susitna project specifications.

He estimated construction costs at $100 million. It would cost 30 percent less to build the line to carry current electricity loads, Hufman said, but he favors building a bigger line so that if the Susitna project goes, it will be in place.

The "go or no go" decision on the Susitna project will be made a year from now, Yould said. Then another 18 months of field work will be needed to complete work on the Ferc license application.

U.S. Sen. Mike Gravel, who is pushing legislation to make Susitna project revenue bonds tax exempt, sent a message to the meeting Fri-

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

REPLY TO
ATTENTION OF:

NPAEN-US

28 June 1978

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 West 4th - Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

I am pleased to submit in response to your 19 January letter the final Susitna Plan of Study prepared by the Alaska District, Corps of Engineers, for the State of Alaska, under provisions of Title 3, the Intergovernmental Cooperation Act of 1968.

The report incorporates the comments developed by other State agencies, which you provided, in particular those prepared by the Department of Fish and Game. As a result, the intensity of some of the biological studies has been expanded to help identify the magnitude of the resources that will be affected by the Susitna project. The total increase is $1,886,000 for biological activities.

To offset some of this increase, activities under the categories of survey and foundation and materials have been decreased as the result of the exercise presently under way at the Watana damsite in obtaining information as requested by the President's Office of Management and Budget (OMB). To respond to OMB's review comments on the 1976 Feasibility Report, test borings and geological data are being compiled which reduced the content of several activities outlined in the September 1977 POS draft. This reduction amounted to $1,150,000 which helped hold the overall cost increase to $736,000. The total study cost is now $24.1 million. The price level index was held at September 1977.

The Plan of Study retained the 46-month period to conduct the project feasibility studies based on a 1 May start. Several months of advanced preparation will be required before initiating the activities to allow

28 June 1978

early mobilization of a camp facility and commence other contract activity actions to assure implementation at the beginning of the summer field season.

The studies will insure optimal basin and system generation planning along with a reasonably accurate cost estimate for the first phase of basin development. These studies represent approximately 25 percent of the total engineering and design effort envisioned for a two-dam complex.

The activities defined in this document have been developed to adequately address determination of project feasibility. The project feasibility analysis program does include suggestions and comments received from various agencies, both Federal and State, and I feel that the program will provide the information necessary for the State to determine desirability of proceeding into construction of a hydroelectric facility in the upper Susitna River basin.

Sincerely yours,

George R. Robertson

GEORGE R. ROBERTSON
Colonel, Corps of Engineers
District Engineer

Friends of Susitna
Hydro-electric project.

JAN 12 1980

MEETING TO CONSIDER THE ORGANIZATION

OF A

CITIZENS COMMITTEE FOR SUSITNA

Please mail copy to me in June.

PLEASE PRINT:

Name: Roger Thiel Organization: Local 190 Roofers
Address: 407 Denali St Anchorage Alaska 99503

Name: Verner D. Christenson Organization: City of Houston
Address: SP Box 2148 A Wasilla AK 99687

Name: Jack McLean Organization: Commercial fisherman
Address: 3542 North Point DR Anchorage Alaska 99502

Name: Josephine McLean Organization: Commercial
Address: 3542 North Point Dr. Anchorage AK 99502

Name: A.C. Swalling Organization: —
Address: P.O. Box 1039 Anchorage 99510

Name: J. McCall Organization:
Address: Box 2. Palmer Alaska

Name: Joe J. Thomas Organization: Laborers Local 942
Address: 315 Barnett St. Fairbanks, Alaska 99701

Name: Gen Int Eagle Organization: Gen Int Eagle Ltd
Address: 1577 C St / Anchorage AK 99501

Name: George M Sullivan Organization: Mayor of Anchorage
Address: Box 6-650 Anchorage

Name: Robert C. Johnson Organization: Matanuska Elec Assoc.
Address: P.O. Box 456 Eagle River, 99577

Name: Frank H. Murkowski Organization: Colonial Bank of the North
Address: Fairbanks Alaska 99701

Name: Organization:
Address

Name: Organization:
Address:

Name: Organization:
Address:

Name: Organization:
Address:

PLEASE SIGN IN

MEETING TO CONSIDER THE ORGANIZATION

OF A

CITIZENS COMMITTEE FOR SUSITNA

PLEASE PRINT:

Name: _____ Organization: _____

Address: _____

Name: _____ Organization: _____

Address: _____

Name: _____ Organization: _____

Address: _____

Harry Dougherty Kaiser Cement - Anchorage.

Bob Penney Bruce Lee 11.

Joe J. Thomas Laborers Local 942, Fairbanks, Alaska

PLEASE SIGN IN

MEETING TO CONSIDER THE ORGANIZATION

OF A

CITIZENS COMMITTEE FOR SUSITNA

PLEASE PRINT:

Name: Dorothy A. Jones Organization: MAT-SU Borough ASSEMBLY
Address: Box 109, Talkeetna, AK. 99676
Name: JESS NICHOLAS Organization: ALASKA
Address: P.O. Box 177 KENAI RURAL ELECT COOP
Name: C.E. JOHNNY JOHNSON Organization: City of SEWARD
Address: Box 337 SEWARD, ALASKA 99664
Name: Willard H. Johnson Organization:
Address: P.O. Box 84 Palmer AK 99645
Name: DALE D. BRIGGS Organization: MEA
Address: Star Rt Box 65, Eagle River AK 99577
Name: JIM THOMPSON Organization: HEA
Address: Box 222 HOMER 99603
Name: PHIL OVELL Organization: M.E.A.
Address: Box 6 SUTTON ALASKA 99674
Name: JOHN E. LISTON Organization: BUILDING ALASKA MAGAZINE
Address: P.O. Box 1971, ANCHORAGE, AK 99510
Name: ILLEGIBLE R. WOOD Organization: FAIRBANKS ECONOMIC DEVELOPMENT Corp. City of Fairbanks Chamber of Commerce
Address: 619 ELEVENTH AVENUE, Fairbanks, Alaska 99701
Name: R.L. HUFMAN Organization: QKEA
Address: 758 ILLINOIS Box 1249 FBKS
Name: Lee Wareham Organization: FBKS News Star Box
Address: SR Box 20653 Fairbanks, AK
Name: Quentin Wood Organization: Alaska Cranes Commission
Address: 106 Chena St., Fbks. AK. 99701
Name: Harold Gillam Organization: EMUC
Address: 645-5th Ave Fairbanks
Name: Ron Hutchcraft Organization: Cook Inlet Regional
Address: 2525 'C' ST RANCH AK
Name: Loren Leasburg Organization: U.V. Leasburg & Assoc.
Address: 723 W 6th Ave Anchorage 99501

MEETING TO CONSIDER THE ORGANIZATION

OF A

CITIZENS COMMITTEE FOR SUSITNA

PLEASE PRINT:

Name: JACK FLINT Organization: Matanuska Maid

Address: 814 McKinley Blvd Anch. 99502

Name: Russ Larson Organization: Matanuska-Susitna

Address: Box 13 Palmer, Alaska 99645

Name: Charlie Parker Organization: self employed

Address: Box 349, Soldotna, AK. land surveyor

Name: Ron Birch Organization: Birch, Horton, et al

Address: 1127 W. Seventh, Anchorage

Name: Elaine Wurster Organization:

Address: 640 L #407

Name: Edward Janzen Organization: Sheet Metal Co's

Address: 825 E 8th Ave Anchorage Alaska 99501

Name: [illegible] Organization: IUOE 302

Address: 3510 Arctic

Name: Roderick T Ernst Organization: IUOE Local 302

Address: 3510 Artic Blvd Anchorage AK 99503

Name: E. W. Casper Organization: Green County Co

Address: 125 W 5th Ave Anch 99501

Name: Lawrence Sisk Organization: IBEW/NECA

Address: 6223 Geronimo Circle Anch 99504

Name: L.M. WALDROP (Retired) Organization: IBEW

Address: 2702 DENALI, ANCHORAGE, AK.

Name: LEE METCALF Organization: U.A. LOCAL 367 PLASTERERS

Address: 610 W. 5-1/2 TH ANCH., AK. 99502

Name: Joe L. Hayes Organization: State Legis.

Address: 625 W-5th Ave — Anch 99501

Name: Joe Armstrong Organization: NECA.

Address: 712-W 36th Ave Anch - 99503

Name: Allen Pilto Organization: PLASTERERS & CEMENT MASONS #367

Address: 825 E 8th Ave ANCH AK 99501

MEETING TO CONSIDER THE ORGANIZATION

OF A

CITIZENS COMMITTEE FOR SUSITNA

PLEASE PRINT:

Name: Thomas Donnelly Organization: U.S. Senate Water Reserve Committee (Sen. Grand)

Address: 4204 DIRKSEN SENATE OFFICE BLDG WASH, D.C. 20510

Name: Tyler Jones Organization: Sen. Mike Gravel 907/10

Address: 701 C ST Box 1 ANC. 99513

Name: BOB PENNEY Organization: U.P. ANCH. CH. OF COMMERCE

Address: 600 E. BENSON, ANCH. 99503

Name: Wes Gregg Organization: Rep. Don Young

Address: 701C ST Box 3 99513

Name: LEE A. WYATT Organization: MAT-SU BOROUGH

Address: BOX B PALMER ALASKA 99645

Name: Sue Tubbs Organization: Sen Korthla

Address: Box 61 PALMER 99645

Name: Kathryn Schonall Organization: MAT-SU-BORO

Address: Box 595 WASILLA 99687

Name: Glenn Levesque Organization: MAT-SU BOR.

Address: Box B. PALMER 99645

Name: Donald Shiro Organization: Mat-Su Boro Assoc.

Address: Box 50, Turnagain, AK 99802

Name: Jim Ekstedt Organization: Mat-Sue Bor

Address: Box 105 Palmer 99645

Name: Thomas A Stabler Organization: MLSP

Address: 6967 Lore Dr Anchorage AK 99504

Name: Larry Madden Organization: Chugach Electric

Address: Box 3518 Anchorage Alaska 99501

Name: Robert Ben Lekanoff Organization: Ben Boeing Int'l Ind 341

Address: 1634 Gamble St. And. Ak. 99501

Name: PAUL A. DUNHAM Organization: MACHINIST LOCAL 601

Address: 825 E. 8th ANCHORAGE AK 99501

Name: Kathi Burdeaux Organization: Senator Ted Stevens DC. Office

Address: 2nd Russell Senate Office Bldg. Wash DC 20510

Jul-Susitna

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER / SUBPORT BUILDING
JUNEAU 99801

Rcvd 4/17

April 2, 1979

The Honorable Jalmar Kerttula
Alaska State Legislature
Pouch V, State Capitol
Juneau, Alaska 99811

Dear Senator Kerttula:

Please find enclosed per your request a synopsis of available information on the Susitna River fisheries.

The Susitna River basin is an important habitat for a wide variety of fish species, both resident and anadromous. Five species of salmon (chinook, coho, chum, pink, and sockeye) utilize the Susitna River drainage for spawning and rearing. The majority of the chinook, coho, chum, and pink salmon in the Cook Inlet area are produced in this drainage. Grayling, rainbow trout, Dolly Varden, burbot, lake trout, whitefish, and sculpins are the more common resident fish species.

Although total salmon escapement estimates have not been derived for the Susitna River, it is probably the second or third largest sockeye salmon production area within Cook Inlet. Economically, the estimated average annual commercial value of the sockeye, king, pink chum, and coho Susitna salmon stocks was $8,721,780 in 1975. This average value does not include the 1975 estimated value of $3,701,745 for the additional salmon in the Susitna River Basin necessary for producing this estimated potential catch (Friese, 1975). Although figures for subsequent years are unavailable at this time, with improved stock condition, etc., it can be assumed the value of the fishery has greatly increased.

Economic values related to recreation are unavailable but are assumed to be high due to high concentration of the population adjacent to the Susitna River. Non-consumptive economic values are also unavailable.

Baseline environmental fisheries studies have been conducted by ADF&G intermittently since 1974. The projects were financed with Federal funding averaging $29,000 per year in 1974, 1975 and 1976, with an allocation of

$100,000 in 1977. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) first contracted with ADF&G to conduct a one-year assessment of salmon populations utilizing the Susitna River in the vicinity of the proposed Devils Canyon dam site during 1974. The objectives of these studies were to determine the adult salmon distribution, relative abundance, and migrational timing and to identify juvenile rearing areas (Barrett, 1974). Funding was received in 1975, 1976, and 1977 from USFWS to continue and expand these studies and to monitor the physical and chemical parameters associated with the mainstem Susitna (USFWS, 1976, and Riis, 1977). Additional baseline studies were not initiated during 1978 due to lack of funding.

The construction and subsequent operation of the Devils Canyon and Watana dams will result in long-term ecological changes. The two dams will inundate an estimated 50,550 acres of aquatic and terrestrial habitat of the Susitna River Basin upstream of Devils Canyon. Regulation of the mainstem river will substantially alter the natural downstream flow regimes and temperature gradients. Secondary impacts such as improved road, water, and floatplane access may create some additional problems in regulating hunter and fishermen harvest.

Our preliminary studies have concluded that the effects of impoundment and construction activities will include alteration of the natural flow regimes, water temperatures, water chemistry, and transport of materials. Habitat requirements of the critical life history phases for passage, spawning, egg incubation, and juvenile rearing of the Susitna salmon species studied are quite specific. The USFWS Cooperative Instream Flow Service Group has developed criteria which demonstrate the narrow tolerances of certain salmonid and resident species to the hydraulic parameters of velocity, depth, substrate, and temperature (Bovee, 1978). The seasonally wide fluctuations of water velocity, depth, temperature, substrate and sediment of the free flowing mainstem Susitna, its sloughs and tributaries, determine the availability and accessability of salmon habitat. Thus, any alterations to the existing Susitna aquatic ecosystem which would restrict or reduce the availability of required habitat, will also reduce fish production in the Susitna Basin and Cook Inlet estuary.

For example, it is important to note that although the Susitna River is glacial and turbid more than half of the year, the river clears during the winter months and becomes the major winter rearing area for salmonids, assuming this function from its clearwater tributaries and sloughs which freeze and dewater. Chinook and coho salmon, which are of high interest to both commercial harvesters and sport anglers in the Cook Inlet area, are dependent on these freshwater rearing areas of the Susitna for a period of one to two years before migrating to saltwater. Should construction of the dam complex take place, these important rearing areas will be lost downstream of the dams because the river will be turbid year-round and have a higher water velocity due to a reversal of the natural seasonal flow and stage conditions after construction.

I hope these comments are useful to you. I appreciate the opportunity to express the Department's views on this matter.

Sincerely,

Ronald O. Skoog
Commissioner

ALASKA POWER AUTHORITY

FEB 8 RECD

333 WEST4th - SUITE 31 - ANCHORAGE ALASKA 99501

February 6, 1979

Senator Bill Sumner
Chairman
Resources C mittee
Alaska Stat egislature

FEB 8 RECD

FEB 8 RECD

Dear Senator Sumner:

The attached letter from the Corps of Engineers, Alaska District, details the quarterly obligation schedule for Program Activities for the Susitna Project Feasibility Analysis. The Program Activities are described beginning on page 45 of the Susitna Hydropower Plan of Study. Figure 8 on page 44 reflects $6.7 million in the accumulated expenditure schedule for the first 12 months of the study. The study will be ongoing for 46 months. Since the Corps of Engineers is required to have funds available on an obligation basis before work can be contracted, the budget submitted in the attached letter and requested in the appropriation bill are for the 12 month obligation amount of $8.128 million.

Passage of SJR #6 and SB #63 by the Legislature is requested by February 15 due to the extremely tight time schedule necessary to initiate the study. The Corps of Engineers has equipment remaining in field from the 1978 study activities performed to answer questions raised by the federal Office of Management and Budget on the 1975 Interim Feasibility Report. Equipment and materials can only be moved into the Watana damsite economically by winter cat-train overland movement. This is a requirement of BLM to protect against surface impacts to land under BLM management that is considered for potential wilderness classification. If the study is not funded, the Corps of Engineers must remove all equipment and materials presently on site this winter. If the study is funded, the Power Authrity must enter into agreements with the Corps of Engineers, and complete a bond sale to finance the cost of the entire study as authorized by SJR #6. The Corps of Engineers must mobilize 2 to 3 times the present amount of equipment on site, enter into contracts for support and operations, and enter the study area by winter cat-train access while sufficient snow cover and freeze conditions still exist.

If you have any additional questions relative to the costs of the study or the necessity for swift action by the Legislature, please contact this office at 277-7641. The Power Authority will be represented at the hearings scheduled by the Resource Committee at 1:30 pm on Friday, February 9, 1979

Sincerely,

Eric P. Yould

Eric P. Yould
Executive Director

FEB 8 REVD

BUDGET FOR CALENDAR YEAR 1979

ACTIVITY CATEGORY	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	TOTAL
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REAL ESTATE	5,000	14,000	4,000	*******	23,000
CULTURAL	5,000	82,000	2,000	2,000	91,000
FIELD CAMP	750,000	500,000	125,000	125,000	1,500,000
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BIOLOGICAL	10,000	262,000	649,000	223,000	1,144,000
POWER MARKET STUDIES	5,000	162,000	11,000	28,000	206,000
TOTAL:	$1,201,000	$2,889,000	$3,004,000	$1,084,000	$8,178,000

ALASKA POWER AUTHORITY

333 WEST4th · SUITE 31 · ANCHORAGE ALASKA 99501

April 6, 1978

The Honorable John Rader
Senate President
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Rader:

The attached resolution is submitted to the Legislature at this time in order to urge Congress to make amendments to the Federal Hydroelectric Power Development Act with respect to the proposed Susitna Hydroelectric Project and to approve the issuance of revenue bond or note indebtedness by the Alaska Power Authority for Phase I Design and Feasibility Studies pursuant to AS 44.56.180.

As recited in the proposed joint resolution, amendments to P.L. 94-587 have been drafted by Authority representatives and representatives of Senator Gravel which would permit the financing by the Authority of the costs of the feasibility studies (known as Phase I Advanced Engineering and Design) required before the construction of the dams can go forward. Under the amendments, as drafted, an agreement would be entered into providing that the United States would reimburse the Authority for any bond or note proceeds spent to prepare the Phase I report for the project if the report is either not favorable or the Authority, within three years of the completion of the report, is unable to borrow money to pay the cost of constructing the project including the cost of preparation of the report based on the security of the project or its revenues. It is further anticipated that funds would be expended by the Authority for costs of the Phase I studies only to the extent federal dollars are paid into the Fund to guarantee reimbursement and retirement of the indebtedness if either of the two events occur.

In addition to urging Congressional passage of the above amendments, the resolution constitutes the consent of the Legislature which may be required pursuant to AS 44.56.180. That section requires "a statement outlining the general design, demonstration of financial feasibility, and maximum amount of bonds estimated to be necessary for each new project (be submitted) to the Legislature and the Commissioner of Commerce and Economic Development," together with a statement as to the means of design, acquisition and construction of the project which the

Authority intends to pursue. Under this section, the Legislature is to adopt "a joint resolution approving the general design and maximum amount of bonds."

It is not clear whether AS 44.56.180 has application to the present situation where Authority financing is to be used solely to pay Phase I design and feasibility costs, rather than construction costs of the project. Inasmuch, however, as public financing will be necessary under the proposed plan anticipated to be authorized by Congress, there must be no substantial question as to whether the legal prerequisites for such financing have been fulfilled. Therefore, bond counsel and the Authority's financial advisor have recommended specific legislative approval of the issuance of indebtedness by the Authority for the purpose of the Phase I design and feasibility costs as provided for in the attached joint resolution.

In compliance with AS 44.56.180 there is attached hereto the proposed joint resolution, with its attached Susitna Status Report, and the draft Susitna Hydropower Plan of Study which, with this letter, constitutes the requisite submission to the Legislature required by AS 44.56.180

This resolution is being forwarded pursuant to unanimous approval by the five members of the Board of Directors of the Alaska Power Authority on March 17, 1978.

Sincerely,

Eric P. Yould
Executive Director

EPY/mgf
Attachments:
as mentioned

Identical letters to
Rep. Hugh Malone
Comm. Hubbard

1. Who is against the bill- Environmental Groups
   a. They say conservation will take care of the power need. Essentially a no-growth stand.
   b. Wse our oil rather than selling it to the Outside. Gallaugher says Alaska should utilize our marketable resources to the hilt.

3. Project Status-
   a. Initial $8,000,000 appropriated for core drillings to determine dam strength. This appropriation will take the study through the fall of 80. This is the first in a total 25,000,000 necessary to complete the first stage evaluations.
   b. 1984 is the anticipated completion date of these first stage evaluations.
   c. 1990 is the expected completion date for the entire roject.

4.Contacts to make- Susitna Power Now Inc.
   a. Bob Penney-Penney Mobile Home Sales of Anchorage-277-2522
   b. Lee Wareham-Alascom in Fairbanks (H)452-8505 (o)452-1756

Not a complete Copy - Some Pages are Missing

EXECUTIVE SUMMARY

This plan of study (POS) prepared by the Alaska District Corps of Engineers for the State of Alaska presents a program of activities for project feasibility analysis of hydropower development in the Upper Susitna River Basin. It provides a description of each activity along with a cost estimate for its completion. The POS fulfills a Federal planning requirement while also providing the State of Alaska an overview of the planning activities associated with a large scale water resource project. The authority for proceeding with this joint State-Federal planning program is contained in Section 203 of the Water Resources Development Act of 1976 enacted by the 94th Congress. Funding for preparation of the POS was provided by the State of Alaska on 30 June 1977.

Existing electrical generation within the study area is produced almost exclusively by fossil fuel thermal resources. However, as these resources become more scarce, and perhaps very expensive, and as the energy demand increases to a projected 15 billion kilowatt hours by the year 2000, the advantage of non-cost-inflating, renewable energy, such as hydropower, becomes apparent. A feasibility report completed by the Corps of Engineers in 1976 outlined a number of alternative plans for developing the hydropower potential of the Upper Susitna Basin and identified the most economical plan, consisting of a system of two dams--a 635-foot-high concrete thin arch dam at Devil Canyon and an 810-foot-high earthfill dam at Watana, with 365 miles of transmission line. This system is capable of developing 6.1 billion kilowatt hours of firm annual energy, roughly triple the energy consumed in Anchorage and Fairbanks in 1974. While the 1976 feasibility report provided sufficient data to support the need and economic feasibility of a plan to develop the hydroelectric potential of the Upper Susitna Basin, it was recognized that additional field data and more detailed studies would be required. The POS outlines the additional studies required to determine the most cost-effective plan, and its environmental impacts.

The activities outlined in the POS have a total estimated cost of $24.1 million over a time frame of 46 months. The schedule is based on early notification of program initiation and timely receipt of study funds to allow mobilization for field explorations prior to

the summer season and arrangements for access to the sites. A critical path method network (CPM) shows the interrelationship of some 202 activities and indicates those activities and timing most critical for completion of the project feasibility analysis. Early acquisition of field data about foundation conditions, stream flows, and topographic surveys during the short summer months is very important.

Study management of physical and fiscal progress must be rigorously maintained throughout the 46-month period. Periodic progress reports and a report of expenditures would be provided the State of Alaska for their information and review. The project feasibility analysis activities have been programmed through three progressive steps: (1) preliminary screening, (2) detailed feasibility studies, and (3) detailed design studies for Watana, access road, and transmission system.

1) Preliminary Screening: In step 1 of the study, a number of potential damsites and combinations of different dams and heights would be evaluated to identify the most economical and environmentally acceptable plan based on a preliminary calculation of benefits and costs. During this study phase, the best plan identified in the 1976 feasibility report, Watana constructed initially followed by construction of Devil Canyon, would be reexamined. This first step is estimated to cost $4.3 million and be completed in 7 months. In order to meet the overall study schedule of 46 months, field work needed in later phases of the study has been scheduled concurrently with the preliminary study phase and these costs are included in the subtotal of $4.3 million. Results of the preliminary phase will provide the first important decision point as to whether the study should continue into the second step of detailed feasibility studies.

2) Detailed Feasibility Studies: Detailed studies would be concentrated on the best plan identified in the preliminary screening. Costs and benefits would be refined using more accurate data obtained from ongoing field work. This second step is estimated to cost $16.7 million and be completed in 25 months after completion of the initial step. As indicated above, additional field work would continue during this phase of the study and these costs have been included in the subtotal of $16.7 million. Also included are concurrent activities required for detailed design studies. Completion of the detailed feasibility report will provide a firm basis for recommending for or against construction of the project, whether Federally funded, State supported under Section 203, or totally financed by the State of Alaska.

Detailed Design Studies: Assuming a favorable showing of feasibility in step 2, the last step would be detailed design of any dams, powerhouses, access roads, and some 365 miles of double circuit transmission lines and substations to deliver power to the Anchorage and Fairbanks

load centers. A detailed and accurate cost estimate for construction of the initial element in a dam system will be provided to enable a decision on funding and initiation of construction. The third step is estimated to cost $3.1 million and be completed in an additional time frame of 14 months after completion of step 2.

The above estimates of cost and time for completion of the three steps are based on the findings and recommendations contained in the 1976 feasibility report, and envision a continuation of that planning study leading to the ultimate construction of the project.

At the end of any of the three program steps, Susitna hydroelectric development could be determined to lack economic or environmental justification. Such a conclusion would result in the termination of the planning program and in Federal assumption of responsibility for expended funds. Otherwise, the study costs would be borne by the State of Alaska. Assuming a favorable recommendation, detailed plans and specifications for the first construction contract could be undertaken immediately thereafter.

PURPOSE

The function of the plan of study is to delineate the engineering, economic, social, and environmental studies associated with planning for the Upper Susitna River Basin hydroelectric project, as a prelude to State participation under Section 203 of the 1976 Water Resources Development Act. The study will provide a description of activities to be performed, an estimate of cost and time for accomplishment of these activities, an indication of the activity interdependence, and a schedule of program activities that can serve as a management tool during the study effort. Should the State of Alaska desire to work toward development of the Upper Susitna Basin outside the provisions of the 1976 Water Resource Development Act, the plan of study will serve as a guide in assessing other proposals for analyzing the economic feasibility and environmental impact of the project.

AUTHORITY

The Corps of Engineers is participating in accordance with a Memorandum of Understanding, dated 30 June 1977, between the United States of America and the State of Alaska for preparation of a "Study Outline, Susitna Project." The memorandum directs that,

> "The Secretary of the Army, acting through the District Engineer, Alaska, shall prepare a study outline for the Susitna Project for the purpose of detailing the Scope of Work required to provide engineering, environmental, economical, and social information relating to the subject project under the provisions of Title 3, Public Law 90-577, 16 October 1968, the Intergovernmental Cooperation Act of 1968."

Studies considered in the Plan of Study were authorized by Public Law 94-587, entitled "Water Resources Development Act of 1976" enacted by the 94th Congress on 22 October 1976.

The authorizing legislation provided for two options for the conduct of Phase I studies. Section 160 states that,

> "The Secretary of the Army, acting through the Chief of Engineers, is authorized to undertake the Phase I design memorandum stage of advanced engineering and design of the project for hydroelectric power on the Susitna River, Alaska, in accordance with the recommendations of the Board of Engineers for Rivers and Harbors in its report dated June 24, 1976, at an estimated cost $25,000,000. This shall take effect upon submittal to the Secretary of the Army by the Chief of Engineers and notification to Congress of the approval of the Chief of Engineers."

The possibility for State of Alaska funding of Phase I studies is provided for by Section 203(e) which states,

> "The Secretary is authorized to make expenditures from the [Alaska Hydroelectric Development Fund] for the Phase I design memorandum stage of advanced engineering

and design for any project in Alaska that meets the requirements of Subsection (a)(2) of this Section, if appropriate non-Federal public authorities, approved by the Secretary, agree with the Secretary, in writing, to repay the Secretary for all the separable and joint costs of preparing such design memorandum, if such report is favorable. Following the completion of the Phase I design memorandum stage of advanced engineering and design under this subsection, the Secretary shall not transmit any favorable report to Congress prior to being repaid in full by the appropriate non-Federal public authorities for the costs incurred during such Phase I. The Secretary is also authorized to make expenditures from non-Federal funds deposited in the fund as an advance against construction costs."

Funds were provided for preparation of the Plan of Study by the State of Alaska on 30 June 1977.

PROBLEMS & NEEDS

Most of the present commercial electrical power in the Southcentral Railbelt area is derived from fossil fuel thermal and turbine generation. The Anchorage-Cook Inlet area had a total installed capacity of 504.8 megawatts (MW) in 1976. Natural gas fired turbines were the predominant energy source with 434.9 MW of installed capacity. Hydroelectric capacity of 45 MW was available from the Eklutna and Cooper Lakes projects. Steam turbines comprised 14.5 MW of capacity, and diesel generation, mostly in standby service, accounted for the remaining 10 4 MW.

The Fairbanks-Tanana Valley area commercial utilities had a total installed capacity of 222.2 MW in 1976. Oil-fired gas turbine generation provided the largest block of power with a capacity of 136.6 MW. Steam turbines provided 53.5 MW of power and diesel generators contributed 32.1 MW.

Recent electrical power growth rates have been in the neighborhood of 14 percent annually, and although these rates are projected to decline to 7 percent beyond 1980, the year 2000 Railbelt power requirements are estimated to be 15 million megawatt-hours energy and 3,170 megawatts peaking capacity.

Estimated Railbelt Area Power Requirements

	1976	1980	1990	2000
Capacity (MW)	569	870	1,670	3,170
Energy (GWH)	2,550	3,980	7,620	15,000

While increased power capability is the need which precipitated the 1972 U.S. Senate Committee on Public Works resolution which authorized the Corps of Engineers feasibility study, other problems and needs have also been identified. These include the need to preserve natural areas, to conserve or enhance fish and wildlife resources, to respond to problems of flood damage and air pollution, to expand recreation opportunities, and to conserve fossil fuels.

It would be presumptuous to assume that any single water resources plan could satisfy all the water-related needs of a region. Even if the plan could respond to the full range of water-related problems, there are often economic, social, and ot[illegible] that must be recognized. It is therefore necessary to sele[illegible] limited set of compatible needs to which the water resources p[illegible] espond. In other words, the extent to which desirable func[illegible] of a multipurpose project could be developed is highly dependent upon which various purposes are compatible.

Needs which the project development could help satisfy, but which may be contrary to the objective of power development, include the improvement of small boat and deep draft navigation conditions, augmentation of municipal water supplies, and development of an extensive irrigation system. The plans for power development are also relatively unresponsive to the desire for preservation of what could be termed the "Alaskan way of life," including prevention of further population growth, prevention of additional industrialization, and curtailment of urban expansion.

PROJECT DESCRIPTION

The plan of development recommended by the Corps of Engineers in 1976 consists of two dams and related reservoirs and powerplants to be constructed on the Upper Susitna River with transmission facilities to provide power to the Anchorage and Fairbanks load centers.

Watana and Devil Canyon were the two projects recommended in 1976. These two projects could produce 6.1 billion kilowatt hours (kWh) firm annual energy, 800 million kWh average annual secondary energy, and 1,392,000 kilowatts of dependable capacity based on a 50 percent system load factor. Watana, the first project to be built under this plan of development, would consist of an 810-foot-high earthfill structure located at river mile 165. The reservoir would extend 54 miles upstream and have a surface area of 43,000 acres. The total storage capacity would be 9,624,000 acre-feet after 50 years of sediment inflow. The useable storage capacity would be 6,100,000 acre-feet. Devil Canyon, 32 miles downstream of Watana, would be a concrete thin-arch dam with a maximum structural height of 635 feet. Construction of the Devil Canyon project after completion of Watana would be phased to meet the projected electrical energy demands of the Railbelt area. The Devil Canyon reservoir would inundate 7,550 acres and 28 miles of natural river, and would provide 1,050,000 acre-feet of storage capacity. Intake structures would be situated to allow a maximum power pool drawdown of 175 feet, but when operated in conjunction with the upstream Watana reservoir, Devil Canyon annual drawdown would normally be less than 5 feet.

The transmission line would be approximately 365 miles in length consisting of double towers, each carrying a single conductor three-phase circuit. About 25 percent of the energy would be provided to the Fairbanks load centers, with 75 percent being utilized in the Anchorage area. A basin map shows the location of the two dams (Figures 1 and 2). Detailed layouts of Devil Canyon and Watana are shown on Figures 3 and 4.



FIGURE 1. ERTS satellite photograph of the Upper Susitna River with the general location of the Devil Canyon and Watana Projects shown in the circles. Devil Canyon project, on the left, is roughly 65 miles upstream from Talkeetna, and Watana is 32 miles above Devil Canyon. Shown in the upper right corner of the photo are the glaciers of the Alaska Range, which provide much of the flow for Susitna River.

ENVIRONMENTAL SETTING

TOPOGRAPHY

The Upper Susitna River Basin contains several topographic features which provide a conglomerate stream flow heavily influenced by specific meteorological events. The basin was shaped by volcanism, diastrophism, glacial erosion, and marine deposition. The basin, as shown in Figure 1, is a fan-shaped area comprising about 6,160 square miles and is bordered by the Alaska Range to the north, the Talkeetna Mountains to the southeast, and flat, low-relief areas to the southwest.

Most of the basin has a well-defined branching stream pattern with a main channel emanating from glacial headwaters in the extreme northern segment of the divide. Below the glaciers, the braided stream traverses a high plateau composed of aggraded alluvial sediment, and then meanders several miles south to the confluence with the Oshetna River. It then takes a sharp turn to the west and flows through a steeply cut, degrading channel until it exits the basin at Gold Creek. The contributing glacial area comprises only 4 percent of the entire basin, but summer glacial melt provides a considerable portion of the total streamflow. By contrast, the flat, glacially carved Lake Louise area in the southeastern portion of the basin provides comparatively little flow from its 700-square-mile area.

The mountains within the basin reflect the influence of the Pleistocene Ice Age, during which glacial advancement over the topography planed the mountains and gave the basin surface a rounded and smoothed appearance. The highest elevation within the basin is 13,326 feet, and the lowest elevation is 740 feet. The basin relief implies a steep channel slope; however, variability of the slope compared to other mountain streams is somewhat reversed. The aggraded channel in the upper reaches of the basin has channel slopes in the range of only 4 to 7 feet per mile, while the lower basin channel drops as much as 37 feet per mile.

Main tributaries to the Susitna River have an even higher range of channel slopes. The deeply incised river channel below the Tyone River contrasts with the many traditional Alaskan U-shaped valleys, remnants

of glacial advances. The absence of broad flood plains in the lower basin results in high stages during high runoff due to confined flow areas. The Susitna River alluvium has developed into a continuous effluent aquifer. Most of the tributary aquifers do not sustain winter flow.

CLIMATE

The climate of the Upper Susitna Basin is characterized by cold dry winters and warm but moderately moist summers. The yearly precipitation distribution shows that 64 percent of precipitation occurs from June through October. Within the Railbelt area, the climate falls into three categories: (1) a zone dominated almost entirely by maritime influences, (2) a zone of transition from maritime to continental climatic influences, and (3) a zone dominated by continental climatic conditions. The Upper Susitna Basin falls within the transitional zone. The contrast between the maritime-influenced areas of the southern Kenai Peninsula and the continental conditions at Fairbanks is marked. Within the confines of the Upper Susitna Basin, away from the moderating influence of maritime air, there are greater temperature extremes than on the coast of the Gulf of Alaska. Extreme winter temperatures are caused by polar air masses which flow in from the north.

Mean annual precipitation in lower elevations of the basin would be expected to range between 18 and 22 inches, while precipitation in higher elevations, because of orographic effects, would be expected to reach 80 inches per year. Mean annual snowfall would range from 60 inches in the lowlands to as much as 400 inches in the high mountains. Freezeup in the highest reaches of the Susitna River starts in early October, and by the end of November the lower regions of the river are icebound. The river breakup begins in early May, and within two weeks of breakup the river tributaries are free of surface ice.

BASIN STREAMFLOW

The annual streamflow patterns of the Upper Susitna River and most of its tributary streams are best described as providing perennial flow. The main tributaries of the Susitna River consist of the East and West Fork Susitna Rivers which originate in the northern section of the drainage basin, the Maclaren River which originates in the northeastern portion of the basin, and the Tyone River which emanates from the southern reaches of the basin.

The flow regime of the Susitna River is seasonal, with more than half of the yearly streamflow occurring from May through September Summer streamflow consists mainly of snow and glacial melt combined with surface runoff from rainfall. Winter flows are restricted almost entirely to groundwater inflow. Primary water sources for the Maclaren and East and West Fork Susitna Rivers are the numerous glaciers which rim the northern basin divide in the Alaska Range.

The Tyone River contribution is mostly reservoir outflow from the multitude of lakes located within its subbasin. Winter flows begin in early November and are composed of baseflow from subsurface storage. When breakup nears in March and April, subsurface storage is depleted to the extent that many small tributaries cease flowing, and the Susitna River flow shrinks to its seasonal minimum. Following breakup, flows increase rapidly with the onset of spring snowmelt. As summer temperatures increase, glacial flow accentuated by rainfall runoff becomes the predominant river source. The cycle repeats itself with winter freezeup.

The variability of streamflow within the basin is extreme. The following table represents average annual streamflow conditions for portions of the basin above the Gold Creek gaging station.

Flow Variations in Upper Susitna River Basin

Gaging Station	Drainage Area (Sq Mi)	Percent of Gold Creek Drainage Area	Percent of Gold Creek Streamflow
Maclaren River near Paxson	280	4.5	10.0
Susitna River near Denali	950	15.4	27.6
Susitna River near Cantwell	4,140	67.2	64.8
Susitna River at Gold Creek	6,160	100.0	100.0

Nearly 38 percent of the Gold Creek streamflow originates from 20 percent of the area. This large percentage of streamflow is contributed by glaciers in the upper portion of the basin and by high precipitation runoff rates which result from impervious glaciers. In addition, it is suspected that the mountains form a geographic constraint, which causes excessive precipitation in this area in relation to the remainder of the basin.

By contrast, the Cantwell gaging station shows a r off rate not consistent with that which could be expected below the glaciers, indicating that below the Paxson and Denali stations a large area contributes little annual streamflow. This large, low contributing area is believed to be the flat, 700-square-mile Lake Louise area. Below the Cantwell station, flow percentages increase slightly to a more nearly normal area-discharge relationship for the basin.

GEOLOGY

The geology of the Upper Susitna River Region reflects the complex processes which make up its geologic history. It has undergone subsidence, marine deposition, volcanic intrusion, mountain building, glacial planing, and erosion. In the upper reaches of the river, the valley floor is composed of reworked glacial moraine and lakebed deposits, which are thought to be approximately 200 feet thick. Materials range in size from silt to boulders. Adjacent mountains are composed of metavolcanics and metasediments (lava flows and sediments which have been changed by heat and pressure), and the bedrock beneath the valley floor is also assumed to be a complex of rocks altered from preexisting rock by pressure, heat, and changes in the chemical environment. In the midsection of the Upper Susitna, massive intrusions of granitic rock have warped and uplifted the region. Subsequent vigorous earth movement resulted in the building of the Talkeetna Mountains. Throughout this area the metavolcanics and metasediments are warped and twisted; medium-grained granite intrusives are exposed intermittently along the valley walls. At the lower end of the drainage, glacial action is evidenced by the absence of overburden materials at higher elevations and the scouring and planing of the underlying bedrock.

REGIONAL TECTONICS

Tectonics deals with rock structures and external forms resulting from large movements or deformation of the earth's crust. Two major earth tectonic features bracket the Upper Susitna Region. The Denali Fault, active during Holocene (Recent) time, is one of the earth's major fractures. It lies approximately 43 miles north of the proposed Devil Canyon damsite. A second arcuate fracture, the Castle Mountain Fault, lies some 75 miles to the south of the river basin. Bisecting the region in a northeast-southwest direction and truncated by the Denali

Fault, the Susitna Fault lies approximately 2.5 miles west of the proposed Watana Dam. Large, prominent lineaments pass through the region trending northeast-southwest, and the river valley is controlled by many of these features.

SEISMOLOGY

Since it is located in an area of major faults, it is to be expected that the Upper Susitna Basin would lie in a zone of major seismic activity. During the period of record, through the end of 1970, 262 earthquakes had been recorded within a radius of 150 miles of the proposed Devil Canyon site (Kachadoorian 1974). Of these, 229 had a magnitude on the Richter scale of less than 5.3, while 20 were between 5.3 and 7.0, eleven were between 7.0 and 7.75, and two were greater than 7.75. An evaluation of the potential exposure of the Upper Susitna damsites to seismic activity was made by the Bureau of Reclamation. In view of the recent advances in seismic technology, faults capable of influencing major design features will be reevaluated for their potential Maximum Credible Earthquake.

VEGETATION

Most of the Upper Susitna River Basin is classified as moist or alpine tundra although the area adjacent to the main river channel below the Maclaren River is classified as either upland or lowland spruce-hardwood forest. Major timber species of the canyon slopes and surrounding benchlands are birch, balsam poplar, black cottonwood, white spruce, and black spruce. Overall, timber is of poor quality, varying widely in size, but mostly small and of little or no commercial value. Two distinctly different plant communities occupy portions of the alternate transmission corridors. Bottomland spruce-poplar is confined to the broad flood plains, river terraces, and warm slopes of major rivers. Throughout the lowlands, another distinct vegetation type is low brush-bog/muskeg. Common plants include tamarack, black spruce, alder, willow, and various berries.

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FISH AND WILDLIFE

Both resident and anadromous fish inhabit the Susitna Basin. Salmon are known to spawn in many of the sloughs and tributaries of the Susitna River below Devil Canyon; however, surveys indicate that salmon may be unable to ascend the turbulent Devil Canyon and thus may be prevented from migrating into the Upper Susitna River Basin. Grayling, rainbow trout, lake trout, Dolly Varden, whitefish, and burbot comprise the principal resident fish populations.

Mammals and birds found in the Upper Susitna Basin are representative of wildlife species common to interior Alaska. Important game species consist of moose, caribou, and Dall sheep. Wolves, wolverine, bear, and smaller fur bearers inhabit the basin. Birds are predominantly seasonal, and include waterfowl, raptors, and passerine species. The peregrine falcon is the only rare or endangered species presently known to frequent or inhabit the basin.

PUBLIC INVOLVEMENT AND COORDINATION

The objective of public participation is to further involve the public in the project feasibility study, in order to insure that the study responds to public views and preferences to the maximum extent possible. As used here. the term "public" includes other Federal, State, and local government entities and officials; public and private organizations; and individuals interested or potentially interested in the Susitna project.

SUMMARY OF PREVIOUS PUBLIC INVOLVEMENT

In conjunction with the 1976 Corps of Engineers feasibility study, numerous comments were received at public meetings and from written statements on the report findings and reccommendations. Over 65 agencies, organizations, and individuals have provided written comments or oral testimony. In general, comments focused on the need for additional studies before a final decision on construction of a project of such magnitude. The Chief of Engineers has responded to all comments received during review of his draft report and companion Environmental Impact Statement and agreed that additional studies are required before a recommendation can be made for construction. The activities outlined in this plan of study reflect public comments and concerns expressed on the 1976 feasibility report.

Comments of Governor Jay Hammond expressed in his letter of November 17, 1976, to the Chief of Engineers are quoted as follows:

> "I concur in the recommendation by the Board of Engineers report that further study effort is needed for a project of this magnitude. I agree that additional detailed studies, including those addressed by my task force, will be required to determine the significant impacts associated with the magnitude and complexity of the project. Our task force recommendations will be supplied to the District Engineer.

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"The information obtained from the District Engineer concerning studies proposed in the next stage coincides well with the environmental, socio-economic and technical studies identified by the State Task Force during review of the Draft Environmental Impact Statement. As these detailed studies are addressed, coordination should be maintained with the State's designee to assure that assessments are answering those points raised in the task force report and to insure that the information developed will be adequate on which to base future State recommendations."

INTERAGENCY COORDINATION

Coordination will be carried out on a continuing basis with Federal, State, and local agencies having interest in the study. Should the planning for Susitna hydropower proceed in the joint State-Federal mode, an extremely close working relationship is envisioned between the Corps of Engineers and the State of Alaska. To ease the coordination problems inherent in a planning program of this magnitude, a single point of contact would be established for the State and a single point for the Corps of Engineers. These would be the Alaska Power Authority on the one hand, and the Alaska District on the other. This State agency would coordinate State reviews of study progress, and formulate feedback into a consolidated State position. The Alaska District would be responsible for and would coordinate all study activities, thus serving as the point of interface between the State and those engaged in accomplishing the project feasibility analysis. Included in this group would be various Corps of Engineers elements, other Federal agencies, private consultants, and State agencies, such as the Department of Fish and Game, that will provide special technical services.

In addition to the ongoing coordination with agencies at all levels of government, there will be an opportunity for formal review and comment after distribution of the draft Project Feasibility Analysis Report and accompanying draft supplemental Environmental Impact Statement. The substance of all comments received will be incorporated in the final report and impact statement supplement.

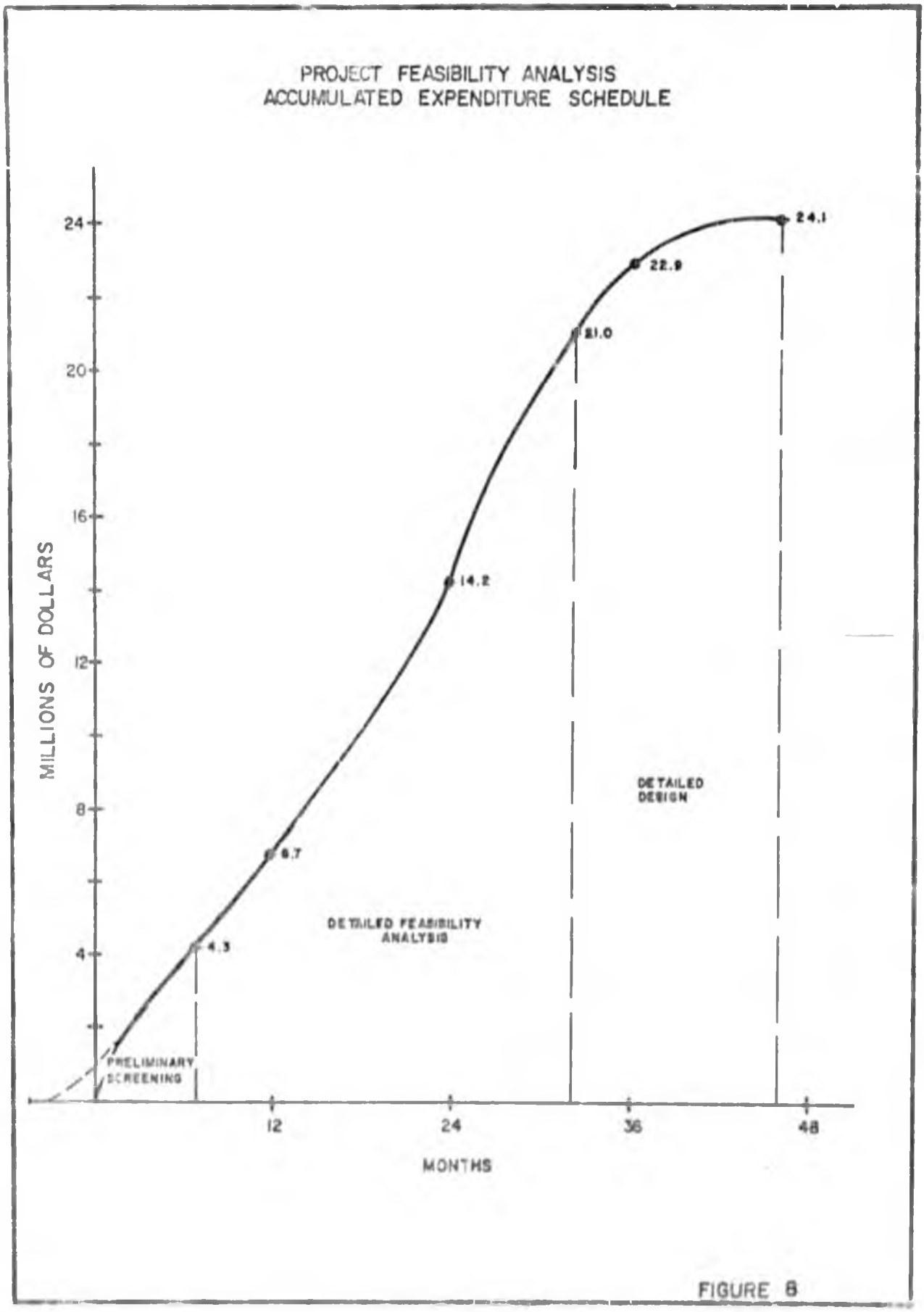

PROJECT FEASIBILITY ANALYSIS
ACCUMULATED EXPENDITURE SCHEDULE
MILLIONS OF DOLLARS
24
20
16
12
8
4
24.1
22.9
21.0
14.2
6.7
4.3
PRELIMINARY SCREENING
DETAILED FEASIBILITY ANALYSIS
DETAILED DESIGN
12
24
36
48
MONTHS

FIGURE 8

DESCRIPTION OF PROGRAM ACTIVITIES

This section contains descriptive summaries and cost estimates for each of some 201 separate activities grouped into 14 major categories. These activities and costs include all items required for the preliminary screening, for the detailed feasibility studies, and for the detailed design activities associated with the initial dam and powerhouse along with transmission lines and access road. A listing of the major categories and cost subtotals follows:

CATEGORY	ACTIVITIES	ESTIMATED COST (in $1000)
Survey	SY-1 thru SY-7	$ 1,130
Hydrology	HY-1 thru HY-27	1,295
Environmental Water Quality	EN-1 thru EN-4	330
Economic Studies	EC-1 thru EC-7	84
Recreation	R-1 thru R-4	56
Plan Formulation	PF-1 thru PF-15	124
Power Studies	PS-1 thru PS-4	198
Power Market Studies	PM-1 thru PM-13	547
Foundations and Materials	FM-1 thru FM-26	9,770
Design	D-1 thru D-39	4,001
Real Estate	RE-1 thru RE-5	59
Cultural Resources	C-1 thru C-2	110
Field Camp	FC-1 thru FC-2	1,625
Biological Studies	B-1 thru B-21	4,263
Reports, Reviews, and Public Participation	RRP-1 thru RRP-26	450
TOTAL COST		$24,092

Per Cheryl 2/24/80 From Anchorage Hearings

SB 294 suggestions:

William Wood, Mayor, City of Fairbanks

add to purpose of project that it include other communities as well as the "entire railbelt area"

Vince O'Reilly, Mayor City of Kenai

other financing options should be added such as it shall be financed by any other appropriate source either private or government

Dave Hutchens

page 2, section (5) ~~OR~~ add to the information that the legislature should provide should include the interim recommendation of the Akers-American feasability study

MIKE GRAVEL
ALASKA

United States Senate

WASHINGTON, D.C. 20510

May 25, 1977

Honorable Jalmar M. Kerttula
Alaska Senate
Pouch V
Juneau, Alaska 99811

Dear Jay,

Most of Alaska's electric power is generated by fossil fuels. As a result of the growing scarcity of our non-renewable energy sources the cost of electricity in Alaska will continue to increase. If we hope to sustain economic growth while maintaining our environment we must look to renewable sources for the generation of electricity.

I have enclosed for your information an update on the hydroelectric development of the Susitna River. This project is capable of supplying a significant portion of our electric needs at low rates. I feel that this project is very important for the future of Alaska and hope that we can all work together to bring low cost electricity to our state.

If you have any questions about the project or would like to comment on any aspect of the development please feel free to contact me.

Sincerely,

Mike

Mike Gravel

RUSSELL B. LONG, LA., CHAIRMAN

HERMAN E. TALMADGE, GA.
ABRAHAM RIBICOFF, CONN.
HARRY F. BYRD, JR., VA.
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ROBERT J. DOLE, KANS.
BOB PACKWOOD, OREG.
WILLIAM V. ROTH, JR., DEL.
PAUL LAXALT, NEV.
JOHN C. DANFORTH, MO.

MICHAEL STERN, STAFF DIRECTOR
GORDON S. GILMAN, CHIEF MINORITY COUNSEL

United States Senate

COMMITTEE ON FINANCE
WASHINGTON, D.C. 20510

May 27, 1977

I believe you have already received a letter intended to accompany my recent update on the Susitna Power Project.

The Report itself was inadvertantly omitted, and it is enclosed here. Please accept my apologies.

Sincerely,

Mike Gravel

THE SUSITNA POWER PROJECT

A Report to Alaskans

by

Senator Mike Gravel

Chairman, Water Resources Subcommittee
Committee on Environment and Public Works

May 23, 1977

INTRODUCTION

The Susitna Power Project holds the promise of plenty even in the midst of plenty for the state of Alaska.

Even as the state reaps the revenues of its North Slope oil, citizens of Alaska can be enjoying an energy supply which, unlike petroleum, will be environmentally clean, increasingly cheap as the years go by, and virtually inexhaustible. While we export oil to the Lower 48, we can ourselves take advantage of one of Alaska's great renewable resources: water power.

The project, which involves the construction of two large dams on the Susitna River, about halfway between Anchorage and Fairbanks, can supply more than 60 per cent of the power needs projected for the railbelt area by 1990. As proposed, it will involve a new method of financing which can bring about construction in record time -- a feat which saves money in interest costs -- while having more financial, engineering and environmental safeguards than other dam projects.

The dams can belong to the state rather than the federal government. And through price equalization, they can help bring what will be some of the hemisphere's lowest-cost electricity not only to the railbelt area (now with 75 per cent of the state's population), but throughout all of Alaska.

BACKGROUND

Alaska's water resource is truly vast. One third of the freshwater runoff of the entire nation is found in Alaska. The Yukon River is North America's third largest. More than half the hydropower potential remaining in America is in our state.

Studies have been conducted over the last 25 years to identify viable hydropower sites in the state, especially in the relatively populous railbelt area, which encompasses the communities on the Fairbanks-Anchorage-Seward rail line.

The Bureau of Reclamation first brought attention to the possibilities of the Susitna in a 1953 report. Another Bureau study was released in 1961, recommending the construction of a dam on the Susitna at Devil Canyon. This recommendation was not pursued, and two events intervened to delay further consideration of a Susitna hydroelectric project.

The first was the abortive Rampart Dam proposal. Sen. Ernest Gruening, who held the same position I now hold on the Public Works Committee, proposed, with the Army Corps of Engineers,

a huge dam at the Yukon's Rampart Canyon 100 miles northwest of Fairbanks. A heated national debate arose over the environmental liabilities of the Rampart proposal, and a subsequent cost/benefit analysis showed the project to be economically undesirable.

The Rampart proposal was dismissed just as a second water crisis arose: the 1967 flood at Fairbanks. For the next several years, the need for flood control drew attention away from the question of hydroelectric development in the state.

In 1972, however, the Senate Public Works Committee ordered the Corps of Engineers to renew the study of power options, including hydroelectric potential, for the railbelt. By the time I became chairman of the Water Resources Subcommittee in 1973, the Corps was reporting that preliminary data pointed to the Susitna at the Devil Canyon site. Its location, its high power potential, the stabilizing effect it could have on the energy systems of the railbelt area and the fact that it would reduce the need for new fossil fuel plants in Alaska: all these factors were in its favor. I acquired accelerated funding for the study, and last year the Corps finalized its recommendation.

The Corps suggested to the Congress a $1.5 billion project composed of a 635-foot concrete dam at Devil Canyon, 14.5 miles east of the Alaska Railroad at Gold Creek, with four 194-megawatt generating units; and an 810-foot earthfill dam at the Watana site, 31 miles upstream from Devil Canyon, with three 264-megawatt units.

The Watana Dam would be built first. Together the dams would generate an average 6.91 billion kilowatt hours per year. According to the Corps, demand for electricity in the railbelt area, presently about 2 billion kilowatt hours annually, will reach 5.5 billion by 1980 and 15 billion by 2000.

Watana would be on line in 1986, Devil Canyon in 1990. They would comprise the largest project in Corps history -- in fact, the largest hydroelectric development in North America.

FINANCING -- THE OLD WAY

At first glance, the prospects for a dam project on the Susitna would seem very bright.

The site is particularly well-suited to hydroelectric development. Environmentalists had cited it during the Rampart

controversy as a preferable alternative because it would do relatively little harm to fish and wildlife habitat. And as chairman of the Senate subcommittee, I was in a position to support the project.

But in my committee work, I had learned that the prospects were in fact not bright for any hydroelectric project, no matter how promising the project might be. Furthermore, the prospects were declining year by year.

The traditional method of financing a federal hydroelectric project is through Congress's dual procedure of authorization (basically, permission to act) and appropriation (making money available for the action). These two distinct functions must be completed for each step in the making of the dam.

The initial surveys, a plan of study for Phase I, Phase I itself (involving advanced engineering and design, a final environmental impact statement and cost/benefit economic analysis), and the actual construction: all of these, must be separately authorized, and money than appropriated. Furthermore, although authorization is needed only once for each phase of the project, the money is appropriated only as needed on a yearly basis. This means that, during the long planning and conceptual phase, Phase I, and during the construction phase, appropriations must be made again and again, year after year, for a single project.

All of this is time-consuming in itself. But more than that, the appropriations process is a political, and hence a relatively capricious, one. It is subject to all the winds of the American political process, including the popularity or unpopularity of dams and federal projects in general. These funds must compete with all other appropriations.

Engineers may know the right amount of money to request year by year in order to complete a project on an optimun schedule. But members of Congress like to think of themselves as hard-nosed on the subject of federal spending, and members of appropriations committees are often likely to trim the requests that come before them.

The result of this process is predictable. In the case of federal water projects they are never finished on schedule. They drag on, sometimes for several decades, and costs go up.

A few examples are instructive:

The Harry S. Truman Dam and Reservoir in Missouri is a multi-purpose project which was authorized in 1954. Construction money was first appropriated in 1965. Total project cost at that time was estimated to be $129.5 million, and completion was scheduled for 1971. Now, in fiscal year 1977, the cost estimate has climbed 219 per cent to $413 million. The project is 51 per cent done, and is scheduled for completion in December 1980, 26 years from original authorization.

The Tennessee-Tombigbee waterway in Alabama and Mississippi will provide a connecting waterway system considered to be national in scope. It was authorized in 1946 at an estimated $120 million. Construction funds were first appropriated in 1971. The estimated total cost at that time was $361.3 million. The 1977 cost estimate for this project is $1.5 billion. It is 6 per cent complete and the estimated completion date is March 1986, 40 years from original authorization.

The Lower Granite Lock and Dam in Washington, part of the Lower Snake River Multiple Purpose Project, was authorized in 1945 at an estimated cost of $82 million. Construction was initiated in 1965. The project is now 9% per cent complete and the total estimated cost is $310 million. Date of completion is now scheduled for September 1979, 34 years from original authorization.

It has taken an average of 18 years from the time of authorization to first construction monies. Construction when initiated has been prolonged an average of five years, or a third longer than engineering schedules would require.

It should be pointed out that the Corps of Engineers suffers the criticism for cost overruns when in fact most overruns are a product of erratic cash flows necessitated by federal budget constraints.

It is also worth pointing out that the named above projects lie within the home states of some of the Senate's most powerful members: John McClellan, James Eastland, John Stennis, Warren Magnuson and Scoop Jackson. If these men have not succeeded better in advancing projects essential to their states, I can't be very sanguine about the chances for the Susitna project under the Congressional appropriation process.

The fact is that federal funding for water projects has been declining for years, even though the nation's hydroelectric capacity could be doubled. It could provide non-polluting, renewable energy and, in effect, help conserve petroleum. I myself would favor an aggressive national hydroelectric policy.

But the conclusion is inescapable that in the competition for federal dollars, the priority given to water projects is slipping lower each year. The total Corps of Engineers program is currently being funded at a rate less than half that of ten years ago. The current budget includes no new construction starts and very few new survey starts.

Ten years ago, nearly 75 per cent of the Corps' appropriation was for construction; 14 per cent was for operation and maintenance. Today construction accounts for only 58 per cent of the Corps' budget; operations and maintenance account for 27 per cent.

Funding was terminated this year for 21 ongoing Corps projects. And my prediction to the legislature last year that a change in Administrations would not mean a change in this policy has been borne out: one of President Carter's first actions was to threaten water projects underway in all parts of the country.

Already, then, it seems an inopportune time to propose a new project, the largest ever, for the Corps of Engineers. But there is yet another strike against the Susitna proposal, one which makes adequate funding for the project appear virtually impossible.

THE IMAGE OF ALASKA

Alaska's energy wealth, in particular its pipeline wealth, is no secret in Washington. In fact, stories of pipeline salaries seem to make a more vivid impression on national legislators than do the much more widespread instances of high costs for basic materials and services.

Alaska experienced a boom while most of the country underwent a recession. No matter that the blessings of a boom are very mixed. A Congressman who hears of a single 17-year-old Alaskan making a $50,000 salary as a surveyor becomes suddenly unsympathetic to the true, pervasive problems of our state.

Throughout its history as a state, Alaskans approached the Congress with the explanation that "things are different here" and "things are harder, and they cost more." This is all true, and Congress has responded: as recently as 1974, Alaska received more than twice as much in federal dollars as we paid in taxes. In highway construction and in federal land revenues, we enjoy a higher share of U. S. money than any other state.

In 1974, in fact, the government spent more per capita in Alaska than in any other state. Only in Washington, D. C. was more federal money spent per person.

In recent years, it has become apparent that our welcome is wearing thin. Alaska is to become the wealthiest state in the union. Why, a congressman asks himself, can't we pay our own way?

This situation is especially applicable to the Susitna proposal. The Corps estimates ten years for construction under optimum funding. At an estimated cost of $1.5 billion, this averages out to $150 million per year. That is 12 per cent of the total Corps construction budget for the entire country in 1977.

If that budgetary level were to remain constant over the next decade, we would have one project using, for ten years running, some 12 per cent of the total construction funds for all 50 states. And this would be for the benefit of little more than one-tenth of one per cent of our nation's population.

One thing was clear: it wasn't going to happen that way.

FINANCING -- A NEW APPROACH

How, then, could the Susitna project be b ought about? How could we even fund the $20 million Phase I w.rk, without which we could not be positive of the feasibility and the desirability of the project?

At lunch one day with Maj. Gen. Ernest Graves, chief of the Corps' Civil Works division, I found myself asking a familiar question: "Why not pay for it ourselves!"

The state could sell revenue bonds to pay the Corps to study and eventually to build the project. We would still have the advantage of federal guarantees during construction. But when the dam was finished, it would be the property of the state of Alaska, not the federal government.

Perhaps most important, if the state sold revenue bonds to pay for construction, we could be sure that the money would be available when it was needed. That would mean optimum scheduling, which would lower the cost of the dam and get power on line quickly.

I came to Alaska in February to discuss this plan with state officials, utility executives and all interested parties. The concept was well-received.

I then presented the plan to the legislature. In its refined form, it looked like this:

Through Congressional legislation, a $25 million revolving fund would be established. The money in the fund would be used to guarantee state bonds issued to pay for Phase I work on hydroelectric projects. If it was determined in Phase I that the dam should not be built, the federal government would pay off the state's bonds. The state in other words loses nothing if the project proves to be ill-advised, either because of reasons of engineering, environme t or economics.

If it was decided to go ahead with the project, the state would issue new bonds which would, 1) pay off the Phase I bonds, thus reimbursing the government for the Corps' work; and 2) pay for the construction of the dam, either by the Corps or by other private contractor. The bonds would be repaid through the sale of electricity from the project.

An Alaska Power Authority would also have to be created to handle the bond issues and run the project. State Reps. Jim Duncan and Red Swanson had already introduced legislation creating such an authority before I addressed the legislature, and this was approved a short time later.

I introduced the Hydroelectric Power Development Act in 1976 to create the revolving fund, and it was reported by the Public Works Committee in September as part of the Water Resources Act.

(In an ironic twist, the House-Senate conference committee refused to believe that the $25 million bond guarantee fund was simply that. They altered the title and the authorization so the bill became the Alaska Hydroelectric Power Development Act, making Alaska the only state eligible for the benefits of the revolving fund.)

After the bill was passed and signed into law last fall, I organized meetings between the Corps, bond attorneys and state officials. Two more needs were identified: 1) the Corps needed $100,000 to complete a Plan of Study for the Phase I work; and 2) clean-up language was needed in the authorizing bill to make clear the liability for litiginous cost overruns.

The state agreed to put up the $100,000. To have that money authorized and appropriated by the Congress would have delayed the project a year.

The clean-up language is part of this year's omnibus water bill, now reported to the Senate by the Environment and Public Works Committee.

In a word, the detailed Phase I study, meant to enable the Corps to give a firm recommendation for or against the Susitna project, is on its way. What remains to be done is to secure the passage of the clean-up language; finish the Plan of Study and pay for it; appropriate the first $6 million of the $25 million revolving fund, needed to guarantee the state's bonds; secure a resolution from the state legislature authorizing the sale of the bonds, and sell the bonds. The Corps says that if it begins next spring, Phase I recommendations can be completed by 1980.

One other facet remains. My original legislation provided for thorough independent critique of each of the segments of the Corps' Phase I report: engineering and design, environmental impact statement, and cost/benefit analysis. This provision was inadvertantly omitted by the House-Senate conferees, and I was unable to have it reinstated in this year's omnibus bill. It is my hope that the state power authority would provide for such an independent critique of the Corps' work.

ADVANTAGES

The Hydroelectric Power Development Act was originally conceived out of necessity: we simply needed an alternative to the traditional financing method, because it was clear the Susitna project could not be financed that way. As it was developed and refined, however, we recognized a number of unexpected advantages that come from the alternative financing method.

A great hydroelectric project could be completed in ten years, not 30 or 40. Not only did this mean power on line more quickly, but it meant lower construction costs. Even the higher cost of Wall Street bonds, as opposed to federal money, would be more than counterbalanced by the savings effected by an optimum construction schedule.

At the end of construction, the dam would be owned by the state. This would give the state great flexibility to provide low-cost power throughout Alaska. This is because when the construction bonds are paid, the huge power output from the project would be extremely low-cost, the operating and maintenance costs of hydro projects being very small and there being no fuel costs. The state, through its power authority, could equalize electricity rates throughout Alaska so that all residents would share in the benefit of state ownership.

Even in spite of its eventual ownership, however, the state's risk in minimized. The experience of the Corps in dam building is unassailable. The thorough Phase I study assures a reliable go or no-go decision -- and if the decision is no-go, the state does not pay the Phase I costs.

Finally, the procedure offers more discipline for safety. A traditional project undergoes the scrutiny of the Corps and the Congress. Projects under the Hydroelectric Development Act would undergo not only this scrutiny, but also that of the state power authority, the state legislature, the national bond market -- and hopefully a qualified independent source to critique the Corps' work.

ALASKA POWER AUTHORITY

333 WEST 4th AVENUE - SUITE 31 - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-2715

April 30, 1980

Honorable Bill Sumner
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear Senator Sumner:

It has been brought to my attention that there is misunderstanding concerning funding needs for the Susitna Hydropower studies. FY '81 requirements remain unchanged from those submitted by the Governor: $7.5 million in the supplemental budget request, and $3.3 million in the normal capital budget request for a total of $10.8 million. This level of funding is the minimum needed to allow the Power Authority to remain on its "critical path" of 30 months. The program additions recommended by Arlon Tussing (costing an additional $1.4 million) could be incorporated into this 30 month program if the Legislature desired.

There has been an exhaustive effort made to initiate this very complex program. Thus, in the event the project is found to be feasible in roughly the February 1981 time frame, should prior actions have been taken by this Legislature that would preclude or restrict funds that would normally have been expended in parallel with next year's legislative decisions on FY '82 Susitna appropriations, the entire program would be in serious jeopardy of grinding to a halt.

The termination of logistics, geotechnical and biological data collection contracts, as well as prime contractor, sub-contractor, Power Authority staff, and Native agreements would occur as a result of nonavailability of program funds. Should this occur, it would be virtually impossible to reinitiate this level of support in a time frame to salvage our existing program even in the event the Legislature did concur to proceed with the remainder of the study program. In all probability, the FY '82 summer field season and program continuity would be lost.

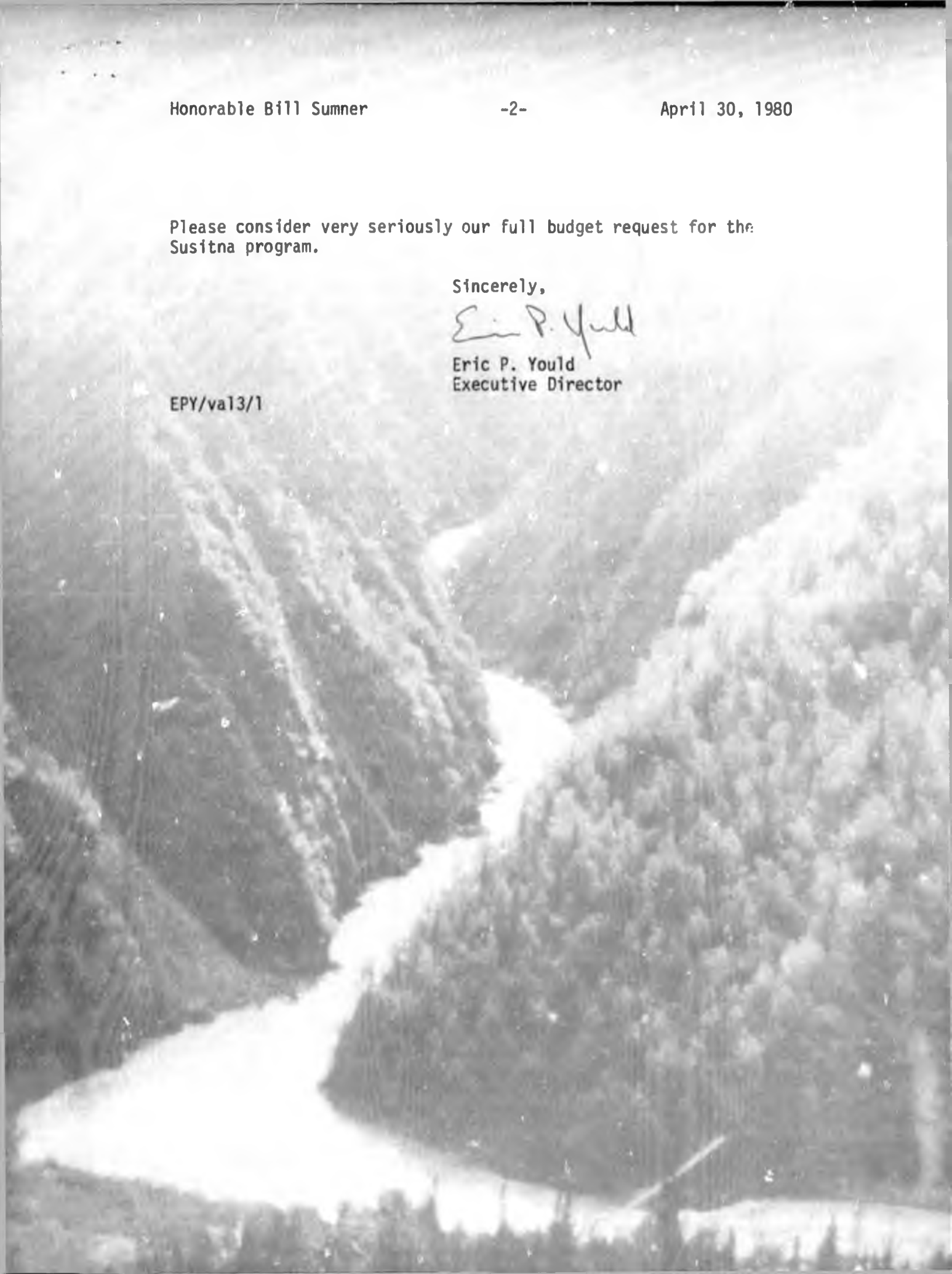
Please consider very seriously our full budget request for the Susitna program.

Sincerely,

Eric P. Yould

Eric P. Yould
Executive Director

EPY/val3/1



ALASKA POWER AUTHORITY

333 WEST 4th AVENUE - SUITE 31 - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-2715

March 12, 1980

The Honorable Bill Sumner
Chairman, Senate Resources Committee
Alaska State Legislature
2216 Culver Place
Anchorage, Alaska 99503

Dear Senator Sumner:

In February, Eric Yould, Executive Director of the Alaska Power Authority, sent you a copy of the plan of study for the Susitna Hydroelectric Project and invited you to attend community meetings at which you will receive more information and have the opportunity to influence the manner in which the work within the plan of study is to be accomplished.

The first round of community meetings will be held April 14, 15, 16, and 17, a few weeks later than originally scheduled. Hopefully, the change in schedule will give you more time to review the plan of study and prepare your questions and comments. The meetings will be held:

April 14:	Fairbanks	7:00 p.m.	Traveler's Inn Gold Room
April 15:	Talkeetna	7:00 p.m.	Talkeetna Elementary School
April 16:	Wasilla	7:00 p.m.	Wasilla Junior High School
April 17:	Anchorage	7:00 p.m.	Bartlett High School Yellow Cafeteria (near visitor parking lot) North Muldoon Road (enter Muldoon and Glenn Highway intercha[illegible])

We expect this first series of meetings to be informative and dynamic. ACRES, the consultant conducting the plan of study, will present a slide show outlining various apects of the feasibility study. Information summarizing current knowledge of alternatives to the Susitna Hydroelectric Project will also be presented. We will explain the Public Participation Program and the "Action Lists", the primary method for receiving public comment throughout the 30 month period of the plan of study.

After you have been given information, you will have time to ask questions and make comments. Some discussion will take place in small groups where there will be opportunity to share ideas. A written record of the comments of each group will be considered as part of the official record of the meeting. Since the format of this meeting does not allow time for testimony, those wishing to testify may present their comments in writing or tape record their remarks on recorders provided at the end of the meeting. Action List forms will be provided at the meeting; comments

filled out on Action List forms will be reviewed by ACRES and responded to in writing.

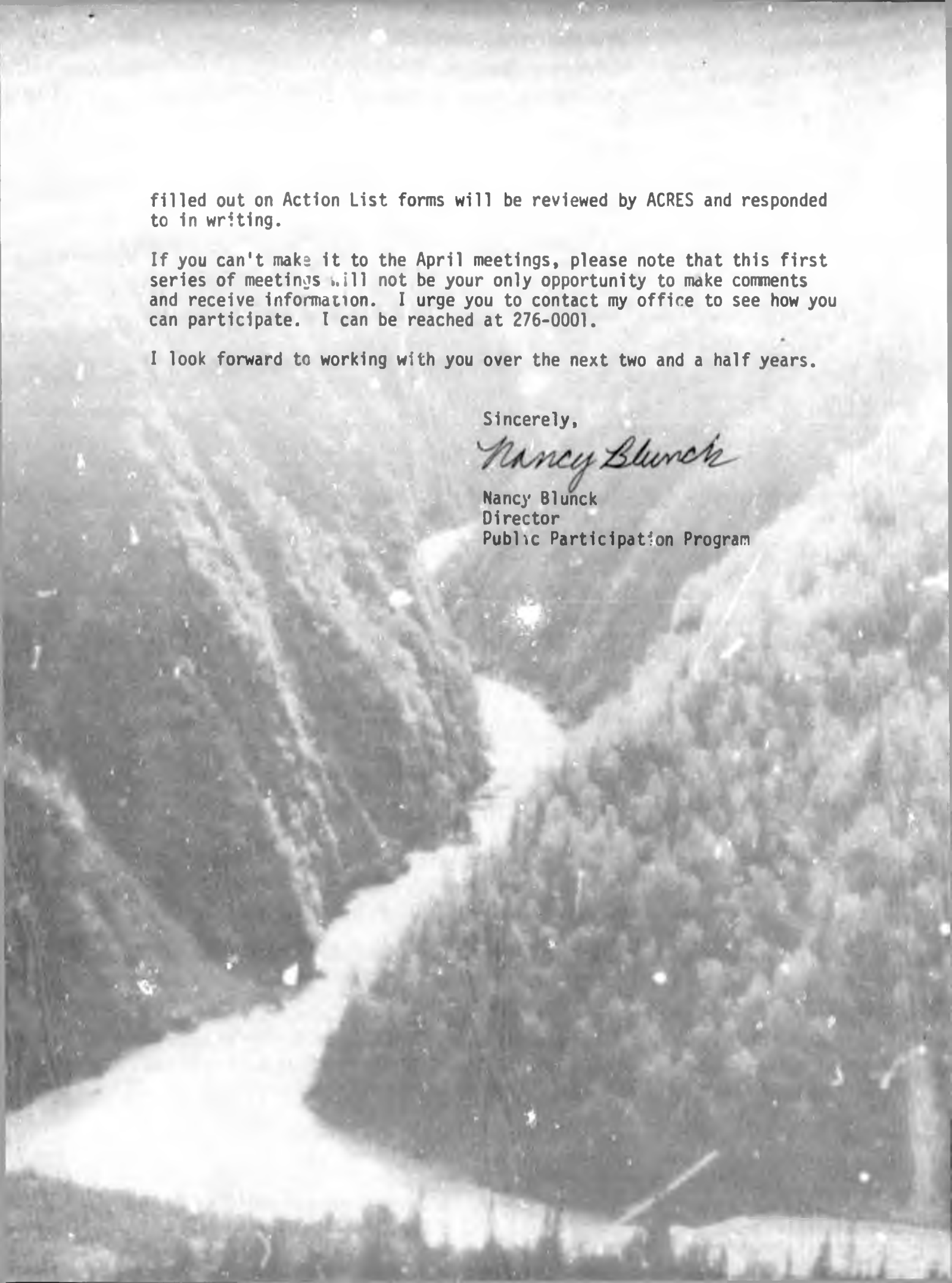
If you can't make it to the April meetings, please note that this first series of meetings will not be your only opportunity to make comments and receive information. I urge you to contact my office to see how you can participate. I can be reached at 276-0001.

I look forward to working with you over the next two and a half years.

Sincerely,

Nancy Blunck

Nancy Blunck
Director
Public Participation Program



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AGENDA Community Meetings April 14, 15, 16 and 17, 1980

WELCOME	-	5 Minutes	Power Authority
DESCRIBE PLAN OF STUDY	-	25 Minutes	Acres
DESCRIBE ENERGY SOURCES FOR THE RAILBELT	-	15 Minutes	Power Authority
QUESTIONS AND ANSWERS	-	20 Minutes	Power Authority and Acres
TABLE TOP DISCUSSION BY CITIZENS	-	20 Minutes	Power Authority
DESCRIBE PUBLIC PARTICIPATION PROGRAM	-	15 Minutes	Power Authority
DESCRIBE ACTION LISTS	-	10 Minutes	Power Authority
SHORT REPORT ON TABLE TOP DISCUSSION RESULTS	-	20 Minutes	Power Authority and Acres
PERMITS	-	5 Minutes	Acres and CIRI/H&N
CLOSING	-	5 Minutes	Power Authority

After the meeting officially ends, persons are invited to:

1. Submit written testimony.
2. Record verbal testimony.
3. Fill out action forms and turn in that night.
4. Ask questions of Power Authority staff, Acres, or their sub-contractors.

COMMUNITY MEETING -- DATES, TIMES, AND PLACES

April 14:	Fairbanks	7:00 p.m.	Traveler's Inn Gold Room
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ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

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Jns - file in Susitna file

DURING SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3701

OUT OF SESSION:
1018 WEST 6TH AVENUE
SUITE 418
ANCHORAGE, ALASKA 99501
(907) 272-4841

BILL SUMNER

Alaska State Senator

DISTRICT 7-E

COMMITTEES:
RESOURCES
CHAIRMAN
FINANCE
RULES
COMMITTEE ON COMMITTEES
JOINT INTERIM COMMITTEE
ON GAS PIPELINE FINANCING

April 16, 1980

Eve Dischner
Susitna Power Now
Post Office Box 981
Anchorage, Alaska 99510

Dear Ms. Dischner:

First, I want to thank you for all the great work you did on making the Senate Resources Committee hearing on the Susitna project such a success. Your efforts contributed immensely to the valuable testimony heard that day and again, thank you.

Now, for the even better news -- included in the supplemental capital budget is a $7 million appropriation for Susitna. I'm confident the monies will survive the scrutiny of the free conference committee and the project will make another move toward becoming a reality.

I hope you'll continue to keep in touch -- and keep up the good work!

Sincerely,

BILL SUMNER, Chairman
Senate Resources Committee

BS/cf

Abstract of
SENATE RESOURCES COMMITTEE
HEARING
on

SENATE BILL 294
"An Act relating to the Susitna River hydroelectric project"

Friday, February 16, 1980

Court House
303 K Street, Room 422
10 a.m.

The hearing was called to order by Senator Jay Kerttula. Also present on the panel were Senators Pat Rodey, Mike Colletta and Ed Dankworth.

The following individuals offered testimony on Senate Bill 294:

EARL MILLER

Benefits of the Susitna project are conducive to attracting industry and an abundance of energy will be a good economic base. Believes it is an excellent project and supports it 100%, along with SB 385 (special appropriation to the Alaska Power Authority for a transmission line).

DR. WILLIAM WOOD, Mayor, City of Fairbanks

Urges prompt action on SB 294. Also believes that the intertie established by SB 385 is one of the top pieces of legislation that will bring the greatest benefit to Alaskans. SUGGESTION: also include in the purpose of the project, other communities as well as the "entire railbelt area"; would like the passage of this piece of legislation to be a binding commitment that when the legislature adopts the Phase 1 construction plan, it mandates issuance of all permits on a timely basis.

CHUCK SMITH, Matanuska-Susitn. Borough

Urged action now on the project and requested prompt funding by the state.

VINCE O'REILLY, Mayor, City of Kenai

Urged prompt, full bringing-on-stream of the project and that the state take advantage of inflation by working out a financing plan. SUGGESTION: page 3, lines 22 - 24 states that financing shall be by appropriations from the general fund. He suggests that "or by any other appropriate source, either private or governmental" be added. (Written comments also included in record).

DOROTHY JONES, Assembly Member, Matanuska-Susitna Borough

Urged prompt passage of both SB 294 and SB 385.

LEE WAREHAM, Co-Chairman, Susitna Power Now

Urged that both projects be undertaken as quickly as possible. It is important to note that these projects may not decrease energy costs, but they will stabilize energy costs into the next century. Potential of hydroelectic power is the replacement of 15,200,000 barrels per year.

STEVE LEVI, Resource Development Council

Urged that action be taken on the two bills now.

MIKE GRAVEL, United States Senator

It is critical that the legislature go ahead with the initial funding of the project because if it doesn't, nothing will happen. Such action will be indicative of the state's firm, long-term committment to the project. At the federal level, it looks like efforts will be successful in getting tax exempt bond status for hydroelectric projects which will mean approximately $400 million the first 10 years. SUGGESTION: establishment of a state revolving fund that the Alaska Power Authority could borrow from for hydroelectric projects.

JOHN CARLSON, Mayor, North Star Borough

Urged prompt action not only because of the inflation free benefits for future energy, but also because of the employment opportunities the project will create at a time when jobs are so badly needed. (Written comments also submitted).

ART KENNEDY

Encouraged action on the Susitna project as well as exploration and development of other hydroelectic projects in the state.

IKE WALDROP, Business Manager, I.B.E.W.

Urged Susitna as a replacement for the state's reliance on fossil fuels.

MALCOLM CHEEK, General Manager, Matanuska Electric Association

Stressed that it is important that efforts are made to acquire competitive financing with a sensitivity to front-end costs so that the cost to consumers doesn't

skyrocket.

WILLARD JOHNSON, Mayor Pro-Tempore, City of Palmer

Presented a resolution by the Palmer City Council urging prompt implementation of the project. (Written comments were also submitted).

ERIC YOULD, Director, Alaska Power Authority

Previously the state had considered Susitna a federal project and four months ago the state decided that it would be a private sector project by the state. Project studies are now underway which are necessary in order to be licensed by FERC. An engineering firm has been contracted with for the field studies. That firm has sub-contracted with Alaskan firms and as a result, Alaskans are already benefiting by being put to work on the project's studies.

JEFF WELTSON, Fairbanks Environmental Center

Commented that there are other sources of energy to develop other than hydroelectric that would minimize impact on life-styles. Concerned that passage of the bill gives a go-ahead on the project, even though the feasability studies have not been completed. Does not believe there is any need for the intertie in the next 10 years and that it is a back door approach to getting the Susitna project underway. Urged, instead, funding of Golden Valley Electric Association's use of waste heat from pump stations as well as studying other possible hydroelectric sites.

RON LARSEN, Mayor, Matanuska-Susitna Borough

Urged prompt action in getting the project underway.

BUD DYE, Resource Development Council

Susitna is supported by over 80% of the Resource Development Council's membership and should be a top priority for action. Also urged support of the Bradley Lake Project. The safest investment the state can make is to take the money made from oil and put it into a project such as hyrd-oelectric power.

MIKE MIKKEL, Council Member, City of Fairbanks

Believes the project can be completed without harm to the environment -- just as we are seeing with the Trans Alaska Pipeline

GEORGE SULLIVAN, Mayor, Municipality of Anchorage

Urged prompt action on both the project and its funding. Because the Fuel Use Act of 1978 disallows the burning of gas in future facilities, Anchorage's low cost electricity will not be forever and asks that Anchorage be added to those cities benefiting from the project.

TOM STAHR, General Manager, Anchorage Municipal Light and Power

An early decision on the project's go-ahead is essential -- because the Fuel Use Act of 1978 disallows burning gas, a utility can get permission from the federal government to use gas on a termporary basis -- if they can PLAN on Susitna.

DAVID MC DONALD, Business-Manager, Laborers Union

The state must recognize that large amounts of money which our fossil fuels are bringing should be diverted to developing hydroelectric power. An excess of power will result in an economic attractiveness for new businesses, resulting in jobs. While the project may not now have any economic savings to the state, it is important for the legislature to address its other responsiblities.

DAVE HUTCHENS, Alaska Rural Village Electric Cooperatives

The Alaska Rural Village Electric Cooperative has 35,000 consumers in its area that would be affected by Susitna. Urges prompt action on both SB 294 and the intertie. Commented that while there may be other sources of energy, Susitna is probably the best and there is no reason the state should settle for any other than the best. SUGGESTION: page 2, lines 7 - 9 should include the interim recommendations of the feasability study underway. On financing, urged flexibility for options be written into the bill.

RODERICK MC DONNEL, Alaska Support Industry Alliance

The membership of the Alaska Support Industry Alliance endorses the Susitna project as a reflection of responsible development.

WRITTEN COMMENTS

The following individuals submitted written comments:

-- James F. Palin, Copper Valley Electric Association

-- Leon T. Brown, Jr., Vice President, Brown's Electric Supply Company

-- Robert Martin, Jr., P.E., General Manager, Tlingit and Haida Regional Electrical Authority

-- Roger Connolly

-- Austin G. Ward

-- Edward A. Merdes, Attorney-at-Law

-- R. L. Hufman, General Manager, Golden Valley Electric Association

-- H. Glenzer, Jr., Manager, Associated General Contractors

-- Dick Norman, General Manager, Pictures, Inc.

-- Ted Smith, Alaska Fuel Service

THOSE ATTENDING HEARING

Mr. Tom Alexander
3136 Tamworth Circle
Anchorage, Alaska 99504

Mr. Kevin Armstrong
4225 Spenard Road #99
Anchorage, Alaska 99503

Mr. Chuck Becker
Economic Development Office
Municipality of Anchorage
Pouch 6-650
Anchorage, Alaska 99502

Ms. Peggy Brewer
SR Box 675
Chugiak, Alaska 99567

Mr. Thomas Brown
I.B.E.W.
Box 31X
Anchorage, Alaska 99507

Mr. and Mrs. Richard Burg
4429 San Roberto
Anchorage, Alaska 99504

Ms. Ruth Burnett
1901 Crosson
Fairbanks, Alaska 99701

Mr. Bob Capps
Post Office Box 2415
Anchorage, Alaska 99510

Mr. John A. Carlson
520 Fifth Avenue
Fairbanks, Alaska 99701

Mr. Malcolm Cheek
MEA
Post Office Box 1148
Palmer, Alaska 99645

THOSE ATTENDING HEARING

Mr. James Clay
Post Office Box 1661
Palmer, Alaska 99645

Mr. Roger Connolly
2803 McRae Road
Anchorage, Alaska 99503

Mr. Paul A. Dunham
Machinists, Local 601
825 East 8th
Anchorage, Alaska 99501

Mr. Bud Dye
2301 Loussac
Anchorage, Alaska 99503

Mr. George F. Fuhry
I.B.E.W., Local 1547
3200 Greenland
Anchorage, Alaska 99503

Ms. Liz Gilbert
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Anchorage, Alaska 99509

Mr. Willard Johnson
Post Office Box 84
Palmer, Alaska 99645

Ms. Dorothy A. Jones
Post Office Box 109
Talkeetna, Alaska 99676

Mr. Dick Kleop
IUOE, Local 302
2510 Arctic Boulevard
Anchorage, Alaska 99503

Mr. Ron Larson, Mayor
Matanuska-Susitna Borough
Box B
Palmer, Alaska 99645

THOSE ATTENDING HEARING

Mr. Allan G. Laudert
I.B.E.W., Local 1547
5205 East 26th #5
Anchorage, Alaska 99503

Mr. Steve Levi
Resource Development Council
Post Office Box 516
Anchorage, Alaska 99510

Mr. Eugene E. Lundstrom
4316 Conifer Lane
Juneau, Alaska 99803

Mr. Scott Matthews
SR 60818
Fairbanks, Alaska 99707

Mr. David A. McDonald
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Anchorage, Alaska 99510

Mr. Jack McLean
3542 North Point Drive
Anchorage, Alaska 99502

Mr. Mike Mikell
Post Office Box 813
Fairbanks, Alaska 99707

Mr. and Mrs. Pat Miller
3115 Tanworth Court
Anchorage, Alaska 99504

Mr. Earl M. Miller
3500 Hiland Drive
Anchorage, Alaska 99504

Mr. George S. Oliver
8411 East 12th Court
Anchorage, Alaska 99504

THOSE ATTENDING HEARING

Mr. Phil O'Neill
Box 6
Sutton, Alaska 99647

Mr. Vincent O'Reilly
Post Office Box 580
Kenai, Alaska 99611

Mr. Ken Peavyhouse
FAA-AAL-4C
Box 84
Anchorage, Alaska 99513

Mr. Bob Piazza
I.B.E.W., Local 1547
2702 Denali
Anchorage, Alaska 99503

Mr. Chuck Smith
Post Office Box 1385
Wasilla, Alaska 99645

Mr. Patrick J. Smutz
HRDI
213 West 6th
Anchorage, Alaska 99501

Mr. John Spencer
Municipality of Anchorage
Pouch 6-650
Anchorage, Alaska 99502

Mr. and Mrs. T. R. Stahr
6967 Laser Drive
Anchorage, Alaska 99504

Mr. Philip J. Stutzer
1576 Karluk Street
Anchorage, Alaska 99501

Mayor George M. Sullivan
Municipality of Anchorage
1345 West 12th
Anchorage, Alaska 99501

THOSE ATTENDING HEARING

Ms. Ann Thompson
23[illegible]2 Lincoln
Anchorage, Alaska 99503

Mr. Richard Tweet
2009 Belair Drive
Anchorage, Alaska 995[illegible]3

Mr [illegible] Waldrop, Jr.
I.b.E.W., Local 1547
2702 Denali
Anchorage, Alaska 99503

Mr. Bob Walker
SR 2859
Wasilla, Alaska 99645

Mr. Dave Walsh
510 L Street
Anchorage, Alaska 99501

Mr. A. G. Ward
106 Charles Steet
Fairbanks, Alaska 99701

Mr. Lee Wareham
200 Gaffney Road
Fairbanks, Alaska 99701

Mr. James R. Webb
4318 Checkmate Drive
Anchorage, Alaska 99504

Mr. Jeff Weltzin
218 Driveway
Fairbanks, Alaska 99701

Dr. William R. Wood, Mayor
City of Fairbanks
619 Eleventh Avenue
Fairbanks, Alaska 99701

THOSE ATTENDING HEARING

Mr. Ernie Worthington
SRA Box 2050
Anchorage, Alaska 99507

349-6069
6212 Old Seward Hwy.
Anchorage, AK. 99502

BROWN'S
ELECTRICAL SUPPLY CO.

279-2450
3001 Mt. View Dr.
Anchorage, AK. 99504

February 14, 1980

Bill Sumner
Alaska State Senator
Pouch V
Juneau, AK. 98111

Dear Mr. Sumner,

I appreciate you keeping me informed on the happenings of Alaska's future, but as I won't be able to attend meeting I would like to say concerning SB 294. The only thing I can say is that it is about time we looked into using Hydro Power, a source of energy that will replenish itself.

Sincerely,

Leon T. Brown Jr. V.P.
Brown's Electric Supply Co.,Inc.

DURING SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3701

OUT OF SESSION:
1016 WEST 6TH AVENUE
SUITE 418
ANCHORAGE, ALASKA 99501
(907) 272-4541

BILL SUMNER

Alaska State Senator

DISTRICT 7-E

COMMITTEES:
RESOURCES
CHAIRMAN
FINANCE
RULES
COMMITTEE ON COMMITTEES
JOINT INTERIM COMMITTEE
ON GAS PIPELINE FINANCING

February 8, 1980

James F. Palin
Copper Valley Electric
Association, Inc.
Post Office Box 45
Glennallen, Alaska 99588

Dear Mr. Palin:

The Senate Resources Committee will be focusing on two issues vital to the growth of Alaska's economy at hearings next week in Anchorage.

On Friday, February 15th, the committee invites public testimony of SCR 41 which establishes guidelines for a state policy of economic development. On Saturday, the 16th, comments will be taken on SB 294, directing the Alaska Power Authority to begin work on the Susitna hydroelectric project.

Both hearings will begin at 10 a.m. in the Court Building, 303 K Street, room 422 and your input will be most welcome. If you're unable to join us and want to comment, written testimony will be included in each hearing's record.

I hope to see you then.

Sincerely,

Bill

BILL SUMNER
Chairman

BS/cf

SENATOR —
I'M UNABLE TO ATTEND — BUT LET'S GET GOING WITH THE SUSITNA PROJECT.
THANK YOU

RECEIVED FEB 11 1980

2/11/80

THE ALASKA CHAPTER
ASSOCIATED GENERAL CONTRACTORS
OF AMERICA, INC.

SKILL
RESPONSIBILITY
INTEGRITY

BOX 4-2500 • ANCHORAGE, ALASKA 99509
TELEPHONE (907) 276-5354

3201 SPENARD ROAD
ANCHORAGE
H. GLENZER, JR.
MANAGER

TO: Senate Resources Committee

The A.G.C. urges that construction begin on the Susitna hydroelectric project as soon as possible. Existing energy demands, the proposed Anchorage - Fairbanks power transmission interconnect project, and the Alaska economy mandate the immediate commencement of construction.

The A.G.C. also encourages utilization of the Alaska labor force and construction industry to the greatest extent possible

H. Glenzer, Jr.

GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707 Phone 907-452-1151

February 14, 1980

State Senate Resource Committee
ATTN: Senator Bill Sumner, Chairman
Pouch V
Juneau, AK 99811

Gentlemen:

Expeditious development of our vast hydroelectric resources is vital to Alaska's energy future. Construction of the Upper Susitna project would be a major step in securing a viable future for three-quarters of the State's population. The long term benefits to be derived from this project will far outweigh those realized from the Alyeska Pipeline and the yet to come Gasline in combination. Continued reliance on non-renewable resource fuels is a blueprint to disaster.

S.B. 294 is worthy of support from all Alaskans. The author, Senator Kertulla, is to be commended.

Sincerely,

Bob Hufman

R. L. Hufman
General Manager

FAIRBANKS OFFICE
Edward A. Merdes
Grace Berg Schaible
Howard Staley
Dennis E. Cook
Barbara L. Schuhmann
Robert B. Groseclose
Charles D. Silvey, Jr.
Michael C. Geraghty

LAW OFFICES OF
MERDES, SCHAIBLE, STALEY & DeLISIO, Inc.
A PROFESSIONAL CORPORATION
300 Barnette Street — Post Office Box 810
FAIRBANKS, ALASKA 99707
Tel. (907) 452-1855/Cable Address—MERFAIR

ANCHORAGE OFFICE
Stephen S. DeLisio
Alan Sherry
Henry J. Camarot
Mark A. Sandberg
Randolph W. Hunter
Joseph M. Moran
Patricia L. Zobel
Walter J. Szrudlo

February 13, 1980

The Honorable William Sumner
Senator, State of Alaska
Pouch V
Juneau, Alaska 99811

The Honorable Jalmar M. Kerttula
Senator, State of Alaska
Pouch V
Juneau, Alaska 99811

Re: Support of Senate Bill 294
Susitna Dam Project

Dear Senators Sumner and Kerttula:

The undersigned along with a broad cross section of other like-minded Alaskans over the past 20 or so years has vigorously supported hydro projects such as Taiya, Rampart, Woodchopper and Bradley Lake, and now vigorously support the Susitna project.

The Susitna project with its de minimus environmental harm would provide a source of inflation proof low cost power and is desperately needed in the railbelt area. From both an Alaskan family and business viewpoint it is imperative the project be undertaken as soon as the necessary environmental and engineering studies are completed. Frankly, I see the project as one of the few positive economic benefits to the largest group of Alaskan citizens for the longest period of time. Since it would be funded by the State, construction could commence many years earlier than if federally financed and built by the Corp. With the incredibly rapidly accelerating cost of fossil fuels and highest unemployment in the nation, it appears to be not only prudent but compelling that construction commence at the earliest possible time.

Respectfully submitted,

Edward A. Merdes

EAM/gj

FEBRUARY 16, 1980

The Honorable WILLIAM SUMNER
SENATOR, STATE OF ALASKA

THE HONORABLE JALMAR M. KERTTULA
SENATOR, STATE OF ALASKA

RE: SENATE BILL #294 4385

SENATOR SUMNER AND SENATOR KERTTULA, I THANK YOU FOR THIS OPPORTUNITYTO TESTIFY IN FAVOR OF THE SUSITNA POWER PROJECT. I AM AUSTIN G. WARD, A 28 YEAR RESIDENT OF THE STATE OF ALASKA, ALSO THE PRESIDENT OF ALASKA ENERGY FOR AMERICA, INC, AND A MEMBER OF THE EXECUTIVE BOARD OF THE SUSITNA POWER NOW GROUP. BOTH OF THESE ORGANIZATIONS ARE BROAD BASED IN MEMBERSHIP SCOPE, BOTH WANT TO FURTHER VIABLE ENERGY PROJECTS, AND THE MEMBERSHIP INCLUDES WORKING MEN AND WOMEN, LABOR LEADERS, BUSINESS AND PROFFESSIONAL PERSONS, AND IN FACT INCLUDE ALL FACETS OF THE ALASKAN COMMUNITY. TO THINK THAT SUSITNA DAM WOULD NOT BE BUILT IS AND WOULD BE CONSIDERED GROSS NEGLIGENCE ON THE PART OF THE STATE OF ALASKA. IF THERE EVER HAS BEEN A NEED FOR A RENEWABLE ENERGY SOURCE, THAT TIME IS NOW. OUR NATION, OUR STATE, AND OUR CITIES ARE PAYING FAR TO MUCH IN DOLLARS FOR A NON RENEWABLE ENERGY SOURCE THAT IN THE NEAR FUTURE WILL DRY UP. THIS USE OF FOSSIL FUELS, WHEN YOU HAVE AT HAND RENEWABLE ENERGY SEEMS CRIMINAL. FOSSIL FUELS SHOULD BE PUT TO USE ONLY WHERE THERE IS NO ALTERNATIVE. SUSITNA POWER PROJECT IS A PLUS IN THAT ONCE COMPLETED IT WOULD BE VIRTUALLY INFLATION PROOF. ALSO, ENVIRORMENTALLY SOUND, WITH LITTLE DAMAGE TO THE AREA, BUT GREAT POTENTIAL IN THE RETURNS TO THE PEOPLE OF ALASKA IN THE SAVINGS OF FOSSIL FUELS. IT WOULD ALSO SAVE THE RAILBELT AREA MILLIONS IN NON EQUIPMENT PURCHASES FOR ENERGY, SINCE WITH THE SUSITNA POWER, THERE WOULD BE NO NEED TO PURCHASE ENERGY EQUIPMENT TO TAKE CARE OF THE GROWTH IN POPULATION. AS A FAMILY MAN, AS PRESIDENT OF ALASKA ENERGY FOR AMERICA, AND AS A MEMBER OF SUSITNA POWER NOW, WE ALL OFFER OUR FULL SUPPORT TO THE SUSITNA POWER PROJECT. THANK YOU.

RESPECTFULLY SUBMITTED,/

Austin G. Ward

AUSTIN G. WARD, 106 CHARLES ST., FAIRBANKS, ALASKA, 99701

tlingit & haida regional electrical authority

811 West 12th Street • Juneau, Alaska • (907) 586-6966

February 13, 1980

The Honorable Bill Sumner
Chairman, Senate Resources Committee
The State Senate
Pouch V
Juneau, Alaska 99811

Dear Senator Sumner:

Thank you for your invitation to testify on SB 294. I regret I cannot be present for the hearing but I would like a few comments to be entered in the record.

First, while I feel very strongly that the Susitna Project is desirable and necessary project for the State of Alaska, I do not feel that SB 294, and the appropriation bill SB 295, are necessarily the right and proper means to accomplish that project.

It is my understanding that preliminary studies are presently underway and that one of the items to be considered are various options for financing the project with advantages and disadvantages of the various options. I feel it will be premature to commit such a large amount of general funds when there may be better options available.

If the studies indicate that general funds are the best means to finance the project, and adequate general funds are available in the future, I would be happy to lend my full support. Until then I must express my opposition to passage of SB 294 and 295.

Sincerely,

Robert Martin, Jr., P.E.
General Manager

RM:cmg

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Anchorage,
Alaska 99501
Phone: 279-1515

February 11, 1980

Senator Bill Sumner
Chairman
Senate Resource Committee
Alaska State Legislature
Pouch "V"
State Capitol
Juneau, Alaska 99811

Dear Senator Sumner:

Thank you very much for your letter of February 7th. Unfortunately, I am unable to testify on either February 15th or 16th. Therefore, I would like to have this letter submitted on SB 294 to begin work on the Susitna hydroelectric project.

I feel that the Susitna hydroelectric project is one which is overdue for the State of Alaska. Having been raised in the Northwest where the production of power was one of the prime interests of our state and federal government, it was possible to have electricity at a very low cost which attracted not only industry, but also individuals to live in the Northwest. With Alaskan costs as high as they are, I think one of the prime things we can do to help keep people in Alaska is to reduce the cost of electricity by using hydroelectric power. Since inflation is continuing to rise, I think the importance of this project and the need to have it done immediately, cannot be over stressed.

Sincerely,

Dick Norman
General Manager

DN:md

2/19/80

Senator Sumner,

I just recieved your invitation to testify before the Committees governing both SCR 41 & SB 294. I'm sorry the invitation did not arrive in time for me to at least give written testimony in those areas. I guess it just shows our Postal Service & or Airways are not very predictable during at least winter months.

I certainly hope there was response to both areas since both are vital to Alaskans development in a manner that is orderly & advantageous to Alaskans.

I would have to bow to the knowledge of the Senate & House of this state on the best movement for economic development since my views would be very limited in scope.

On SB 294, as in our past discussions on Hydroelectric power - I am a dedicated proponant of this type of electrical proponant & encourage you & all legislators to do the utmost to see that Hydro power is the basis for electricity throughout the state.

If I can be of any help to you in this capacity please do not hesitate to get in touch with me.

Sincerely

Ted Smith

Theodore H. Smith

AK Fuel Service

TESTIMONY PRESENTED BY
MAYOR JOHN A. CARLSON
FAIRBANKS NORTH STAR BOROUGH
FOR SENATE BILL 294
(SUSITNA PROJECT BASIC AUTHORIZATION)
FEBRUARY 16, 1980

MR. CHAIRMAN:

MY NAME IS JOHN A. CARLSON AND I AM MAYOR OF THE FAIRBANKS NORTH STAR BOROUGH.

I APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE YOU ON SENATE BILL 294, SINCE THE AVAILABILITY AND COST OF ELECTRIC POWER TO RESIDENTS OF INTERIOR ALASKA HAVE BECOME A CRITICAL, IF NOT LIMITING, FACTOR IN THE AREA'S SOCIAL WELL-BEING AND ECONOMIC DEVELOPMENT.

THE COST OF ELECTRIC POWER HAS TRADITIONALLY BEEN HIGH, BOTH IN THE INTERIOR AND IN ALASKA AS A WHOLE. HOWEVER, ELECTRIC POWER RATES IN FAIRBANKS RUN TWO TO THREE TIMES HIGHER THAN IN ANCHORAGE AND AS MUCH AS TEN TIMES HIGHER THAN IN SEATTLE. AS I MENTIONED EARLIER, THE COST OF ELECTRIC POWER TO INTERIOR ALASKA RESIDENTS HAS NOW BECOME PROBABLY THE SINGLE MOST CRITICAL FACTOR LIMITING THEIR ABILITY TO DEVELOP A HIGHER STANDARD OF LIVING AND CREATING A MORE DIVERSIFIED ECONOMY FOR THEMSELVES.

I THINK WHAT THE FEDERAL GOVERNMENT WAS ABLE TO ACCOMPLISH IN THE PACIFIC NORTHWEST FOR HYDROELECTRIC DEVELOPMENT DURING THE 1930'S AND 1940'S SHOULD BE AN EXAMPLE TO ALASKA.

AS A RESULT OF EXTENSIVE DAM CONSTRUCTION FOR THE GENERATION OF HYDOELECTRIC POWER ALONG THE COLUMBIA RIVER, A MAJOR REGION OF THE UNITED STATES NOW ENJOYS INEXPENSIVE AND ABUNDANT ELECTRIC POWER.

I WILL GIVE YOU ONE BRIEF EXAMPLE OF THIS. BETWEEN 1973 AND 1979, ELECTRIC POWER RATES IN THE FAIRBANKS MUNICIPAL UTILITIES SYSTEM INCREASED 67%. IN THE SAME PERIOD GOLDEN VALLEY ELECTRIC ASSOCIATION RATES INCREASED 72%, WHEREAS THE RATE .NCREASES FOR URBAN AND SUBURBAN A..CHORAGE WERE 40% AND 49% RESPECTIVELY. IN A PERIOD OF RAPIDLY INCREASED COSTS FOR FOSSIL FUELS, WE UNDERSTAND THE REASON AND PAINFUL NECESSITY FOR THESE RATE INCREASES. HOWEVER, IN THE SAME SIX-YEAR PERIOD, USING WATER-GENERATED POWER, SEATTLE CITY LIGHT ELECTRIC RATES INCREASED ONLY 1%.

GE..TLEMEN, I THINK THIS EXAMPLE SPEAKS FOR ITSELF. ONCE THE INITIAL, AND ADMITTEDLY THE VERY MAJOR CAPITAL COSTS ASSOCIATED WITH HYDROELECTRIC DAM CONSTRUCTION HAVE BEEN MADE, HYDROELECTRIC POWER IS BASICALLY AN INFLATION FREE SOURCE OF ENERGY IN AN ERA OF DOUBLE DIGIT INFLATION AND DIMINISHING FOSSIL FUEL SUPPLIES.

IN ADDITION TO SUSITNA SUPPLYING A MAJOR PORTION OF INTERIOR AND SOUTHCENTRAL ALASKA'S ENERGY REQUIREMENTS, THE CONSTRUCTION OF THIS PROJECT WOULD PROVIDE A MAJOR ECONOMIC BOOST TO ALASKA'S RESIDENTS AT A TIME IN WHICH UNEMPLOYMENT IS HIGH AND THE ECONOMY IS STAGNATING.

Up until now, one of the major drawbacks facing Alaska's desire to develop its vast hydroelectric resources has been the lack of capital to make the initial large scale investment in dam construction and site development. Now that Alaska is benefiting from skyrocketing oil revenues, we presently have the money on hand to create our own hydroelectric power system, independent of federal government control. The lead time is so great and our own power needs are so urgent that we must move now, and we must move as quickly as possible. I strongly urge that the Legislature support Senate Bill 294 as the basic vehicle necessary to develop our hydroelectric potential. It cannot come a moment too soon, and it will provide a benefit beyond our lifetimes to generations of new Alaskans.

CITY OF PALMER, ALASKA

RESOLUTION NO. 434

A RESOLUTION SUPPORTING SUSITNA POWER NOW.

The City of Palmer Resolves:

The City of Palmer supports the program of Susitna Power Now and Senate Bill 294, and Councilmen Willard Johnson and James Ekstedt are authorized to represent the City's position hereon.

Passed and Approved by the City of Palmer, Alaska this 12th day of February, 1980.

Jack E. Mazz

JACK E. MAZZ, MAYOR

William E. Curtis

WILLIAM E. CURTIS, CITY CLERK



CITY OF KENAI

"Oil Capital of Alaska"

P. O. BOX 580 KENAI, ALASKA 99611
TELEPHONE 283 - 7535

February 5, 1980

Honorable Jay Hammond
Governor, State of Alaska
Pouch A
Juneau, AK 99811

Dear Governor:

First how enjoyable the dinner Thursday at which we all relaxed. In view of the heavy burdens you carry, it was encouraging to see the fortitude, wisdom and confidence you are bringing to bear on matters.

Please do keep in your budget considerations, the 10% of income tax provision for the municipal assistance fund under Sec. 43.20.016. The 10% flow through, State to municipalities, has an equal validity with the relationship of the petroleum industry and the State tax structure. The funds flowing in full would offer real property tax relief, would fill many municipal needs and would meet many of the criteria you are trying to establish for fair distribution of tax revenues.

If I may, Governor, may I offer some thoughts for your consideration concernin the money situation facing the State.

We should perhaps set this in proper perspective. What we are talking about is economics and finance, not civil rights, education goals, abortion, public safety, etc.

Within the perspective of economics and finance, for the moneys flowing to the State above operating expenses, we should set as an objective the preservation for present and future inhabitants of the potency and flexibility of capitol. With this objective, we can select a path to get there. Most of the Western world nations are caught in an inflation cycle, certainly the United States economy is so caught. This leads to a course of action somewhat brutal in its implementation but necessary if we are to preserve potency and flexibility of capitol over a ten to fifteen year period.

We should expend the moneys, above expenses, only when they can be invested in an equity position. Investments should be made in hydroelectric projects, capital improvement projects, and direct return to citizens such as energy credits.

TO: Honorable Jay Hammond February 5, 1980

If we have to be involved in loans programs, we should borrow money to provide such funds. The inflation caused dollars depreciation makes issued debt an advantage to us, as the future dollars we use for repayment will be cheaper as they come from an inflation influenced economy.

Hopefully the above gives us the following criteria for determining how revenues available above operating expenses should be allocated.

1. Invest this equity money in equity positions, i.e.: hydropower situations, natural gas line, capital improvement programs, energy credits, etc.

2. Do not loan it as we then subject it to inflation erosion open payback. If we have to loan it, borrow from external sources to reloan.

3. Income tax sources, to some degree, should stay in effect as this gives us a foothold to tax the inflation dollar stream.

Governor, excuse the length but I do wish and know you share the wish that we act in accordance with prudent criteria and a plan of wisdom.

Sincerely,

Vince

Vincent O'Reilly
Mayor

CITY OF KENAI
VOR:jw

Saturday, Feb. 16

TESTIMONY, Senate Bill 294, Susitna River Hydroelectric

Willard H. Johnson
P.O. Box 84
Palmer, Alaska 99645

Registered Professional Engineer
Retired, General Manager of Matanuska Electric Association(20 years Service
Representing, as Mayor Pro Tem, the City of Palmer

First, I want to present the City of Palmer Resolution No. 434, which was adopted by the Palmer City Council on Feb. 12, 1980. It expresses support for the Upper Susitna Hydroelectric Development and Senate Bill 294.

Palmer believes that the Upper Susitna Project should be developed with all deliberate speed. Palmer also believes that the State of Alaska should, through the Alaska Power Authority, finance and direct the project's construction. For the long range benefit of Alaskans, we can think of no better way to invest Royalty Oil Income. Money from a non-renewable resource invested in a renewable resource such as hydroelectric energy, that will provide so many benefits continuing long after many of Alaska's oil deposits are depleted, makes awfully good sense.

An area may have developable land, water, a transportation system, investment capital and other resources, but it is not going to thrive and prosper without an adequate and reliable supply of electric power. Alaska has this potential and in the Railbelt area we are blessed with the Upper Susitna.

I doubt if many of us fully realize the kind and magnitude of the benefits that will flow to the railbelt people when Susitna power goes on the line. Spinoff benefits will go to all of Alaska's people and to the Lower 48.

I remember as a boy in Eastern Washington State, the vast stretches of sagebrush, blowing sand and the desolate land. There were little villages with dirt streets, unpainted houses and little work for men to do. Later, as a young engineer, after the great Columbia River projects came on the line, I remember the vast productive fields of corn, sugar beets and alfalfa where before there was only desert. Attractive and comfortable homes replaced the old shacks, and towns were modernized. Commercial activities thrived. People had jobs.

Most of the early Columbia River Hydro projects were federally planned, financed and constructed. It took 20 years and a lot of effort by western people to move Congress to approve the great Coulee Dam. We think the State of Alaska deserves something better than that. So we urge that SB 294 be passed, and that the Susitna project be completed and operated by the State.

THANK YOU

Willard H. Johnson

Steam Generation has switched from coal To Natural Gas and now is supposed to switch back To coal at Great cost ——→ Lets use hydro once and for all Time

Other industry has been adversely affected by high power costs — at one time we had a small lumber operation in the Mad Sew area — This utilized birch that now has gone by its prim as useable lumber — This was due to Too high cost of power —

I am in favor of both Bills S.B. #294, #385 and any other bills that will get This projed on the way To completion. Tax relief in the form of cheaper Electricty Roger Connolly

International Union of Operating Engineers

AFFILIATED WITH AFL-CIO

LOCAL 302 AND BRANCHES A, B, C AND D

FRANK T. POLSAK, *Business Manager*

JACK J. WILSON, *President*

ROD J. FRASER, *Financial Secretary*

Branch Offices:
WENATCHEE, WASHINGTON
YAKIMA, WASHINGTON
ANCHORAGE, ALASKA
FAIRBANKS, ALASKA
JUNEAU, ALASKA

WESTERN AVE. AND CLAY ST.
SEATTLE, WASHINGTON 98121
TELEPHONE: 622-6180

February 29, 1980

Senator Sumner
Capitol Building Rm. 125
Pouch V
Juneau, Alaska 99811

RE: Susitna Power Project
SB 294

Sir:

The International Union of Operating Engineers, Local 302 (Alaska), which presently is composed of over 4000 members, has determined that the Susitna Power Project would be in the best interests of all of the people within our State. We would like the Legislature to not only know that we support the project tut we also wish all practical speed in efforts to get it under construction.

Sincerely,

Roderick J Fraser

Roderick J. Fraser
Financial Secretary
I.U.O.E., Local 302

RJF/jch
cc: Susitna Power Now, Inc.

TELEGRAM
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PMS SENATOR BILL SUMNER 465-4791

SENATE RESOURCES COMMITTEE

264

JUN

MAYOR AND CITY COUNCIL OF THE CITY OF FAIRBANKS SUPPORT AND RECCOMMEND PASSAGE OF SENATE BILL 294. DEVELOPMENT OF SUSITNA POWER PROJECT WILL BE OF GREAT BENEFIT TO INTERIOR ALASKA

C DROZ CITY MANAGER

TELEGRAM

ALASCOM, INC.
PHONE: 586-6442
JUNEAU, AK 99802

1990 MAR 4 PM 7 09

12026 FAIRBANKS ALASKA 134 03-04 410P AST

PMS SENATOR BILL SUMNER

CHAIRMAN SENATE RESOURCES COMMITTEE

291

JUN

I WOULD LIKE TO REEMPHASIZE MY SUPPORT FOR SENATE BILL 294. AS I TESTIFIED IN ANCHORAGE LAST MONTH, THE COST OF ELECTRIC POWER TO INTERIOR ALASKA RESIDENTS HAS NOW BECOME THE SINGLE MOST CRITICAL FACTOR LIMITING THEIR EFFORTS FOR A HIGHER STANDARD OF LIVING AND MORE DIVERSIFIED ECONOMY. THE DEVELOPMENT OF HYDROELECTRIC POWER DURING THE 1930S AND 40S IN THE PACIFIC NORTHWEST HAS NOW RESULTED IN STABLE, AND VIRTUALLY INFLATION FREE, ENERGY SUPPLIES TO RESIDENTS OF THAT REGION. WE HAVE THE OPPORTUNITY TO CREATE SIMILAR BENEFITS FOR RESIDENTS OF INTERIOR AND SOUTHCENTRAL ALASKA IN THE NEXT TWO DECADES.

ADDITIONALLY ALASKA NOW HAS AVAILABLE THE SURPLUS CAPITAL NECESSARY TO DEVELOP THE SUSITNA HYDROELECTRIC PROJECT OURSELVES. I RESPECTFULLY URGE THE SENATE NATURAL RESOURCES COMMITTEE TO GIVE FAVORABLE AND EXPEDITIOUS CONSIDERATION TO THIS AND SUPPORTING LEGISLATION.

JOHN CARLSON BOROUGH MAYOR

TELEGRAM

ALASCOM, INC.
TELEPHONE: 561-8442
Wasilla, AK 99802

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PMS SEN BILL SUMNER

JUNEAU

MATANUSKA VALLEY LIONS CLUB WHOLEHEARTEDLY SUPPORT SB294 AND

ARE HOPING IT PASSES SOON.

GEORGE BEACOM PRESIDENT

KAISER ENGINEERS

KAISER ENGINEERS INC.
KAISER CENTER - 300 LAKE HILL DRIVE
OAKLAND, CALIFORNIA 94611

June 14, 1977

Alaska Power Authority
c/o Department of Commerce and
Economic Development
Office of the Commissioner
McKay Building
Anchorage, Alaska

Dear Commissioner Hubbard:

Further to our presentation of June 3, 1977, to the Alaska Power Authority, we would like to clarify some of the points in our plan for implementation of Susitna River development, in order to get the project under way expeditiously.

Three years have elapsed since Kaiser Engineers presented its conceptual plan for development of the Upper Susitna River and outlined the project best suited for initial development. In the intervening period considerable effort has been made by the Corps of Engineers to explore other ways of developing the river. These other ways included concepts and elements of projects which had been developed before and which were rearranged and presented as alternatives. They did nothing to bring nearer the date of initial power generation, but in fact, set it back further. No doubt, it would be possible to develop more schemes and more alternatives on the basis of what has gone before; however, we believe that nothing is to be gained, but much is to be lost in time and money by more study of alternatives. We believe that our development plan is the right plan and that it can and should be implemented now.

There is much work to be done - by the Alaska Power Authority, by Kaiser Engineers and by the financial consultants, Stone and Youngberg. There are legal and financial matters to be resolved, project optimization to be defined, and environmental impacts to be evaluated and accounted for in project design.

Environmental impact is the issue which presents the major time constraint in implementation of the project. It is estimated that the preparation of an effective environmental report will require about one year because it is preferable to make field studies and gather information applicable to all four seasons of the year. Current experience of the Federal Power Commission shows that approval of hydroelectric projects on environmental grounds requires about two years after report submittal.

We believe that the best interests of the project will be served by engaging independent specialists to undertake environmental studies under our overall management. These studies would be carried out in close cooperation with federal and state agencies which have already gathered considerable information or which have responsibility in natural resource management; among these would be the State Department of Fish and Game which confirms that the study can be completed over four seasons providing the department is authorized and given the budget to hire additional staffs or otherwise be reimbursed for expediting the services which at the present time are scheduled and budgeted for a two to three year period. We propose to engage the services of Environmental Services Limited of Anchorage, and EDAW to perform base line studies, and of local experts such as Mr. W. Workman, archeologist at the University of Alaska, and Dr. R. Forbes, seismology consultant, and others who are familiar with the environment and ecology of Alaska

In regard to environmental impact, it is to be noted that the upper end of the Susitna I reservoir would inundate a much smaller area of the Caribou habitat between Watana and Kosina Creeks than any project built at Watana.

The major engineering task to be undertaken in the first phase of Kaiser Engineers' implementation plan is optimization and outline design. Optimization means that we will seek that degree and timing of development which will meet projected power demands in the Railbelt area at the least overall cost. Cost includes monetary, financial and social. Optimization does not necessarily mean that every last kilowatt of power will be squeezed out of the Upper Susitna River regardless of the consequences. Optimization cannot and will not be limited to the first project to be developed, but requires firming up the locations and conceptual designs of future projects.

Outline design will be based upon more accurate mapping and more detailed geologic information. On the ground observations of the Susitna I damsite have convinced us of the suitability of the rock for foundations and for construction of a rockfill dam. At this stage of development, tangible evidence must be provided. We propose to employ local firms such as R. and M. Consultants of Anchorage or Shannon and Wilson of Fairbanks to carry out subsurface exploration programs. These would include geoseismic surveys and core drilling to provide the degree of information required for this phase of project development. This work will be concentrated at the Susitna I site; however, a certain amount of investigation is necessary before the suitability of sites for future projects can be confirmed, before a selection can reasonably be made of the types of dams best suited for safety and economy at those sites, and before the overall development concept can be optimized.

When the final definition of the initial project is achieved by optimization, the engineering task will narrow down to staging. A determination will be made as to the rate at which power available from this

project can be economically absorbed into the existing power systems. This will include not only load growth, but also consideration of retirement of older generating equipment and the conservation of fossil fuels for other use. If power from existing generating plants can be economically replaced by Susitna I, the complete project will be recommended for construction at one time; otherwise, an economic staged development will be proposed. Almost any design of project can be built in several stages; it is common practice in basic powerhouse design to provide for the later addition of generating units. There is no special trick involved in building most dams in two stages, if desirable, to minimize first cost. This can readily be done at Susitna I with the proposed rockfill dam, on the basis of existing technology.

The work to be undertaken by Kaiser Engineers in the first phase of the implementation plan will be in the detail and to the degree required to:

1. Demonstrate the economic viability of development
2. Provide the basis of project financing
3. File application for project licensing by the Federal Power Commission.

It is not strictly necessary to apply to the Federal Power Commission for a Preliminary Permit; it may be desirable to do so, however, as a very simple means of protecting the State's interest pending filing of license application.

We have discussed the timing of our implementation plan with representatives of the State of Alaska Department of Fish and Game, environmental specialists and staff of the Federal Power Commission, and others. We have been reassured that the schedule for completion of the environmental report in one year and the issue of the F.P.C. license two years later is feasible and practical.

We suggest that the remaining months of this year be used effectively to get the project off the ground. Provided work is commenced before the beginning of August, a good start can be made on environmental studies; mapping and geoseismic exploration can be completed before the weather closes in, in October. Engineering and further environmental study can be carried out during winter and spring; in May and June, environmental studies can be completed, site drilling to confirm seismic exploration can be completed and the application for project licensing can be submitted to the Federal Power Commission at the end of July 1978. First power can be delivered in late 1984 or early 1985.

If the Alaska Power Authority engages the services of Kaiser Engineers to carry out the first phase of the proposed implementation plan, our first task would be to gather and review all of the data gathered, used or prepared by the U.S.B.R., the Corps of Engineers and other state or Federal agencies or departments in connection with the Upper Susitna River. After review and evaluation of this data, we will be able to

determine what information can be used directly in further work, what information must be augmented and what further information must still be gathered. On this basis we shall be able to prepare realistic estimates of the cost of Kaiser Engineers' services, services of environmental experts and consultants, and services of contractors required for mapping, geoseismic surveys and other subsurface exploration, all as applicable to the first phase implementation plan. Kaiser Engineers' bills reimbursable expenses at cost; the services of all consultants and subcontractors are considered as reimbursable expenses.

If you have any questions concerning implementation of the project, please let us know.

For your further information, we are enclosing three brief memoranda. The first is in connection with the selection of dam type in areas of potentially severe earthquake activity; the second describes Environmental Management services performed by Kaiser Engineers; and the third is a general description of Project Management and Control Systems utilized by Kaiser Engineers.

Very truly yours,

A. J. Chan
Manager
Hydroelectric Department

AJC:ars

Enclosures

SELECTION OF DAM TYPE IN AREAS OF POTENTIALLY SEVERE EARTHQUAKE ACTIVITY

Kaiser Engineers and members of its present staff have designed or built dams in many parts of the world, including the specially seismically active areas in California and the Pacific Northwest. Wherever we design for, we account for the seismicity potential of the area in the selection of the type of dam and in its design.

Experience records of a wide range of seismic occurrences show that serious adverse effects of earthquakes have been severe cracking in concrete gravity dams, abutment damage in concrete arch dams and liquefaction of fines in fill dams. The Pacoima arch dam in southern California presents a good example of earthquake effect on abutments. The February 1971 San Fernando earthquake caused abutment damage to the degree that after careful studies, the dam was breached and abandoned. While the record may show that even concrete arch dams have been designed for an 8.5 Richter scale earthquake in reasonable proximity to such dams, we have no record that such an earthquake has, in fact, occurred near such designed arch dams.

A critical design which has not been tested by full scale prototype cannot be claimed as fully effective before the full scale test condition occurs. It is one thing to apply static test loads to a model structure, but it is something else to apply complex dynamic loads not only to the model structure, but also to the foundation. Whereas the quality of the dam and its constituent materials is subject to a high degree of control, by analysis, design and construction, no such control can be achieved over the foundation, and in arch dams, it is generally the abutment which fails first. Abutment failure in an arch dam inevitably means dam failure and experience shows that such failure is very fast and very complete. The whole question of arch dam construction in seismically active zones is under especially close scrutiny today, particularly where the ratio of crest length to height is high.

The dam proposed for construction at Susitna I is a rockfill with a concrete face. Rockfill dams by their very nature are most resistant of all dams to damage by earthquake forces. The dam does not crack because it is not one solid piece; it is free to adjust, either to movement of the abutments or of its own. It can deflect safely to a degree which would mean dramatic failure to an arch dam of the same height range. Of all rockfill types, the concrete face type is most resistant to damage because the dam itself is built primarily of rock materials which are not subject to liquefaction since the embankment is dry. The concrete face can crack, but leakage is controlled by the immediate underlying zone of selected low permeability dense filter, and by designed high permeability of the rock mass under the downstream half of the base of the dam and in the downstream toe. In fact, a design criterion in the rock zoning of the concrete face dam is that it will safely withstand the leakage that would occur even without the concrete face. Such a dam may require repair of the concrete

face after a very high intensity earthquake, but failure due to the most severe seismic event is not considered credible.

Arch dams can be economical and efficient, and with their abutments can resist seismic forces to some unknown degree, but the overall safety and economy of dam construction must be based on the concept of the right dam at the right place. Where there are clear economic and safe alternatives there is nothing to justify the risk of adopting an arch design in an area of potentially high seismicity.

The above views are those of Kaiser Engineers in collaboration with their general dam consultant, J. Barry Cooke. Similar views on inherent seismic resistance of rockfill dams are held by such authorities as Dr. H. Bolton Seed, Dr. James L. Sherrard, and Dr. Don U. Deere.

ENVIRONMENTAL MANAGEMENT

Environmental matters are an integral and vital economic element in all our engineering projects. In the past few years we have been developing working relationships with some of our major industrial clients supplying a service which we call Environmental Management. This memorandum discusses the concept, the product, and its implications to both KE and its clients.

It is important to understand what KE means by the term Environmental Management. It is the service which addresses, identifies and handles the environmental issues related to a project. It includes project work functions, conceptual engineering, permit processing and resolving regulatory agency requirements. Today, it is an essential part of a successful engineering business.

Environmental Management involves planning, organizing and performing environmental project activities within a defined scope of work, schedule and budget. It requires close contact with the client, working with the engineering project staff, and liaison in cooperation with government agencies which have regulatory influence or authority on the project.

Planning Stage

In most instances, even before preliminary engineering is initiated, planning for the requisite environmental activities is often required and always desirable. Our larger clients, Anaconda, ANG, SCE, etc., usually have an environmental staff within their organizations and may do this phase of the work themselves. In other instances, especially where a client is entering a new field, they are not as well staffed and we can supply needed services.

It is during the initial planning stage that we can work effectively with a client to help plan their environmental program, review available data and identify the environmental requirements for a project. If appropriate, scientists or environmental consultants can be recruited to perform baseline studies.

Baseline Studies

Baseline studies are usually initiated shortly before or with the start of project feasibility studies. In the main, baseline studies involve field investigations concerning preliminary site evaluations, hydrology, meteorology, vegetation, wildlife, archaeology and demographic data accumulation. In the past few years, a large body of information has become available in published environmental reports.

Baseline studies are usually made by the client or by outside consultants. Our Environmental Management role includes monitoring, evaluating and, in some instances, directing the preparation of the baseline studies. Performance controls are prepared to measure rates of progress, quality and cost of the baseline studies against planned goals. Initial contact with regulatory agencies occurs at this stage as does the preliminary engineering feasibility studies of the project itself.

Environmental Assessment

Major environmental activity occurs during the preliminary engineering phase of a project after baseline studies have been made. At this time, environmental assessment and trade-off studies are prepared which, to a large extent, can influence the timing and cost of a project. Also, during this time, site selection studies are completed, regulatory and reclamation requirements are defined and environmental assessments are made based on the field studies and the preliminary project engineering. Potential impacts as a result of the project are identified and are evaluated to identify possible alternative courses of action. Contact with regulatory agencies and the project engineering staff is necessarily frequent both to acquaint the agencies with the nature and possible impacts of the project and to convey the requirements of the regulatory agencies to the engineering staff.

Agency Reviews

Regular reviews are required because of continuing changes in federal and state regulations including the Clean Air Act, the Clean Water Act, the Toxic Substances Act, OSHA, and new energy utilization requirements.

Detail Design

Environmental Management functions continue through detail design including:

- o preparation and/or review of environmental impact reports
- o selection of basis for design for environmental controls
- o review of environmental controls
- o participation in public presentations of the project in connection with its environmental significance
- o meeting with regulatory agencies
- o processing and obtaining of permits for construction and operation.

The attached flow sheet, Environmental Management, identifies activities addressed through Environmental Management. The functions of Environmental Management are:

A. Planning and scoping the environmental activities of a project.

B. Data assimilation including base studies, preliminary engineering, liaison and contact with regulatory agencies.

C. Preparation of environmental assessments including identification of the environmental control concepts, identification of regulatory requirements, identification of impacts, site selection, and development of reclamation plans.

D. Development of design bases for environmental control requirements, processing of permits, definition of regulatory requirements and the selection of process control methods.

E. Preparation of functional and bid specifications, bid evaluations and equipment selections.

F. Start-up assistance and preparation of manuals.

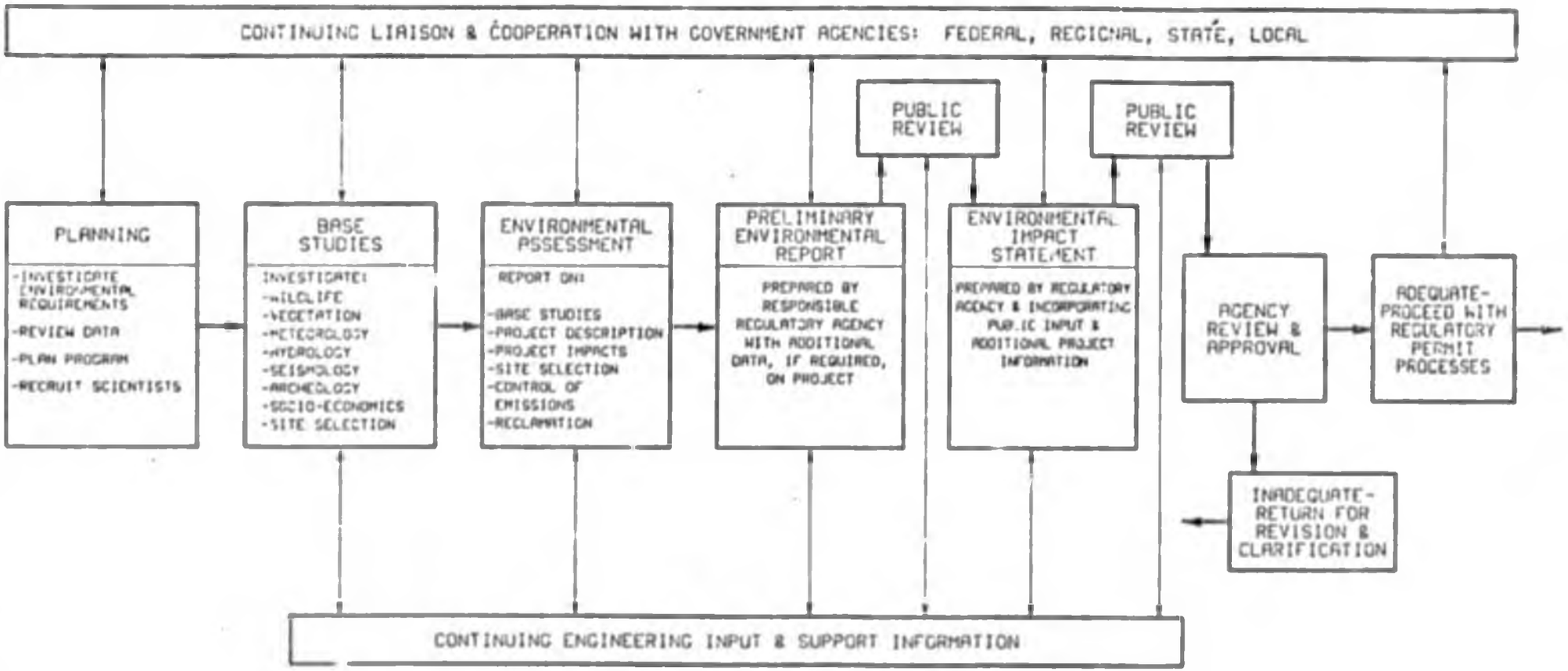
Advantage to Client

A major advantage to using the Environmental Management approach for a client is in the early identification and resolution of environmental issues which might otherwise delay the project or lead to unacceptably high costs. The implementation of the Environmental Management concept to major projects at an early date can result in substantial savings in time and cost and may make the difference between a feasible or non-feasible project.

Presenting the Environmental Management Concept

As each project may involve a different client relationship, the Environmental Management concept should be presented in a similar vein. Participation in planning with the client before the baseline studies have been initiated is highly desirable, particularly when a client is entering a new type of activity or business. A good example where we have been successful is with American Natural Gas coal gasification project. We participated in the planning phase, identified environmental baseline requirements, evaluated proposed consultants to make the baseline studies and monitored their performance as to its technical competence. One recommended step (not adopted by the client to his regret) was to establish a performance goal for the consultant to measure progress against cost of work. The client chose to do this himself and it was not done. A better approach would have been to have NE assume responsibility for the baseline studies to include cost control as well as technical performance.

ENVIRONMENTAL MANAGEMENT



PROJECT MANAGEMENT AND CONTROL SYSTEMS

Kaiser Engineers recognizes that an effective management and control system is an important function in the effective integration of all project activities leading to the successful execution of a project.

As a result of the extensive and diversified experience in the field of engineering and construction, Kaiser Engineers has developed the necessary organization, techniques and procedures to successfully plan, monitor, control and manage a project.

Over the past 20 years Kaiser Engineers has developed and operated a computerized system of Project Control that truly characterizes our basic approach to management of a project.

The control system using a central file includes programs for:

a. planning and scheduling all elements of the project

b. measurement of progress and performance

c. monitoring and tracking procurement activities

d. estimating, recording and forecasting cost, manhours, and quantity

Based on experience we find there are three phases that are common to all construction projects, Preliminary Design, Detail Design phase and Construction phase.

We believe that through careful and realistic planning in the initial phases and continuing monitoring, analyzing and managing in the later phases we can effectively control cost and schedule to meet the targets established. We are confident that our management procedures and techniques do meet these requirements.

Kaiser Engineers is also organized to provide direct lines of responsibility for corporate and project management to ensure a quick and comprehensive response to the individual needs of the project.

The management control and reporting systems we offer provide a systematic and practical approach to the management of this project. It is effective primarily, because of the experience and talents of the people that are involved as a team, knowing and understanding how to utilize these tools in a practical manner.

National Hydropower Study
Alaska Region

With the need to find and assess alternate sources of energy, Congress directed the Corps of Engineers to conduct a study of potential hydroelectric power development throughout the country. The objectives of the National Hydropower Study are to:

- Assess the demand for electricity and define the need for hydropower.
- Define the physical limits to increasing hydropower production.
- Determine the feasible and acceptable increases in hydropower generation.
- Analyze existing policies affecting hydropower development and use.
- Assess potential environmental and socio-economic impacts
- In the study report to Congress, identify specific potential hydropower projects which warrant detailed study and make recommendations regarding needed policy changes.

SUMMARY OF FINDINGS

Demand for Electricity

According to projections by the Alaska Power Administration, the demand for electrical energy in Alaska will have increased from 3,066 million kilowatt hours in 1979 to 15,000 million kilowatt hours in the year 2000, an increase of nearly five times the present use. The demand is expected to increase in each of the six major subregions of the State. However, the greatest increase is expected in the more heavily populated areas of the State, specifically the Southcentral Railbelt region which includes the Anchorage-Cook Inlet and the Fairbanks areas and the Southeast Subregion.

Present Sources of Electricity

As of 1979, the existing electrical generating capability of power plants in Alaska was about 1,867 megawatts. The majority of electricity generated in the State was produced from energy supplied by fossil fuel. Natural gas was by far the major fuel, accounting for 56 percent of the year's output. Next came oil (18 percent), coal (10 percent), hydropower (10 percent) and others (6 percent).

Most of the electrical energy in Alaska is supplied by combustion turbines (65.2 percent), followed by internal combustion plants (19.2 percent), steam turbines (5.6 percent) and hydropower (10.1 percent). The combustion turbine is the predominant source of power in the more heavily populated Southcentral Subregion, whereas hydropower plants and steam turbines are the predominant sources of power in the Southeast and Yukon Subregions, respectively. The diesel fueled turbine is the primary source of electrical energy for the isolated bush villages of Alaska.

Until recently, the availability of low cost natural gas, particularly in the Anchorage area, accounted for the predominant use of combustion turbines. In addition, the Alaskan climate is conducive to the operation of combustion turbines.

There are more than 40 hydroelectric installations in Alaska. Most of the plants are small (less than 50 MW) and only of local community significance. Only 14 plants are large enough and in such locations to have an impact on the future power supply of the State. Twelve of these plants serve individual cities in the Southeast Subregion. The other two plants are in Southcentral Alaska and are part of the interconnected system serving the Anchorage-Cook Inlet area.

Screening Process

During the National Hydropower Study, the potential for additional hydropower generation was evaluated at 61 existing water resource project sites and 634 undeveloped sites within the State of Alaska. By means of a 4-stage screening process, the number of sites demonstrating potential economic feasibility and environmental acceptability was reduced 59. A summary of the screening process displayed by major subregions of the State and the principal objectives of each screening stage is presented in Table 1.

Evaluation

In keeping with the objectives of the National Hydropower Study, the potential of hydropower in Alaska to meet the future electrical energy needs was determined from a regionalized assessment of economic and environmental factors.

Generally, a project was considered economically feasible if the total average cost of the additional power capable of being produced by the project did not exceed 50 mils (5 cents) per kilowatt hour. In some instances, however, local considerations indicated that a project might be feasible with even higher costs. As shown in Table 1 (third screening) 21 existing projects and 144 undeveloped sites in Alaska are identified as having potential economic feasibility for the development of additional hydropower.

To determine what portion of the economically feasible hydropower projects might be acceptable for development, environmental, social and institutional impacts and marketability constraints were evaluated. Although specific criteria could not always be followed in making this determination, projects which would result in major adverse environmental or social impacts, including elimination of terrestrial and aquatic wildlife habitat and major dislocations of villages and transportation systems, were identified as being unacceptable for development. Also, projects whose development would violate present land use restrictions such as, wild and scenic rivers, national parks and wildlife refuges, or opposed by significant portions of the public were considered to be unacceptable.

Some of the undeveloped sites, although identified as having a substantial potential for producing additional hydropower, were eliminated for marketability reasons, in particular those projects located in the vast undeveloped regions of Alaska.

The results of the hydropower study indicate that 59 projects, including 10 existing sites and 49 undeveloped sites, were acceptable for development and warranted further, more detailed study. Detailed information on each of these sites is presented in Tables 2, 3, and 4. The map attached to Table 2 shows the general location of the sites. If these 59 sites were developed, they could produce as much as 3.56 million kilowatts of power and 15,432 million kilowatt hours of energy.

Table 5 provides a comparison by geographical subregion of the estimated electrical requirements for the year 2000 with the hydropower potential. A further comparison with the marketable hydropower potential, as determined by the Alaska Power Administration, would indicate that the development of these projects could meet the majority of the electrical needs for the Southcentral, Southeast, and Yukon Subregion .

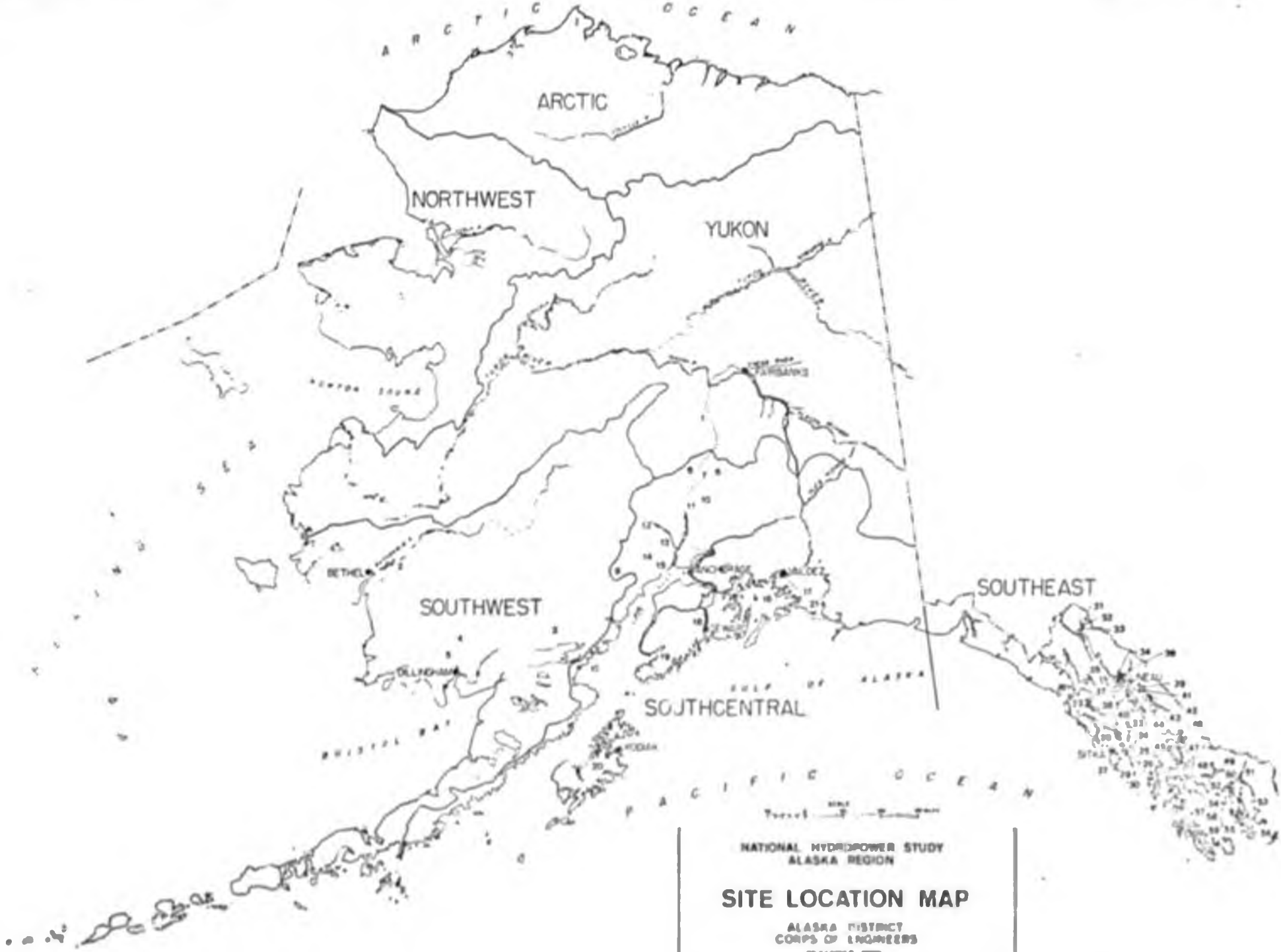

ARCTIC OCEAN
ARCTIC
NORTHWEST
YUKON
SOUTHWEST
SOUTHCENTRAL
SOUTHEAST
PACIFIC OCEAN
NATIONAL HYDROPOWER STUDY
ALASKA REGION
SITE LOCATION MAP
ALASKA DISTRICT
CORPS OF ENGINEERS

Table 1
SUMMARY OF NATIONAL HYDROPOWER STUDY SCREENING RESULTS, ALASKA

OWER AREA / JBREGION	STAGE 1						STAGE 2			STAGE 3					
	Initial Inventory 1/			First Screening 2/			Second Screening 3/			Third Screening 4/			Fourth Screening 5/		
	Existing Projects	Undev. Sites	Total	Existing Projects	Undev. Sites	Total	Existing Projects	Undev. Sites	Total	Existing Projects	Undev. Sites	Total	Existing Projects	Undev. Sites	Tota
RCTIC	0	5	5	0	5	5	0	3	3	0	2	2	0	0	0
ORTHWEST	0	27	27	0	16	16	0	7	7	0	6	6	0	0	0
JKON	3	56	59	3	51	54	0	27	27	0	20	20	0	1	1
OUTHWEST	2	38	40	2	28	30	0	8	8	0	8	8	0	4	4
OUTHCENTRAL	14	196	215	12	138	150	9	43	52	3	40	43	0	16	16
OUTHEAST	42	312	349	40	189	229	30	114	144	14	70	84	10	28	38
LASKA TOTAL	61	634	695	57	427	484	39	202	241	17	146	163	10	49	59

/ Objective: Inventory all existing dams and previously identified undeveloped sites.
/ Objective: Identify total physical hydropower potential.
/ Objective: Identify physical hydropower potential showing possible economic feasibility.
/ Objective: Identify economically feasible hydropower potential.
/ Objective: Assess noneconomic factors (environmental, social, institutional) and identify feasible hydropower projects tha
ere identified for detailed study.

TABLE 2
NATIONAL HYDROPOWER STUDY
POTENTIAL HYDROPOWER SITES IDENTIFIED FOR DETAILED STUDY IN ALASKA

Map Index Number	Project Name	Site Ident Number	Name of Stream	Latitude	Longitude	Owner	Additional Capacity Potential (kW)	Additional Energy Potential (Mwh)	Average Cost of Energy (mills/kWh
	Yukon								
1.	Browne	AK6NPA0427	Nenana River	64 11.0	149 15.0	undeveloped	200,000	566,000	48.99
	Southwest								
2.	Kisaralik	AK6NPA0012	Kisaralik River	60 26.4	160 5.5	undeveloped	30,000	131,000	56.72
3.	Tazimina	AK6NPA0032	Tazimina	59 58.0	154 33.0	undeveloped	51,000	224,000	17.00
4.	Grant Lake	AK7NPA0018	Wood River	59 45.1	158 32.0	undeveloped	2,700	12,700	145.87
5.	Lake Elva	AK7NPA0155	Elva Creek	59 37.9	157 0.0	undeveloped	1,000	8,000	29.58
	Southcentral Railbelt								
6.	Chulitna	AK6NPA0181	Chulitna River	63 4.9	149 45.0	undeveloped	34,000	166,000	45.07
7.	Devil Canyon	AK6NPA0188	Susitna River	62 48.9	149 18.9	undeveloped	766,000	3,410,000	11.53
8.	Watana	AK6NPA0222	Susitna River	62 48.9	148 30.9	undeveloped	792,000	3,480,000	17.97
9.	Chakachamna	AK7NPA0106	Chakachamna	61 13.0	152 22.0	undeveloped	366,000	1,300,000	12.30

TABLE 2
NATIONAL HYDROPOWER STUDY
POTENTIAL HYDROPOWER SITES IDENTIFIED FOR DETAILED STUDY IN ALASKA (cont)

Map Index Number	Project Name	Site Ident Number	Name of Stream	Latitude	Longitude	Owner	Additional Capacity Potential (kW)	Additional Energy Potential (Mwh)	Average Cost of Energy (mills/kwh)
10.	Talkeetna	AK6NPA0216	Talkeetna River	62 28.0	149 22.0	undeveloped	90,000	406,400	23.32
11.	Keetna	AK6NPA0197	Talkeetna River	62 26.5	149 41.6	undeveloped	74,000	324,000	30.38
12.	Skwentna	AK6NPA0211	Skwentna River	61 51.9	152 7.0	undeveloped	98,000	490,000	30.02
13.	Yentna	AK6NPA0224	Yentna River	61 36.9	150 32.0	undeveloped	219,000	960,000	38.47
14.	Beluga Upper	AK6NPA0175	Beluga River	61 15.9	151 15.0	undeveloped	48,000	210,000	53.06
15.	Coffee	AK6NPA0108	Beluga River	61 12.0	151 10.0	undeveloped	37,000	160,000	50.41
16.	Solomon Gulch	AK7NPA0384	Solomon Gulch	61 30.9	146 15.9	undeveloped	12,000	65,000	25.57
17.	Allison Creek	AK7NPA0041	Allison Creek	61 7.1	146 10.2	undeveloped	8,000	180,000	46.50
18.	Snow	AK7NPA0283	Snow River	60 17.9	149 18.0	undeveloped	63,000	278,000	31.24
19.	Bradley Lake	AK7NPA0103	Bradley Creek	59 45.0	150 51.0	undeveloped	94,000	410,000	18.40
20.	Terror Lake	AK7NPA0166	Terror River	57 40.0	153 6.0	undeveloped	20,000	139,000	19.94
21.	Power Creek	AK7NPA0039	Power Creek	60 36.0	145 34.0	undeveloped	7,000	26,000	87.04
	Southeast								
22.	Pelican Creek	AK1NPA0346	Pelican Creek	57 34.7	136 7.8	Pelican Utility Co	1,000	1,700	75.57

TABLE 2
NATIONAL HYDROPOWER STUDY
POTENTIAL HYDROPOWER SITES IDENTIFIED FOR DETAILED STUDY IN ALASKA (cont)

Map Index Number	Project Name	Site Ident Number	Name of Stream	Latitude	Longitude	Owner	Additional Capacity Potential (kW)	Additional Energy Potential (Mwh)	Average Cost of Energy (mills/kwh)
23.	Kasnyku Lake	AK7NPA0335	Kasnyku Falls	57 11.0	134 49.9	undeveloped	7,000	30,000	41.63
24.	Takatz Creek	AK7NPA0311	Takatz Creek	57 6.9	134 51.0	undeveloped	20,000	97,000	34.48
25.	Carbon Lake	AK7NPA0321	unnamed	57 1.9	134 28.1	undeveloped	10,000	49,000	58.16
26.	Milk Lake	AK7NPA0294	Milk Creek	56 58.0	134 47.0	undeveloped	7,000	33,000	39.10
27.	Diana Lake	AK7NPA0325	unnamed	56 53.0	135 3.0	undeveloped	8,000	35,000	35.65
28.	Green Lake	AK7NPA0332	Vodopad River	56 95.3	135 11.6	undeveloped	16,000	64,000	48.47
29.	Maksoutof	AK7NPA0291	Maksoutof	56 30.0	134 57.9	undeveloped	24,000	117,000	23.47
30.	Borodino Lake	AK7NPA0319	B.P. Walter	56 22.3	134 42.9	undeveloped	5,000	24,300	44.51
31.	Goat Lake	AK7NPA0357	Pitch Fork	59 31.3	135 11.0	undeveloped	10,000	46,000	33.80
32.	Dewey Lake	AK1NPA0359	Dewey Creek	59 26.4	135 18.9	Alaska Power & Tele Co	1,000	1,300	83.39
33.	Dayebas Creek	AK4NPA0078	Dayebas Creek	59 17.2	135 2.0	undeveloped	5,000	18,200	65.95
34.	Gold Creek	AKHNPA0099	Gold Creek	58 17.9	134 23.9	Alaska Elec Light & Power Co.	2,000	9,000	34.90

TABLE 2
NATIONAL HYDROPOWER STUDY
POTENTIAL HYDROPOWER SITES IDENTIFIED FOR DETAILED STUDY IN ALASKA (cont)

Map Index Number	Project Name	Site Ident Number	Name of Stream	Latitude	Longitude	Owner	Additional Capacity Potential (kW)	Additional Energy Potential (MWh)	Average Cost of Energy (mills/kWh)
[illegible].	Treadwell Ditch	AKMNPA0086	Treadwell	58 15.5	134 22.3	Alaska Tread-well	2,500	10,000	25.70
36.	Annex	AK[illegible]NPA0098	Annex Creek	58 19.5	134 7.6	A.J. Ind.	1,800	3,000	57.18
37.	Lake Dorothy	AK5NPA0096	Dorothy Creek	58 14.0	134 3.0	undeveloped	34,000	150,000	15.24
38.	Speel Division	AK6NPA0082	Speel River	58 5.9	133 42.9	undeveloped	63,000	275,000	32.84
39.	Snettisham	AKJNPA0102	Long Lake	58 5.9	133 48.0	Alaska Power Administration	27,000	168,500	14.17
40.	Crater Lake	AK7NPA0356	Crater Creek	58 8.0	133 45.7	undeveloped	12,000	41,500	45.65
41.	Tease	AK7NPA0084	Tease Creek	58 5.9	133 40.2	undeveloped	16,000	70,000	29.42
42.	Upper Sweetheart	AK7NPA0143	Sweetheart	57 59.7	133 30.6	undeveloped	7,000	31,000	42.94
43.	Sweetheart	AK7NPA0083	Sweetheart	57 56.6	133 38.[illegible]	undeveloped	29,000	127,000	38.19
44.	Scenery Creek	AK7NPA0401	Scenery Creek	57 4.9	132 41.9	undeveloped	15,000	67,000	34.04
45.	Falls Lake	AK7NPA0417	Cascade Creek	57 1.1	132 45.1	undeveloped	44,000	190,000	18.20
46.	Thomas Bay	AK7NPA0310	Cascade Creek	57 3.3	132 45.2	undeveloped	50,000	217,000	18.47
47.	Ruth Lake	AK7NPA0400	Delt Creek	56 59.0	132 45.0	undeveloped	13,000	63,000	45.61

TABLE 2
NATIONAL HYDROPOWER STUDY
POTENTIAL HYDROPOWER SITES IDENTIFIED FOR DETAILED STUDY IN ALASKA (cont)

Map Index Number	Project Name	Site Ident Number	Name of Stream	Latitude	Longitude	Owner	Additional Capacity Potential (kW)	Additional Energy Potential (MWh)	Average Cost of Energy (mills/kWh)
48.	Anita	AK6NPA0414	Zimovia Straight	56 15.5	132 26.5	undeveloped	3,200	14,000	54.60
49.	Harding River	AK7NPA0301	Harding River	56 16.1	131 38.9	undeveloped	18,000	85,000	60.44
50.	Tyee Creek	AK7NPA0408	Tyee Creek	56 12.0	131 33.0	undeveloped	30,000	133,000	27.66
51.	Swan Lake	AK7NPA0132	Falls Creek	55 35.9	131 21.0	undeveloped	22,000	85,000	58.33
52.	Mahoney Lake	AK7NPA0123	Mahoney Lake	55 25.0	131 31.1	undeveloped	14,400	56,000	30.42
53.	Upper Silvis	AKDNPA0139	Beaver Falls	55 22.8	131 30.9	City of Ketchikan	2,000	49,100	21.71
54.	Lake Connell	AKDNPA0141	Ward Creek	55 26.0	131 40.2	City of Ketchikan	2,000	10,400	56.45
55.	Ketchikan	AKINPA0138	Ketchikan Creek	55 21.5	131 37.0	City of Ketchikan	2,000	15,000	31.10
56.	Chester Lake	AKPNPA0097	Nichols Off	55 7.1	131 31.6	City of Metlakatla	2,500	5,200	48.75
57.	Black Bear	AK7NPA0104	Black Bear	56 32.9	132 0.5	undeveloped	5,000	22,000	44.36
58.	Lake Mary	AK7NPA0395	Old Franks Creek	55 26.0	132 29.0	undeveloped	9,600	42,300	49.80
59.	Mellen Lake	AK7NPA0255	Reynolds Creek	55 12.0	132 36.0	undeveloped	8,000	30,000	41.68

TABLE 3

The following tables provide physical data and environmental and social impacts of the proposed projects. The environmental and social impact codes can be identified through the following matrixes:

Description Matrix for Potential Environmental Concerns Code

Environmental Concern / Column No.	State/Nat'l Parks & Wilderness area	Designated and Potential W&S R.	Resident Fish	Anadromous Fish	Wildlife Habitat	Endangered Species	Wetlands
Impact	1	2	3	4	5	6	7
Unknown	U	U	U	U	U	U	U
No	N	N	N	N	N	N	N
Yes	Y	Y	Y	Y	Y	Y	Y

Description Matrix for Potential Social Concerns Code

Social Concern / Column No	Cultural/Historical Resources	Community Relocation	Transportation Relocation	Farm Land	Local Comment	Environmental Group Comment	Other Group Comment	Utility Interest	State Comment
Impact	1	2	3	4	5	6	7	8	9
Unknown	U	U	U	U	U	U	U	U	U
No	N	N	N	N	N	N	N	N	N
Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y

SURVEY SITES
TABLE 4

SITE ID / DEP ACTV / CODE INV / GEOG. AREA	PROJECT NAME / PRIMARY CO. -NAME OF STREAM / OWNER / MAP REFERENCE	LATITUDE / LONGITUDE / DR.AREA (D M.M) (D M.M) (SQ.MI)	PROJ.PURP. / STATUS / AVE. Q (CFS)	DAM HT / F C STOR. / PWR. HD. (FT) (AC FT) (FT)	EXIST.CAP. / INC. CAP. / TOT. CAP. (KW) (KW) (KW)	EXIST.ENRG / INC.ENERGY / TOT.ENERGY (MWH) (MWH) (MWH)	ANUL. COST / ENERGY COST (1000 $) ($/MWH)	ENVIRONMENTAL IMPACT CODE / SOCIAL IMPACT CODE
AKJUPA0102	SNETTISHAM	58 5.9	H	10.0	97160	168500	1902.8	YNNNUNN
I 2	JUNEAU LUNG LAKE	133 48.0	OP	150000	23300	0	0	
SOUTHEAST	AK POWER ADMIN.	30	447.0	800.0	70460	84250		NNNNYNYYY
	TAKU RIVERA-6							
AK6NPA0042	SPEEL DIVISION	58 6.9	H	325.0	0	0	9032.7	NNUUUUU
I 2	JUNEAU SPEEL RIVER	133 42.9	IS	910000	63000	275000	32.846	
SOUTHEAST	UNDEVELOPED	194	-2314.5	272.7	63000	275000		UNNUUUUUU
	TAKU RIVERA-5.							
AK7NPA0083	SWEETHEARTFALLS	57 56.6	H	150.0	0	0	4850.2	NNUUUUU
I 2	JUNEAU SWEETHEARTCRE	133 38.1	IS	206000	29000	127000	38.199	
SOUTHEAST	UNDEVELOPED	35	328.0	611.5	29000	127000		UNNUYYYYY
	SUMDUM D-5							
AK7NPA0086	TEASE	58 5.9	H	80.0	0	0	2050.9	NNUUUUU
I 2	JUNEAU TEASE CREEK	133 40.2	IS	22000	16000	70000	29.428	
SOUTHEAST	UNDEVELOPED	11	152.0	1032.9	16000	70000		UNNUYYYYY
	TAKU RIVERA-5.							
AKMNPA0086	TREADWELL DITCH	58 15.5	H	5.0	0	0	297. 0	NNUUUUU
I 2	JUNEAU TREADWELL DIT	134 22.3	IS	400	2500	10000	25.700	
SOUTHEAST	AK ELEC LIGHT & POWER	15	75.0	517.4	2500	10000		UNNUUUUYU
	JUNEAU D-2,A-2							
AK7NPA0163	UPPER SWEETHEART	57 59.7	H	35.0	0	0	1316.7	NNUUUUU
I 2	JUNEAU SWEETHEARTCRE	133 30.6	IR	18000	7000	30660	42.945	
SOUTHEAST	UNDEVELOPED	5	45.0	1178.8	7000	30660		UNNUUUUUU
	SUMDUM D-5							
AK7NPA0103	BRADLEY LAKE	59 45.0	H	120.0	0	0	7587.5	NNYYYNY
I 2	KENAI-COOKIN BRADLEY CREEK	150 51.0	PA	363000	94000	410000	18.408	
SO CENTRAL	UNDEVELOPED	86	594.0	1053.9	94000	410000		NNNUYYYYY
	SELDUVIA D-3,C-3.							
AK7NPA0106	CHAKACHAMNA LAKE	61 13.0	H	5.0	0	0	1968A	YNUUUUU
I 2	KENAI-COOKIN CHAKACHAMNA R	152 22.0	IS	4015000	366000	1400000	12.305	
SO CENTRAL	UNDEVELOPED	1120	3646.0	792.2	366000	1400000		UNNUUUUUU
	TYONEK A-7.							
AK6NPA0108	COFFEE	61 12.0	H	120.9	0	0	8068.1	NNYYUUU
I 2	KENAI-COOKIN BELUGA RIVER	151 10.0	IS	0	37000	160000	50.413	
SO CENTRAL	UNDEVELOPED	840	2486.0	108.8	37000	160000		UNNUUUUUU
	TYONEK A-8.							

SURVEY SITES
TABLE 4

SITE ID / DEP ACTV / CODE INV / GEOG. AREA	PROJECT NAME / PRIMARY CO. -NAME OF STREAM / OWNER / MAP REFERENCE	LATITUDE / LONGITUDE / DR.AREA (D M.M) (D M.M) (SQ.MI)	PROJ.PURP. / STATUS / AVE. Q (CFS)	DAM HT / F C STOR. / PWR. HD. (FT) (AC FT) (FT)	EXIST.CAP. / INC. CAP. / TOT. CAP. (KW) (KW) (KW)	EXIST.ENRG / INC.ENERGY / TOT.ENERGY (MWH) (MWH) (MWH)	ANNUL. COST / ENERGY COST (1000 $) ($/MWH)	ENVIRONMENTAL IMPACT CODE / SOCIAL IMPACT CODE
AK6%PA0012 I 2 SOUTHWEST	KISARALIK RIVER BETHEL KISARALIK RIV UNDEVELOPED BETHEL B-3.	60 26.4 160 5.5 548	H ID 800.0	315.0 714000 264.7	0 30000 30000	0 131000 131000	7031.4 56.72A	YYUUUUU UNAUUUUUU
AK7%PA0018 I 2 SOUTHWEST	GRANT LAKE BRISTOL BAY WOOD RIVER UNDEVELOPED DILLINGHAM D-7,D-8	59 45.9 158 32.0 37	H IS 96.0	56.0 52500 209.7	0 2700 2700	0 12672 12672	1868.5 145.87	NNUUUUU UNAUUUUUU
AK7%PA0155 I 2 SOUTHWEST	LAKE ELVA BRISTOL BAY ELVA CREEK UNDEVELOPED GOODNEWS BAY C-1	59 37.9 159 0.0 10	52.2	137.0 29000 259.7	0 1000 1000	0 8000 8000	2324.6 290.58	UNNNNNU NUNNNNNNYU
AK7%PA0032 I 2 SOUTHWEST	TAZIMINA BRISTOL BAY TAZIMINA RIVE UNDEVELOPED ILIAMNA D-5.	59 58.0 154 33.0 320	H IS 1440.0	65.0 148000 190.0	0 18000 18000	0 224000 224000	4809.8 17. 8	YNYYYNN UNNNNNNNNU
AK5%PA0039 D 2 SO CENTRAL	POWER CREEK 1 CORDOVA-MCCA POWER CREEK UNDEVELOPED CORDOVA C-5.	60 35.1 145 32.8 21	H SP 251.0	25.0 0 359.6	0 5000 5000	0 24000 24000	2687.0 103.38	NNYYNUN NUNNYNNUYY
AK1%PA0096 I 2 SOUTHEAST	ANNEX JUNEAU ANNEX CREEK ALASKA ELEC LGT AND PWR JUNEAU A-1	58 19.5 134 7.6 6	H UP -63.4	25.0 23400 755.0	3500 1750 5250	6000 9000 9000	171.52 57.176	NNUUUUU UNNUUUUUU
AK7%PA0394 D 2 SOUTHEAST	CRATER LAKE JUNEAU CRATER CREEK UNDEVELOPED TAKU A-6.	58 8.0 133 45.7 12	H IS 185.0	55.0 118000 979.0	0 11872 11872	0 81400 81400	1977.4 47.658	NNNNNNN NUNUYNUYY
AK4%PA0099 I 2 SOUTHEAST	GOLD CREEKS JUNEAU GOLD CREEK ALASKA ELECTRIC LGHT & POWE JUNEAU A-2	58 17.4 134 23.9 10	H UP -57.7	5.0 0 225.0	1400 2000 3400	6800 9464 15763	312.48 38.878	NNUUUUU UNNUUUUUU
AK5%PA0096 I 2 SOUTHEAST	LAKE DOROTHY JUNEAU DOROTHY CREEK UNDEVELOPED TAKU RIVERA-6.	58 14.0 134 3.0 11	H IS 112.0	5.0 165000 2367.6	0 30000 30000	0 150000 150000	2246.3 15.242	NNUUUUU UNNUYYYYY

SURVEY SITES
TABLE 4

SITE ID / DEP / CODE / GEOG. AREA	PROJECT NAME / PRIMARY CO. -NAME OF STREAM / OWNER / MAP REFERENCE	LATITUDE / LONGITUDE / OR.AREA (D M. / D M.M / SQ.MI)	PROJ.PURP. / STATUS / AVE. Q (CFS)	DAM HT / F C STOR. / PWR. HD. (FT / AC FT / FT)	EXIST.CAP. / INC. CAP. / TOT. CAP. (KW)	EXIST.ENRG / INC.ENERGY / TOT.ENERGY (MWH)	ANUL. COST / ENERGY COST (1000 $ / $/MWH)	ENVIRONMENTAL IMPACT CODE / SOCIAL IMPACT CODE
AKINPA0138	KETCHIKAN LAKES	55 21.5	SM	33.0	4200	14800	159.52	NNUUUUU
I 2	KETCHIKAN KETCHIKAN CRE	131 37.0	OP	9200	1400	2140	74.545	
SOUTHEAST	CITY OF KETCHIKAN	11	-146.1	265.0	5600	16940		UNNIIUUIIUU
	KETCHIKAN B-5							
AKONPA0141	LAKE CONNELL DAM	55 26.0	SO	85.0	0	0	590.28	NNUUUUU
I 2	KETCHIKAN WARD CREEK	131 40.2	OP	8300	2000	10456	56.450	
SOUTHEAST	KETCHIKAN PULP COMPANY	13	178.0	149.8	2000	10456		UNNUUUUUU
	KETCHIAKANB-5,B-6							
AK7NPA0123	MAHONEY LAKE UPPER	55 25.0	H	25.0	0	0	1691.8	NNYNYNN
I 2	KETCHIKAN MAHONEY LAKE	131 31.1	IS	10200	14000	55590	30.426	
SOUTHEAST	UNDEVELOPED	2	44.0	1825.1	14000	55590		YNNNYNIIYY
	KETCHIKAN B-5							
AK7NPA0132	SWAN LAKE	55 35.9	H	195.0	0	0	4958.7	NNYYNIU
I 2	KETCHIKAN FALLS CR HEVI	131 21.0	IS	179000	22000	85000	54.334	
SOUTHEAST	UNDEVELOPED	36	464.0	274.7	22000	85000		YNNNYUIIYY
	KETCHIKAN C-3.							
AKONPA0139	UPPER SILVIS LAKE	55 22.8	H	60.0	2100	5000	286.20	NNUUUUU
D 2	KETCHIKAN BEAVER FALLS	131 30.9	OP	22000	2000	49111	5.9277	
SOUTHEAST	CITY OF KETCHIKAN	22	-574.9	265.0	4100	58111		UNNUUUUUU
	KETCHIKAN B-5							
AK7NPA0146	TERROR LAKE	57 40.0	H	70.0	0	0	2772.1	YNNYYNN
I 2	KODIAK TERROR RIVER	153 6.0	IS	0	20000	139000	19.943	
SO CENTRAL	UNDEVELOPED	17	99.0	1148.8	20000	139000		YYNYYNUYY
	KODIAK C-4.							
AK6NPA0175	BELUGA UPPER	61 15.9	H	180.0	0	0	11143	NNUYUUU
D 2	MATANUSKA-SU BELUGA RIVER	151 15.0	IS	0	48000	210000	53. 66	
SO CENTRAL	UNDEVELOPED	840	2484.0	141.8	48000	210000		UNNIIUUUUU
	TYONEK B-6.							
AK6NPA0181	CHULITNA HURRICANE	63 4.9	H	230.0	0	0	7882.3	NNUIIIUU
I 2	MATANUSKA-SU CHULITNA RIVE	149 45.0	IS	0	34000	166000	45. 74	
SU CENTRAL	UNDEVELOPED	795	2622.0	206.7	34000	166000		UNYIIUUIUU
	HEALY A-6.							
AK6NPA0186	DEVIL CANYON NPA PROPOSAL	62 48.4	HRC	635.0	0	0	39328	NYNNNIIN
D 2	MATANUSKA-SU SUSITNA RIVER	149 18.9	FP	1050000	776000	3810000	11.532	
SO CENTRAL	UNDEVELOPED	5810	9227.0	574.8	776000	3810000		UNNNYNUYY
	TALKEETNA ATS D-5 D-6.							

SURVEY SITES
TABLE 4

SITE ID / PROJECT NAME / PRIMARY CD. -NAME OF STREAM / OWNER / MAP REFERENCE	LATITUDE / LONGITUDE / DR.AREA (D M,M) (D M,M) (SQ.MI)	PROJ.PURP. / STATUS / AVE. Q (CFS)	DAM HT / RES.STOR. / NOR. HD. (FT) (AC FT) (FT)	EXIST.CAP. / INC. CAP. / TOT. CAP. (KW) (KW) (KW)	EXIST.ENRG / INC.ENERGY / TOT.ENERGY (MWH) (MWH) (MWH)	ANNL. COST / ENERGY COST (1000 $) ($/MWH)	ENVIRONMENTAL IMPACT CODE / SPCIAL IMPACT CODE
AKANPA0197	KEETNA	H	360.0	0	0	9849.7	
I 2	MATANUSKA-SU TALKEETNA RIV	IS	910000	74000	324000	30.362	
SU CENTRAL	UNDEVELOPED	1250	2400.0	285.7	74000	324000	
	TALKEETNA MTS M-6						
AKANPA0211	SKWENTNA (HAYES)	61 51.9	H	360.0	0	0	14713
2	MATANUSKA-SU SKWENTNA RIVE	152 7.0	IS	0	96000	490000	30. 27
SU CENTRAL	UNDEVELOPED	950	2424.0	290.7	96000	490000	
	TYONEK C-4.						
AKANPA0216	TALKEETNA 2	62 28.0	H	575.0	0	0	9867.0
I 2	MATANUSKA-SU TALKEETNA RIV	149 22.0	IS	0	90000	406445	23.341
SU CENTRAL	UNDEVELOPED	850	1650.0	369.6	90000	406445	
	TALKEETNA MTNS A-5.						
AKANPA0222	MATANA UNAPPROPOSAL	62 48.9	HRC	810.0	0	0	42569
D 2	MATANUSKA-SU SUSITNA RIVER	148 30.9	PP	9624000	792000	3600000	17.979
SU CENTRAL	UNDEVELOPED	5180	8137.0	659.3	792000	3600000	
	TALKEETNA MTS U-4,3,2 C-2,1.						
AKANPA0229	YENTNA	61 36.9	H	120.0	0	0	36940
D 2	MATANUSKA-SU YENTNA RIVER	150 32.0	IS	0	219000	960000	38.474
SU CENTRAL	UNDEVELOPED	6400	17611.0	81.4	219000	960000	
	TYONEK C-2.						
AKPNPA0097	CHESTER LAKE	55 7.1	H	12.0	0	0	254.55
I 2	OUTER KETCHI NICHOLS OFFST	131 51.6	OP	300	2500	5221	48.759
SOUTHEAST	METLAKATLAPOWER & L IGHT	2	25.0	749.2	2500	5221	
	KETCHIKAN A-5						
AK7NPA0106	BLACK BEARLAKE	56 32.9	H	28.0	0	0	976. 6
I 2	PRINCE OF WA BLACK BEARCRE	132 0.5	IS	6900	5000	22000	44.367
SOUTHEAST	UNDEVELOPED	1	13.5	1058.5	5000	22000	
	CRAIG C-5						
AK7NPA0395	LAKE MARY	55 26.0	H	30.0	0	0	2104.9
I 2	PRINCE OF WA OLD FRANKSCRE	132 29.0	IS	95000	9600	42300	49.808
SOUTHEAST	UNDEVELOPED	27	240.0	244.7	9600	42300	
	CRAIG B-2						
AK7NPA0255	MELLEN LAKE	55 12.0	H	35.0	0	0	1250.4
I 2	PRINCE OF WA REYNOLDS CREE	132 36.0	IS	0	8000	50000	41.662
SOUTHEAST	UNDEVELOPED	6	62.0	844.1	8000	50000	
	SITKA D-3.						

SURVEY SITES
TABLE 4

SITE ID / PROJECT NAME / LATITUDE / PROJ.PURP. / DAM HT / EXIST.CAP. / EXIST.ENRG / ANUL. COST / ENVIRONMENTAL IMPACT CODE
PRIMARY CO. -NAME OF STREAM / LONGITUDE / STATUS / F C STOR. / INC. CAP. / INC.ENERGY / ENERGY COST /
DEP ACTV / OWNER / DR.AREA / AVE. Q / PWR. HD. / TOT. CAP. / TOT.ENERGY / /
CODE INV / MAP REFERENCE / (D M.M) / / (FT) / (KW) / (MWH) / (1000 $) /
GEOG. AREA / / (SQ.MI) / (CFS) / (AC FT) / (FT) / (KW) / (MWH) / ($/MWH) / SOCIAL IMPACT CODE
AK7NPA0283 / SNOW / 60 17.9 / H / 310.0 / 0 / 0 / 8685.5 / NNNNNNNU
1 2 / SEWARD SNOW RIVER / 149 18.0 / IS / 0 / 63000 / 278000 / 31.242 /
SO CENTRAL / UNDEVELOPED / 85 / 710.0 / 652.3 / 63000 / 278000 / / UNNUUUUUU
/ SEWARD B-7. / / / / / / /
AK7NPA0319 / HONOUINO LAKE / 56 22.3 / H / 5.0 / 0 / 0 / 1041.7 / NNUUUUU
1 2 / SITKA BIG PORT WALT / 134 42.9 / IS / 28000 / 5000 / 24300 / 44.516 /
SOUTHEAST / UNDEVELOPED / 3 / 66.0 / 479.5 / 5000 / 24300 / / UNNUUUUUU
/ PORT ALEXANDER B-3. / / / / / / /
AK7NPA0321 / CARBON LAKE / 57 1.9 / H / 65.0 / 0 / 0 / 2849.8 / NNUUUU
1 2 / SITKA UNNAMED / 134 28.1 / IS / 56880 / 10000 / 49000 / 58.160 /
SOUTHEAST / UNDEVELOPED / 27 / 483.0 / 259.7 / 10000 / 49000 / / UNNUUUUUU
/ SITKA A-3. / / / / / / /
AK7NPA0325 / DIANA LAKE / 56 53.0 / H / 5.0 / 0 / 0 / 1318.0 / NNUUUUU
2 / SITKA UNNAMED / 135 3.0 / IS / 0 / 8000 / 35000 / 37.658 /
SOUTHEAST / UNDEVELOPED / 4 / 56.0 / 1473.5 / 8000 / 35000 / / UNNUUUUUU
/ PORT ALEXANDER D-4. / / / / / / /
AK7NPA0332 / GREEN LAKE / 56 95.30 / H / 200.0 / 0 / 0 / 3101.9 / NNNNNNN
1 2 / SITKA VODOPAD RIVER / 135 11.60 / UC / 132000 / 16400 / 64000 / 48.467 /
SOUTHEAST / UNDEVELOPED / 28 / 291.0 / 348.6 / 16400 / 64000 / / NNNUYYYYY
/ PORT ALEXANDER D-4 / / / / / / /
AK7NPA0335 / KASNYKU LAKE / 57 11.0 / H / 20.0 / 0 / 0 / 1248.8 / NNUUUUU
1 2 / SITKA KASNYKU FALLS / 134 49.9 / IS / 0 / 7000 / 30000 / 41.626 /
SOUTHEAST / UNDEVELOPED / 5 / 70.0 / 650.3 / 7000 / 30000 / / UNNUUUUUU
/ SITKA A-5. / / / / / / /
AK7NPA0291 / MAKSOUTOF RIVER / 56 30.0 / H / 80.0 / 0 / 0 / 2747.1 / NNUUUUU
1 2 / SITKA MAKSOUTOF RIV / 134 57.9 / IS / 0 / 24000 / 117000 / 23.479 /
SOUTHEAST / UNDEVELOPED / 24 / 375.0 / 569.4 / 24000 / 117000 / / UNNUUUUUU
/ PORT ALEXANDER C-3. / / / / / / /
AK7NPA0294 / MILK LAKE / 56 58.0 / H / 30.0 / 0 / 0 / 1290.3 / NNUUUUU
1 2 / SITKA MILK CREEK / 134 47.0 / IS / 0 / 7000 / 33000 / 39.101 /
SOUTHEAST / UNDEVELOPED / 11 / 230.0 / 645.3 / 7000 / 33000 / / UNNUUUUUU
/ PORT ALEXANDER B-3 / / / / / / /
AK1NPA0346 / PELICAN CREEK / 57 34.7 / H / 22.0 / 500 / 2000 / 128.56 / NNUUUUU
1 2 / SITKA PELICAN CREEK / 136 7.8 / OP / 200 / 1000 / 1700 / 75.507 /
SOUTHEAST / PELICAN UTIL. CO. / 12 / 150.0 / 120.0 / 1500 / 3700 / / UNNUUUUUU
/ SITKA D-7 / / / / / / /

SURVEY SITES
TABLE 4

SITE ID / DEP CODE / ACTV INV / GEOG. AREA	PROJECT NAME / PRIMARY CO. -NAME OF STREAM / OWNER / MAP REFERENCE	LATITUDE / LONGITUDE / DR.AREA (D M.M) (D M.M) (SQ.MI)	PROJ.PURP. / STATUS / AVE. Q (CFS)	DAM HT / F C STOR. (AC FT) / PWR. HD. (FT)	EXIST.CAP. / INC. CAP. / TOT. CAP. (KW) (KW) (KW)	EXIST.ENRG / INC.ENERGY / TOT.ENERGY (MWH) (MWH) (MWH)	ANUL. COST / ENERGY COST (1000 $) ($/MWH)	ENVIRONMENTAL IMPACT CODE / SOCIAL IMPACT CODE
AK7NPA0311	TAKATZ CREEK	57 6.9	H	205.0	0	0	3348.6	YNNNNUU
I 2	SITKA TAKATZ CREEK	134 51.0	IS	145800	20000	97000	34.480	
SOUTHEAST	UNDEVELOPED	10	180.0	990.0	20000	97000		UNNUUUUUU
	SITKA 1-3.							
AK6NPA0078	DAYEBAS CREEK	59 17.2	H	15.0	0	0	1199.6	UNNNYUU
I 2	SKAGWAY-YAKU DAYEBAS CREEK	135 2.0	IS	0	5000	18190	65.951	
SOUTHEAST	UNDEVELOPED	11	85.5	344.6	5000	18190		UNNUUUUYU
	SKAGWAY B-1							
AK1NPA0359	DEWEY LAKES	59 26.8	HS	20.0	375	1000	108.40	NNUUUUU
I 2	SKAGWAY-YAKU DEWEY CREEK	135 18.9	OP	410	1000	1300	83.385	
SOUTHEAST		7	30.0	400.0	1375	2300		UNUUUUUUU
	SKAGWAY B-1							
AK7NPA0357	GOAT LAKE	59 31.3	H	15.0	0	0	1555.2	NNUUUUU
I 2	SKAGWAY-YAKU PITCHFORK CAL	135 11.0	IS	6000	10000	46000	33.408	
SOUTHEAST	UNDEVELOPED	4	29.0	1868.1	10000	46000		UNNUUUUUU
	SKAGWAY C-1.							
AK7NPA0041	ALLISON CREEK	61 7.1	H	1.0	0	0	837.10	NNUYNNN
I 2	VALDEZ-CHIT- ALLISON CREEK	146 10.2	IS	19980	8000	18000	46.505	
SO CENTRAL	UNDEVELOPED	5	49.0	1148.9	8000	18000		UUNNYYYYY
	VALDEZ A-7							
AK7NPA0386	SOLOMON GULCH	61 30.9	H	10.0	0	0	1462.1	NNNNNUU
I 2	VALDEZ-CHII- SOLOMON GULCH	146 15.9	IS	0	12000	65000	25.571	
SO CENTRAL	UNDEVELOPED	18	138.0	607.3	12000	65000		UUNUYUUUY
	VALDEZ A-7							
AK7NPA0310	THOMAS BAY	57 3.3	H	3.0	0	0	4016.8	NNNNNNN
I 2	WRANGELL PET CASCADE CREEK	132 45.2	IS	97500	50000	217417	18.477	
SOUTHEAST	UNDEVELOPED	18	226.0	1443.5	50000	217417		NNNNYYYYY
	SUMDUM A-2A-5							
AK6NPA0414	ANITA	56 15.5	H	48.0	0	0	772.60	NNUUUUU
I 2	WRANGELL-PET ZIMUVIA STRAI	132 26.5	IS	15500	3230	14150	54.607	
SOUTHEAST	UNDEVELOPED	2	27.0	1005.0	3230	14150		UUUUUUUUU
	PETERSBURGH-2.							
AK7NPA0301	HANDING RIVER	56 16.1	H	190.0	0	0	5137.6	NNUUUUU
I 2	WRANGELL-PET HANDING RIVER	131 58.9	IS	200000	18000	85000	60.447	
SOUTHEAST	UNDEVELOPED	61	725.0	254.7	18000	85000		UUUUUUUUU
	BRADFIELD CANAL A-5							

SURVEY SITES
TABLE 4

SITE ID	PROJECT NAME	LATITUDE	PROJ.PURP.	DAM HT	EXIST.CAP.	EXIST.ENRG	ANUL. COST	ENVIRONMENTAL
	PRIMARY CO. -NAME OF STREAM	LONGITUDE	STATUS	F C STOR.	INC. CAP.	INC.ENERGY	ENERGY COST	IMPACT CODE
DEP ACTV	OWNER	DR.AREA	AVE. Q	PWR. HD.	TOT. CAP.	TOT.ENERGY		
CODE INV	MAP REFERENCE	(D M.M)		(FT)	(KW)	(MWH)	(1000 $)	
GEOG. AREA		(D M.M)		(AC FT)	(KW)	(MWH)	($/MWH)	SOCIAL
		(SQ.MI)	(CFS)	(FT)	(KW)	(MWH)		IMPACT CODE
AK??PA0400	MUTH LAKE	56 59.0	H	210.0	0	0	2873.6	NNUUUUU
1 2	ARANGELL-PET DELT CREEK	132 45.0	IS	0	13000	63000	45.613	
SOUTHEAST	UNDEVELOPED	8	81.0	1447.5	13000	63000		UNNUUUUUU
	PETERSBURG-3.							
AK??PA0401	SCENERY CREEK	57 4.9	H	10.0	0	0	2280.7	NNUUUUU
1 2	ARANGELL-PET SCENERY CREEK	132 41.9	IS	60000	15000	67000	54. 41	
SOUTHEAST	UNDEVELOPED	21	202.8	619.3	15000	67000		UNNUUUUUU
	SUMDUM A-2,A-3.							
AK??PA0406	TYEE CREEK	56 12.0	H	100.0	0	0	3678.2	NNUUUUU
1 2	WRANGELL-PET TYEE CREEK	131 33.0	IS	105000	30000	132940	27.668	
SOUTHEAST	UNDEVELOPED	14	163.0	1356.6	30000	132940		UNNUUUUUU
	PRADFIELD CANAL A-5.							
AK??PA 427	NENANA	64 11.0	H	230.0	0	0	27731	NNUUUUU
1 2	YUKON-KOYUKU NENANA RIVER	149 15.0	IS	0	200000	566000	48.995	
YUKON	UNDEVELOPED	2450	4492.0	206.7	200000	566000		UNNUUNNNN
	FAIRBANKS A-5.							

TABLE 5

Regional Requirements versus Hydroelectric Potenti:

REGION	ESTIMATED REQUIREMENT		HYDROELECTRIC POTENTIAL		MARKETABLE HYDROELECTRIC POTENTIAL 1/	
	MW	GWh	MW	GWh	MW	GWh
Southcentral	2,541	10,560	2,728	12,004	2,587	11,184
Yukon	675	2,072	200	566	200	566
Southeast	349	1,131	549	2,486	152	668
Southwest	134	358	85	376	30	131
Remainder of State	301	879	0	0	0	0
	4,000	15,000	3,562	15,432	2,969	12,549

1/ Marketable Projects by Year 2000. Source: Alaska Power Administration

Susitna Power Now, Inc.
P.O. Box 7-4436 Fairbanks Alaska 99701 (907) 452-5272
P.O. Box 981 Anchorage Alaska 99510 (907) 276-7744

SUSITNA HYDROPOWER PROJECT

Pertinent Data

Location	Watana	Devil Canyon
	River Mile 165 (2 mi. upstream from DC pool head)	River Mile 134 (14.5 mi. from Gold Creek)
Type Construction	Earthfill	Concrete, thin-arch
Height, feet	810	635
Crest Length, feet	3,450	2,475
Design Earthquake Richter Scale	8.5	8.5
Water surface area (full pool) acres	43,000	7,550
Average annual estimated drawdown-feet	100	5
Reservoir Length (river miles inundated)	54+	28
Firm Annual Energy BkwHrs	3.1	3.0
Secondary Production for 2-dam system annually BkwHrs	0.44	0.36
Access Road, miles	37	27
Reservoir Storage Loss-Sedimentation, per 100 yrs.(comb.)	4.2 %	6.5 %

TRANSMISSION SYSTEM	to Anchorage	to Fairbanks
Two-single Circuit lines	136 miles 345 KV	198 miles 230 KV

COST

Total Project Costs January 1979 dollars	$2,590,000,000

Co-Chairmen
Bob Penney
Lee Wareham

Treasurer
John Spencer

Secretary
Dave Hutchens

Susitna Power Now, Inc. Newsletter

Volume 1, No. 1
April 1980

P. O. BOX 981, Anchorage, Alaska 99510 (907) 277-7644

SUSITNA BACKERS SPEAK OUT AT CHAMBER LUNCHEON

At a St. Patrick's Day luncheon of the Anchorage Chamber of Commerce backers of the Susitna Hydroelectric Project warned of massive cutbacks in the use of electricity and higher electrical rates by 1990 without development of the State's hydroelectric potential. In his remarks before the Chamber luncheon, John Spencer, Executive Manager of the Anchorage Municipal Utilities and Treasurer of SUSITNA POWER NOW, INC. urged that State funds be invested in the project. "It's not pleasant to have the lights go out... but if we don't do something that's what will happen", he said.

Eric Yould, Executive Director of the Alaska Power Authority told the luncheon audience that Alaska, with its precipitous terrain and large water run-off has "roughly one-half the un-tapped hydro power in the U.S.

Bob Penny, Co-Chairman of SUSITNA POWER NOW, INC. noted that eighty percent of the State's population would receive low-cost energy from the project. "I can think of no better way to spend the energy surplus than using it on this project", Penny said.

CHAMBER GIVES SUSITNA DAM OK

In a joint action the Anchorage and Fairbanks Chambers of Commerce have come out in support of the Susitna River Hydroelectric Project. The resolution notes that energy use will continue to rise as well as the price of natural gas and oil. The proposed hydroelectric power would help decrease dependence on those fuel sources. The businessmen came out in support of SB 294 and 295, providing for construction of the project by the A.P.A. and appropriating money for studies leading to application for a Federal license to construct the project.

SUSITNA POWER NOW, INC. OPENS ANCHORAGE OFFICE

At the Board of Directors meeting in Juneau, March 7, Co-Chairman Lee Wareham of Fairbanks announced the opening of the Anchorage office. Located at 2702 Denali the office is staffed by Ms. Eve Dischner. Office hours are from 9:00 to 5:00 and the telephone number is 276-7744.

MEMBERSHIP DRIVE

Ike Waldrop, Membership Chairman reported at the Board of Directors meeting in Juneau that the membership drive is just getting off the ground. LET'S ALL PITCH IN AND DO OUR SHARE - ENROLL YOUR FRIENDS AND NEIGHBORS AS MEMBERS. Requests for membership applications may be sent to the Anchorage office. Current membership stands at ~~300~~ 600+

SB 294 RECEIVES UNANIMOUS APPROVAL OF SENATE RESOURCES COMMITTEE

The Senate Resources Committee unanimously gave it's approval to SB 294 which directs the Alaska Power Authority to get the project moving. Bills which appropriate State money to that end are now in the Senate Finance Committee.

SUSITNA POWER NOW, INC. supported the measure with many witnesses as well as written testimony. Among those speaking in favor of the bill were former Governor Bill Egan. Egan, in his testimony said, "the time has come when we must do everything possible to turn public wealth from Prudhoe Bay oil production into an alternative source of power for use in Alaska."

The lone dissenting testimony provided the hearing's most lively moment. Joe Geldhof, a lobbyist for the Alaska Conservation Society and other environmental groups said his organization was not "flatly opposed" to the Susitna Project, but instead supported smaller hydroelectric dams. Senator Bettye Farenkamp (D-Fairbanks) reminded Mr. Geldhof of the testimony of the environmental groups at Ramparts hearings when they recommended Susitna as an alternative to the Ramparts Dam.

Of the Environmentalists testimony at the Ramparts hearings Senator Don Bennett (R-Fairbanks) said environmentalists had said the Ramparts Dam would flood the Yukon wetlands "and drown the ducks". "I didn't buy that", and continued saying that now the environmentalists say the Susitna Project might harm caribou migration. "It's a waste of my time", Bennett said of such testimony.

(Copies of SB 294, 295 and HB 739 & 570 as well as an abstract of the Senate Resources Committee Hearings (February 16 and March 7) are available from the Anchorage office os SUSITNA POWER NOW, INC.)

COMMENTS FROM OUR MEMBERS

"I feel it is a crime to use a non renewable resource to generate power when hydro-generation could be developed"..... Roger Connolly, Director of Training, Alaska Electrical Apprentice Training Trust.

"This project would give Alaska and Alaskans the energy needed now and for our future growth." ..... Bill Mike Baker, Fairbanks.

Readers and members comments and suggestions are solicited. Let us hear from you.

COMING NEXT MONTH

Future issues of this newsletter will feature a column giving the history of the Susitna Hydroelectric project dating back to the 1940's.

H E L P !

Senate Bill 385 appropriates 54 million dollars for a transmission line tie between South Central and Interior Alaska via the rail belt corridor from Willow to Healy. This line will accommodate economy energy transactions, pooling power generation reserves, and emergency power interchanges. If approved this session, the line could be completed by late 1983. This project warrants the highest priority for all Fairbanks-Anchorage residents.

YOU CAN HELP!

Immediately write your area legislators, the Governor and Lt. Governor urging support of SB 385.

GOVERNOR JAY S. HAMMOND
POUCH A
Juneau, Alaska 99811

LT. GOVERNOR TERRY MILLER
POUCH AA
Juneau, Alaska 99811

SEND CORRESPONDENCE TO: Alaska State Senate or Alaska State House, Pouch V
Juneau, Alaska 99811

From the desk of

UNITED STATES SENATOR MIKE GRAVEL

There is one aspect of the Susitna hydropower issue that I would like to address for your membership's information. As you know, I had authored and shepherded through the Senate Finance Committee a provision that would have allowed large hydroelectric projects to be financed by tax-exempt bonds. The Finance Committee passed the large hydro exemption on October 24, 1979. The full Senate passed it December 17, 1979.

This exemption had the potential of saving Railbelt electrical users literally hundreds of millions of dollars. It would have had an equal benefit on large hydro projects in other parts of the country.

Unfortunately, the House conferees from the Ways and Means Committee strongly oppose tax-exempt bonding of any kind, fearing that the bond purchasers derive an inappropriate tax free income from those bonds. Knowing that, I went to the conference committed to fight for the hydro exemption. Sadly, not one of the House conferees--including some whose districts would have benefited from the hydro exemption--supported the hydro exemption when I pushed it to a vote. It would appear that future efforts to procure the Hydro exemption will need more leverage and priority in the minds of the House members.

That should not be perceived as an insurmountable problem. It will be difficult, of course, as long as the House conferees insist that tax-exempt bonding which benefits large populations is somehow corrupt by virtue of the benefit that accrues to the bond purchaser.

Regardless, that is a fight I am committed to fighting when the time and opportunity arise in the future. For the time being I am confident that there will be any number of bills of substantial importance to the House's concerned Ways and Means members and that we will prevail in obtaining the desires exemption prior to 1983 when Susitna financing will be needed.

Correspondence may be addressed to Senator Gravel at:

UNITED STATES SENATOR MIKE GRAVEL
3121 Dirksen
Senate Office Building
Washington, D. C. 20510

JOIN SUSITNA POWER NOW!

Susitna Power Now was formed by a group of citizens for the sole purpose of creating a viable inflation-proof electrical energy future via construction of the Devil Canyon Upper Susitna Hydroelectric Project.

The Project will cost approximately 3 billion 1980 dollars and provide 6.1 billion kilowatt hours of firm electrical energy on an annual basis. This energy will benefit 80% of the State's population residing in Southcentral and Interior Alaska.

We need your help. Join NOW. Complete the membership application and mail to:

SUSITNA POWER NOW!, INC.
P. O. Box 981
Anchorage, Alaska 99510

MEMBERSHIP APPLICATION

NAME _____

TITLE _____

COMPANY _____

MAILING ADDRESS _____

_____

PHONE _____

SIGNATURE _____

DATE _____

Type of Membership:

General ___ $1.00 for three (3) years

Sustaining ___ $100.00 initiation
$10.00 month dues (payable semi-annually)

Institutional ___ $500.00 or more annually

REMARKS _____

_____

_____

_____

INTRODUCTION

In December 1979 the Economic Feasibility Study for a possible Anchorage - Fairbanks Transmission Intertie (Intertie Study) was completed by IECO-RWRA for the Alaska Power Authority. This Intertie Study reviewed alternative intertie designs that considered the railbelt requirements for generation with and without the Susitna hydroelectric project.

The study concluded that a feasible intertie was possible without the Susitna project as well as with it. The optimized designs for the alternatives studied were for the total line length (323 miles) and included the following voltage and conductor configurations:

Alternative Cases	Interconnection Description	Voltage kV-circ	Optimum ACSR kcmil-no.cond	Capability MW
W/o Susitna:				
I A & B	Anchorage - Ester	230 s/c	954 - 1/c	130
I C	Anchorage - Ester	345 s/c	795 - 2/c	380
I D	Anchorage - Ester	230 s/c	954 - 1/c	130
W/ Susitna:				
II A	Anchorage - D. Canyon	345 s/c x2	954 - 2/c	1200
	D. Canyon - Ester	230 s/c x2	1510 - 1/c	370

After study of the report it was suggested by the Anchorage Municipal Light and Power (AMLP) and the Golden Valley Electric Association (GVEA) that it would be useful to analyze an arrangement that would use existing lines (including a pending extension of a Matanuska Electric Association (MEA) line from Willow to Sunshine) with new line constructed for the remaining portion -- such new line to be built according to the design criteria of Susitna (see II A in the above Table).

The Alaska Power Authority (APA) authorized a brief supplementary study to determine the approximate transfer capabilities and construction costs of such an arrangement. The following pages report the results of this study.

Genesis of This Report

The Intertie Study concluded that a 230 kV single-circuit transmission line with a line loading capability of 130 MW is economically feasible in 1984. This line design is smaller in capacity than would be required if the Susitna Project were constructed. A line design compatible with the Susitna Project was not found feasible by 1984 although the larger capacity circuit is deemed technically preferable for the Anchorage - Fairbanks connection. Further studies were recommended toward finding a way to support this larger capacity circuit.

The suggestion of GVEA and AMLP to study an interim arrangement that would maximize the use of existing lines (resulting in the least amount of new construction) was supported by the APA as a potentially practical way to accomplish the intertie at an earlier date and provide that new construction would be compatible with the larger capacity circuits suitable for the Susitna Project.

The purpose of the following pages is to examine the technical character of such an arrangement with a view toward maximizing the power transfer capability at minimum initial construction cost.

Technical Scope of This Report

The depth of technical review of the interim arrangement described above will include only steady-state analysis of several line configurations with an assigned limit of approximately 30 degrees of power angle between the buses at Pt. MacKenzie and Gold Hill. The stability of these configurations is not analyzed. No serious stability problems are anticipated with the power angle limit as stated.

Future Stability Analysis

If it is determined that an interim system configuration as described herein be implemented, it is important to make a complete stability analysis that would consider the characteristics of such intertie, the connected rotating machinery (generators, motors) and the control characteristics (governors, voltage regulators, relaying and switching, etc.) Such a study would provide the guidelines for selection or modification of control equipment, if necessary, and establish guidelines for operating the interconnected system.

Line Configurations Studied

Five general line configurations were studied to provide information regarding line transfer capabilities and related construction costs:

I- Existing Lines to Willow and Healy
New 345 kV s/c line with 2-954 kcm, Willow to Susitna Jct. - 72 miles
New 230 kV s/c line with 1-1510 kcm, Susitna Jct. to Healy - 86.5 miles
Operate lines as follows:

Pt. Mack - Teeland	230 kV
Teeland - Willow	115 kV
Willow - Healy	230 kV (add 32 MVAR Shunt Reactor)
Healy - North Pole	138 kV (add 28 MVAR Shunt Reactor)

Use two winding transformers and no series compensation

II- Same as I above, except:
Use autotransformers and series compensation (20%, Willow to Healy)

II-1 Same as II above, except:
Existing lines to Sunshine and Healy
New 345 kV s/c line with 2-954 kcm, Sunshine to Susitna Jct.-43.5 miles
Operate lines as follows:

Pt. Mack - Teeland	230 kV
Teeland - Sunshine	115 kV
Sunshine - Healy	230 kV (add 32 MVAR Shunt Reactor)
Healy - North Pole	138 kV (add 28 MVAR Shunt Reactor)

III- Same as II-1 above, except:
Operate lines as follows:

Pt. Mack - Teeland	230 kV
Teeland - North Pole	138 kV (add no new Shunt Reactors)

Use autotransformer at Teeland and no series compensation

III-1 Same as III above, except:
Use series compensation (20%, Sunshine to Healy)

Summary and Conclusion

Load Flow studies of 13 Cases with the five configurations previously described were made using the General Electric Company "CIFLO$" program. The line and transformer data, and the worksheets for these cases are attached as Appendix-A.

The following Table-1, "Load Flow Summary Data" contains selected data from the load flow calculations and construction cost estimates for the various configurations. These estimates were developed from the cost data in the original Intertie Study. A sample calculation is shown in Appendix-B attached.

The load flow cases studied clearly show that an interim transmission intertie operated at 138 kV from an assumed supply point at Teeland substation to connect with the GVEA existing 138 kV system at Healy is a technically feasible connection capable of transferring up to 50-plus megawatts of power from Fairbanks to Anchorage and up to 35-plus megawatts from Anchorage to Fairbanks.

It is also shown that by constructing an additional 28.5 miles of new line to Willow an additional 5 megawatts could be transmitted. A more detailed review of the work sheets shows that the "weak" links of such an interim circuit arrangement are the existing 138 kV lines.

Such an interim arrangement is easily capable of transmitting at least 200,000,000 kWh of energy annually and providing reserve capacity as indicated. This could postpone other investments and provide an opportunity for exchange of the lowest cost energy alternatives available along the interconnected system.

If it is assumed that the energy exchanges possible are worth 3 cents per kWh (fuel cost differences now appearing in Anchorage and Fairbanks support this probability) a $6,000,000 per year minimum saving in fuel

cost is possible. The added value of reserve sharing would increase the annual savings attributable to this intertie. Depending on financing costs, it would appear that the $45,000,000 investment is attractive particularly when it is remembered that several million dollars of the cost is for future capacity related to the Susitna Project.

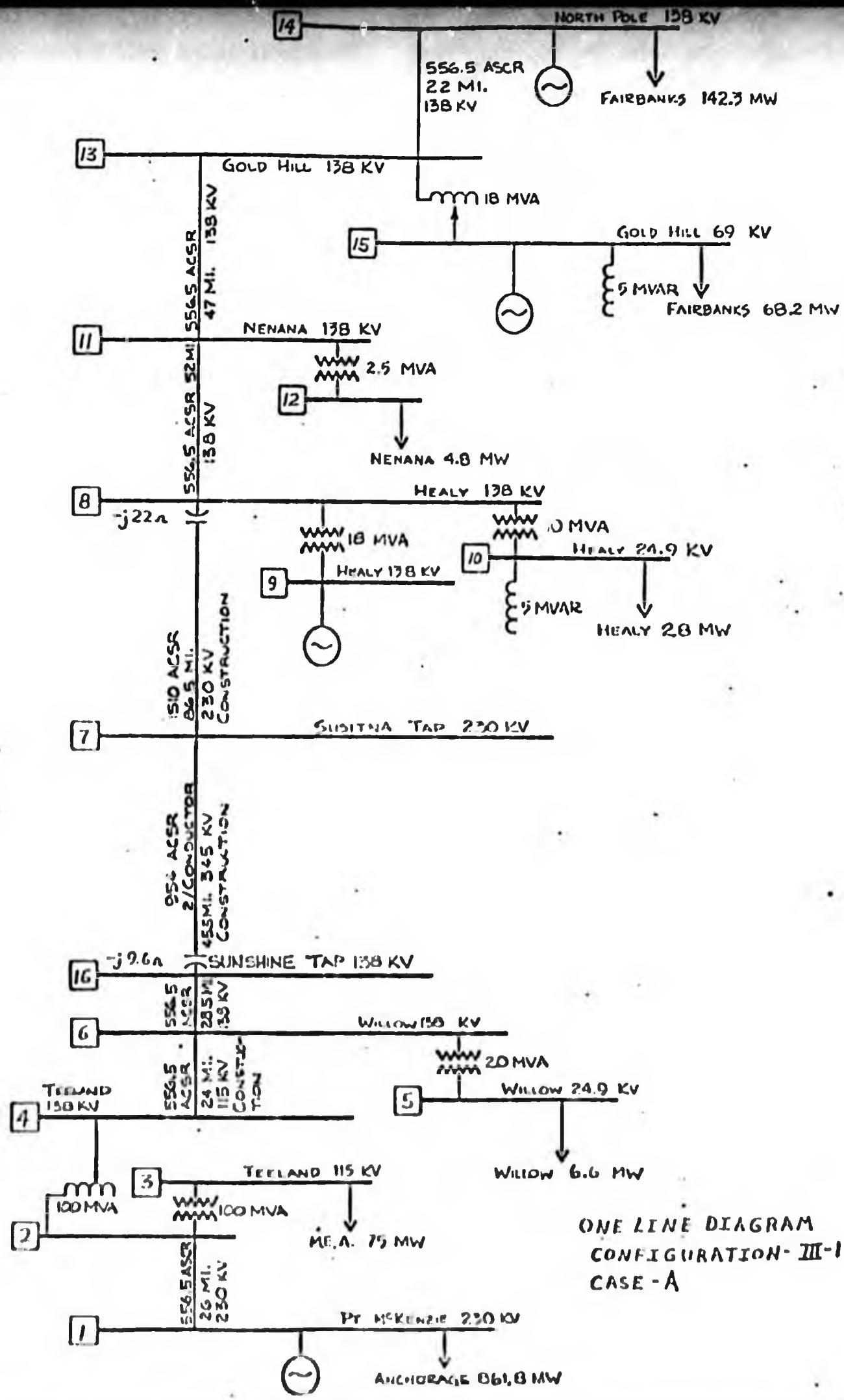
It is recommended that this interim arrangement is worth serious consideration particularly in view of the opportunity to accelerate the completion of an important segment of a renewable energy project. A decision to begin by mid-1980 would allow for construction to start in the winter of 1980-81 and for completion by mid 1983.

Additional specific studies to arrive at the basic details for design support and for negotiations of operating, wheeling and maintenance agreements should be implemented early in the course of action toward accomplishment of such a project.

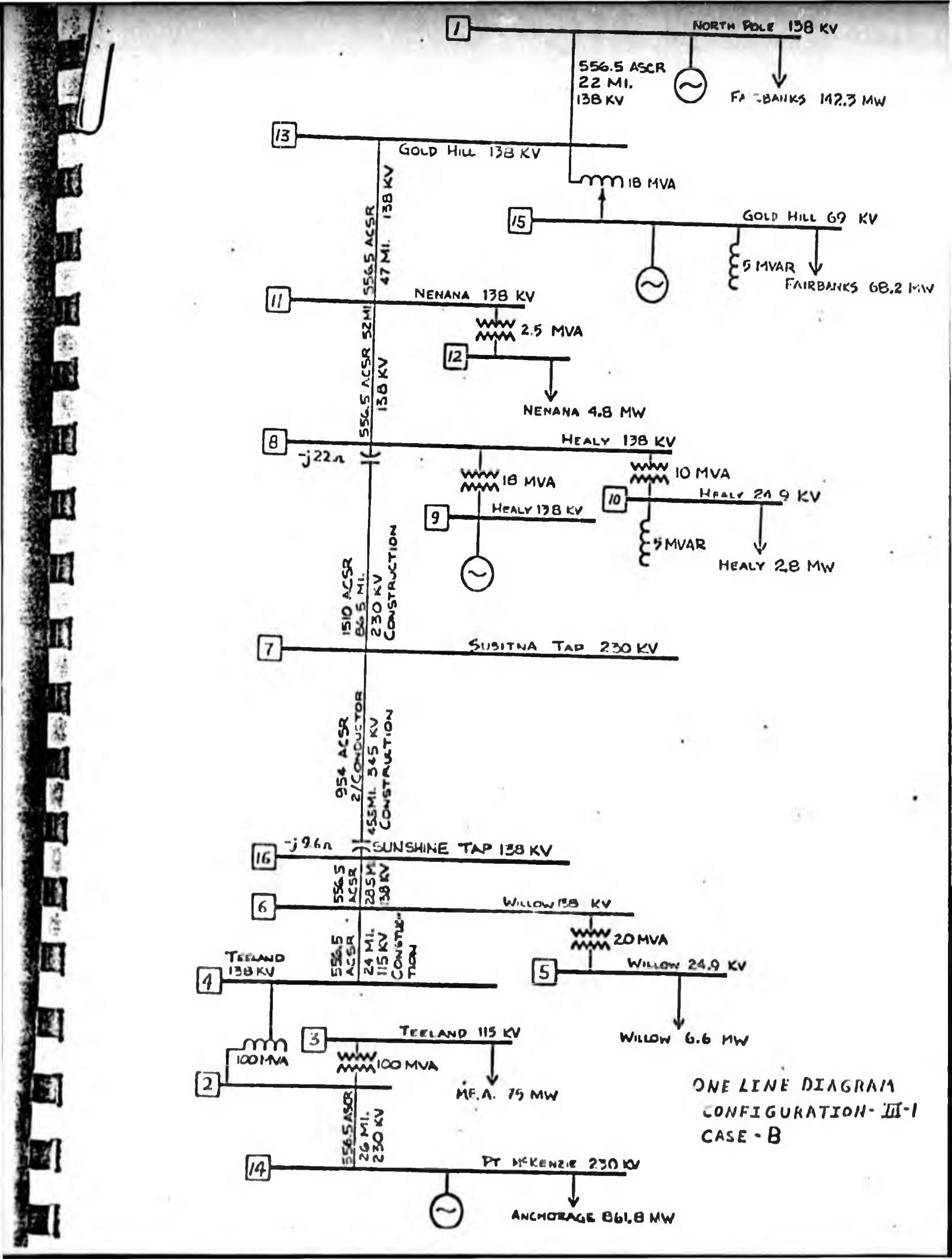
TABLE-1
LOAD FLOW SUMMARY DATA

	CASE	Load Flow Load Year	Line Section Power Transfer - MW	Line Voltage Range - %	Line Loss %/MW*	Power Angle - degrees Pt. Mac - N.Pole	Total Construction Cost**
I	CASE A	Anch-Fbks 1984 Loads	Willow to Healy 35	102 to 112	2.5 / 3.4	33°	$ 63,727,000
	CASE B	Fbks-Anch 1984 Loads	Healy to Willow 50	99 to 108	2.2 / 2.0	27°	$ 63,727,000
	CASE C	Fbks-Anch 1984 Loads	Healy to Willow 16	99 to 105	n.a.	9°	$ 63,727,000
II	CASE A	Anch-Fbks 1984 Loads	Willow to Healy 39	102 to 108	2.9	28°	$ 63,371,000
	CASE B	Anch-Fbks 1990 Loads	Willow to Healy 31	98 to 104	2.5 / 6.5	30°	$ 63,371,000
	CASE C	Fbks-Anch	Healy to Willow 51	97 to 104	1.6 / 3.5	23°	$ 63,371,000
II-1	CASE A	Anch-Fbks 1984 Loads	Sunshine to Healy 36	102 to 107	3.0 / 4.1	31°	$ 52,630,000
III	CASE A	Anch-Fbks 1984 Loads	Sunshine to Healy 34	103 to 106	2.8 / 3.8	30°	$ 44,587,000
	CASE B	Open circ.-Healy 1984 Loads	Sunshine to Healy 0	104 to 112	---	3°	$ 44,587,000
III-1	CASE A	Anch-Fbks 1984 Loads	Sunshine to Healy 35	103 to 106	2.9 / 3.9	28°	$ 45,032,000
	CASE B	Fbks-Anch 1984 Loads	Healy to Sunshine 54	102 to 105	4.5 / 4.2	31°	$ 45,032,000
	CASE C	Anch-Fbks 1990 Loads	Sunshine to Healy 27	100 to 105	3.0 / 7.5	31°	$ 45,032,000
	CASE D	Fbks-Anch 1990 Loads	Healy to Sunshine 53	97 to 104	2.7 / 5.9	30°	$ 45,032,000

* Line Loss is calculated as a % of the total Generation on line for each case. MW are also shown.
** Construction costs estimated using unit costs from Intertie Study (See Appendix B for sample).



ONE LINE DIAGRAM
CONFIGURATION - III-1
CASE - A



ONE LINE DIAGRAM
CONFIGURATION - III-1
CASE - B

Report of
Technical Advisory Committee
on
Economics of Anchorage - Fairbanks
Minimal Transmission Intertie

Anchorage Municipal Light & Power
Golden Valley Electric Association
Fairbanks Municipal Utilities System

January 1980

Robert W. Retherford Associates' Anchorage-Fairbanks transmission intertie supplementary study for maximizing use of existing lines with new lines at Susitna Design capacity, completed January 24, 1980, demonstrated the probable technical feasibility of transmitting economy energy from Anchorage to Fairbanks and reserve generating capacity from Fairbanks to Anchorage over a minimal transmission line. This report examines the economics of such interchanges for Configuration III - 1 Cases A and B of the RWRA study.

ECONOMY ENERGY

From data in the supplementary study it was estimated that annual losses in transmitting 200 million KWH at economy energy from Anchorage to Fairbanks would be about 4% or 8 million KWH. 200 million KWH generated by AMLP would replace 192 million KWH generated by GVEA with simple cycle and regenerative combustion turbines averaging 13,000 BTU per KWH.

AMLP's fuel consumption to generate the economy energy was determined by using the General Electric HPROD production costing program to model generator operation. HPROD was run for AMLP's system load plus economy energy and for AMLP system load alone. The difference between the two amounts of fuel was the fuel burned to generate the economy energy for GVEA. The following table shows the fuel saved.

FUEL CONSUMPTION, MILLIONS OF BTU

GENERATION BY

YEAR	GVEA	AMLP	FUEL SAVED
1984	2,500,000	2,200,000	300,000
1985	2,500,000	2,330,000	170,000
1986	2,500,000	2,560,000	-60,000

The 300,000 million BTU saved in 1984 is equivalent to about 52,000 barrels of fuel oil. The amount of fuel consumed by AMLP to generate economy energy increases each year; as AMLP system load grows, less efficient generating units must be operated to produce the economy fuel.

Monetary savings from economy energy, of course, depend on the relative costs of fuel in Anchorage and Fairbanks. To give an idea of the amounts of money involved without attemptiong to forecast fuel prices several years hence, fuel was priced at present values of $2.85 per million BTU for GVEA and $0.829 per million BTU for AMLP:

FUEL COSTS

GENERATION BY

YEAR	GVEA	AMLP	SAVING
1984	$7,125,000	$1,824,000	$5,301,000
1985	7,125,000	1,932,000	5,193,000
1986	7,125,000	2,122,000	5,003,000

The supplementary study showed that GVEA could provide 53 MW of reserve generating capacity to AMLP over the transmission line. Without this reserve capacity it would be necessary for AMLP to install a peaking combustion turbine to maintain firm generating capacity. Capital recovery costs of such a peaking turbine were estimated to be $847,000 annually at today's prices. The value of 53 MW of reserve capacity furnished by GVEA to AMLP over the transmission line would thus be $847,000 annually.

SUMMARY

Adding the value of economy energy to that of reserve generating capacity produced the following total value of the transmission line to AMLP and GVEA:

YEAR	ECONOMY ENERGY	RESERVE CAPACITY	TOTAL
1984	$5,301,000	$847,000	$6,148,000
1985	5,193,000	847,000	6,040,000
1986	5,003,000	847,000	5,850,000

COST ESTIMATE (1979 Dollars)

CONFIGURATION III-1

1.	New Transmission Lines		
1.1	Healy - Susitna Tap, 86.5 m. (sc, 230 kV, 1510 kcmil ACSR)	$176,693./mile	15,283,945
1.2	Susitna Tap - Willow 71.5m (sc, 345 kV, 2 x 954 kcmil ACSR)	$253,320./mile	18,112,380
		Transmission Total:	$33,396,325
2.	Substations		
2.1	Healy 138 kV Addition of Series Compensation	150,000	
2.2	Healy 138 kV Circuit breakers & property	243,000	
2.3	Willow 138 kV Addition of Series Compensation	150,000	
2.4	Willow 138 kV Circuit breakers and property 60 MVA Autotransformer 115/138 kV	1,243,000	
		Substations Total:	$ 1,786,000

CONFIGURATION III-1 (Cont.)

TOTAL COSTS (1979)

Transmission Lines	$ 33,396,325
Substations	1,786,000
Control and Communication	3,300,000
Engineering/Design	3,000,000
	$ 41,482,325

DISBURSEMENTS AND ESCALATION

		Escalated @ 8% p.a.
198? (7%)	2,903,760	3,387,000
198 (25%)	10,370,580	13,064,000
1983 (68%)	28,207,985	38,376,000
	41,482,325	54,827,000
		- 41,482,325
	Total Escalation	13,344,675

PROJECT COST SUMMARY

Project Costs	$41,482,325
Escalation	13,344,675
Total	$54,827,000

Susitna Power Now, Inc.
P.O. Box 7-4436 Fairbanks Alaska 99701 (907) 452-5272
P.O. Box 981 Anchorage Alaska 99510 (907) 276-7744

February 14, 1980

The Honorable Bill Sumner
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear Senator Sumner:

Legislation providing for funding and construction of the proposed Anchorage/Fairbanks Transmission Line Intertie justifies a position of highest priority early this session. Support documentation is contained in appropriate pages taken from the Anchorage-Fairbanks Intertie Supplementary Study conducted by the International/R.W. Retherford Engineering firm and an economic study performed by Anchorage Municipal Light and Power personnel in cooperation with GVEA and the Fairbanks Municipal Utilities System, copies of which are enclosed.

The figures speak for themselves. However, in the event you are not into engineering studies, we will summarize the results for you.

The following plan is recommended:

1. Build approximately 158 miles of new transmission line and connect to existing facilities at Healy and Willow at an approximate 1983 dollar costs of $54,827 000.

2. The new section is to be built to specifications designed to ultimately transmit energy to both Interior and South Central Alaska supplied from the Upper Susitna Hydroelectric Project.

3. Once completed, the Intertie will be capable of providing for economy energy transactions, a pooling of reserve capacities, and emergency power support between the State's population centers. Further it will be used to supply energy for the Susitna Project once construction is underway.

4. The benefits are substantial. Following is a brief description of the several major ones:

Co-Chairmen
Bob Penney
Lee Wareham

Treasurer
John Spencer

Secretary
Dave Hutchens

A savings in direct fuel costs in excess of $5,000,000 annually.

A savings in capital investment for reserve generator units of $847,000 annually.

A savings thru displacement by electricity generated from high efficiency natural gas fired units rather than expensive oil fired generation of 425,180 barrels of fuel oil each year.

These are the major ones; there are many more.

5. Financing. We propose the State appropriate $54,827,000 from the general fund early this session and that said funds be administered by the Alaska Power Authority for the purpose of constructing the transmission line project in an expeditious manner. (SB No. 385 sufficiently addresses the funding issue.)

Further, that the utilities using said intertie be assessed appropriate wheeling and/or capacity charges sufficient to cover all operations and maintenance costs incurred by the APA following completion of the facility.

Principal and interest costs associated with the capital investment to be held in abeyance pending completion of the first phase of the Upper Susitna Hydro Project. At that time all capital costs for the line will be co-mingled with those of the prime project and amortized accordingly.

This project will benefit thousands of Alaskans and is therefore most worthy of your support.

Thank you and best wishes.

Lee Wareham, Co-chairman
Susitna Power Now

Bob Penney Co-chairman
Susitna Power Now

R. L. Hufman
Gen. Mgr.
GVEA

Tom Stahr
Gen. Mgr.
Anch. ML&P

Malcolm Cheek
Gen. Mgr.
MEA

Harold Gillam
Gen. Mgr.
Fbks MUS

Enclosures
1. Portions of Engineering Analysis
2. Economic Evaluation

Alaska State Legislature

Senate

Office of the Secretary

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

April 14, 1980

MEMORANDUM TO: Resources Committee

From: Secretary of the Senate

Subject: Alaska Power Authority Reconnaissance Study

The President referred a letter and report from Eric P. Yould, Executive Director of the Alaska Power Authority concerning a Reconnaissance study of Lake Elva and the Black Bear Lake Projects to your committee.

Encl: Letter w/report

ALASKA POWER AUTHORITY

333 WEST 4th AVENUE - SUITE 31 - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-2715

April 3, 1980

The Honorable Clem Tillion
President of the Senate
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Tillion:

A.S. 44.56.180(b) requires the Power Authority upon completion of the reconnaissance study to submit to the Governor and the Legislature a statement of its recommendations for financing each new project. In addition, if the recommended financing for the project includes a guarantee of indebtedness or an appropriation from the general fund, the Legislature must first give its approval by joint resolution before the Authority may proceed with the engineering or design phase of the project. "Reconnaissance study" is defined in Section 230(7).

A problem exists in that Section 180 does not clearly establish the requirement for legislative approval in relation to the project development process. As defined in the statute, "reconnaissance study" incorporates the first two phases of the development process which are reconnaissance study (a regional assessment of alternative projects to identify one or more projects with the greatest potential for development) and feasibility assessment (an assessment of one or more projects for engineering, economic, and environmental feasibility.

The third stage in the process is detailed field explorations, general design, and preparation of the Federal Energy Regulatory Commission license application. Detailed design commences either upon submission of a license application or receipt of a FERC license to construct. The stage of development involving field studies, general design, and preparation of a FERC license application is not recognized within the statutory requirements. The recommendations of the Power Authority for financing each new project can only be preliminary before completion of a definite project report and a license application. Although it appears that a preliminary recommendation for financing certain projects should be submitted at this time, the recommendations may not be required until further field investigations and general design are completed. Consequently, we have attached statements for the Lake Elva and the Black Bear Lake Projects. Similar statements for Dayebas Creek, Grant Lake, Kisaralik River, Mennonite Creek and Larsen Bay are being prepared and will be submitted as soon as possible.

Sincerely,

Eric P. Yould

Eric P. Yould
Executive Director

Attachments:
as noted

ALASKA POWER AUTHORITY

LAKE ELVA HYDROELECTRIC PROJECT

The Lake Elva Hydroelectric Project near Dillingham will produce 1.5 MW's of power and 7.1 million KWh's of average annual energy. The cost of the Project is estimated to be $13 million in 1979 dollars. The Project includes a rockfill dam across the creek, founded on bedrock, at stream mile 1.5 with an uncontrolled spillway through a saddle approximately 1,000 feet north of the dam with the crest at elevation 350. A 4,100 ft. low pressure 4 ft. diameter pipeline would connect to a 3,200 ft. power penstock to convey the water to the surface powerhouse at elevation 50. The Project would also include 9 miles of surface and 20 miles of submarine transmission line at 25 KV and the upgrade to 25 KV of the existing 22 mile long 7.2 KV line from Dillingham to Aleknagik. The Project appears feasible as a result of a feasibility assessment from the economic, social, engineering and environmental perspectives. Construction could begin on the Project as early as April of 1981.

The Project is eligible to be financed by a combination of state loans, loans from the Rural Electrification Administration, and revenue bonds issued by the Power Authority and guaranteed by the National Rural Electric Utilities Cooperative Finance Corporation. Current high interest rates in the municipal revenue bond market and the present financial condition of the Nushagak Electric Association make revenue bond financing extremely expensive for the utility and ultimately its customers. Nushagak Electric has received 2% loans from the REA in the past, however, the most optimistic estimate of REA financing considered to be available for this Project is 50% financing at 5% interest over 35 years.

The utility has expressed the desire to have the Power Authority design, acquire, and construct the Project. If this takes place REA loan funds may still be available to supplement state loans or revenue bonds issued to finance Project construction. The Project should be financed with REA loan funds to the maximum extent possible, with state loans and revenue bonds issued by the Power Authority and guaranteed by the National Rural Electric Cooperative Finance Corporation (CFC). It would be desirable to achieve 1/3 participation from each financing source for the Project. The Power Authority would work with REA and the Cooperative Finance Corporation to seek participation in funding the Project to the maximum extent possible. Due to present turmoil and high interest rates in the municipal markets, a 1/3 participation of the State in financing the Project appears to be necessary at this time.

Authorization is requested to proceed with the detailed engineering, design and preparation of a Federal Energy Regulatory Commission license application. Authorization to finance the Project will be required before construction can commence in accordance with A.S. 44.56.180. It is anticipated that up to $15 million in revenue bond authorization will be required for the Project to cover construction costs, interest during construction, inflation, and funding of a reserve if up to $5 million in REA or state loan funds are available to assist in the Project financing. This recommendation or statement for financing is preliminary at this time.

ALASKA POWER AUTHORITY

BLACK BEAR HYDROELECTRIC PROJECT

A Reconnaissance Study of the Black Bear Lake Project was funded by the Alaska Power Authority and completed by Harza Engineering Company in October of 1979. The project was determined to be economically feasible to meet the needs of Klawock, Craig and Hydaburg. Klawock is served by the Tlingit and Haida Regional Electric Authority (THREA), a rural electric utility with offices in Juneau. Craig and Hydaburg are served by the Alaska Power and Telephone Company (APT), an investor owned utility company with offices in Port Townsend, Washington. The Power Authority desires to proceed with design and preparation of a Federal Energy Regulatory Commission license application. Construction financing is anticipated to be accomplished by a combination of REA 5% loans, Power Authority revenue bonds secured by power sales contracts and possibly guaranteed by the Cooperative Finance Corporation, and state assistance in the form of subordinate loans.

PROJECT DESCRIPTION

The Black Bear Lake Project is located on the lake of the same name about 8 miles east of Klawock. The Project would have an installed capacity of 5000 kW and at full production level would produce about 22,000 MWh in an average year. Black Bear Lake could be constructed and in operation by 1985. The Project would consist of a dam, spillway, intake, penstock power-station and transmission line. A 20-foot high rock fill dam would be built across Black Bear Creek at the outlet of Black Bear Lake. An uncontrolled spillway with a discharge capacity of 1200 cfs would be built on the left abutment. Water would pass through a 26" steel penstock to a powerstation located near the base of a falls just downstream of the lake outlet. The powerhouse would be a pre-fabricated metal building containing four single-jet Pelton turbines. Each turbine would be directly coupled to a generator rated at 1250 kW. Power from the Project would be transmitted to Klawock over a 14-mile long, 23-kV transmission line. From Klawock power will be transmitted over 23-kV lines, 6 miles long, to Craig and 32 miles to Hydaburg.

EXISTING CAPABILITIES AND PROJECTED DEMAND

All existing generation capacity in the three communities is diesel fueled. The forecast loads for the interconnected system exclusive of the needs of the Alaska Timber Corporation are:

Year	Peak Demand, kW	Energy Generation, MWh/yr
1978 Actual	1810	6,590
1983	2210	8,060
1988	2480	10,150
1993	2830	11,650

ALTERNATIVES CONSIDERED

The most feasible alternative considered is the Alaska Timber Corporation proposal for a conventional wood waste steam generation system. This system could be constructed in a timely manner at a relatively low cost of $2.6 million to produce the short term needs of the Corporation and the communities of Klawock and Craig. The major difficulty with the system is the unreliable long term source of wood waste sufficient to meet community needs. After existing stockpiles are depleted, the wood waste produced by ATC operations will only be sufficient to power ATC operations. The wood generation system should be developed as soon as possible to produce electric power until the Black Bear Lake Project is operational.

Other alternatives for electric power generation were investigated and determined to be too expensive, inappropriate, or not available for use in the area.

ENVIRONMENTAL IMPACTS

The damming of Black Bear Creek at the outlet of Black Bear Lake would not affect the passage of anadromous fish since the falls serve as a natural barrier. The construction and operation of the Project, unless carefully controlled, could cause some disruption to downstream migratory and resident salmonid populations. Discharge rates and water temperature are the most critical parameters and these will have to be studied in depth during feasibility studies.

At the present level of study there do not appear to be any adverse environmental impacts of a magnitude which would prohibit construction of the Project or greatly restrict its operation.

ENGINEERING CONSIDERATIONS

The project is planned to provide sufficient storage to regulate the discharge from the Black Bear Lake and provide practically the entire Craig - Klawock - Hydaburg system capacity and energy requirements over the first 30 years of project life. The power plant and generator/turbine sizes and arrangement are appropriate for the project. Rock composition at the damsite and on valley sides is adequate for proper design of a project to withstand severe shaking from earthquakes that could occur in this high seismic activity area. The very steep slope on which the penstock would be constructed presents difficult construction problems. The selected alignment would eliminate the possibility of damage from snow and debris avalanches. Turbine and generators are appropriately sized for the system.

ALASKA POWER AUTHORITY

PROJECT FINANCING

Black Bear Lake should be developed as a capital project of the State since it is a regional project. The Rural Electric Administration may still participate in construction financing to the extent that the REA utility benefits from the Project. The supplemental financing should be provided by Power Authority revenue bonds either guaranteed by the National Rural Electric Utilities Cooperative Finance Corporation or by power sales contracts with the local utilities. State assistance in the form of subordinate loans may become necessary if present high interest costs for tax exempt revenue bonds persist. Authorization is requested to proceed with the detailed study and preparation of a Federal Energy Regulatory Commission license application for the Black Bear project. Authorization to finance the project will be required before construction can commence in accordance with A.S.44.56.180. It is anticipated that $30 million in revenue bond authorization will be required for the project to cover construction costs with inflation, interest during construction, and funding of a reserve if up to $5 million of REA loan funds are available to assist in the project financing. This recommendation or statement for financing is preliminary at this time due to the considerable amount of work on the project which remains to be accomplished.

Introduced: 1/19/79
Referred: Resources and Finance

IN THE SENATE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

SENATE JOINT RESOLUTION NO. 6

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - FIRST SESSION

Relating to the Alaska Power Authority, the Phase I environmental, economic, social and engineering studies of the Susitna Hydroelectric Project, and the incurring of indebtedness for Phase I.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the Alaska Power Authority under AS 44.56.180 has submitted to the legislature and to the commissioner of commerce and economic development a statement outlining the status of the Susitna Hydroelectric Project and the Plan of Study outlining the necessary feasibility studies of the project which is planned to be designed, and may be acquired or constructed, by the United States under an agreement providing for ownership of the project by the authority; and

WHEREAS the Congress of the United States, on October 22, 1976, enacted P.L. 94-587, the Alaska Hydroelectric Power Development Act, which Act authorized the Secretary of the Army and the U.S. Army Corps of Engineers to participate in the Susitna Hydroelectric Project; and

WHEREAS the Phase 1 activities outlined delineate the environmental, economic, social, and engineering studies requisite to informed decision-making; and

WHEREAS the cost to be incurred during Phase I is now estimated to be $25,000,000, but may exceed that amount; and

WHEREAS it is considered to be in the best interests of the State of Alaska to proceed with Phase I of the project through the use of Alaska Power Authority sponsored financing; and

Biggie

WHEREAS legislative approval of project construction is required if project feasibility and desirability result from the study process conducted under Phase I activities;

BE IT RESOLVED that, based on the plan outlined in the statement of the Alaska Power Authority to the legislature and to the commissioner of commerce and economic development, the legislature agrees to the incurring of indebtedness by the Alaska Power Authority in an amount necessary to finance the cost of the Phase I feasibility studies of the Susitna Hydroelectric Project, including interest; and be it

FURTHER RESOLVED that Phase I studies must provide for substantive public involvement throughout the study process; and be it

FURTHER RESOLVED that the Legislative Affairs Agency shall conduct or contract for an independent review, in consultation with the Alaska Power Authority, based on existing data, of the economic, financial, biological and geophysical implications of the proposed Susitna Hydroelectric Project, and shall report to the legislature by January 15, 1980.

Susitna Power Now, Inc.
P.O. Box 7-4436 Fairbanks Alaska 99701 (907) 452-5272
P.O. Box 981 Anchorage Alaska 99510 (907) 276-7744

February 27, 1980

The Honorable Bill Sumner
Pouch V
Juneau, Alaska 99801

Dear Senator Sumner:

On Friday, March 7th at 1:30 p.m. the Senate Resources Committee will hold a hearing or Senate Bill 294. The hearing will be in the Butrovitch Room on the 2nd Floor of the Capitol Building.

Anyone wishing to sign up in advance to testify may do so by contacting Senator Bill Sumner's office at 465-3791.

We would like to have several hundred individuals represented through oral or written testimony. If you can't attend in person please indicate your support by either sending a public opinion telegram to Senator Sumner (at a cost of 95¢) or contacting your local Legislative Affairs Office who will take written testimony of up to 50 words for transmittal to Juneau.

At 10:00 a.m. on the morning of the hearing we will have our March Executive Board Meeting in Room 121 of the Capitol Building (right across the hall from Senator Kerttula's office).

Meeting Agenda:

1. Call to order
2. Financial and operational status report
3. Membership Committee status report
4. Legislative update by Senator Kerttula on status of SB294, SB295 and SB 385.
5. Discussion and preparation for Senate Resources Committee Hearing
6. Reassessment of near term goals
7. General discussion
8. Setting time and place for next meeting
9. Adjournment

This is a big one. It's very important to the success of the Susitna Project we demonstrate solid, broad based support.

Sincerely,

Lee Wareham
Co-Chairman

Co-Chairmen
Bob Penney
Lee Wareham

Treasurer
John Spencer

Secretary
Dave Hutchens

ALASKA POWER AUTHORITY

333 WEST4th · SUITE 31 · ANCHORAGE ALASKA 99501

March 17, 1978

The Honorable Jay S. Hammond
Governor
State of Alaska
Pouch A
Juneau, Alaska 9981!

Dear Governor Hammond:

This annual report on the operations of the Alaska Power Authority is submitted in accordance with requirements of Alaska Statute 44.56.200.

The previous twelve month activities of the Power Authority have centered on creating an organization of sufficient quality and expertise to carry out the objective of providing for lower cost ener for Alaskan communities. Concurrently, we have been coordinating the State's efforts on evaluating the potential of developing the Susitna Hydroelectric project. While this latter effort has necessarily occupied much of our time, our recent staffing has allowed us to become cognizant of and responsive to the energy needs of the smaller communities as well. The posture of the Power Authority is moving toward that of an organization with the ability to evaluate the engineering, economic, and financial feasibility of developing our hydroelectric and fossil-fuel fired generation resources, and, if desirable, to ultimately bring them to inception.

The Power Authority retained the services of Peat, Marwick and Mitchell to conduct a search for an Executive Director. This effort culminated with the January 17, 1978 appointment of Mr. Eric Yould, a five year state resident, who was previously with the Corps of Engineers as their project manager for the Susitna project. Mr. Yould holds a Bachelor of Science degree in Civil Engineering, and a Masters degree in Water Resources Engineering, both from the University of Kansas. In addition to his efforts on Susitna, he became quite well acquainted with the engineering and economic merit of the smaller hydropower projects throughout the state. To complement Mr. Yould, the Power Authority has hired the First Southwest Company as its Financial Advisor, and Wohlforth and Flint for its Bond Counsel. With this nucleus, the Power Authority should become quite capable of exercising the policies of the Board of Directors.

During the previous twelve month period, the Susitna project has received much of our attention. While Susitna has been studied for a number of years, there have been insufficient monetary expenditures to precisely determine the economic merit of the project or its environmental impact. Consequently, Congress has conditionally authorized Susitna for what is known as Phase I Advanced Engineering and

Design. Authorization to proceed with Phase I studies is contingent upon a twelve month, $3.0 million seismic analysis and foundation exploration program presently being conducted by the Corps of Engineers. Contained in the same bill that provides for the Phase I studies is a proviso sponsored by Senator Mike Gravel that allows for a federal/state cooperative development of the Susitna project. Under this concept, the federal government would design and construct the project using State funds, and the State would own and operate the project. The salient feature of this Act, commonly known as Section 203 of the 1976 Water Resources Development Act, is the protection afforded the State should it decide to participate. In essence, the federal government would absorb any costs incurred during the Phase I studies if the project proved unfeasible. Since the Phase I studies are estimated to cost in excess of $25.0 million, this guarantee is a tremendous safeguard. Participation under Section 203 does not commit the State to proceed to construction with the federal government. At the conclusion of the four year Phase I studies, the State could choose to proceed with its own efforts for developing Susitna. On the other hand, if the State does decide to construct under Section 203, safeguards from cost overruns could be realized. Obviously the monetary advantage afforded by these safeguards would have to be weighed against a possible loss of revenue which may result from encumbrances in dealing with the federal bureaucracy. The Power Authority plans to participate under Section 203 for the Phase I studies. Financing for the studies would come from the sale of revenue bonds; thus, the State would not be subjected to debt encumbrance. Should the Phase I studies indicate that the project is not feasible, the federal government would repay the cost and interest of the bonds. In order to streamline the Susitna project, Senator Gravel has entered new legislation to Congress that will give direct authorization of Susitna and will clear up some of the procedures of Section 203. Should this bill pass, it is anticipated that the Authority could proceed with the Phase I studies during the latter part of the upcoming summer. There is a possibility that Susitna could become ensnarled under the D-2 land classification as a Wild and Scenic River or that it should at least be studied for such a classification. Either classification could preclude ongoing study or construction efforts. To date, the Power Authority has made $100,000 available to the Corps of Engineers for the development of a Plan of Study for the accomplishment of the Phase I studies. This document is in the process of being finalized. Should the Authority not proceed with the Federal government, the Plan of Study could be utilized by private industry for the Advanced Engineering and Design studies.

Other business of the Power Authority entails the financing of two power studies, and the decision to loan $500,000 to Alaska Electric Light and Power from the Power Project Revolving Loan Fund. One study entailed a reconnaissance grade report on the hydroelectric potential in the Tlingit-Haida communities by Robert W. Retherford Associates, Engineers. The other study was co-funded by the Division of Energy and Power Development. This report entailed a review of the Railbelt area energy alternatives through the year 2000. The report concluded that based on existing cost data, the Susitna project is the most feasible energy option. The loan to AEL&P would be used for the automation of the existing hydropower project on Annex Creek.

During the previous twelve month period, the Power Authority received no project revenue and incurred the following expenses:

Expenditures
3/1/77 - 2/28/78

	3/1/77 6/30/77	7/1/77 2/28/78	Total 3/1/77 - 3/1/78
Personal Services	-0-	5,002	5,002
Travel	5,283	6,122	11,405
Contractual (1 & 2)	193,333	60,137	253,470
Commodities	1,673	15	1,688
Equipment	7,242	870	8,112
TOTAL	207,531	72,146	279,677

Footnote 1 & 2:

(1)
Professional Service Contracts:

Corps of Eng.	100,000	
Peat, Marwick & Mitchell	13,000	
R.W. Retherford	40,000	
Battelle N.W.	35,000	
Wohlforth & Flint		30,000

(2)
Rent paid through 6/30/78 — 27,600

A Look Ahead: In that this is the first full year of the Authority, and consequently, the views and policies of the Authority are not widely known, a summation of what the Authority hopes to accomplish is appropriate. During the upcoming year, the Power Authority will become more and more involved in formulating plans for solving some of the State's energy problems which loom ahead. Although we are presently reviewing power projects on a community basis, we believe that it is imperative that long range regional plans be developed which will address the regional energy needs and the availability of energy alternatives to meet those needs. Much regional information has already been amassed by the Division of Energy and Power Development, and funding for such efforts should continue.

The present practice of electrical energy development within the state has centered around decentralization in which each community is attempting to bring to inception contiguous energy resources. However, the size of the available resources are not always commensurate with the size of the community needs. Furthermore, the small community load demands preclude the opportunity to benefit from "economy of scale". Other communities have virtually no energy options available outside of the traditional diesel fuel generation.

For these reasons it could be desirable to shift the thinking toward transmission interconnection instead of contiguous resources development. Three such regions which could possibly benefit from such an interconnection are Southeast Alaska, the Anchorage/Fairbanks railbelt area, and the AVEC communities. The per capita cost of interconnection, at least in Southeast and in the AVEC region, has historically proven to be quite expensive using conventional means. However there are some unconventional and innovative schemes which are emerging that might provide the beginnings of an effective transmission interconnection. Deserving of analysis for potential use as transmission lines are electrical systems using the earth as one leg of an electrical circuit. There are new ideas being used in submarine cable applications and renewed interest in the potential feasibility of small scale direct current converters. Studies of route locations, engineering assessment of technical problems, survey of cable manufacturers, and preliminary analysis of power requirements for these regions would be beneficial. Studies of this magnitude would cost approximately $500,000. If interconnection could be achieved, a new perspective in power planning could be realized. Communities that have energy alternatives available, perhaps excessive to their needs or ability to develop, could provide to communities that presently rely on expensive imported thermal generation.

It is also suggested that the technical and financial expertise of the Power Authority be utilized in management of the funds which may be available through the permanent fund for power development. The Authority could either act as a technical advisor to the Trustees of the Permanent Fund, or it could assist in managing the funds. The latter method could perhaps best be accomplished through the restructuring of the Power Project Revolving Loan Fund presently administered by the Power Authority. The fund could be expanded to provide for loans to municipalities for the purposes of feasibility studies and

construction financing of approved power projects ultimately to be financed on a long term basis by the Power Authority. It could also be used to provide a reserve fund to secure payment of outstanding long term Authority debt; and finally, it could be used to provide a loan fund to purchase junior lien revenue bonds of municipalities when the Authority can issue only a portion of the debt necessary for permanent financing.

Outside of the permanent fund, it would be desirable that the Power Project Revolving Loan Fund be appropriated an amount sufficient to allow it to operate as envisioned when the Power Authority was established. An assessment of the small community immediate needs reveals that roughly $3,000,000 should be appropriated for hydroelectric planning alone. To this, perhaps another $2,000,000 should be added to provide for the communities which have not made their power needs known. This loan program should be administered on an application and need basis with amounts and terms of financing prescribed by the Board of Directors of the Power Authority rather than by the present practice of having the legislature determining which communities are to receive loans and under what conditions. This latter practice is inefficient and untimely. In short, with its engineering, planning and financial expertise, the Power Authority should be granted the responsibility to administer its loan program as it was originally intended in the Authority's enacting legislation.

The task of providing reasonable cost power to our Alaskan communities is not an easy one. It can only be accomplished by sound planning and shrewd investment practices. Given the necessary resources and responsibility, the Power Authority can help all of Alaska provide for its energy needs.

Robert W. Ward

Robert W. Ward, Chairman
Board of Directors
Alaska Power Authority

SENATE RESOURCES COMMITTEE

TO: SENATOR SUMNER--CHAIRMAN DATE: FEBRUARY 8, 1979

FROM: JERROLD WATTS - STAFF RESEARCHER

Re: Senate Bill #63 and SJR6

SB#63 "An Act making special appropriation to the Alaska Power Authority for the Susitna Hydrolectric Project and proving for an effective date."

Requested is $8,178,000 for the purpose of a gurantee-the sale of the necessary bonds to finance the first year of the Phase I Studies of the Sustina Project.

The appropriation will be on condition, in that;
1. The full amount repaid to the State of Alaska,once the appropriation is no longer needed as a result of other funding sources.

2. Any money earned on the $8,178,000--will be paid to the state.

On June 30,1977- $100,000 from Personnel Services to Contractual Services within the Alaska Power Authority's FY'77 appropriations, was appropriated to fund a Plan of Study to be done by the U.S. CORPS of Engineers.

1978- The Legislature passed HCS for SJR 50 am House, authorizing the Alaska Power Authority to sell bonds to finance the completion of Phase I Studies for the Susitna Project.

Also included in the resolution, a provision which made the sale contingent upon the passage of P.L. 94-587(amended), which would gurantee the bonds and reimburse the state if the project was determined unfeasible.

The 1978 Congress failed to pass the legislation. There are plan to resubmit the propsal this year to Congress.

The project has been estimated to have a final cost of $24.1 million for the Phase I Studies. It is possible the State of Alaska will have to provide complete financing if the Congress fails to pass the P.L. 94-587 amendment.

Additional Requirements To Meet The Phase I Study Time Frame;

1. The corps of Engineers must recieve approval by the Federal Office of management and Budget to enter into an agreement by which the State finances its activities in regard to the project

2. Approval must also be recieved from village corporations which have lands adjacent to the project sites.

3. The internal Revenue Service must sanction the complex financing arrangement which the Alaska Power Authority has proposed.

The project is said to be economical feasible, environmentally acceptable and is desired by the majority of the people that the project will effect, and others.

rec'd 1/22/79 file

George L. Benesch
Attorney at Law

Telephone 907/274-4726

213 West Sixth Avenue, Suite 1
Anchorage, Alaska 99501

January 17, 1979

The Honorable Jay Hammond
Governor, State of Alaska
Pouch "A"
Juneau, Alaska 99811

Dear Governor Hammond:

For your ready reference I have attached to this letter a copy of my letter of February 23, 1977 suggesting that the State itself "fund and construct" the Devil Canyon hydroelectric project. I proposed that the State use the permanent fund for this purpose rather than revenue bonds for the reasons stated in the letter, among others.

My proposal would have the State rather than the Corps of Engineers perform all of the investigations and design of the project as well as construction.

Although the plan was apparently rejected, I believe current circumstances warrant giving it serious review.

It is appalling to me that the State now finds itself in a position of having to fund the Corps of Engineers field work and studies because of the vindictiveness of Congressman Sieberling and/or other congressional HR-39 proponents. It seems to me that we greatly compromise ourselves and our situation in Congress if we appropriate $8.2 millin for use by the Corps, under the assumption that a benevolent Congress will authorize a total of $25 million for the future and/or reimburse us for the $8.2 million.

I seriously question the wisdom of giving Congressman Sieberling, Udahll, et al this additional leverage in the d-2 issues. It appears to me that we are in the process of making the investigations of the Devil Canyon project a pawn in the d-2 legislative process.

Furthermore, I question the impartiality of the Corps of Engineers to make any studies ostensibly for the State. The Corps is an integral part of a current federal administration that has thoroughly and ruthlessly demonstrated a decided anti-Alaskan and anti-development policy toward Alaska. Yet we seem to find ourselves

bent on a course that entrusts to this agency of the Federal Policy the feasibility analyses of a development-oriented project utilizing a river that the federal administration and wilderness oriented congressmen admittedly want to lock up in a wilderness withdrawal.

It is a fact of feasibility evaluation that the same basic data can yield totally differing results depending upon the results the evaluator wants to reach. Surely Alaska's interests are not properly served or represented by turning over this most important function of project development to the federal government.

Even if it is assumed that the Corps will act impartially and in the best interests of the State it will be a federal development on federal terms. Once the State is financially committed to any significant degree I feel we will have little control over what is done and how it is done.

It seems to me that we are already subject to excessive federal control without going out of our way to provide new avenues of federal control of our economy.

I also highly question the wisdom of using the Corps of Engineers for feasibility studies of the Susitna development for a more technical reason. The original Devil Canyon dam found feasible and proposed for construction by the Department of Interior's Bureau of Reclamation in 1960 was a thin arch dam. I may be wrong but it is my belief that the Corps of Engineers has never before proposed, designed or constructed a significant thin arch dam. I doubt that in the final analysis they will build one at Devil Canyon. A gravity dam at Devil Canyon would greatly increase the cost of the project.

It may be that information and data developed in the area since 1960 will pose additional considerations about constructing thin arch structures on the Susitna River. But I question whether the Corps is the appropriate party for making an unbiased, impartial assessment and evaluation of the feasibility of using thin arch structures. I believe the State should engage the services and expertise of a consulting firm which has broad experience in hydroelectric project planning, investigation, design and construction, and determine for itself the design of the project.

The State has an appropriate agency, the Alaska Power Authority, to plan and oversee the feasibility investigations, and ultimate development of the Devil Canyon Project. Surely it can be structured and appropriately funded to do the job in the best interests of Alaska. In my opinion, the State would get a better product, sooner, and at considerably less total cost. If we are going to appropriate $8 million for Devil Canyon studies this year, let's use it to firmly establish

and get in operation our own state agency and our own state investigations. If we do so we will save considerable time, expense, and federal interference in the long run.

I fail to see why we are using a federal agency as our planner, designer, and builder instead of the private sector, -- particularly under the current state of affairs between Alaska and the Federal Administration and Congress.

Sincerely yours,

George L. Benesch

cc: All Legislators
Alaska Power Authority
Commissioner Robert Ward

Telephone 907/274-4726

George L. Benesch
Attorney at Law

213 West Sixth Avenue, Suite 1
Anchorage, Alaska 99501

February 23, 1977

C
O
P
Y

The Honorable Jay Hammond
Governor of Alaska
Juneau, Alaska 99801

Subject: Use of the permanent fund for renewable resource development

Dear Governor Jay:

Now that the idea of a permanent fund is an accomplished fact and the fund will soon be receiving substantial deposits, it essentially becomes a matter of prudent investment. As I understand it the idea of the permanent fund is to preserve for future generations some of the benefits of current development of non-renewable resources; and as a hedge against the time when such non-renewable resources are depleted. It seems to me that one excellent way of accomplishing these objectives would be to invest part of that money in the development of renewable resources such as construction of hydroelectric projects.

A case in point would be the construction of the Devil Canyon Project on the Susitna River. Assuming that it is still an economically viable project, I would suggest that the State fund and construct the entire project using the permanent fund as a source of revenue rather than funding the project with issuance of revenue bonds. This type of funding would provide the State immediate and direct and flexible control over the debt service and the repayment period.

I also believe that serious thought should be given to the State itself controlling and contracting for all project design and construction rather than leave these extremely important functions to the Corps of Engineers or some other federal agency. To begin with I think that significant cost savings could be effected. I believe that you will find that federally constructed projects like this generally cost significantly more than comparable projects constructed by private companies or local governments. Furthermore, I suspect we might find that with state funding of federal design and construction, we may be reimbursing the federal government for grossly excessive overhead and administrative costs which neither

the federal administration nor the Congress would be inclined to reduce.

I also believe that there would still be a need for a very substantial participation and review by the State of all phases of design and construction which would duplicate much of the same functions performed by the Corps.

Thirdly, if the State itself gets into the hydroelectric development effort, funded by the permanent fund, it can plan and schedule its own developmental programs rather than be subservient to the development programs proposed by the federal government to fit its convenience. For example, it may be possible to program such construction to boost the economy of the State in periods of economic slump.

As you are well aware, the cost and availability of electric power is very often a major consideration to industrial development. As a corollary, there is a tremendous lobby effort in Congress by other states seeking to attract industry by means of federal development of low cost energy resources. If Alaska is dependent upon federal hydroelectric developmental programs, even though funded by the State, we are nevertheless competing with other states for resource development by the Corps. We may very well find that the Corps development programs and efforts do not necessarily reflect the best interest of Alaska.

I believe that Alaska hire programs would also be significantly affected. If projects such as Devil Canyon are constructed by the federal government, Alaska may have little to say about employment preferences and hiring practices which meet federal requirements and priorities but not necessarily those of the State.

Lastly, I believe this project development could be accomplished much sooner, if desired, if the State designs and constructs the Devil Canyon Project. This could be a very important factor in the ultimate cost of power. I am certain we can expect all costs of design, construction, etc. to continue to increase annually. The Devil Canyon Project, for example, could probably have been built when first recommended to Congress in 1961 for less than half the current construction cost. This would be an additional advantage to using the permanent fund revenue for project development.

With proper maintenance and replacements of equipment as needed, hydroelectric projects such as Devil Canyon have a useful life well beyond 100 years. However, if the State goes to the bond market for construction funds, it may be necessary to gear the repayment period of the project to the term of the bonds; and of course, the cost of power is inversely related to the payout period -- the shorter the period, the higher the unit cost of power until such time as the project is fully paid for.

In my February 7 letter to you concerning the Alaska Power Authority, I indicated that I was forwarding under separate cover, a number of documents relating primarily to the Devil Canyon and Snettisham hydroelectric projects.

Since they are the only copies I have and would be impossible for me to replace, I must confess that I have not mailed them. I had thought I would be going to Juneau this month on other matters and would carry them with me. However, it now appears that I will not be taking the trip. Therefore, if practical, I would like to deliver the documents to your Anchorage office either for review there or to be hand carried to Juneau by someone from your office on their next trip to Juneau.

Sincerely yours,

George L. Benesch

George L. Benesch

SB
344

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

February 18, 1980

TO: Resources Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate Bill 344

This bill would allow for the issuance of $4,218,800 in general obligation bonds after the approval of the voters of the state. The money would go to the Department of Public Safety for the purchase of (1) 120-foot patrol boat, based at Kodiak to serve the Kodiak/Dutch Harbor areas. If approved, delivery of the vessel is expected sometime in September 1981. This vessel would give Public Safety a second enforcement vessel operating in the crab fishery in the Kodiak/Dutch Harbor areas.

See attached fiscal note and Department of Public Safety informational letter.

12-L6LH

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF PUBLIC SAFETY

DIVISION OF ADMINISTRATIVE SERVICES / POUCH N – JUNEAU 99811

February 4, 1980

The Honorable Bill Sumner
Senator, Alaska State Senate
Pouch V
Juneau, Alaska 99811

Subject: Senate Bill 344

Dear Senator Sumner:

The 120 foot patrol vessel referenced in Senate Bill 344 will be stationed in Kodiak to serve the Kodiak/Dutch Harbor areas. If the bond package is approved by the Legislature and the voters, we anticipate receipt of the vessel some time in September, 1981.

The priority enforcement project for this vessel will be in the crab fishery in the Kodiak/Dutch Harbor areas. The Alaska Department of Fish and Game and our Division of Fish and Wildlife Protection conservatively estimate that between 8,000 and 20,000 unmarked and unclaimed illegal pots fish the gulf and Bering Sea year-round. The toll these pots have on the resource is really unknown, and until now we have not had the ability to calculate, with any reasonable degree of success, what that toll is. We feel we will be able to do this with the new boat because it will be capable of carrying approximately 175 crab pots. This will give us two enforcement vessels operating in the Kodiak area, and coverage of the fisheries should increase substantially.

We feel that the primary purpose of the Division of Fish and Wildlife Protection is to provide the enforcement necessary to ensure the successful completion of Fish and Game's management plans. In the Kodiak area, as an example, we have been unable to provide the necessary level of enforcement due to a lack of adequate vessels to patrol the waters in and around Kodiak and Dutch Harbor. Upon receipt of this boat there is still no guarantee that all fishing violations or crabbing violations will be detected. However, the degree at which violations occur should be reduced substantially due to the fact that there are now more vessels operating in the area. As indicated above, the primary objective of this new vessel will be in the crab fishery but it will also be doing work in the salmon, shrimp and bottomfish fisheries as well. In addition, the vessel will play a large role in search and rescue missions that we conduct along the Chain.

Introduced: 1/18/80
Referred: Resources and Finance

IN THE SENATE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

SENATE BILL NO. 344

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act providing for the issuance of general obligation bonds in the amount of $4,218,800 for the purpose of paying the cost of capital improvements for fisheries resources protection facilities; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. For the purpose of paying the cost of capital improvements for fisheries resources protection and enhancement facilities, general obligation bonds of the state in the principal amount of not more than $4,218,800 shall be issued and sold. The full faith, credit, and resources of the state are pledged to the payment of the principal of and interest and redemption premium, if any, on these bonds. These bonds shall be issued under the provision of AS 37.15 as those provisions read at the time of issuance.

* Sec. 2. (a) If the issuance of these bonds is authorized by the qualified voters of the state, a special fund of the state to be known as the "1980 Fisheries Resources Facilities Construction Fund" shall be established, to which shall be credited the proceeds of the sale of bonds described in sec. 1 of this Act except for accrued interest and premiums.

(b) There is appropriated from the "1980 Fisheries Resources Facilities Construction Fund" to the Department of Public Safety the amount of $4,218,800, for the purchase of one 120-foot patrol vessel to be based at Kodiak.

* Sec. 3. If the issuance of these bonds is authorized by the qualified

voters of the state, the amount of $14,800 or as much of that amount as is found necessary is appropriated from the general fund of the state to the state bond committee to carry out the provisions of this Act and to pay expenses incident to the sale and issuance of the bonds authorized in this Act. The amounts expended from the appropriation authorized by this section shall be reimbursed to the general fund from the proceeds of the sale of the bonds authorized by this Act.

* Sec. 4. The amount withdrawn from the public facility planning fund for the purpose of advance planning for the improvements financed under this Act shall be reimbursed from the proceeds of the sale of bonds authorized by this Act.

* Sec. 5. The question whether the bonds authorized in this Act are to be issued shall be submitted to the qualified voters of the state at the next general election and shall read substantially as follows:

Proposition

State General Obligation Fisheries Resources Construction Bonds $4,218,800

Shall the State of Alaska issue its general obligation bonds in the principal amount of not more than $4,218,800 for the purpose of paying the cost of capital improvements for fisheries resources protection and enhancement facilities?

Bonds Yes [ ]

Bonds No [ ]

* Sec. 6. This Act takes effect immediately in accordance with AS 01.-10.070(c).

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. SB 344 - "An Act providing for $4,218,800 in GO bonds for
Title fisheries resource protection facilities" (120 foot patrol vessel).
Requested by Sen. Sumner Date 1/29/80

II. FISCAL DETAIL

Agency Affected Public Safety
Program Category Affected NRMEC
BRU, Program, or Subprogram(s) Affected Vessel Section (Marine Enforcement)
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES			324.2	324.2	324.2	
200 TRAVEL			7.0	7.0	7.0	
300 CONTRACTUAL			103.2	123.9	123.9	
400 COMMODITIES			250.3	300.5	300.5	
500 EQUIPMENT			0	10.0	10.0	
600 LAND & STRUCTURES				-	-	
700 GRANTS, CLAIMS, ETC.				-	-	
TOTAL	0	0	684.7	765.6	765.6	

FUNDING (Thousands of Dollars)

GENERAL FUND	0	0	684.7	765.6	765.6	
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	0	0	6	6	6	
PART TIME			1	1	1	
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Crewmember salary and benefit costs are: Lt. $60.0; 1st Sgt. $52.5; Cpl. $50.7; 2 troopers $47.8 each; Boat Engineer II $45.4; and a part-time cook $20.0. These costs include sea pay, similar to overtime and shift differential, to compensate crewmembers for shipboard duty. Both salary and other costs are comparable to the Vigilant's operating needs.

In contractual services, major items are: $55.0 for repairs & maintenance and $55.1 for insurance. In commodities, fuel use is estimated at 50 gallons/hour for 12 hours/day during 250 days at sea. The 150,000 gallons needed would cost $270.0 using $1.80/gallon as the price for diesel fuel.

Estimating vessel delivery on 9-1-81, major FY82 operating costs have been adjusted except for salary. Crew training is needed on other vessels until acceptance of the new vessel. Present costs are used for all expenses except fuel estimated at FY83 cost.

IV. DATE 1/29/80 PREPARED BY Mike Clemens
AGENCY Public Safety
PHONE 465-4336

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

The Department of Public Safety considered this 120 foot vessel its top capital budget priority, as evidenced by the Commissioner's list of priorities submitted to the Governor. I would like the opportunity, at your convenience, to meet and further discuss the potential uses and benefits of this vessel.

Sincerely,

Robert J. Stickles

Robert J. Stickles
Director

RJS/bh

Harold E. Bond
25% COTTON FIBER

"An Act providing for the issuance of general obligation bonds in the amount of $4,218,800 for the purpose of paying the cost of capital improvements for fisheries resources protection facilities; and providing for an effective date."

Senate Bill 344- By the Rules Committee by Request of the Governor

This bill would allow for the issuance of $4,218,800 in general obligation bonds after the approval of the voters of the state. It would create a special fund known as the "1980 Fisheries Resources Facilities Construction Fund." Appropriations from the fund would go to the Department of Public Safety for the purchase of one 120-foot patrol boat to be based at Kodiak. In addition $14,800 is appropriated from the general fund to cover costs of the bond sale. The actual ballot proposition will state "Shall the State of Alaska issue its general obligation bonds in the principal amount of not more than $4,218,000 for the purpose of paying the cost of capital improvements for fisheries resources protection and enhancement facilities?"

STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

January 17, 1980

The Honorable Clem Tillion
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

Under the authority of art. III, sec. 18 of the Alaska Constitution, I am transmitting a package of bond legislation consisting of 3 bills proposing bond issues as follows:

-- water and sewer systems --	25,520,000
-- University of Alaska facilities --	20,550,000
-- fisheries resources protection facilities --	4,218,800

Backup information will be furnished by my staff.

Sincerely,

Jay S. Hammond
Governor

JAY S. HAMMOND
GOVERNOR

STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

February 13, 1980

The Honorable Bill Sumner
Chairman
Senate Resources Committee
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Sumner:

SB 344 contains several drafting errors that need to be corrected. They are as follows:

Sec. 1, page 1 line 13, delete word "and enhancement"

Sec. 2, page 1 line 22, after word "Resources" add word "Protection"

Sec. 2, page 1 line 25, after word "Resources" add word "Protection"

Sec. 5, page 2 line 16, after word "Resources" add word "Protection"

Sec. 5, page 2 line 21, delete words "and enhancement" immediately following word "protection".

Sincerely,

Keith W. Specking
Legislative Assistant
to the Governor

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

February 4, 1980

TO: Resources Committee Members

FROM: Jens Zehoe, Staff Member

REGARDING: Senate Bill 344

This bill would allow for the issuance of $4,218,800 in general obligation bonds after the approval of the voters of the state. The money would go to the Department of Public Safety for the purchase of (1) 120-foot patrol boat, based at Kodiak to serve the Kodiak/Dutch Harbor areas. If approved, delivery of the vessel is expected sometime in September 1981.

The Department of Fish and Game estimates that between 8,000 and 20,000 unmarked and unclaimed illegal crab pots fish the Gulf and Bering Sea. Purchase of this vessel will give Fish and Wildlife Protection a second vessel to patrol the Kodiak.

See attached fiscal note and Department of Public Safety informational letter.

Exact Bill

Jens — is HB691 —

Monday's Committee hearing will have

SB 374

SB402

New Bill

Fish & Game

R°

5/4A

1/28/80 Requested a fiscal not from M. le Clemmons in Dept of Public Safety # 4322

2/4/80 - Requested backup information from Dept. of Public Safety - said he'd get it to me this afternoon

See Mulcahy's office

2/7/80 - Called Bob Stickles - told him of tentative hearing on Monday 2/11/80 Re SB 344

2/8/80 will be heard 2/20/80 -

2/19 - Confirmed Bob Stickles and Carl Rasso

2/20/80 - Bill passed out of Resources Committee
Sent to Finance

February 20,1980

The Senate Resources Committee voted do pass on Senate Bill 344 with these amendments:

First Page Line 9- Subustitute vessel for facilities

First Page Line ~~19~~- Substitute vessel for facilities

First Page Line 22- Substitute vessel for facilities

First Page Lines 25-26- Substitute vessel for facilities

~~Second Page Line 21- Substitute vessel for facilities~~

3897 Ken Vasser @3897

2/21 Bill given to Ken Vasser in Legal Services for rewrite - He questioned whether bonds can be issued for non-statutory items, hence that might be why the word facilities is used

SB
345





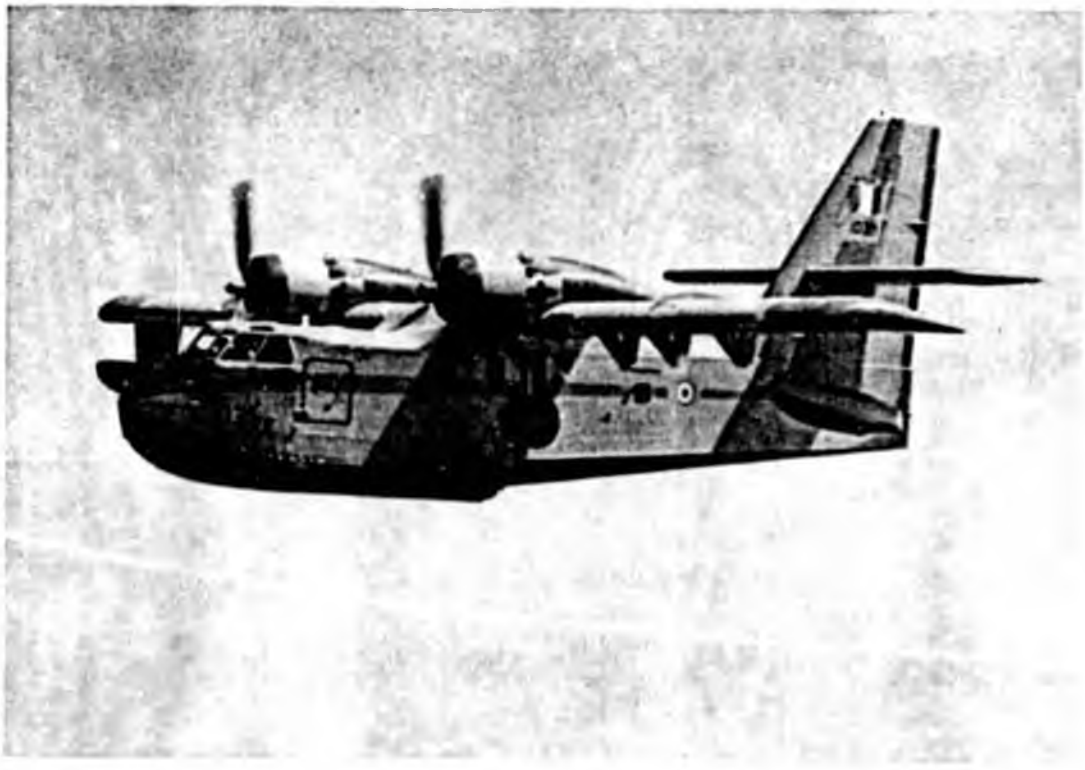






canadair CL-215

canadair CL-215



INTRODUCTION

The CL-215 is one of the most versatile aircraft in production today.

Designed to fill the need for a multi-purpose aircraft capable of efficient operation from both land and water, the CL-215 features:

The strength and dependability of fail-safe construction

The proven reliability of Pratt & Whitney engines

A rugged landing gear and robust hull

A large payload

A spacious cabin

Long range and endurance at low altitude

Exceptional manoeuvrability

Excellent water handling characteristics

Minimum maintenance requirements

Proven corrosion protection

This combination of features enables the CL-215 to be used in a variety of roles, including forest fire fighting, aerial spraying, patrol, search and rescue, and passenger/utility transportation.



canadair
P.O. Box 6087, STATION 'A' Montreal
Quebec, CANADA
H3C 3G9

S.P. 554 (E imperial) Revision November 1978

Printed in Canada

PROJECT TITLE: Suppression/Air Operations/Plans/Cooperative Programs

AGENCY Dept. Natural Resources

STATUTORY BASIS: AS 41.15.010-700 (mandatory)

CATEGORY Natural Resource Mgt.

COVER PROGRAM NRMEC

BRU Forest Management

COMPONENT Fire Protection/Suppress

SHORT FORM PAGE _____

PROJECT DESCRIPTION: The State is presently responsible for fire protection on approximately 24,000,000 acres of land. Presuppression consists of detection and initial attack; suppression consists of actual fighting of fires. Under this project, the Department would contract for air operations on a stand-by basis for project fires.

SOURCE OF REQUEST:

PROJECT LOCATION:

Statewide (where State has protection responsibility)

OBJECTIVES/POLICIES: Protect forest and other wildland resources and adjacent inhabitants and property from wildfire by maintaining a standing fire detection/suppression capability commensurate with wildfire risk; deploying fire detection/suppression personnel and equipment on project fires where wildfire threatens valuable natural resources, the safety of proximate inhabitants, or valuable private property; and maintaining sufficient equipment to combat wildfire on a cost effective basis.

DEPARTMENT PRIORITY:
Alternative if CL-215 capital project is ~~not~~ funded

GOVERNOR'S ACTION:
No funding

INTEREST GROUPS AFFECTED: All who live in, work in, own, derive products or livelihood from, or recreate on lands under State protection.

LEAD DIVISION/PROJECT MANAGER:
Div. of Forest, Land & Water Mngmt
Theodore G. Smith, Director
Phone 279-5577

LEGISLATION/REGULATIONS REQUIRED: None

DNR PROJECT BUDGET

RECIPIENTS DELIVERED Under this Project, the Department would contract for air operations capability on a standby basis for project fires.

SUMMARY OF PROJECT COST:		1st Yr. FL&WM Forestry		2nd Yr.	3rd Yr.				
CODE	EXPENDITURES BY OBJECT	DIVISION	~~DIVISION~~	~~DIVISION~~	~~DIVISION~~	DIVISION	DIVISION	DIVISION	DIVISION TOTA
100	PERSONAL SERVICES	44.5							
200	TRAVEL	15.0							
300	CONTRACTUAL SERVICES	547.5							
400	COMMODITIES	39.0							
500	EQUIPMENT	15.0							
600	LANDS, BLDGS., ETC.								
700	GRANTS, CLAIMS, ETC.								
800	MISCELLANEOUS								
	TOTAL	661.0		727.1	799.8				2187.9
	1-A TRANS. (non-add)								
FED. RECEIPTS – CODE:									
GF MATCH.									
GEN. FUND									
1-A RCPTS.									
PGM RCPTS.									
OTHER									
OTHER									
CAPITAL									

DESCRIPTION OF ASSOCIATED CAPITAL COSTS: None

COSTS TO OTHER AGENCIES BLM would incur costs if they utilize State contract aircraft on BLM responsibility fires.

PROJECT DURATION/LIFE CYCLE COST: Continuous-barring State acquisition of appropriate aircraft or a decision to significantly downgrade the level of protection.

PROJECT COST BREAKDOWN

PERSONAL SERVICES

PCN/JOB TITLE	LOCATION	DIVISION	SALARY	BENEFITS	NO. OF MONTHS	POSITION COST
Aircraft Supervision	Anch.	FLWM	20-A	28%	12	44.5

TRAVEL	AMOUNT	DIVISION	PURPOSE
	15.0	FLWM	Contract administration throughout State where aircraft are located.

CONTRACTUAL	AMOUNT	DIVISION	PURPOSE
	547.5	FLWM	3 super PBY at $1000.00/day standby for 100 days + $5.00/hr. for 125 hrs. each.

COMMODITIES	AMOUNT	DIVISION	PURPOSE
	39.0	FLWM	20,000 gallons fuel at 1.50/gal. plus retardant plus misc. other commodities

EQUIPMENT	AMOUNT	DIVISION	PURPOSE
	15.0	FLWM	Provide transfer/loading pumps and retardant mixers at Delta Junction and Anchorage 8.7; 3 wolfsburg 9600 Channel radios at $2100 each.

POSSIBLE ADJUSTMENTS

UPWARD INCREMENT Increased funding would not provide optimal cost plus loss analysis.

DOWNWARD INCREMENT Reduced funding would lower level of protection and not provide optimal cost plus loss analysis. Reduction of an aircraft would remove standby cost and radio expense (Contractual $100.0; equipment 2.1)

RELATION TO LAST YEAR: This is a new program designed to provide effective and efficient aerial fire suppression support functions not currently available on a dependable basis.

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER / POUCH M – JUNEAU 99811

ANNUAL REPORT ON THE FIRE SUPPRESSION FUND

Prepared for the Alaska State Legislature

While the 1978 fire season was the mildest on record, the 1979 fire season was one of the worst on record for the State.

In accordance with AS 41.15.240 the following report of income and expenses of the fire suppression fund is submitted for the 1979 fire season.

The fund was established at $750,000 by the 1978 Legislature. During the 1978 fire season $75,955.75 was expended on fire suppression work. The 1979 Legislature did not appropriate funds to bring the suppression fund back to its original level. Due to this fact the sum of $674,044.25 was available at the start of the 1979 fire season.

The 1979 fire season started with a few inconsequential fires near Fairbanks and in the Mat-Su Valley. On May 10, 1979 a fire was started within the Delta Barley project, the agricultural clearing project near Delta Junction. Under existing weather conditions of high wind and low humidity, the fire could not be controlled and grew to 2000 acres the first night. A project fire organization was initiated and the fire declared controlled on May 19, 1979 at 4200 acres. By May 25, the fire had been totally demanned. No new evidence of fire was observed until June 4, 1979.

June 4 was another day of high wind and low humidity. It has never been satisfactorily determined whether a new fire start was made or buried fire within the perimeter blew across and started in unburned fuels. A project fire organization was again ordered to attempt to control the fire. Fire control personnel stayed on the fire at various levels until the summer was ended. The fire made runs on June 24, July 4 and in August.

Late season problems continued to appear from the Delta Barley Project. During the fall some individuals started their berm piles with no effort to control fire spread. On October 16 an individual started his berm piles and under ideal fire conditions, made a run of six miles during the night.

The accompanying fire statistics indicate that state fire fighters were suppressing other fires through the area of state responsibility at the same time the Delta Barley fire was being fought.

To illustrate some of the major costs, the following items of expenditures are given. These are firm figures only through August but are indicative of the ration of major cost items on any project fire.

Class of Expenditure	Costs
Emergency Firefighter wages	$1,091,572.36
Helicopter charter	305,259.88
Tractor rental	470,046.16
Other vehicle rental	190,714.06

These costs, along with the accompanying attachments indicate the Fires Suppression Fund must be better aligned with state fire responsibility. BLM predicts that by 1985 Alaska will have its full entitlement of land. Along with the land, the State's fire workload will increase many times over. By 1985 it is estimated 75 million acres of state land will be under fire protection.

Future Demands

Land will be transferred at the rate of 10-15 million acres per year; and will result in the State having 75% of the total fire cost on state lands by 1985. Total statewide fire cost in 1979 dollars is $20,000,000 per year, therefore state funds must be able to support expenditures of $14-15 million per year, with about $5 million of this in project fire costs.

Attachment A: Fire Cause - State Responsibility Lands
Attachment B: Projected Fire Occurrance Through 1985
Attachment C: Problem Fire Identification State Lands Through 1985
Attachment D: Statewide Fires by Cause - State and Federal Lands
Attachment E: Fire Suppression Funds - Receipts and Expenditures Calendar Year 1979

STATE RESPONSIBILITY LANDS

1979 FIRE SEASON

CAUSE	DISTRICT	FIRES		ACRES	
		NO.	%	NO.	%
LIGHTNING	NCD	22	7.8	458	1.1
	SCD	1	0.4	9	0.0
MAN CAUSED	NCD	127	44.8	41,697	98.1
	SCD	133	47.0	336	0.8
SUB-TOTAL		283		42,500	

1978 FIRE SEASON

CAUSE	DISTRICT	FIRES		ACRES	
		NO.	%	NO.	%
LIGHTNING	NCD	3	2.0	2	0.3
	SCD	1	0.6	-0-	0.0
MAN CAUSED	NCD	36	23.5	61	10.7
	SCD	113[1]	73.9	509[1]	89.0
SUB-TOTAL		153		572	

1. INCLUDES 2 FIRES IN SE & 100 ACRES

PROJECTED* FIRE OCCURRENCE THRU 1985

	Lightning		Man-Caused		False Alarm		Total	%	Average
	No.	%	No.	%	No.	%			
State Responsible Land	681	50	1,144	85	338	75	2,163	69%	432.6
Fed. Responsible Land	659	50	195	15	107	25	961	31%	192.2
Total (5 Years)	1,340		1,339		445		3,124		
Annual Average	248		267,8				625		

*Based on 1972 - 1976 Fire History

Lands transferred to the State at 14 million acres per year.

Attachment B

PROBLEM FIRE* IDENTIFICATION
STATE LANDS PROJECTED TO 1985

	Problem Fires		Percent		Total Fires	
	No.	Cost	No.	Cost	No.	Cost
State	62	$7,405,039	33	44	2163	$9,527,000
Federal	127	9,512,014	67	56	961	12,126,000
Total	189	16,917,051			3124	21,653,000
Average	37.8	$3,383,006			625	$4,330,000

*Problem Fire: Fires over 300 Acres and fires costing over $100,000
Based on Fire Histroy, 1972 to 1976 (5 years)
Problem Fires accounted for 78% of the total suppression cost.
Dollar costs are actual expenditures, not adjusted for inflation.

Attachment C

JANUARY 22, 1980

1979 FIRE SEASON

NO. OF FIRES BY CAUSE

STATE RESPONSIBILITY LANDS

CAUSE	DISTRICT	FIRES		ACRES	
		NO.	%	NO.	%
LIGHTNING	NCD	22	3.6	458	0.1
	SCD	1	0.2	9	0.0
MAN CAUSED	NCD	127	20.7	41,697	9.6
	SCD	133	21.5	336	0.1
SUB TOTAL		283	46.0	42,500	9.8

FEDERAL RESPONSIBILITY LANDS

CAUSE	DISTRICT	FIRES		ACRES	
		NO.	%	NO.	%
LIGHTNING	FAIRBANKS	164	26.7	384,534	89.2
	ANCHORAGE	24	3.9	787	0.2
MAN CAUSED	FAIRBANKS	74	12.0	2,249	0.5
	ANCHORAGE	70	11.4	1,444	0.3
SUB TOTAL		332	54.0	389,014	90.2
STATEWIDE TOTAL		615		431,514	

Attachment D

FIRE SUPPRESSION

RECEIPTS AND EXPENDITURES FOR CALENDAR YEAR 1979

RECEIPTS	10-42-9-500	10-42-9-505
January 1, 1979 Fire Suppression Fund	674,044.25	
June 5, 1979 Revised Program		315,000.00
June 3, 1979 Governor's Disaster Fund		395,000.00
August 7, 1979 Debt Service Lapse	86,900.00	513,100.00
August 7, 1979 Agricultural Loan Fund		1,200,000.00
	760,944.25	2,423,100.00
EXPENDITURES (1)		
January - June 1979 (attachment 1 minus 2)	760,856.98	
July - December 1979 (attachment 3)	707,429.53	
January - June 1979 (attachment 4)		661,855.40
July - December 1979 (attachment 5)		1,407,775.11
Total Expenditures	1,468,286.51	2,069,630.51
Adjustment (Prior year obligations decrease current and prior year authorizations)		46,826.72
December 31, 1979 Balance	(707,342.26)	*306,642.77

*This balance is the total of prior year and current year (119,417.88 + 187,224.89)

(1) See attachments numbers 1 thru 5 for line items allocations.

Attachment E

FY 80 NATURAL RESOURCES APPROPRIATIONS

SUPPLEMENTAL/SPECIAL CAPITAL REQUEST

WORKBOOK

Prepared by
Division of Budget and Management
Office of the Governor
January 1980

7C Analysis of Governor's Decisions

ITEM	AMOUNT	FUNDING SOURCE	EXPLANATION
Cadastral Land Surveying	6,903.1	GF	$5,500.0 has been included in the Governor's FY 81 Capital request for Cadastral Land Surveys, thereby reducing this request.

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Management and Administration

7C ANALYSIS OF GOVERNOR'S DECISIONS

01

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
Cadastral Land Surveying	Statewide	Statewide	Statewide

OBJ. NO(S)	OPERATING BUDGET BRU(S)	NAME(S) BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
		Information/Records Management	7-1-80	6-30-81

PROJECT NARRATIVE

1. PROJECT NEED STATEMENT

Under Chapter 181, SLA 1978, this BRU submitted a capital imporvement project to field identify by survey 100,000 acres of State land per year for disposal. AS 38.04.045 required that lands to be conveyed by the State must be surveyed prior to alienation. Further, the where land is located within a Municipality with platting and zoning powers, plats for State subdivision would comply with local ordinances and regulations in the same manner and in the same extent as plats for subdivsion by land owners. Chapter 85, SLA 1979, amended the subdivision powers of local municipalities by allowing the State to file their own subdivisions, but all State surveys must comply with local ordinances and regulations. AS 38.05.077 was repealed and reenacted to allow remote parcel location and disposal. A minimum amount of monumentation is performed in remote parcel areas but is necessary in order to be used as points of reference for the measurement of distances within an area. AS 38.05.047 was added as a new section and it requires that if land is suitable for residential use the Department shall survey and subdivide the land in a survey district.

Under Chapter 26, SLA 1979 preference rights to Forest service permitees (from the Federal Government on lands aquired by the State thru the selection process) were afforded a first right opportunity to obtain the lands. As part of the fiscal analysis for that Legislation,

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☐ Equipment (E)
- ☒ Land (L)
- ☐ Professional Services (P)
- ☐ Other (O)

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☐ One of Several Phases
- ☐ Major External Funding Source
- ☐ Other

NO	YES	SITE FEATURES
☐	☐	Site Currently Owned?
☐	☐	All Utilities Available?
☐	☐	Access Already Available?

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	12,903.1
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	12,903.1

GOVERNOR'S RECOMMENDATION

APPROVED [X] DEFERRED [ ] DISAPPROVED [ ]

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	6,903.1
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	

01-1035a (12/79)

OPERATIONAL COST & NO. PERSONNEL INCREASE (DECREASE)		FIRST OPERATING YEAR 81	ULTIMATE ANNUAL YEAR 82	PREVIOUS YR–PRIORITY
FUNDING SOURCE	FED. RCPTS.			AGENCY PRIORITY
	GEN. FUND			
				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST				
POSITION (PTE)		N/A	N/A	

CATEGORY MRMEC AGENCY Natural Resources PROGRAM DNR Management and Administration

01-1035a (7/78)

35a PROPOSED CAPITAL PROJECT

REVISED DATE _____

0000 02

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering (300)	11.741.0	11.741.0					0
Land N/A							0
Construction N/A							0
Equipment (500)	11.0	11.0					0
Administration and Other (100, 200, 400)	1,151.1	1,151.1					0
Total Annual Expenditure (Capital Cost)	12.903.1	12.903.1					0

CONTINUATION OF NARRATIVE

this BRU requested funds to perform the preference rights surveys if requested by the permitee. Therefore, this project is requesting additional funds to perform these preference right surveys that are approved in FY 80.

A part of the Land Disposal Process requires the daily recording of State land activity on Status Plats, Historical Indices and Serial Pages. Therefore, this project request is including personnel to accomplish this increased work-load during this project.

The Cadastral Land Surveying Project is developed to survey in the year prior to disposal because of the seasonal/ weather restrictions for field surveying. Therefore, this capital project requests which included FY 82 and FY 83 disposal areas should not be construed as requesting funds for those fiscal years, but that we are requesting funds for surveying for disposal of lands to be made available in FY 82 and 83.

I. PROJECT DESCRIPTION

Chapter 85, SLA 1979, created a land disposal bank. As part of the process the Department is required to make available 100,000 acres of land for disposal in each fiscal year. This is broken into approximately 75,000 acres for remote parcels and 25,000 acres of small tract parcels which range from 1 to 5 acre in size. The public is obtaining lands that have been identified, monumented, platted and recorded, creating a firm Land Title Document for the passing of State Land Title. The State is lowering the cost to the consumer in obtaining a parcel of land by having the surveys performed in groups which decreases the cost of survey field work. Each project for subdivision goes thru six phases in order to complete the project area. This includes the site evaluation, photography and mapping, feasibility plan, master plan, preliminary platting, and final plat. The site evaluation is researching for lands that are suitable for the intended purpose, investigation of the environmental concerns, and office investigation for access (both legal and physical) the area to be surveyed, and meeting with other Department personnel. The photography and mapping included horizontal and vertical control for the photography, contour mapping, ground truthing for the preliminary soils work, and a final discussion with the Division of Technical Services personnel to see if the project is still feasible. The next phase, the feasibility plan, reviews all the

data of phases 1 and 2 and has an overall master plan and general concept showing the soils, the determination of usable and unusable lands and a brief overview of waste water disposal. This is discussed with other interested parties and department personnel. The master plans include a general lot layout, including approximate sizes and general configuration based upon the data gathered to date. Ideally this includes two or three plans that can be refined and adjusted for a final master plan. The preliminary platting process is submitting it to the Borough and other agencies as applicable. The final plat is the final survey staking of the approved master and preliminary plans. These phases are established so that if for policy or technical reasons a project should be deleted, adjusted, or be delayed, a decision can be made that minimizes the cost of that project at that stage.

Presently, there is only one to two percent of State lands that have densified monumentation. The Federal Government in passing title to the State surveys the exterior of a township approximately every two miles and a township is a six mile by six mile block. Therefore, the interior monumentation required for remote parcels or subdivision is what this project accomplishes in addition to that previously stated.

These projects are Statewide from areas drawn from the Land Disposal Bank and in subdivision areas are generally close to existing transportation corridors. The projects are indentified thru the Land Availability Determination Schedule (L.A.D.S.)

III. DOCUMENTATION OF ESTIMATED CAPITAL COST

The cost listed below for each subproject was estimated by Division of Technical Services Personnel in August, 1979 The estimated cost for the FY 81 Capital Budget request utilizes professional assumptions made on the past awards of survey contracts in FY 79 and FY 80.

A. FY 81 LAND DISPOSALS

100	875.6	
200	50.0	
300	5,500.0	
400	20.0	
500	10.0	
SUBTOTAL	6,455.6	26 FTE

CONTINUATION FORM

CATEGORY NRMEC AGENCY Natural Resources PROGRAM DNR Management and Administration

PROJECT TITLE Cadastral Land Surveying

35

REVISED DATE

0000 04

81-1033 (7/79)

B. FY 82 LAND DISPOSALS

100	0	
200	0	
300	5,500.0	
400	0	
500	0	
SUBTOTAL	5,500.0	0 FTE

C. FY 83 LAND DISPOSALS

100	0	
200	0	
300	500.0	
400	0	
500	0	
SUBTOTAL	500.0	0 FTE

D. RECORDS

100	194.5	
200	5.0	
300	3.0	
400	6.0	
500	1.0	
SUBTOTAL	209.5	7 FTE

E. PREFERENCE RIGHTS

100	0	
200	0	
300	238.0	
400	0	
500	0	
SUBTOTAL	238.0	0 FTE

CONTINUATION FORM

CATEGORY NRMEC AGENCY Natural Resources PROGRAM DNR Management and Administration

PROJECT TITLE

35

REVISED DATE

000005

01-1033 (7/79)

IV. ANALYSIS OF ESTIMATE OF OPERATIONAL EXPENSE

This project is designed and planned to function with its own administrative cost for personnel, travel, contractual, commodities and equipment. However, there is some overlap with operating personnel work during the life of the project, but it is a minimal and not a continuing situation.

V. IDENTIFICATION OF ALTERNATIVES CONSIDERED

1. Our operating budget level of funding necessary for the large scale disposal actions, does not allow this level of funding in order to accomplish the mandated disposals.

2. In lieu of having numerous full time field survey technicians, it is beneficial to contract for the acutal field survey work to be performed. An ample number of firms are located throughout the State and in communities generally where our projects are located. This ease of operations with a minimum survey staff offsets numerous personnel, field equipment and logistics problems, and allows us expeditious operations in several locations at once.

3. Allowing land to be appropriated and surveyed by private individuals presents problems presently encountered in the former open-to-entry program. Administrative costs are not recoverable by the sale of the land. The administrative costs are to insure that lands are properly and legally identified according to the Division of Technical Services Survey criteria before being alienated.

4. Requesting other agencies, either State or Federal, was rejected based on an analysis made in our FY 79 Capital Budget. As identified in that budget request, unique handling of local platting, planning and zoning authorities is a consideration when involving a Federal agency such as the BLM. With the exception of townsite programs by the BLM the majority of their contracts are large cadastral survey projects. BLM is not in the position to program for densifying their monumentation for State purposes in order to quickly pass title.

CONTINUATION FORM

CATEGORY NRMEC AGENCY Natural Resources PROGRAM DNR Management and Administration

PROJECT TITLE Cadastral Land Surveying

35

REVISED DATE

0000 06

01-1033 (7/78)

The proposed Capital Program is for the purchase of four (4) aircraft whose primary mission is for use in the State's fire suppression program, although it will be available for many other uses by various state agencies. This Capital Program is in the Inspection and Protection BRU.

The Governor's policy theme number 3, "To provide government services which meet the needs of Alaskans in an effective and efficient manner", is most closely related to the program objectives guiding this plan.

Objective #1: Provide the necessary air support for the State's fire suppression program mandated by statute.

Alaska has only been in actual fire suppression activities briefly. Previously all State and private lands were contracted to the Bureau of Land Management (BLM). BLM has declared its intention and in fact has withdrawn from protecting State and private lands in the populated areas of the State. Because of change in protection responsibilities and the State's short period of being in the actual fire business air support capability must be obtained to provide fire protection at a necessary level. This capital program request is a departure from normal contracting procedure for aircraft because of financial savings over the long term.

Objective #2: Take advantage of existing State expertise and facilities to reduce costs.

The Department of Military Affairs has the trained crews and maintenance personnel to operate these aircraft. In addition facilities are available for maintaining the aircraft and providing security for them. The Commissioner of the Department fo Military Affairs has stated that this program is a viable mission and expressed his willingness to enter an operating agreement. By utilizing existing State expertise and facilities the possibility for reducing costs is very real.

Objective #3: To provide for other agencies' needs for aircraft by taking advantage of the aircrafts versatility.

In fire suppression work single-use aircraft normally have been contracted for. Aerial tankers could only drop retardant, smokejumper aircraft could only drop smokejumpers and to some extent haul crews, cargo hauling by some other specialized aircraft. The type aircraft in this program does all of the above activities. The aircraft's ability to drop water, smokejumpers, haul cargo, and passengers decreases the need for additional aircraft. This versatility enables it to provide services needed by other agencies.

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land and Water Management

01-1031 (7/78)

31 ANALYTIC STATEMENT (Six-Year Capital Program)

REVISED DATE _____

07

7C Analysis of Governor's Decisions

ITEM	AMOUNT	FUNDING SOURCE	EXPLANATION
Canadair CL-215 Purchase	5,067.0	GF	Purchase of two planes ($4,700.0), import duties ($238.0) and insurance ($132.0) is included.

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Forest, Land and Water Management

7C ANALYSIS OF GOVERNOR'S DECISIONS

08

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
Canadair CL-215 Purchase	Anchorage	Statewide	7-12

OBJ. NO(S)	OPERATING BUDGET BRU(S)	NAME(S)	BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
3		Inspection and Protection	10-42-1-500	1981	March 1981

PROJECT NARRATIVE

1. Project Need Statement

The State is statutorily responsible for fire protection of all State and privately owned lands in Alaska. At the present time the State is protecting with its own forces 21 million acres of land. It is understood that the BLM and State have agreed to conveyance of 10 million acres per year for the next seven years. These facts point out that within seven years the State will have received its full entitlement of 103 million acres. Of this 103 million acres roughly 75 million acres will require fire protection.

The State has only recently become involved in actual fire suppression with its own forces and has not required the necessary equipment to properly fulfill its mission. Aircraft, must be provided if life, property, and resources are to be protected at an acceptable level.

The State has never been funded for other than helicopters for initial attack on fires. Air tanker support has come from BLM sources on an "as available" basis. This source of availability will decrease with time. Air tankers are vital to any viable fire suppression activity and must be provided for or risk an unacceptable level of loss by wildfire.

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☒ Equipment (E)
- ☐ Land (L)
- ☐ Professional Services (P)
- ☐ Other (O)

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☐ One of Several Phases
- ☐ Major External Funding Source
- ☒ Other

NO	YES	SITE FEATURES
☐	☒	Site Currently Owned?
☐	☒	All Utilities Available?
☐	☒	Access Already Available?

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	13,599.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	13,599.0

GOVERNOR'S RECOMMENDATION

APPROVED	DEFERRED	DISAPPROVED
X		

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	5,067.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	5,067.0

01-1035a (12/79)

OPERATIONAL COST & NO. PERSONNEL INCREASE (DECREASE)		FIRST OPERATING YEAR 81	ULTIMATE ANNUAL YEAR 81	PREVIOUS YR-PRIORITY
FUNDING SOURCE	FED. RCPTS.			AGENCY PRIORITY
	GEN. FUND	1246.2	611.2	
				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST		1246.2	611.2	
POSITION (PTE)		48 MM	48 MM	

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land and Water Management

01-1035a (12/79)

35a PROPOSED CAPITAL PROJECT

REVISED DATE

09

B. Contract for all aircraft needs (continued)

advantages of having a mulitpurpose aircraft intended for use by a number of user agencies, not just for fire season. The number of contract aircraft suitable for airtanker work is dwindling. All available contract aircraft are modified military aircraft 30 to 40 years old and some are being deadlined each year.

C. Provide no aircraft capability:

This is not a viable alternative in view of the States fire responsibilities. The lands protected by the State are those lands of highest value and population density. The threat to life, property, and resources is too real to allow this alternative to be valid. The support these aircraft will provide will allow State forces to keep most fires small, without aircraft support there will be many more project fires costing the State more in the long run than the purchase price of the aircraft.

CONTINUATION FORM

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land and Water Management

PROJECT TITLE Canadair CL-215 Purchase

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REVISED DATE _____

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01-1033 (7/79)

CL-215 Study and Recommendations

The 1979 fire season has been the second highest year, in terms of state fire expenditures, in the history of the state. In 1969 we expended $4,000,000. We are approaching that figure this year. It is a safe assumption that Alaska's fire bills are going to remain in the millions of dollars and by far exceed the record of $4,000,000 for 1969.

A quick look at the map contained in this report will show why our fire bills will continue to climb. The map shows state ownership and outlined in red is state selections. A very high percentage of both state owned and state selected lands require some level of protection from fire. The time has come for the state to recognize it has a very large role to play in fire suppression now and in the very near future. In addition to state lands we are statutorily responsible for private lands. Considering ANSCA that means at some point in time 44,000,000 acres will be added to state lands for protection purposes.

The magnitude of the states fire responsiblities now and in the near future warrants consideration of new concepts in firefighting activities. The state simply cannot afford some of the concepts in use today. We must be willing to apply new methods and cut costs where possible, particularly in use of aircraft or else the state will be contracting aircraft to the tune of $9,500,000 annually as does BLM. The attached evaluation, in my mind proves beyond a doubt a vehicle exists and is in use today that will save the state millions of dollars. We only need the courage and foresight to break away from forty years of doing it the same way and accept a new concept in firefighting methods.

I recommend the state purchase the two CL-215s that Canadair Ltd. has offered for the following reasons:

1. By utilizing the Air National Guard as indicated in their letter the state will provide its own operations and maintenance program. By the two agencies operating together we will not pay a daily guarantee as we would were we to contract. Also the planes would be available for state missions other than fire.

2. Although the hourly operating and replacement costs appear high consider the calculations are based on new aircraft and 15 years depreciation but the aircraft life time is in excess of 30 years. For example BLM uses C-119s and PBYs, these aircraft are close to 40 years old and still in use.

3. As per Canadairs letter of June 26, 1979 now is the time to purchase because their next production the cost per plane will be $4,000,000 as opposed to $2,200,000 and $2,500,000 respectively.

4. In comparing productivity using the same fire situation two PBYs would be needed to deliver the same gallonage as one CL-215. It would take four C-119s to equal the productivity of one CL-215.. This point was proven very well this summer on the Delta Barley Fire. The CL-215 dropped as many as 28 loads in a five hour period. Had the plane been land based and restricted to retardant the very best it could have delivered is five loads and the retardant would have cost

$8,500.00 as opposed to nothing for the water.

5. The individual evaluations clearly demonstrate the value and superiority of the CL-215 over other aircraft in fire suppression work. The option of water or retardant represents a potential for great savings. This versatility is an asset no other firefighting aircraft has. This one plane can drop water or retardant, it can haul crews to and from fires, it can move equipment and supplies and it can be used for smokejumping.

   Air operations as they are conducted with present day aircraft is inefficient and expensive. C-119 and PBYs are used only for retardant shipe, crew transportation is by Volpars and Twin Otters, cargo by C-123s, and smokejumping by Volpars. The CL-215 can do any one or all of these missions. No wonder BLM's aircraft operations exceed $9,000,000 per year.

6. One of the best reasons for purchasing these aircraft is due to its great versatility, and CL-215 is not limited to strictly fire suppression activity. Other state and federal agencies would have many uses for the aircraft. Fish and Game, Public Safety and Evironmental Conservation have need for this type of aircraft to name a few. Also the very real possibility of contracting the planes during our off season exists.

Included in this study are various documents supporting the reasons why purchase of these aircraft would be in the state's interest. In addition there is a section on "obligations". The section includes an outline of correspondence dating back to 1964. Not all of this correspondence is included. However, the selected documents clearly indicate that the State of Alaska has no choice but to become involved in fire suppression. The BLM clearly states they will not do it for us as in the past. I urge anyone who reads this study to satisfy themsleves that the state is in the fire business to stay.

Recognizing we must have a state firefighting organization we should, while we are new in the business select the best most cost effective way of getting the job done. The CL-215 is the most effective tool we could possibly acquire.

7C Analysis of Governor's Decisions

ITEM	AMOUNT	FUNDING SOURCE	EXPLANATION
Statewide Fire Warehousing	$854.0	GF	Only commodities and equipment items are funded.

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Management of Forest Land and Water Resources

7C ANALYSIS OF GOVERNOR'S DECISIONS

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
Statewide Fire Warehousing	Anchorage-Fairbanks	Statewide	7-12, 20

OBJ. NO(S)	OPERATING BUDGET BRU(S) NAME(S)	BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
3	Land & Water Mgmt.	10-42-1-500	July 80	Dec 81

PROJECT NARRATIVE

I. Project Need Statement:

Presently the only source of fire warehousing is from BLM stocks. Items available to the State run from Emergency Fire Fighter packs to fire communications system. For the past 4 years BL . has been providing this service under terms of the BLM-State Cooperative Agreement. At the present time the State is not capable of supporting its fire fighting forces in the field without BLM warehouse facilities.

Under terms of the agreement BLM support will cease in 1981. The implication by this withdrawal is the State must replace this warehousing capability or a reduction in the State's fire fighting effectiveness will occur or even cease to be functional.

The State is scheduled to receive an additional 70 million acres over the next 7 years. This fact, coupled with BLM's withdrawal of their facilities clearly indicates a need exists to provide the State's own facilities.

II. Project Description:

This project is to provide necessary supplies and equipment for State initial attack crews and to support project fires as they occur.

Some examples of items stocked are: EFF packs, shovels, pulaskis, pumps, chain saws, fire net co.. unications systems. The supplies and equipment

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☒ Equipment (E)
- ☐ Land (L)
- ☐ Professional Services (P)
- ☒ Other (O)

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☒ One of Several Phases
- ☐ Major External Funding Source
- ☐ Other

NO	YES	SITE FEATURES
☐	☐	Site Currently Owned?
☐	☐	All Utilities Available?
☐	☐	Access Already Available?

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	1021.5
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	1021.5

GOVERNOR'S RECOMMENDATION

APPROVED	DEFERRED	DISAPPROVED
X		

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	854.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	854.0

01-1038a (12/74)

OPERATIONAL COST & NO. PERSONNEL INCREASE (DECREASE)		FIRST OPERATING YEAR 81	ULTIMATE ANNUAL YEAR 82	PREVIOUS YR-PRIORITY
FUNDING SOURCE	FED. RCPTS.			AGENCY PRIORITY
	GEN. FUND	1021.5	381.0	
				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST		1021.5	381.0	
POSITION (FTE)		6	6	

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land & Water Management

01-1038a (

35a PROPOSED CAPITAL PROJECT

REVISED DATE _____

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CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment & Supplies	1021.5	1021.5	381.0	409.6	440.3	473.3	
Administration and Other							
Total Annual Expenditure (Capital Cost)	1021.5	1021.5	381.0	409.6	440.3	473.3	

CONTINUATION OF NARRATIVE

will be warehoused in Fairbanks and Anchorage at District headquarters.

III. Documentation of Estimated Capital Costs:

Estimated Capital Costs were obtained from discussions and cost studies of the BLM's fire warehousing procedures. The result of these studies were adjusted downward to conform to estimated State requirements.

100 Personal Services	72 MM	155.1
200 Travel		4.0
300 Contractual		8.4
400 Commodities		388.4
500 Equipment		465.6
Estimated Capital Costs 1st Year		1021.5

IV. Analysis of Estimated Impact on Operating Budget:

Budget year will show a large increase due to initial start up, subsequent years will show a significant reduction. BLM studies have indicated replacement of stocks are about one fourth the total inventory when fully stocked.

		Budget Year	Budget Year +1
100	72 MM	155.1	155.1
200		4.0	4.0
300		8.4	8.4
400		388.4	97.1
500		465.6	116.4
		1021.5	381.0

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land & WAter Mangagement

PROJECT TITLE Statewide Fire Warehousing

35b PROPOSED PROJECT ANALYSIS

REVISED DATE

81-1038b (7/79)

Succeeding budget years would reflect increases caused by inflation.

V. Identification of Alternatives Considered:

A. Project as described in this budget proposal:

Based upon studies of BLM warehousing operations and adjusted the State requirements, this project will provide adequate support to the States fire suppression program for the next five to ten years.

Failure to approve this project will result in the State's capability to protect life, property, and resources to fall below a standard acceptable to the public.

B. Continue to Utilize BLM's Warehousing Facilities:

Under terms of the BLM-State Cooperative Agreement, the State will no longer be able to exercise this alternative as in previous years. BLM will no longer supply the State's initial attack needs and will only support project fires as a secondary mission to their own needs.

C. Rely on Boise Interagency Fire Center for Supplies and Equipment:

Major items could be obtained with this alternative but not the basic supply items. This center operates out of Boise, Idaho and would produce an unacceptable time lag as well as increase costs due to air frieghting material to Alaska and return to Boise.

D. Provide no Statewide Fire Warehousing at all:

This alternative is unacceptable. Without immediate support in supplies and equipment the State's ability to fight fire would be eliminated.

CONTINUATION FORM

CATEGORY NRMEC AGENCY Dept. Natural Resources PROGRAM Land & Water Management

PROJECT TITLE Statewide Fire Warehousing

35

REVISED DATE

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81-1033 (7/78)

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
Fire Fighting Costs	Statewide	Statewide	All

OBJ. NO(S)	OPERATING BUDGET BRU(S)	NAME(S)	BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
		Management & Protection	10-42-1-500 & 520	July 1977	June 1981

PROJECT NARRATIVE

I. Project Need Statement

Wildland firefighting during the summer of 1979 incurred direct costs to the state of some 4 million dollars. Funds available for this purpose were less than $700,000 from the Fire Suppression Fund and the State's Disaster Fund. In order to meet these obligations $1.2 million was borrowed from the Agriculture Revolving Loan Fund and funds were shifted whenever possible in order to meet payrolls and pay contractors.

This project will repay these loans, reestablish the firefighting capabilities of the department for the 1980 fire season, and provide training funds for both the 1980 and 1981 season.

II. Project Description:

The project has four elements:

a. Payment due BLM: $1,500,000. Actual audited billing for BLM suppression efforts on state lands for 1978 total $600,000. Estimated charges for 1979 amount to $900,000. The estimate is from BLM's data center in Denver, Colorado and a bill for this amount is now due and payable.

b. Repayment to Agricultural Revolving Loan Fund: $1,200,000. After exhausting the fire suppression fund and the state's disaster fund, the state was still far short of money to meet payrolls and pay contractors. To continue to meet fire-fighting responsibilities statewide a loan was procured from this source.

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☐ Equipment (E)
- ☐ Land (L)
- ☐ Professional Services (P)
- ☐ Other (O)

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☐ One of Several Phases
- ☐ Major External Funding Source
- ☐ Other

NO	YES	SITE FEATURES
☐	☐	Site Currently Owned?
☐	☐	All Utilities Available?
☐	☐	Access Already Available?

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	3,600.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	3,600.0

GOVERNOR'S RECOMMENDATION

APPROVED	DEFERRED	DISAPPROVED
[X]	[ ]	[ ]

1002	FED. RCPTS:	
1003	G/F MATCH	
1004	GEN. FUND	3,603.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	3,603.0

01-1035a (12/79)

OPERATIONAL COST & NO. PERSONNEL INCREASE (DECREASE)		FIRST OPERATING YEAR ____	ULTIMATE ANNUAL YEAR ____	PREVIOUS YR-PRIORITY
FUNDING SOURCE	FED. RCPTS.			AGENCY PRIORITY
	GEN. FUND			
				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST				
POSITION (FTE)				

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Lands & Water Management

01-1038a (

35a PROPOSED CAPITAL PROJECT

REVISED DATE ____

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CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
~~Administration and~~ Other Firefighting Costs	3,600.0	3,600.0					
Total Annual Expenditure (Capital Cost)	3,600.0	3,600.0					

CONTINUATION OF NARRATIVE

c. Unpaid bills: $200,000. This item is part of the Capital Project to provide for late or lost billings and any claims that might stem from firefighting activities. Known bills include payment for use of private property for camp and air operations, operating costs for CL-215 aircraft on the Delta Fire,etc.

d. Operations and Training: $700,000. Funds originally programmed for air operations and training for the 1980 and 1981 seasons were used to meet financial obligations incurred during the 1979 season. This part of the Capital Project will replace these funds in order that the state can meet its firefighting responsibilities by providing necessary air operations and scheduled in-house training as well as training that can only be obtained outside such as the National Fire Training Center at Marana, Arizona.

III. Documentation of Estimated Capital Cost

Documentation of Capital Cost is explained in the following items:

a. 1978 BLM fire bill: Finalized by audit and written mutual agreement as to its accuracy.

b. 1979 BLM fire bill: BLM estimate contained in Bill No. B000443.

c. Agricultural Revolving Loan Fund: Documentation for this cost can be found in state accounting records.

d. Unpaid bills: This is a best estimate of possible claims, payment of CL-215 operational cost billing submitted earlier in error, and other costs which may have ocurred on the Delta Barley Fire.

e. Operations & Training: Air operations estimate based on previous years records. Training based on identified need to establish qualified individuals in fire overhead teams and additional manmonths to train seasonal firefighters prior to the fire season. Estimated cost of air operations is $400,000 and identified training needs is $300,000.

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Lands & Water Management

PROJECT TITLE Firefighting Costs

81-10358 (7/79)

IV. Analysis of Estimated Impact on Operating Budget

There will be no impact on the Operating Budget. This Capital Project is to replace funds programmed for other activities but diverted to pay wages and other firefighting expenses after the Fire Supperssion Fund was exhausted.

V. Identification of Alternatives Considered

The only alternatives for elements a, b, and c is to not pay the bills. The BLM would collect the money by withholding payments due to the state for mineral extraction or other purposes. The private parties would sue.

The alternative to providing air support and training is to not do so. Without air support, the response time on fires would be increased to a level that would certainly result in more large project fires and accompanying higher costs. Not providing training to seasonal firefighters and permanent overhead would result in severe safety hazards on the fire line and the possibility of either suits or large workmans compensation claims.

CONTINUATION FORM

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Lands & Water Management

PROJECT TITLE Firefighting Costs

35 b

REVISED DATE

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01-1033 (7/79)

State of Alaska
Dept. of Natural Resources
Pouch M
Juneau, AK 99801

Please detach top portion of this bill and return with remittance.

Amount of Payment $_____

Date	DESCRIPTION	Quantity	Unit Price Cost	Unit Price Per	Amount
	Estimated 1979 Fire Suppression Costs				900,000.00

APPROVED FOR PAYMENT:

[illegible] District
[illegible]

RECEIVED
JUN 26 1979
NATURAL RESOURCES
FISCAL

AMOUNT DUE THIS BILL, $ 900,000.00

NOTE: A receipt will be issued for all cash remittances and for all other remittances when required by applicable procedure. Failure to receive a receipt for cash payment should be promptly reported to the bureau or office shown above.

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
Fire Suppression Fund		Statewide	All

OBJ. NO(S)	OPERATING BUDGET BRU(S)	NAME(S)	BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
		Management and Protection	10-42-8-500	1/80	Indefinite

PROJECT NARRATIVE

I. Project Need Statement

AS 41.14.210 established the emergency fire suppression fund. The fund was totally exhausted by fires in the summer of 1979, principally the Delta Barley fire. This project will re-establish the fund at a $5,000,000 initial level.

This fund provides a source to pay the expenses of fighting expected wildland fires. The average annual cost of fire suppression activities statewide over the past 10 years has been about $4,000,000, with the bulk of this being spent by the BLM. Transfer of land selected under the Statehood Act will transfer about two-thirds of this cost to the State. This transfer is programmed to proceed at the rate of 10-15 million acres per year for the next 5-7 years. Because of lack of conflicting claims, it is expected that the most expensive areas - in terms of fire suppression costs will be transferred first.

II. Project Description

The operating budget carries funds for initial attack of wildfires on state lands by state crews. For some fires, initial attack may result in suppression. However, in severe burning conditions or in remote areas where attack is delayed, the fire may develop into a "project fire." A project fire may burn for weeks or occasionally months, posing a severe hazard to property in the area and to the timber, watershed, wildlife, or other natural resources. The cost of containing such a fire can run into millions of dollars. This project will provide a continuing source of funding to pay the costs of fighting such fires.

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☐ Equipment (E)
- ☐ Land (L)
- ☐ Professional Services (P)
- ☒ Other (O)

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☐ One of Several Phases
- ☐ Major External Funding Source
- ☒ Other

SITE FEATURES n/a

NO	YES	
☐	☒	Site Currently Owned?
☐	☒	All Utilities Available?
☐	☒	Access Already Available?

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	5,000,000
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	5,000,000

GOVERNOR'S RECOMMENDATION

APPROVED ☒ DEFERRED ☐ DISAPPROVED ☐

1002	FED. RCPTS:	
1003	G/F MATCH	
1004	GEN. FUND	5,000.0
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	5,000.0

01-1038a (12/79)

OPERATIONAL COST & NO. PERSONNEL	INCREASE (DECREASE)	FIRST OPERATING YEAR	ULTIMATE ANNUAL YEAR	PREVIOUS YR-PRIORITY
FUNDING SOURCE: FED. RCPTS.				AGENCY PRIORITY
FUNDING SOURCE: GEN. FUND				
FUNDING SOURCE				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST				
POSITION (FTE)				

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Land and Water Management

01-1038a (1)

35a PROPOSED CAPITAL PROJECT

REVISED DATE

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CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)	varies						

CONTINUATION OF NARRATIVE

III. Documentation of Estimated Capital Cost

The amount of funding requested for this project reflects an estimate of the cost of one moderately severe fire year. State expenditures for firefighting in 1979 totalled about $4,000,000. A $5,000,000 fund will provide a 25% reserve over and above this amount. Annual appropriations will ordinarily be required to maintain the fund and occasional supplements will be needed when annual expenditures exceed $5,000,000.

IV. Analysis of Estimate of Operational Expenses

Except for the fact that continuing expenditures from the fund will be necessary, this could be considered as being all operating expenditures. Money will be used to pay the salaries and overtime of emergency firefighters hired for a project fire, overtime for permanent employees involved in firefighting, transport of firefighters and equipment to and from a fire, rental of equipment including aircraft charter, and replacement of supplies expended on the fire including such items as food, hand tools, protective clothing, etc.

V. Identification of Alternatives Considered

One way or another, the State will bear the cost of wildfire fighting. If fires are not controlled the damage to natural resources can be incalculable. The State can also be sued for property damage incurred by private parties for it's failure to control a fire. Indirect losses due to smoke - such as airport and highway closures - can be substantial. The only alternatives considered are how to pay the costs of wildfires.

a. No Fund Provides: Loss of resource values would be unacceptably high in many cases. If fire threatened human life or property, it would be necessary to call for military and other assistance thereby incurring an unbudgeted cost.

b. Fund Annually by Supplemental Appropriation: This would create substantial hardship for EFF's who would

CATEGORY NRMEC AGENCY Natural Resources PROGRAM Land and Water Management

PROJECT TITLE Fire Suppression Fund

35b PROPOSED PROJECT ANALYSIS

REVISED DATE

Alaska State Legislature

Senate

Committee on Resources

Agenda

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

February 27,1980
1:30 p.m.
Butrovich Room

SB 345	supplemental and special capital appropriation to Department of Natural Resources
SR 20	urging Board of Game to establish special seasons for bow and arrow hunting
CSHB 599	relating to the authority of the Board of Game and the Department of Fish and Game over domestic animals
SB 189	relating to the determination of residency for fish and game licensing

Persons Giving Testimony

SB 345- Ken Ward and Fred Mast from the Alaska Air Carriers. Mr. Ward would like to be first because he must return to work. Claude Hoffman, Jeff Haynes, Ted Smith, Tom Bergstrom and possibly Robert LeResche of the Department of Natural Resources.

SR 20, CSHB 599 and SB 189- Bob Hinman and Rube Andrews from the Department of Fish and Game. Representative Carney or his aide Kelly Fike would like to speak on CSHB 599.

Alaska State Legislature

Senate

Committee on Resources

March 11, 1980

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

Meeting on alternatives to State purch[a]se of CL 215's

Ted Smith- Department of Natural Resources
Representative Rick Halford
Wally Miller
Richard Rude- Flying Firemen, Inc.
Bob Schafley- Seattle PBY operator
Ken Ward- Alaska Air Carriers
Kent Loken- Channel Flying
Jim Wilson- Livingston Copters

Official Business

Alaska State Legislature

Senate

Committee on Resources

February 25, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate Bill 345

The sum of $21,427,100 in supplemental appropriations is made to the Department of Natural Resources in the following amounts:

$6,903,100- for cadastral land surveying
$ 854,000- for statewide fire warehousing
$5,067,000- for the purchase of 2 Canadair CL 215's
$3,603,000- for firefighting costs
$5,000,000- for the Fire Suppression Fund

Cadastral Land Surveying- $6,903,100

With the creation of the Land Disposal Bank, the State is required to make available 100,000 acres of land for disposal each year. The statutes require that lands to be conveyed by the State must by surveyed prior to disposal. This supplemental appropriation would cover those surveying costs. The reason for a supplemental request have to do with weather restrictions, in that most surveying is done in the summer months. If it were to be included in FY 81 appropriations, valuable start-up time would be lost.

Purchase of (2) Canadair CL 215's (waterbombers)- $5,067,000

The Bureau of Land Management (BLM) was previously contracted to handle the state's fire suppression program. It has declared it's intention to withdraw from this activity, leaving the state with the responsibility of protecting state and private lands. The department feels that purchase of the aircraft is necessary for the following reasons:

a) To maintain a necessary level of fire protection.
b) Normal contracting procedures for aircraft are not considered because of the financial savings over the long term.

c) The Department says that the number of contract aircraft suitable for airtanker work is dwindling. All available contract aircraft are modified military aircraft 30-40 years old and some are being deadlined each year.
d) The versatility of this aircraft allows for a broader use ie. the ability to drop water, smokejumpers, haul cargo and passengers.
e) With this versatility, it can be loaned to other agencies when not in use.

Statewide Fire Warehousing- $854,000

Because of the BLM's withdrawal from fire suppression, the state must also take over this area of fire protection. This appropriation would provide the necessary supplies and equipment for state initial attack crews and to support project fires as they occur.

Fire Fighting Costs- $3,603,000

This appropriation would cover 4 basic areas:

a) $1,500,000 payment due to the BLM for costs incurred in fighting 1978 and 1979 wildland fires.
b) $1,200,000 to repay a loan from the Agricultural Revolving Loan Fund to cover firefighting costs.
c) $200,000 in any late or lost bills or potential claims from firefighting activities.
d) $700,000 of 1980 and 1981 operation and maintenance money was used to cover costs in the 1979 fire season. This appropriation would return that money to this fund.

Fire Suppression Fund- $5,000,000

The fire suppression fund, as established by statute, was totally depleted by the 1979 fire season. This amount would re-establish the fund at a $5,000,000 initial level. It will provide a source to pay for fighting expected wildland fires. It is an estimate to cover one moderately severe fire season. Based on a 1979 total cost of $4,000,000, this amount would give the department a 25% reserve to handle additional costs. Annual appropriations will be required to maintain the fund and occasional supplements will be needed when annual expenditures exceed $5,000,000.

The money will be used to pay the salaries and overtime of emergency firefighters and equipment to and from a fire, rental of equipment including aircraft charter, and replacement of supplies expended on the fire including such items as food, hand tools, protective clothing etc.

Fiscal note is included in the enclosed Project Analysis.

"An Act making supplemental and special capital appropriations to the Department of Natural Resources for land disposal surveying and forest fire protection projects for FY 80; and providing for an effective date."

Senate Bill 345- By the Rules Committee by Request of the Governor

The sume of $21,427,100.00 in supplemental appropriations is made to the Department of Natural Resources in the following amounts.

$6,903,100- for cadastral land surveying ✓
$ 854,000- for statewide fire warehousing ✓
$5,067,000- for the purchase of 2 Canadair CL 215's ✓
$5,000,000- for the Fire Suppression Fund
$3,603,000- for firefighting costs

All of the above are for capital projects and are valid for the life of the project. All unexpected balances will be carried into subsequent fiscal years.

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

March 3, 1980

TO: Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: SB 345, Information requested by the Resources Committee on 2/27/80. Per Geoffrey Haynes, Deputy Commissioner, DNR.

This data is being supplied in response to the Senate Resources Committee request for information on cost, timing and products to be produced for the following tasks:

Project Tasks	Associated Costs
1) Identification and Verification of gravel deposits in the following areas:	
a) FY 80 Land Disposals	$ 150,000
b) FY 81 Land Disposals	$ 150,000
c) All lands in the Land Bank	$ 500,000
d) Along transportation corridors within above mapped areas	(Cost identified above)
2) Development of Intergrated Terrain Unit Mapping, as displayed to the committee for the FY 81 Disposal Program, to be expanded in the following areas:	
a) FY 80 Land Disposals mapped at 1 inch=1 mile	$ 300, 000
b) All lands in the Land Bank, estimated 3½ million acres, mapped at 1 inch=1 mile	$1,050, 000
c, All State Lands, estimated 100 million acres mapped at 1 inch=4 miles	$1,086,000
3) Establishment of a land Disposal Information Center in each Department of Natural Resources District Land Office. A Center where information developed for Land Disposal Areas (ie. NASA Photography, photo base maps, Integrated Terrain Unit Mapping products, reports, etc.) can be viewed by the general public to assist them in their selection of land.	$ 234,000

We propose a Three Phase Program for the completion of the above tasks. The three phases are developed in parallel and each one iterfaces to the other. However, each phase can be developed separately depending on the funding availability.

Detailed Discussion

The first phase of the program would be to utilize the Integrated Terrain Unit Mapping technique as shown the committee on 2/27/80. The Terrain Unit Mapping process used to assess the FY 81 Land Disposal areas involves the identification and mapping of genetically based landforms. Once these landforms are known, the suitability of each unit as a construction material source can be assessed. With a matrix and automation, production of a construction material (gravel) attribute map is then relatively simple. This level of reconnaisance information would then be field verified during the summer of 1980. The Landforms for FY 80 Land Disposal Areas would be interpreted, and verified in conjunction with the summer FY 81 Field Verification Program. Once all the information for the FY 80 and FY 81 Land Disposal Areas is collected it will be digitized utilizing the Integrated Terrain Unit Mapping technique for instant retrieval and manipulations. The first phase could start March 1, 1980, depending on availability of funds and be completed by January 1981. The total cost of the first phase is $ 800,000 and includes positions for 3 people, the rest of the work would be contracted.

The second phase of the program would be a State Land Resources Inventory. This inventory program would utilize resources data that has already been collected, the NASA High Altitude Resource Photography and the Integrated Terrain Unit Mapping process to construct an automated resource inventory data file at a scale of 1=250,000. The resulting output from this program will identify land areas for:

1) Transportation corridors to disposal sites
2) Construction material sites (gravel)
3) Potential entry into nd Bank
4) Wetland investigatio
5) Conflict areas that require detailed investigation
6) Priority geologic, soil, etc. study areas.

This phase of the Program could begin on July 1, 1980 and be completed by Apr'l 1, 1981, and will be useful in establishing priority areas for for FY 82 Land Disposals and future detailed data inventory work. THis program would inventory 100,000,000 acres of State land and cost $1,066,000 to complete. This would be a one time cost and includes positions for 2 people, the rest of the work would be contracted.

The third phase of the program would be the establishment of Land Disposal Information Centers within the Department of Natural Resources District Land Offices. These Centers

would contain copies of all information available from the Intergrated Terrain Unit Mapping programs on each Land Disposal Area Project and include all NASA Photography, photo base maps, reports etc. These Centers would be staffed by a Land Information Clerk and equipped with files, map racks, card indexes, microfilm readers, reproduction equipment (Blue line copier, existing copy machines in the District Offices etc.) and facilities to r view and investigate the materials available. The program could start 90 days from funding availability. The cost of this phase would be initially $234,000 and $120,000 a year thereafter for Staff and materials.

Summary

Hopefully, the above addresses all of the committee's requested information. This program will provide a basic foundation for the Land Disposal Program, allow for better management of State lands and display all available resource data and information to the general public. We appreciate the opportunity to respond to the above requests and will be prepared to discuss any or all of the phases in detail, at the committee's convenience.

of ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ADMINISTRATION & MANAGEMENT

MEMORANDUM

TO: Jens Zehbe
Legislative Aide
Pouch V
Juneau, Alaska 99811

DATE: February 22, 1980

FILE NO:

TELEPHONE NO:

FROM: Tom Bergstrom
Director

SUBJECT: Water Bomber Aircraft

This is in response to your constituant inquiry regarding the selection of Canadair CL-215 water bombers for State firefighting use. The decision criteria in choosing the CL-215 over the PBY were (1) reliability, (2) versatility, and (3) cost effectiveness.

1. Reliability: The PBY is a World War II - vintage aircraft ranging in age from 35 to 45 years old. In the past two years there have been two fatal water-scooping accidents due to airframe failure involving the PBY. Mr. Bursiel suggests a use period of thirteen years in his letter, however, by that time most PBY's would be nearing 60 years old. Clearly, even the PBY cannot last forever and replacement aircraft will only become more expensive to aquire as time passes. It is also obvious that with aircraft of the PBY's age, substantial down-time must be anticipated.

   The CL-215, on the other hand, is a new aircraft and our experience with it during last summer's demonstration project is that it is extremely reliable.

2. Versatility: The PBY carries water tanks in its cargo area when it is in a water bombing configuration and thus cannot be used to haul firefighters or cargo. Further, since PBY's would be on charter for firefighting, that is the only purpose they could be used for.

   The CL-215 has a large cargo-passenger area and can be used as a multi-purpose aircraft with no configuration change. Since it would be owned year-round by the State it could be used for oil spill patrol and oil disposal (the tanks can carry dispersant), fisheries patrol, remote sensing, and disaster relief.

3. Cost Efficiency: Mr. Bursiel states that the operating costs per PBY are $700 per day and $600 per flying hour on a 90 day contract based on 200 flying hours. This is somewhat understated, since the fire season is now approximately 150 days and we anticipate 300 hours of operation per aircraft. These corrections would bring Mr. Bursiel's costs to $285,000 per aircraft. Finally, both the standby costs and operating costs on a contract would be subject to inflation.

   Our estimated operating costs for the CL-215, including amortization of debt, crew costs, insurance, fuel, and maintenance, are $360,000 per aircraft. Actually, this figure is probably too high since the amortization cost is based on a highly conservative 20-year depreciation schedule.

There is no "enlargement of the bureaucracy," as Mr. Bursiel contends, since all flight operations and maintenance will be conducted by the Alaska Air National Guard. No State personnel will be added due to acquisition of the CL-215.

Finally, it should be pointed out that the State will realize a substantial capital gain by exercising its two CL-215 options. The option cost for the State is $2.5 million per aircraft and the current cost of a CL-215 for the new production run is $4.5 million per aircraft. The State will thus realize a gain of some $4.0 million by purchasing the planes.

Wright Air Service, Inc.

Post Office Box 60142 • Fairbanks, Alaska 99706
Phone: 456-5502 or 452-7918

FEB 20 9 16 AM

February 05, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
State Capitol Building
Juneau, Alaska 99811

Dear Senator Sumner:

I understand that a supplemental appropriations bill has been introduced which would authorize the Department of Natural Resources to purchase two Canadair CL-215 water bombers at a cost of more than $5 million.

It is my belief that the State of Alaska could obtain much better aerial fire suppression capabilities by putting bomber contracts out for bid to private industry rather than spending millions on state-owned aircraft that will be sitting idle for nine months out of every year. The $5 million cost of the two aircraft seems completely ridiculous, particularly since it would only be the tip of the iceberg--it would still be necessary to pay pilots, ground crew, and administrative personnel all at additional cost.

A PBY amphibious water bomber on a 90 day contract would cost in the neighborhood of $700/day and $600/flying hour--this would include the pilots and the maintenance, everything except for the fuel. Assuming the aircraft flies 200 hours in a very busy season, the cost to the state would be $63,000 for daily availability for 90 days plus $120,000 for 200 hours of flying, or a total of $183,000 for the year for the plane complete with a full crew to operate it. By dividing this cost into the $5 million purchase price of the two Canadair aircraft, it can be determined that two PBY's could be operated for 13 years. An additional consideration is that should the aircraft be destroyed or damaged during the performance of the admittedly hazardous duties, the state would not have to pay for it--it would be the responsibilities of the contractor and his insurance company.

The state is wasting money and enlarging the bureaucracy by trying to operate it's own air force. Last summer I observed that the state was using it's own Beaver aircraft for fire detection patrols. I cannot imagine a worse choice for this mission. Not only is the Beaver painfully slow, it costs more just to operate it than it does to charter many models of single engine aircraft that are much faster. I only mention this example to emphasize my point that the state should leave the flying to those who can do it best and most economically.

Sincerely,

Robert P. Bursiel
President

SOUTHEAST ALASKA AIRLINES

February 20, 1980

Senator Bill Sumner
Alaska State Senate
Pouch "V"
State Capitol Building
Juneau, Alaska 99811

Dear Senator,

Senate bill 345 has a real sleeper in it that is bad.

"Sec. 3 the sum of $5,067,000-for purchase of two canadian CL-215's" aircraft.

That's really the down payment on a STATE AIR FORCE. It will take many more millions forever to train crews and maintain aircraft of that size. Then they will need a hanger, then more office space,then a larger base then, more planes to justify the hanger expense ect. ect. It will grow like a cancer. We don't need it. Rely on the existing aviation businesses in the state and at the same time you will be helping support a vital transportation system throughout the state and aiding a sagging economy.

With twenty years experience as a military pilot and base commander I know what size monster you are growing if you purchase those planes. Please don't.

Sincerely,

Paul H. Breed
President

PB/cla

1515 TONGASS AVENUE, KETCHIKAN, ALASKA 99901 • (907) 225-6691
IN CRAIG CALL (907) 826-3372 — IN KLAWOCK CALL (907) 755-2272 • PAUL BREED, President



GOLDEN NORTH AIR SERVICE, INC.

MILE 131½ DENALI HWY. • P.O. BOX 9 • CANTWELL, ALASKA 99729 • Phone: (907) 768-2434

February 21, 1980

Senator Bill Sumner, Vice Chairman
Senate Resources and Finance Committee
Alaska State Senate Pouch "V"
Juneau, Alaska 99811

Dear Sir,

It has been brought to my attention that Senate Bill Number 345 has been introduced in the Legislature and has been referred to the Senate Resources and Finance Committee.

While we feel that it is in the public interest of Alaskans for the survey of State Lands, we do take issue with the appropriations allotted for "Fire Fighting (8,603,000.00) and most expressively the $5,607,000.00 for the purchase of two CL-215s.

It is not our intent to allow Alaska to burn to the ground, however..... we do feel that the expenditures for firefighting are excessive in that the Federal Government owns, or at least claims most of our State and that many of the fires under concern by the department are started by agencies of the Federal Government (The Alaska Railroad) which effect State Lands. Let the Federal Government be responsible for their responsibilities and damages!

Foremost we do oppose the acquisition of the two Canadair CL-215s. There is sufficient aircraft available to the State by the State Licensed Air Taxies within the State to fulfill the needs of the Department of Natural Resources. We do not need the implementation of a State Air Force for the needs of state agencies. We already have a Federal Air Force in the "Office of Aircraft Services" which is in fact a Federal Air Taxi, which depletes revenues from existing State and Federally approved Air Taxi operators.

We have enough "bureaucracy", we only seek freedom and the right to Private Enterpri...

We greatly appreciate your concern and responsibilites in this matter, and we hope that you will also consider the Alaskan citizen and business enterprise when you consider the merits of this Bill.

Sincerely yours,

James M. Wright

James M. Wright

MEMORANDUM State of Alaska

TO: Ted Smith
State Forester

DATE: August 6, 1979

FILE NO:

TELEPHONE NO:

FROM: Ray Settles RS
Asst. State Forest

SUBJECT: CL-215 Hourly Costs

Here is an up dated hourly cost computation for the CL-215. This update includes depreciation costs based upon work done by Frank Tannock, a fire suppression consultant done in April 1979 (copy attached).

Operating Costs:

1.	Crew: 2 pilots (National Guard)	$37.70/hr.
2.	Fuel (consumption 168 U.S.gal/hr. @ $0.75/gal)	126.00/hr.
3.	Oil (3.6 U.S. gal/hr @ $3.02/hr)	10.87/hr.
4.	Maintenance labor (7.5 manhours/flight hr. @ $20.00)	110.00/hr.
5.	Maintenance materials	75.00/hr.
		359.57

Total hourly operating costs $360.00

Overhead Costs:

1.	Federal Use Tax	2.81/hr.
2.	Insurance, Hull and Liability	220.00/hr
		$222.81

Total Overhead Costs $222.00/hr.

Depreciation Costs CL-215 #1049 and 1065:

1. CL-215 #1049

Purchase Price	$2,200,000
Residual 10%	220,000
	1,980,000
Straight depreciation 15 years	132,000/yr.
Per month (8)	16,500/mo.
Per hour (300)	440/hr.

Per hour depreciation #1049 $440/hr.

2. CL-215 #1065

Purchase Price	$2,500,000
Residual 10%	250,000
	2,250,000

02-001 (Rev. 5/75)

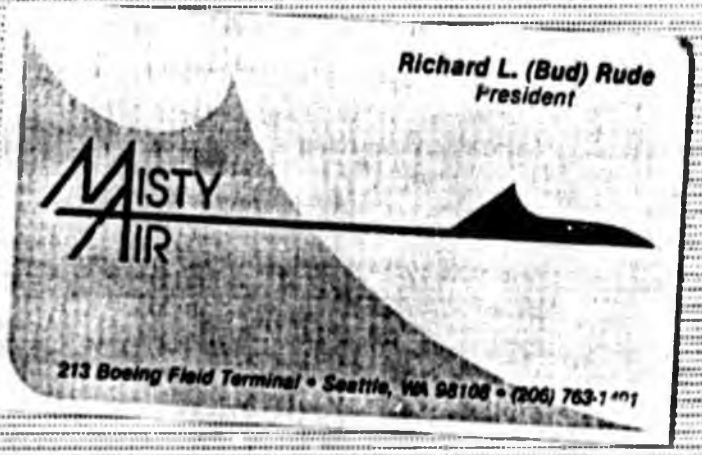
Straight depreciation 15 years	$150,000/yr.
Per month (8)	18,750/mo
Per hour (300)	500/hr.

Per hour depreciation #1065 $500/hr.

Total Hourly Operating and Replacement Costs:

	CL-215 #1049	CL-215 #1065
Hourly Operating Costs	$360.00	$360.00
Hourly Overhead Costs	222.00	222.00
Depreciation (15 yrs.)	440.00	500.00
Total hourly costs for operating & replacement	$1,022.00	$1,082.00

These costs are based on a 15 year depreciation period and does not consider the useful life of the aircraft. Consider aircraft used today as aerial tankers, both the PBYs and C-119s were built in the 1940s, in excess of 30 years use. We can expect the CL-215 will last as long or longer since it was specifically designed for the use of firefighting and bush flying.



Contact for Finance

ROBERT P. SCHLAEFLI

AVIATION CONTRACTOR

206-876-0410

623 DWIGHT STREET
PORT ORCHARD, WA. 98366

STATE
of ALASKA

MEMORANDUM

TO: Ted Smith

DATE: February 29, 1980

FILE NO.

TELEPHONE NO.

FROM: Paul Maki

SUBJECT: CL-215

Sig Larsen called me this afternoon. He discovered the following information since our meeting with Representative Halford yesterday.

The standard Consolidated PBY is certified to operate at 30,500 pounds gross weight. With the addition of R-2600 engines the Super PBY is certified to operate in the United States at 32,000 pounds gross weight. Sig said that no PBY is certified in Canada to operate with more than 800 gallons of water (the tank capacity of the standard PBY). He said the Canadian Department of Transportation will not certify it for more than 800 gallons because they feel the stresses are in excess of the wing's structural capability.

Sig said Flying Firemen operates one Super PBY in Canada, but it has a modification of its tanking system to limit its capacity to 800 gallons. The other 2 Super PBY's in Canada are not used for firefighting.

Public Aircraft operating in Alaska are not limited by the FAA or DOT and do carry up to 1500 gals of water

from Rick

Richard Rude, Flying Firemen, Inc.

Experience: 17 years Captain Northern Consolidated Airlines
Owner: Flying Firemen of Victoria, B.C.
Operates 10 PBY's - Has 2 Super PBY - Scoop - Tankers available for this season and several other PBY tankers.

First involved in CL 215 evaluations 8-9 years ago.

CL 215 Evaluation: "Make work projects for Quebec Government"

Single Stephull drags tail on T.O. A-26/B 26 engine cowl and exhaust system. Tires especially at nose too small for other than paved or well prepared landing fields.

Only Canadian province to buy other than Quebec was Manitoba - after 400 hours inspection and necessary maintenance cost $43,000.

High operating cost, high insurance, high initial cost.

Mentioned Alberta study and French government operating cost figure of $8,000/hour plus.

Bob Schafley, Seattle PBY operator

Experience: PBY - Same water capacity and scoop time with latest mods almost same cruise speed with big engines - better rough field landing capability cost approximate $500,000 with large engines, tanks late scoops all mods and in overhauled and work ready condition.

CL 215 Evaluation: CL 215 demonstrated all over Canada and U.S. for several years only one in Canadian service outside of Quebec. Others in S. America on subsidized sale and in France and Spain for political reasons.

Alberta study and project produced operating cost estimate of $8,227/hour. French government published cost $8,000/hour.

Canada operates 32 PBY's.
Costs: CL-215 over PBY
Insurance on $2.5 million at 7% =
Depreciation on $2.5 million = $175,000/year
High direct operating cost

Current bids for Alaskan operations
Super PBY with high capacity scoops
Anchorage $1200 daily plus $450/hour plus $145 fuel
Fairbanks $1050 daily plus $450/hour plus $150 fuel

Bob Schafley - cont.

CL 215 Evaluation - cont.

Last year they operated 2 aircraft on 90-day contracts in Alaska for 180 AC/days. Had 2.5 AC/days downtime while CL 215 had 11 days downtime.

PBY - Availability approximately 32 operating in Canada. Several in South 48, several in Alaska. Many in South America and world wide.

After considering the CL 215 and their costs, the Saskatchewan government just last month bouth 3 PBY's.

Avalon Aviation, Red Deer, Alberta

Experience: Operates 6 or 7 PBY's in fire bombing service.

Chief mechanic says they couldn't afford to operate CL 215 even if they had them -- too much maintenance and too many AD notes.

3/4

MISTY AIR 213 Boeing Field Terminal • Seattle, WA 98108 • (206) 763-1491

for DNR Fire Suppression
file re CL-215
RWH

February 27, 1980

Mr. Rick Halford
ALASKA STATE LEGISLATURE
Pouch V
Juneau, Alaska 99811

Dear Mr. Halford:

Pursuant to our telephone conversation this date, this letter will confirm our discussion on aerial application of fire suppressants.

To this date, we have found the 8-year old CL-215 aircraft totally economically unfeasible for replacement of our PBY fleet. The CL-215 is so costly to operate that the Province of Quebec (second largest operator of CL-215's) is considering overhaul and putting the PBY back in the forefront as its main tool.

Some of the factors which lead to this condition are the use of an anti-quated C-series 2800 engine which Canadair quotes for $65,000 each with a life of 800 hours, giving a per engine cost of over $80 per hour. This compares to the 1200-hour life of the -1830 or -2600 engine at a cost of $20,000 each, relating a cost of less than $20 per hour or 400% less.

However, engines are only a small portion of the cost. The aircraft has such a short production run, less than 50 total for an 8 year period, that there are virtually no spare parts, and the delivery time for spares could be beyond tolerance. We point out that in one case, an 800-hour inspection on such an aircraft exceeded $40,000. In a study performed by the various provinces in Canada, the French Government, the oldest and largest operator of the CL-215, related a per hour cost of operation in excess of $8000 per flight hour. These figures would also be 600% higher than comparable figures for the PBY operation.

Although an older aircraft, a sufficient number of PBY aircraft and parts were manufactured to assure the operating existence of this aircraft for the next 10 years, in our estimation.

At this time, in our limited field of vision, we know of 4 to 6 water bomber aircraft available for contract in the 1980 season; hence, no shortage of aircraft. This does not mean, however, that one can order an aircraft off the shelf when needed, as much preparation for support, crew training, and locating is necessary to be ready for a season.

I have been involved with water scooping aircraft since its inception. Having a broad base as an operator and pilot, it is, therefore, my opinion that the job of forest protection can be accomplished more economically by the PBY than by purchasing an aircraft such as the CL-215, which has had an 8-year history of being unsaleable and totally uneconomical.

My apologies for the bluntness of this letter, but, unfortunately there is no other way of approaching the subject. If I can be of further assistance, please do not hesitate to contact me.

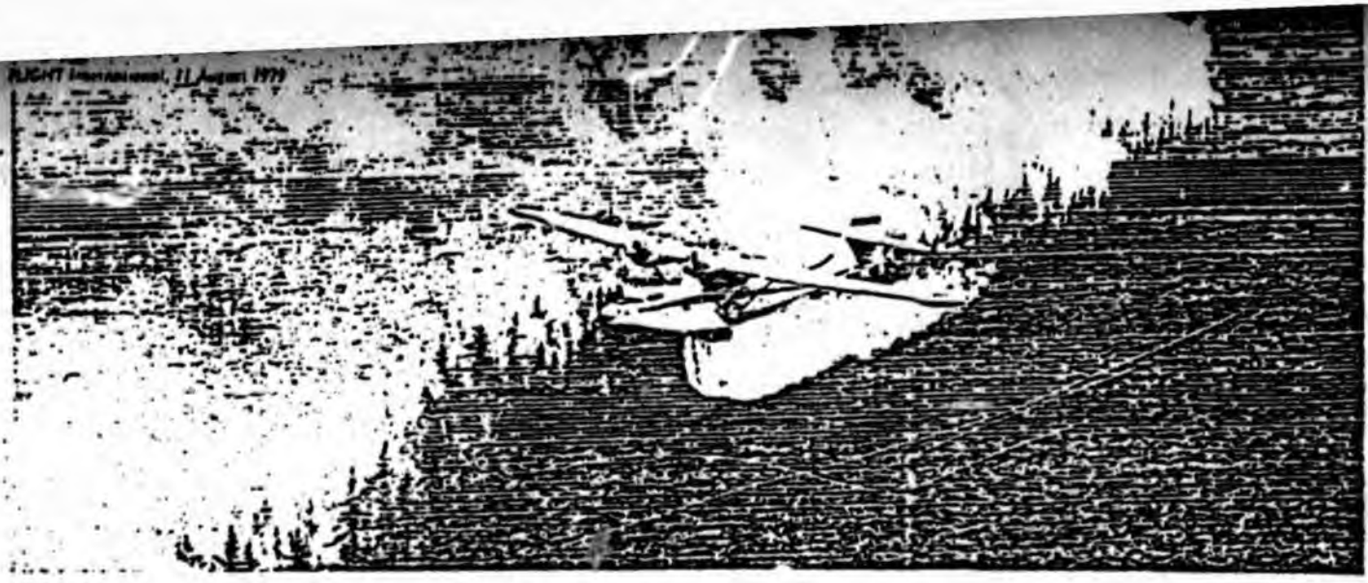
Very sincerely,

FLYING FIREMAN, INC.
d/b/a MISTY AIR

Richard L. Rude
President

RLR:cw

Encl.



The fighting firemen of British Columbia

by CLIFF BARNETT

NO country recognises better than Canada the need for effective anti-incendiary action by aerial application—known more poetically as "water bombing". With literally hundreds of thousands of square miles of forest, Canada's human and wildlife, her environment and her investment are over vulnerable to fire.

Flying Firemen is based on Vancouver Island's Victoria International Airport in British Columbia, Canada's most westerly and wooded province. Their fleet of now middle-aged Catalina/PBY/Cansos are very active as water bombers in the constant fight to reduce fire hazard across the country. In contrast, only the Province of Quebec so far has bought home-grown Canadair CL-215s.

The eight Cansos and three pressurised Cessna 337 "Bird Dog" control aircraft (Flying Firemen's description, and not to be confused with Cessna L-19/O-1s) operate during the three high-fire-risk summer months as far away from base as the eastern limits of the Province of Ontario.

None of the eight aircraft is standard. Two are Super Cansos, powered by Wright R2600s and capable of carrying a 1,200gal water load; and the other six, with P&W R1830s, carry 400gal less. Some aircraft have Convair rounded vertical stabilisers, and some the eight-top Steward-Davis modification. Some have the 3ft-longer spray-reducing Clipper Bow, while others still retain the waist gunners' Busters, and some have either toothpick or paddle propellers. But all have 4ft-mouth water scoops which can be extended some 15ft below the hull, just behind the step, and instant-opening water-drop doors on the ventral surface.

Each aircraft, crewed by two pilots, will fly some 200 revenue-earning



hours during the summer, and a utilisation of more than 140 water pick-ups in a day is not unusual. Refilling the water tanks calls for a slow approach over the stillest nearby water, then a 15sec scooping run at 60kt. Load drop will depend on terrain, wind and fire intensity and may be a two-door salvo or a one-door-at-a-time sting.

Reconnaissance and control are the responsibility of the 337 pilot and his Forestry Service passenger, who is in radio contact with the Fire Master on the ground at the fire site. The choice of the Cessna was dictated by its centre-line twin-engine reliability; pressurisation, for Rockies operations; and for its eventual high resale value.

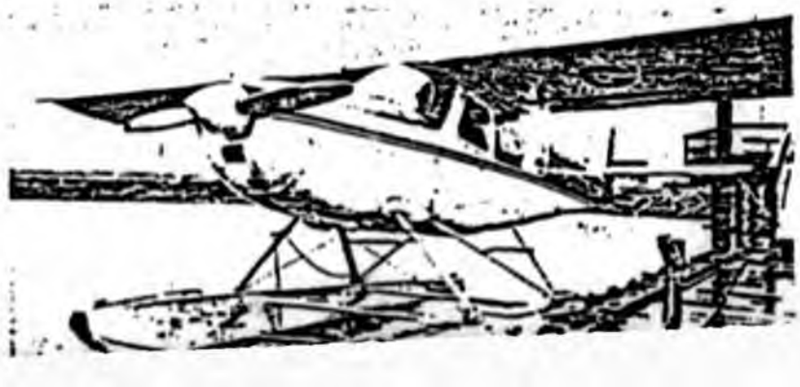
Despite being based in BC, Flying Firemen is not under contract to the provincial government and therefore spend most of the fire season in Manitoba or Alberta. Two semi-permanent bases are set up at high level in N Alberta some 4 miles north-west of Edmonton in the Footmer Lake Forest area; and at Slave Lake, roughly midway between high level and Edmonton. Flying Firemen and their Cansos are not the only operators on Vancouver Island. Private enterprises include the consortium of five forestry companies which operates six-engined Martin Mars south from Sproat Lake.

Pilot recruiting is no problem. Rich in coastline and lakes, BC abounds in experienced float-trained commercial bush pilots, both male and female and all keen to fly. Furthermore, the attraction of wealthy, rugged "Beautiful BC" is always a lure for pilots from the colder eastern and Prairie provinces.

If you have the experience and feel that water bombing is your thing, then go west, young man!

Top Canso in full flood as one of the fleet makes an intense water drop ahead of a fire sweeping through the pine forest. Below Float-equipped Helio Couriers put their Stol capability to good effect flying off British Columbian waterways. They provide a general utility service in the area





7/30/79

Advantages of CL-215s Over PBYs and C-119s

There are a number of Air Tankers in operation today. These aircraft are of two categories, amphibious water scoopers and land based air tankers. The three most common aircraft used in Alaska today are the CL-215, PBY, and C-119. A comparison of their firefighting productivity is attached.

A firefighting aircraft is an initial attack vehicle and must be able to:

1. get to the fire quickly,
2. drop its load accurately,
3. produce the most effective drop pattern on the ground,
4. attack the fire frequently,
5. be cost effective.

The productivity comparison assumes a) all aircraft operate from the same base and start at the same time, b) the CL-215 and PBY pick up their water at a location 13 miles from the fire, c) the C-119 as a land based aircraft was retardant loaded from base.

As can be seen on the chart there is little difference on the first drop. However during a normal four hour operation there is considerable difference in the number of drops. Based on this example it would take two PBYs to equal the productivity of one CL-215.

FIRE FIGHTING PRODUCTIVITY COMPARISON

Fire 95 miles from Base, 13 miles from water

Designation	CL-215	PBY	C-119
Time required to Load, Start, Warm up, Taxi & Take-off (Min.)	10	10	12
Time: Base to fire (Min.)	32	42	29
Manoeuvring time for first drop (Min.)	3	3	5
Time: Start to first drop (Min.)	43	53	46
Round trip time: Fire to reload point	5	6.5	29
Loading time	1	1.5	10
Reload point to fire	5	6.5	29
Manoeuvring	1	1	5
Total (Min.)	12	15.5	73
Time: Start to 2nd drop	55	68.5	119
Number of drops made in 4 hours	18	13	3
Number of gallons dropped in 4 hours	25,918	12,502	7,205
Number of aircraft required to equal one CL-215's productivity	1	2	4
Hourly Operating Cost	$1,022	$450	$500
Four Hours Operations	4,088	3,600	8,000
*Daily Guarantee	0	700	840
Total Costs for Operation	$4,088	$4,300	$8,840

*Daily Guarantee is standard contracting procedures with State-ownership would not be a cost for CL-215.

MEMORANDUM

State of Alaska

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF TECHNICAL SERVICES

TO: Geoffrey Haynes
Deputy Commissioner

DATE: February 29, 1980

FILE NO: 2530

TELEPHONE NO:

FROM: Claud M. Hoffman
Director
And: Jim Anderson
Natural & Physical Scientific Planner

SUBJECT: Information requested by Senate Resources Committee

This data is being supplied in response to the Senate Resources Committees request for information on cost, timing and products to be produced for the following tasks:

Project Tasks	Associated Costs
1) Identification and Verification of gravel deposits in the following areas:	
a) FY 80 Land Disposals,	$ 150,000
b) FY 81 Land Disposals,	$ 150,000
c) All lands in the Land Bank	$ 500,000
d) Along Transportation corridors within above mapped areas	(Costs identified above)
2) Development of Intergrated Terrain Unit Mapping, as displayed to the committee for the FY 81 Disposal Program, to be expanded in the following areas:	
a) FY 80 Land Disposals mapped at 1 inch = 1 mile	$ 300,000
b) All lands in the Land Bank, estimated 3 1/2 million acres, mapped at 1 inch = 1 mile	$1,050,000
c) All State Lands, estimated 100 Million acres mapped at 1 inch = 4 miles	$1,066,000
3) Establishment of a Land Disposal Information Center in each Department of Natural Resources District Land Office. A center where information developed for Land Disposal Areas (i.e. NASA Photography, photo base maps, Intergrated Terrain Unit Mapping products, reports, etc.) can be viewed by the general public to assist them in their selection of land.	$ 230,000

We propose a Three Phase Program for the completion of the above tasks. The three phases are developed in parallel and each one interfaces to the other. However, each phase can be developed separately depending on the funding availability.

Detailed Discussion

The first phase of the program would be to utilize the Integrated Terrain Unit Mapping technique as shown the committee on February 27, 1980. The Terrain Unit Mapping process used to assess the FY 81 Land Disposal areas involves the identification and mapping of genetically based landforms. Once these landforms are known, the suitability of each unit as a construction material source can be assessed. With a matrix and automation, production of a construction material (gravel) attribute map is then relatively simple. This level of reconnaissance information would then be field verified during the summer of 1980. The Landforms for FY 80 Land Disposal Areas would be interpreted, and verified in conjuction with the summer FY 81 Field Verification Program. Once all the information for the FY 80 and FY 81 Land Disposal Areas is collected it will be dipitized utilizing the Integrated Terrain Unit Mapping technique for instant retrieval and manipulations. The first phase could start March 1, 1980, depending on availability of funds and be completed by January 1981. The total cost of the first phase is $600,000 and includes positions for 3 people, the rest of the work would be contracted.

The second phase of the program would be a State Land Resources Inventory. This inventory program would utilize resources data that has already been collected, the NASA High Altitude Resource Photography and the Integrated Terrain Unit Mapping process to construct an automated resource inventory data file at a scale of 1:250,000. The resulting output from this program will identify land areas for:

1) Transportation corridors to disposal sites
2) Construction material sites (gravel)
3) Potential entry into land bank
4) Wetland investigation
5) Conflict areas that require detailed investigation and
6) Priority geologic, soil, etc. study areas.

This phase of the Program would begin on July 1, 1980 and be completed by April 1, 1981, and will be useful in establishing priority areas for FY 82 Land Disposals and future detailed data inventory work. This program would inventory 100,000,000 acres of State land and cost $1,066,000 to complete. This would be a one time cost and includes positions for 2 people, the rest of the work would be contracted.

The third phase of the program would be the establishment of Land Disposal Information Centers within the Department of Natural Resources District Land Offices. These Centers would contain copies of all information available from the Intergrated Terrain Unit Mapping programs on each

Land Disposal Area Project and include all NASA Photography, photo land use maps, reports, etc. These Centers would be staffed by a Land Information Clerk and equipped with files, map racks, card indexes, microfilm readers, reproduction equipment (Blue line copier, existing copy machines in the District Offices etc.) and facilities to review and investigate the materials available. The primary objective of these Centers will be to assist the general public in obtaining information on the lands of their interest. This program could start 90 days from funding availability. The cost of this phase would be initially $234,000 and $120,000 a year thereafter for Staff and materials.

Summary

Hopefully, the above addresses all of the committee's requested information. This program will provide a basic foundation for the Land Disposal Program, allow for better management of State lands and display all available resource data and information to the general public. We appreciate the opportunity to respond to the above requests and will be prepared to discuss any or all of the phases in detail, at the committee's convenience.

FLIGHT International, 11 August 1979



The fighting firemen of British Columbia

by CLIFF BARNETT

NO country recognises better than Canada the need for effective anti-incendiary action by aerial application—known more poetically as "water bombing". With literally hundreds of thousands of square miles of forest, Canada's human and wildlife, her environment and her investment are over vulnerable to fire.

Flying Firemen is based on Vancouver Island's Victoria International Airport in British Columbia, Canada's most westerly and wooded province. Their fleet of now middle-aged Catalina/PBY/Cansos are very active as water bombers in the constant fight to reduce fire hazard across the country. In contrast, only the Province of Quebec so far has bought home-grown Canadair CL-215s.

The eight Cansos and three pressurised Cessna 337 "Bird Dog" control aircraft (Flying Firemen's description, and not to be confused with Cessna L-19/O-1s) operate during the three high-fire-risk summer months as far away from base as the eastern limits of the Province of Ontario.

None of the eight aircraft is standard. Two are Super Cansos, powered by Wright R2600s and capable of carrying a 1,200gal water load; and the other six, with P&W R1830s, carry 400gal less. Some aircraft have Convair rounded vertical stabilisers, and some the straight-top Steward-Davis modifications. Some have the 3ft-longer spray-reducing Clipper Bow, while others still retain the waist gunners' Busters, and some have either toothpick or paddle propellers. But all have 4ft-mouth water scoops which can be extended some 15ft below the hull, just behind the step, and instant-opening water-drop doors on the ventral surface.

Each aircraft, crewed by two pilots, will fly some 200 revenue-earning



hours during the summer, and a utilisation of more than 140 water pick-ups in a day is not unusual. Refilling the water tanks calls for a slow approach over the stillest nearby water, then a 15sec scooping run at 60kt. Load drop will depend on terrain, wind and fire intensity and may be a two-door salvo or a one-door-at-a-time sting.

Reconnaissance and c ol are the responsibility of the 337 pilot and his Forestry Service passenger, who is in radio contact with the Fire Master on the ground at the fire site. The choice of the Cessna was dictated by its centre-line twin-engine reliability; pressurisation, for Rockies operations; and for its eventual high resale value

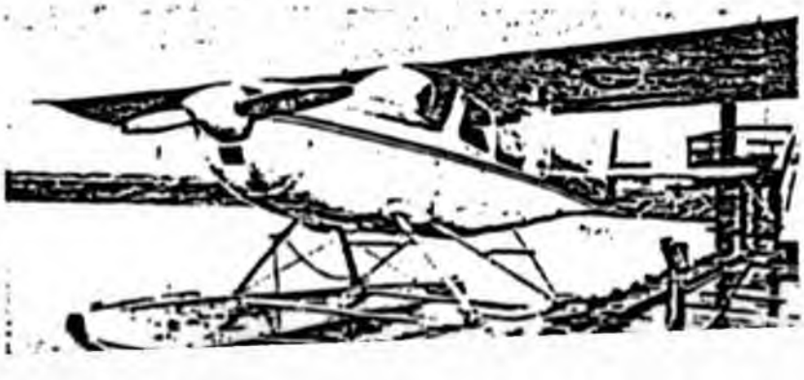
Despite being based in BC, Flying Firemen is not under contract to the provincial government and therefore spend most of the fire season in Manitoba or Alberta. Two semi-permanent bases are set up at high level in N Alberta some 4 miles north-west of Edmonton in the Footmer Lake Forest area; and at Slave Lake, roughly midway between high level and Edmonton. Flying Firemen and their Cansos are not the only operators on Vancouver Island. Private enterprises include the consortium of five forestry companies which operates six-engined Martin Mars south from Sproat Lake.

Pilot recruiting is no problem. Rich in coastline and lakes, BC abounds in experienced float-trained commercial bush pilots, both male and female and all keen to fly. Furthermore, the attraction of wealthy, rugged "Beautiful BC" is always a lure for pilots from the colder eastern and Prairie provinces.

If you have the experience and feel that water bombing is your thing, then go west, young man!

Top Canso in full flood as one of the fleet makes an intense water drop ahead of a fire sweeping through the pine forest. Below Float-equipped Helio Couriers put their Stol capability to good effect flying off British Columbian waterways. They provide a general utility service in the area





SB - 345

1/31/80 - Called Tom Bergstrom to get backup info on supplemental appropriation Would get back to me ASAP

2/4/80 - Ray Settles came in to see me about the bill - Contact Division of Forest, Land, and Water - Mgmt: C279-5577 in Anchorage - needs 3-4 days notice and Ted Smith ~~2440~~ 2400 DNR

Ray Settle 2/4/80

$21,427,100 Total Supp. Appropriation

Land Survey

BLM - Agreement w/ State expires in 81 Why?

Going out of business Re: fire fighting. Since 1971

Never intended to be the BLM firefighting Alaska -

Voting

Ted Smith
2-3-4 days after
Anchorage

NATURAL RESOURCES APPROPRIATIONS

Settler

SUPPLEMENTAL/SPECIAL CAPITAL REQUESTS

279-5577 Division

DEPARTMENT OF NATURAL RESOURCES

Cadastral Land Surveying ($6,903.1 GF)

This project provides for survey of 100,000 acres of State land for disposal during FY 81. Appropriating these funds early in 1980 will allow adequate time to survey the land prior to disposal. Approximately $209.5 will be used to survey State General Grant land subject to a U.S. Forest Service Special Use Permit and will be reimbursed by the transferee upon sale of the property.

Canadair CL-215 Purchased $5,067.0 GF

The State currently has fire protection responsibility for approximately 29,000,000 acres of land, compared with 10 million in FY 78. Reponsibility for additional acreage will be assumed with anticipated accelerated General Grant land transfers from the federal government over the next few years. Due to the remoteness of much of the recently assumed and to be assumed acreage, air support of five operations is presently required and will become even more imperative in the future. The requested funds will purchase two CL-215 aircraft, which are specifically designed for firefighting operations.

Statewide Fire Warehousing $854.0 GF

For the past four years, the Bureau of Land Management has allowed the State to draw on BLM's firefighting supplies inventory in case of need. This arrangement is to terminate in 1981 and the requested funds will allow the State to warehouse its own inventory of firefighting supplies such as firefighter packs, shovels, chain saws and pumps.

Fire Suppression Fund $5,000.0 GF

The Fire Suppression fund was initially capitalized in 1978 for $750.0. The acreage under State fire protection responsibility has approximately tripled since that time. The Fund is presently depleted due to the Delta fires of last summer, the cost of which approaches $4,000.0 The requested funds would provide manpower, equipment and supplies on an as-needed basis for firefighting.

Firefighting Costs $3,603.0 GF

This request would provide funds for firefighting costs which were incurred in the Delta and other fires in 1979 and a 1978 firefighting invoice from the Bureau of Land Management. Approximately $400.0 is needed to provide for air operation contracts and pre-season training of fire suppression personnel in the spring and summer of 1980.

3795

610gen C9

11/30/79 Called Bob in finance - C/M

1/14/80 GB Told me to call Tom Bergstrom - Director of Administration @ 2492

DIVISION OF TECHNICAL SERVICES
CADASTRAL SURVEY PROGRAM
PROJECT SURVEY COST

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-1-300 GSC #150 Warehouse Mountain 10-42-9-007	R	$80,000.00 Final	N/A	N/A	10,350 Gross 1,500 Disposal	300 (5 Acres) $267.00/Site	36@ $2,222.00 Per Monument	40.52
10-42-1-300 GSC #152 Windy Hills 0062-80-1-2	S	$195,000.00	$61,250.00	$133,750.00	3,138 @ $62.00 Per Acre	220(5 Acres) $886.00 Lot		
10-42-1-300 GSC #153 Anderson 0034-80-1-1	S	$499,740.00	$7,500.00	$492,240.00	6,662 @ $75.00 Per Acre	988 Lots (2.5-10 AC) $506.00/Lot		
10-42-9-006 GSC #154 N.E. Alaska Range 0003-80-1-2	R	$20,400.00 Final	N/A	N/A	20,000 Gross 1,120 Disposal	28 (5 Acres) $728.00/Site	16@ $1,275.00 Per Monument	Auto Surv. & Triangulation
10-42-9-006 GSC #155 Bear Creek 0004-80-1-1	R	$12,000.00 Final	N/A	N/A	13,000 Gross 500 Disposal	25 (5 Acres) $480.00/Site	8 @ $1,500.00 Per Monument	Auto Surveyor
10-42-1-300 GSC #156 June Creek 0022-80-1-2	S	$171,150.00	$60,200.00	$110,950.00	5,225 @ $33.00 Per Acre	303 (5 Acres) $565.00 per lot		
10-42-1-300 Jack #0021-80-1-2 Greely #0015-80-1-2 GSC #157	S S	$52,300.00	$25,500.00	$26,800.00	1,170 @$45.00 Per Acre	208 (4.8 Acres) $251.00/Lot		

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-9-006 GSC #158 Alexander Creek 0002-80-2-2	S	$192,150.00	$62,800.00	$129,350.00	3,287 Acres @$58.00 Per Acre	213 (5 Acres) $902.00/Lot		
10-42-9-006 GSC #159 Chase II 0060-80-2-3	S	$409,500.00	$127,625.00	$281,875.00	4,369 Acres @ $94.00 Per Acre	420 (5 Acre Lots) $975.00/Lot		
10-42-9-006 GSC #160 Valdez 0057-80-2-3	S	$89,300.00	$44,100.00	$45,200.00	597 Acres @$1[illegible]0.00 Per Acre	54 Lots @ $1654.00/Lot		
10-42-9-006 GSC #161 McDougal-Chase I Yentna & Lake Creek	R	$168,000.00 Final	N/A	N/A	200,000 Gross 27,400 Disposal	685 (5 Acres) $24[illegible].00/Site	72 @ $2,333.00 Per Mon. Plus Aerial Photo	Photo Pannel and Auto Surveyor
10-42-9-006 GSC #162 Tazlina 0053-80-2	S	$314,700.00	$25,000.00	$289,700.00	1,999 Acres @ $158.00 Per Acre	226 Lots @ $1392.00 Each (4-5 Acres)		
10-42-9-006 GSC #163 Talkeetna 0051-80-2-2	S	$379,800.00	N/A	N/A	2,756 Acres @ $138.00 Per Acre	423 Lots @ $898.00 Each (4.5-5 Acres)		
10-42-9-006,GSC 164 Slate Creek Rock Ck.#0042-80-1-1 Panguin.#0036-80-1-2	R S	$102,950.00	N/A	N/A	520-Rock Ck 2,521-Pangu. $31.00/Acre	Rock Creek 13 Sites (5 Acres) Panguingue 196 Lots (5 Acres)	16@ $1203.00 Per Monument	3.98 @ $1,884.00 Per Mile
10-42-9-006 GSC #165 Meadow Lakes 0031-80-2-3	S	$100,000.00	$3,500.00	90,538.00	677 Acres @ $148.00 Per Acre	272 Lots @ $368.00 Each		

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-9-006 GSC #166 Glennallen 0013-80-2-2	S	$142,729.93	$27,900.00	$114,829.93	2,371 Acres @ 60.00 Per Acre	213 Lots @ $670.00 Per Lot		
10-42-9-006 GSC #167 Willow Creek 060B-80-2-2	S	$273,345.00	$23,400.00	$249,945.00	1533 Acres @ 178.00 Per Acre	251 Lots @ $1,089.00 Each (5 Acres)		
10-42-1-300 GSC #168 Smallwood 0048-80-1-2	S	$71,500.00	$25,000.00	$46,500.00	273 Acres @ 262.00 Per Acre	53 Lots @ $1,349.00 Each (5 Acres)		
10-42-9-006 GSC #169 Haines 0017-80-3-2	S	$108,150.00	$22,308.00	$85,842.00	273 Acres @ $396.00 Per Acre	47 Lots @ $2,301.00 Per Lot		
10-42-9-006 GSC #170 Gustavus 0016A-80-3-2	S	$59,874.00	$26,534.00	$33,340.00	175 Acres @ $342.00 Per Acre	38 Lots @ $1,576.00 Per Lot		
10-42-9-006 GSC #171 Hewitt I 018A-80-2-1	R	$18,000.00 Final	N/A		N/A 40,000 Gross 7500 Disp.	450 Sites @ 16 @ $1 25.00 $40.00 Each (5 Acres)	Per Monument	
10-42-9-006 GSC #172 Hewitt II 018B-80-2-1	S	$237,000.00	$37,000.00	$200,000.00	1,923 Acres @ $123.00 Per Acre	222 Lots @ $1,068.00 Each (5 Acres)		
10-42-1-300 Ravine Ck#0040-80-1-2S Yanert #0063-80-1-1 GSC #173	R	$62,300.00		CANCELLED		CANCELLED		

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-9-006 GSC #174 Alder Creek 0001-80-1-2	S	ACTUAL $200,000.00 (Juneau Encumb $201,650.00)	$27,550.00	$33,325.00	179 Acres	(5-10 Acres) 16 Lots	1	
10-42-9-006 GSC #175 Cher Ridge 0007-80-1-2	S	$27,000.00	$21,700.00	PHASES V & VI CANCEL.$5,300 Boundary Surv.	241 Acres	1 Tract		
10-42-9-006 GSC #176 Circle II 0068-80-2-3	S	$195,500.00	$51,555.00	$141,445.00	1,708 Acres @ $114.00 Per Acres	181 Lots (4-5 Acres) $1,080.00		
10-42-9-006 GSC #177 Chena South 0008-80-1-1	R	$7,300.00 Final	N/A	N/A	9,000 Gross 1,660 Disposal	83 (5 Acres) @ $88.00 Per Site	6 @ $1,217.00 Per Monument	Radial In
10-42-9-006 GSC #178 Swan Lake 0050-80-2-2	S	$370,136.00	$75,183.00	$294,953.00	4,422 Acres @ $84.00 Per Acres	336 Lots @ $1,102.00 Per Lot (4.5 Acres)		
10-42-9-006 GSC #179 Skagway 000X-80-3-2	S	$22,100.00	$10,600.00	$11,500.00	48 Acres @ $460.00 Per Acre	11 Lots @ $2,009.00 Per Lot		
10-42-9-006 GSC #180 Hollis 0019-80-3-2	S	$313,112.00	$47,960.00	$265,152.00	999 Acres @ $313.00 Per Acre	192 Lots $1,631.00 Per Lot		
10-42-9-006 GSC #181 Homer 0020-80-2-1	R	$10,160.00 Final	N/A	N/A	5,000 Gross 2,000 Disposal	225 (5 Acres) @ $45.00 Per Site	5 @ $2,032.00 Per Monument	Triangulation

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-9-006 GSC #182 Goldsteam 0014-80-1-3	S	$87,760.00	$32,380.00	$55,380.00	680 Acres @ $131.00 Per Acre	93 (4.5 Acres) $944.00 Per Lot		
10-42-9-006 GSC #183 Petersburg 0038-80-3-2	S	$60,000.00	N/A	N/A	598 Acres @$100.00 Per Acre	44 @ $1,364.00 Per Lot		
10-42-9-006 GSC #184 Lake Minchumina 0028-80-1-2	S	$85,892.00	$34,050.00	$51,842.00	$257.00 Per Acre 334 Acres	$1,909.00 Per Lot 45 Lots (5 Acres)		
10-42-9-006 GSC 186 Warren & Tok Four Mile Hill	S	$20,000.00	N/A	N/A	2,868 Acres @$7.00 Per Acre		Paper Platted	
10-42-9-006 GSC # 187 Gustavus II 106B-80-3-2	S	$20,000.00	N/A	N/A	553 Acres @ $18.00 Per Acres	47 Lots @ $213.00 Per Lot	Paper Platted	
10-42-9-006 GSC # 188 Tok 0055-80-1-2	S	$73,500.00	$18,210.00	$55,290.00	293 @ $251.00 Per Acre	104 @ $707.00 Per Lot (1-2 Acres)		
10-42-9-006 GSC #189 Mud Bight 025A-80-3-2	S	$108,105.00	$20,655.00	$87,450.00	266 @ $406.00 Per Acre	117 Lots @ $924.00 Per Lot		
10-42-9-006 GSC #190 Lowe River 0074-80-2-2	S	$194,800.00	$1,800.00	$193,000.00	382 @ $510.00 Per Acre	63 Lots @ $3,092.00 Per Lot		

PROJECT	REMOTE (R) SUB. DIV.(S)	TOTAL COST	COST OF MASTER PLAN PHASES I THRU IV	COST OF FINAL PHASES PHASES V, VI	Area (ACRES)	LOTS (SUBDIVISION) SITES (REMOTE)	CONTROL MONUMENTS SET	MILES RUN FOR CONTROL
10-42-9-006 GSC #192 Two Rivers 0056-80-1-2	CAD	$50,000.00	N/A	N/A	6,740 Gross @ $7.00 Per Acre	Cadastral 51 (Cadastral) Survey	$980.00 Per Monument	
10-42-9-006 GSC #193 Thorne Bay 0054-81-3-2	S	$17,729.00	PHOTOGRAPHY	NOT YET CONTRACTED	1,000 Gross			

TOTALS

Acct. Code #10-42-9-007————	$75,000.00
Acct. Code #10-42-1-300————	$1,056,990.00
Acct. Code #10-42-9-006————	$4,492,642.93
TOTAL	$5,624,632.93

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF TECHNICAL SERVICES
FY80 SUBDIVISIONS FOR DISPOSAL

PROJECT	LADS	AREA LOTS	COMMON	ROADS	GRN BLT	TOTAL	SOURCE/DATE	D.DATE
GSC-152								
Windy Hills	0062-80-1-2	1,090 AC	0	139 AC	1,909 AC	3,138 AC	Pre. 1/28/80	6/80
GSC-153								
Anderson	0063-80-1-1	4,679 AC	0	459 AC	1,524 AC	6,662 AC	3 Sub 1/31/80	6/80
GSC-156								
June Creek	0022-80-1-2	1,589 AC	0	157 AC	2,954 AC	4,700 AC	1 Sub. 1/2/80	6/80
GSC-157								
Jack	0021-80-1-2	464 AC	0	62 AC	13 AC	539 AC	1Sub 12/24/79	6/80
Greely	0015-80-1-2	502 AC	0	74 AC	55 AC	631 AC	1 Sub 1/10/80	6/80
GSC-158								
Alexander Creek(B)	0002-80-2-2	766 AC	0	95 AC	1,827 AC	2,688 AC	2 Sub 2/20/80	6/80
Otter Lakes(B)		278 AC	7	28 AC	286 AC	599 AC	2 Sub 2/20/80	6/80
GSC-159								
Chase II (B)	006B-80-2-3	2,097 AC	1,031 AC	433 AC	808 AC	4,369 AC	3 Sub 2/11/80	6/80
GSC-160								
Valdez (B)	0057-80-2-3	246 AC	33 AC	37 AC	281 AC	597 AC	Fin.1/28/80	6/80
GSC-162								
Tazlina SW	0053-80-2-2	500 AC	30 AC	47 AC	137 AC	714 AC	Fin.12/19/79	6/80
Tazlina NW		388 AC	28 AC	54 AC	173 AC	643 AC	Fin. 1/10/80	6/80
Tazlina Hill		132 AC	0	73 AC	437 AC	642 AC	1 Sub 2/6/80	6/80

PROJECT	LADS NO.	AREA LOTS	COMMON	ROADS	GRN BLT	TOTAL	SOURCE/DATE	D.DATE
GSC-163								
Talkeetna	0051-80-2-2							
Tract A (B)		266 AC	121 AC	19 AC	25 AC	431 AC	4th Sub.2/5/80	6/80
Tract B (B)		300 AC	5 AC	21 AC	71 AC	397 AC	4rd Sub 2/5/80	6/80
Tract C (B)		283 AC	32 AC	25 AC	19 AC	359 AC	2nd Sub 1/17/80	6/80
Tract D (B)		1,105 AC	375 AC	89 AC	0	1,569 AC	2nd Sub 2/5/80	6/80
GSC-164								
Panguingue Creek	0036-80-1-2	1,167 AC	57 AC	136 AC	1,161 AC	2,521 AC	Fin.2/1/80	6/80
GSC-165 (Meadow Lk)								
Goldstreak(B)	0031-80-2-3	62 AC	1 AC	14 AC	0	77 AC	1 Sub 2/20/80	6/80
Greensward(B)		125 AC	53 AC	17 AC	45 AC	240 AC	4 Sub 2/19/80	6/80
Bruce Lake(B)		204 AC	82 AC	33 AC	41 AC	360 AC	Fin.2/20/80	6/80
GSC-166								
Glennallen Area I	0013-80-2-2	1,561 AC	0	0	0	1,561 AC	Fin.12/26/79	1/80
Glennallen Area II		685 AC	22 AC	47 AC	56 AC	810 AC	Fin 2/5/80	6/80
GSC-167								
Willow Creek I	060A-80-2-2	761 AC	0	65 AC	50 AC	876 AC	Fin.11/16/79	1/80
Willow Creek II	060B-80-2-2	571 AC	0	70 AC	16 AC	657 AC	M.P.1/22/80	6/80
GSC-169 (Haines)								
North Klehini (B)	0017-80-3-2	7 Ac	0	0	0	7 AC	Fin. 1/11/80	6/80
South Klehini(B)		27 AC	0	2 AC	0	29 AC	Fin.1/11/80	6/80
Wells(B)		40 AC	0	3 AC	0	43 AC	Fin.1/16/80	6/80

PROJECT	LADS NO.	AREA LOTS	COMMON	ROADS	GRN BLT	TOTAL	SOURCE/DATE	D.DATE
Mud Bay(B)		78 AC	0	0	0	78 AC	Fin.1/11/80	6/8
Mosquito Lakes I(B)		72 AC	0	2 AC	0	74 AC	Fin. 1/16/80	6/80
Mosquito Lakes II(B)		18 AC	1 AC	1 AC	0	20 AC	Fin. 1/16/80	6/80
Mosquito Lakes III(B)		22 AC	0	0	0	22 AC	Fin.1/16/80	6/80
GSC-170								
Gustavus I	0016A-80-3-2	145 AC	4 AC	26 AC	0	175 AC	Fin 2/6/80	6/80
Paper Plat		175 AC	0	0	0	175 AC	Pre.12/26/79	Fal/80
GSC-172								
Hewitt-Whiskey(B)	0018B-80-2-2	702 AC	113 AC	63 AC	353 AC	1,231 AC	Fin 2/13/80	6/80
Skwentna Station(B)		395 AC	0	18 AC	279 AC	692 AC	Fin.1/30/80	6/80
GSC-174								
Alder Creek(B)	0001-80-1-2	163 AC	0	16 AC	0	179 AC	2 Sub 2/11/80	6/80
GSC-175								
Chena Ridge (B)	0007-80-1-2	241 AC	0	0	0	241*	1 Sub 1/15/80	6/80
GSC-178								
Swan Lake Unit 2 (B)	0050-80-2-2	285 AC	83 AC	48 AC	324 AC	740 AC	Fin.2/20/80	6/80
Trapper Creek Glen (B)		1,112 AC	242 AC	197 AC	2,131 AC	3,682 AC	2 Sub 2/11/80	6/80
GSC-179								
Skagway	000x-80-3-2	36 AC	1 AC	11 AC	0	48 AC	Final 1/4/80	6/80
GSC-180 (Hollis)								
Harris River	0019-80-3-2	128 AC	47 AC	45 AC	0	220 AC	2 Sub 2/8/80	6/80
Clark Bay Peninsula		121 AC	7 AC	23 AC	37 AC	188 AC	2 Sub 2/8/80	6/80
Clark Bay Term.		52 AC	0	17 AC	63 AC	132 AC	2 Sub 2/8/80	6/80
Hollis Anch.		66 AC	0	20 AC	15 AC	101 AC	2 Sub 2/8/80	6/80

PROJECT	LADS NO.	AREA LOTS	COMMON	ROADS	GRN BLT	TOTAL	SOURCE/DATE	D.DATE
GSC-182								
Goldstream (B)	0014-80-1-3	407 AC	59 AC	72 AC	142 AC	680 AC	Fin.1/2/80	6/80
GSC-183								
Petersburg	0038-80-3-2	146 AC	0 AC	0	452 AC	598 AC	Fin.1/8/80	6/80
GSC-184								
Lake Minchumina	0028-80-1-2	210 AC	0	37 AC	87 AC	334 AC	1 Sub 1/31/80	6/80
GSC-186								
Warren	0058-80-1-2	320 AC	0	0	0	320 AC	Fin.12/4/79	1/80
Tok		1,981 AC	0	23 AC	0	2,004 AC	Fin.12/13/79	6/80
Buffalo	0005-80-1-2	33 AC	0	0	0	33 AC	Fin. 12/4/79	1/80
Four Mile Hill	0012-80-1-2							
79-274		71 AC	0	0	0	71 AC	1 Sub 2/11/80	6/80
80-6		120 AC	0	0	0	120 AC	1 Sub 1/28/80	6/80
80-7		320 AC	0	0	0	320 AC	1 Sub 1/28/80	6/80
GSC-187 (Gust.II)								
79-142	016B-80-3-2	40 AC	0	0	0	40 AC	Fin.11/28/79	1/80
79-150		80 AC	0	0	0	80 AC	Fin.11/28/79	1/80
79-151		160 AC	0	0	0	160 AC	Fin.11/28/79	1/80
79-152		120 AC	0	0	0	120 AC	Fin.11/28/79	1/80
79-153		153 AC	0	0	0	153 AC	Fin.11/28/79	1/80
GSC-188								
Parcel ASLS 79-197	0055-80-1-2	45 AC	0	0	0	45 AC	3 sub 2/6/80	6/80
Parcel ASLS 79-198		92 AC	0	0	0	92 AC	2 Sub 1/8/80	6/80
Parcel ASLS 79-199		110 AC	0	0	0	110 AC	3 Sub 2/6/80	6/80
Parcel ASLS 79-200		46 AC	0	0	0	46 AC	4th Sub 2/6/80	6/80

PROJECT	LADS NO.	AREA LOTS	COMMON	ROADS	GRN BLT	TOTAL	SOURCE/DATE	D.DATE
GSL-189								
Mud Bight(B)	025A-80-3-2	69 AC	0	36 AC	161 AC	266 AC	2 Sub 2/8/80	6/80
GSC-190								
Lowe River(B)	0074-80-2-2	149 AC	2 AC	17 AC	214 AC	382 AC	Pre.12/11/79	6/80
TOTAL		28,552 AC	2,436 AC	2,908 AC	16,293 AC	50,189 AC		

* One Parcel

FY80 SUBDIVISIONS FOR DISPOSAL IN FY 81

GSC-156								
Lake Killarney(B)	0027-80-1-2	?	?	?	?	525 AC		/81
GSC-176								
Circle II**	0068-80-2-3	876 AC	226 AC	118 AC	488 AC	1,708 AC	2 Sub.1/14/80	/81
GSC-168								
Smallwood(B)	0048-80-1-2	249 AC	0	24 AC	0	273 AC	Rev.Pre.1/21/80	/81
GSC-180								
Cat Island	0019-80-32	174 AC	0	37 AC	147 AC	358 AC	2 Sub 2/8/80	/81
GSC-193								
Thorne Bay	0054-81-3-2	?	0	?	?	1,000 AC		/81
TOTAL		1,299 AC	226 AC	179 AC	635 AC	3,864 AC		

**To Be Sold At Auction ? Unknown At This Time

(B) Indicates located within a municipality, city or borough

CADASTRAL

PROJECT	LADS NO.	GROSS ACR.	DIS. ACR.	NUM OF SITES	DISPOSAL DATE
GSC-192					
Two Rivers (B)	0056-80-1-2		6740 AC		1 Sub 12/26/79 6/80

FY80 REMOTE SITES FOR DISPOSAL IN FY80

PROJECT	LADS NO.	GROSS ACR.	DIS. ACR.	NUM OF SITES	DISPOSAL DATE
GSC-154					
N.E. AK Range	0034-80-1-1	20,000 AC	1120 AC	56	1/80
GSC-155					
Bear Creek	0004-80-1-1	13,000 AC	500 AC	25	1/80
GSC-161					
Yentna(B)	0064-80-2-1	20,000 AC	4000 AC	100	6/80
McDougal(B)	0030-80-2-1	20,000 AC	4000 AC	100	1/80
Lake Creek(B)	0026-80-2-1	68,000 AC	12,000 AC	300	1/80
Chase I(B)	006A-80-2-1	92,000 AC	7400 AC	185	6/80
GSC-164					
Rock Creek	0042-80-1-1	12,000 AC	520 AC	13	1/80
GSC-171					
Hewitt I(B)	018A-80-2-1	40,000 AC	7500 AC	450	1/80
GSC-177					
Chena South(B)	0008-80-1-1	9,000 AC	1660 AC	83	1/80
GSC-181					
Homer(P)	0020-80-2-1	5,000 AC	2,000 AC	225	1/80
TOTAL		299,000 AC	40,700 AC	1537	

FY80 AGRICULTURAL FOR DISPOSAL IN FY80

GSC-161					
Chase(B)	006C-80-2-2	?	4000 AC	?	6/80
GSC-167					
Willow Cr Sec. 16		640 AC	618 AC	3	6/80
TOTAL			4,618 AC		

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF TECHNICAL SERVICES

PREVIOUSLY SURVEYED ACREAGE FOR DISPOSAL IN FY80

PROJECT	LADS NO.	DISPOSAL ACREAGE	TYPE OF DISPOSAL	DISPOSAL DATE
Six Creeks	0047-80-1-2	645 AC	Agricultural	1/80
Warren		740 AC	Agricultural	1/80
Bartlett Hills (B)		8,172 AC	Agricultural	1/80
Buffalo		1,157 AC	Agricultural	1/80
Two Rivers (B)		5000 AC	Agricultural	1/80
Gustavus		540 AC	Agricultural	1/80
Total Agricultural		16,254 AC		
Windy Creek	0061-80-1-1	1,120 AC	Remote	1/80
Two Rivers (B)		19,740 AC	Remote	6/80
Total Remote		20,860 AC		
Circle		92 AC	Subdivision Lottery	1/80
Tok		150 AC	Subdivision Lottery	1/80,6/80
Montana Ck. (B)		40 AC	Subdivision Lottery Paper Plat	1/80
Glennallen		979 AC	Subdivision Lottery	1/80
Anderson		1,918 AC	Subdivison Lottery	1/80,6/80
Total Subdiv. Lottery		3,179 AC		
Delta Homesites		189 AC	Homesite	1/80
Glennallen		22 AC	Homesite	1/80
Total Homesites		211 AC		

SUMMARY, ACREAGE AVAILABLE FOR DISPOSAL

	FY79	FY80	FY81
Open to Entry (Warehouse Mt.)	1,500 AC		
Total Acreage, Subdivision Lots		***31,731 AC	1,299 AC
Toal Acreage, Remote		61,560 AC	
Total Acreage, Agricultural		20,872 AC	
Total Acreage Previously Surveyed Homesites		211 AC	
Total Acreage, Common Tracts		2,436 AC	
Total Acreage, Cadastral		6,740 AC	
TOTAL	1,500 AC	123,550 AC	1,299 AC

***The total should be larger; at this time it does not reflect common areas to be included in the disposal

(B) Indicates located within a municipality of borough

TOTAL "B" FY80	
Subdivision	9,559 AC
Remote	58,300 AC
Agricultural	17,172 AC
TOTAL	85,031 AC

PLEASE NOTE

THE ORGINAL FILE CONTAINS AN OVERSIZED DOCUMENT THAT IS UNSUITABLE FOR FILMING. PLEASE REFER TO THE ALASKA STATE ARCHIVES TO VIEW THE ORIGINAL.

DESCRIPTION: MAP (SEE XEROXED INFO BELOW)

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF TECHNICAL SERVICES
FY '80 & '81 LAND DISPOSAL PROJECT LOCATIONS

O FY 80 ▲ FY 81 △ PROPOSED FY 81

LEGEND

——— Solid line indicates Senatorial Districts (letters)

– – – – Dashed line indicates House Districts within Senatorial Districts (numbers)

STATE OF ALASKA ELECTION DISTRICTS

HOUSE DISTRICTS	SENATE DISTRICTS	
1	A	Ketchikan - Prince of Wales
2,3	B	Wrangell - Petersburg - Sitka
4	C	Juneau - Lynn Canal
5,6	D	Cordova - Valdez - Seward - Palmer
7	E	Anchorage Northwest
8	F	Anchorage Northeast
9	G	Anchorage Spenard
10	H	Anchorage East
11	I	Anchorage South
12	J	Anchorage West
13	K	Kenai - Cook Inlet
14,15	L	Kodiak - Aleutian Chain
16,17	M	Bristol Bay - Bethel
18,19	N	Wade Hampton - Yukon - Tanana
20	O	Fairbanks
21,22	P	Barrow - Kobuk - Nome

AS DETERMINED BY STATE SUPREME COURT DECISION ON JULY 28, 1972

PLEASE NOTE

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DESCRIPTION: GRAPH (LADS NO 0000-81-1-2)

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF TECHNICAL SERVICES

"LANDS INVESTIGATION AND IDENTIFICATION FOR FY 81 LAND DISPOSAL"

PLEASE NOTE

THE ORGINAL FILE CONTAINS AN OVERSIZED DOCUMENT THAT IS UNSUITABLE FOR FILMING. PLEASE REFER TO THE ALASKA STATE ARCHIVES TO VIEW THE ORIGINAL.

DESCRIPTION: GRAPH

DIVISION OF TECHNICAL SERVICES

PRELIMINARY SCHEDULE FOR 1980 SURVEY PROGRAM

Meeting – Waterbombers 1:30 Pm. Rm 121

Bill & Halford

Bob Schlaefli
Richard Rue
Rick Halford
Wally Miller
Jim Wilson
Ted Smith
Ken Ward
Kent Loken

Reference of Spare parts
Ward Air –
Jim Wilson
Sig Larson

Ted Smith spoke re: Advantage of CL 215 –
State doesn't care if it owns the plane
yet theyre OK on Lease – Feels this is the
best plane for the money.
Operation would be the National Guard State buy it–

Richard Rue. Flynn Firemen Inc. spoke
against the plane. –

10 yrs. ago – $860,000 initial price –
inherant problems – Control problems
when scooping up water, particularly in
15 mph. crosswind – French found out
disasterously –
Totally Underwhelled – especially on unimproved
~~surface~~ surface – problems can be overcome
CJ3A – Engine – out of production for 30 years
$65,000 for 800 hours of operation – Toyo.
Securities on parts N up



Private operators w/ Jack Smith - 3/11/80 (Mtg.)

Wing & Step repair cost $ 1.5 million
L.t of down time - in Canadian experience
$ 43,000 for 1st inspection - Manitoba bought
them too. Outside of Quebec govt. - Manitoba
only bought one -

French govt says it costs them $8000 per hour
to operate -

Sig Larson Canadair Rep.

Quebec is now going with the PBY's

Mr. Rue said he could deliver 7 PBY's
for 2.5 million
Also sees potential problems w/ Natl Guard
piloting the planes As he said "God help
them"

DNR Ray Sitts

Bob Scheafly - Seattle PBY operator -
has operated air service for 20 years - It
never has dual ctrl/ selling planes to govt.
C(215 could have distinctly operating in many of
the forest areas -

Look into some kind of working agreement w/ BLM
to cover phase III of State protection

Cost Comparison - 700 day 450 per hour Amph
$ 98 day 450 per hour Floatplanes
State provides food - go to 1050 - 1200 per day
450

3/11/80 Wtg.

Costs

90-100,000 per plane per year
120,000 for a 90-day season.

Accident History per Sig Larson
Lost 3 planes in France
1 in Spain
1 in Greece -
Quebec has not lost any -

Mr. Rude - in 18 yrs w/ PBYs has lost (1) they believe pilot had a heart attack

Super PBY 120% - of the CL215

Scooptester, drop purposes, haul cargo,

Follow-up on assumption that both types of planes are in public service are they comparable? ie: Mr. Rude and Mr Larson -

Ray Settles doesn't care in terms of which plane is being used

43000 built - since inception
Halford. Situation of what will happen 10 years down the road, will PBYs still be available
65 CL 215's have been built.
Rude has 7 available
Schaffy - has 1 Standard PBY, 1 Super PBY.
20,000 hours of proven capability -
have had no structural problems.
CL215 7-8 different customers, all have come back for more. Can scoop in area where PBY can't go

2 PBY's = 1 CL215

Per Bill

Put 600,000 into ~~Governors~~ budget and see where the dept takes it.
Need for some kind of coordinator with aircraft expertise

Federal Law prohibits Canadian from operating in Alaska under Canadian Registry for more than 2 years

Give them a multi-year contract - to show good faith to private sector.

$3,666,000 appropriation put into DNR - use interest earnings to cover firefighting costs

ASAP. Setting aside Permanent fund moneys to protect a Resource - Also that DNR does not have to come back each year and fight for the appropriation.

Akland Helicopters, Inc.
Box 302
Talkeetna, Alaska 99676
An Equal Opportunity Employer

(907) 733-2222

February 12, 1980

Senator Bill Sumner, Chairman
Resources Committee
Alaska State Senate
Pouch "V"
State Capitol Building
Juneau, AK 99811

Dear Senator Sumner,

I'm writing to you today in reference to Senate Bill No. 345, specifically Section 3 of the bill, which would appropriate $5,067,000.00 for the purpose of purchasing two Canadian CL-215 aircraft for the Department of Natural Resources. As an Alaskan citizen and member of the Alaskan business community, I am opposed to the state entering into business in direct competition with industry. The seasonal nature of the Department of Natural Resource's air logistical requirements alone dictates lease or contract services in lieu of user ownership.

What action has been taken to fund the operation of these aircraft? I believe, upon investigation, you will agree the best course of action in this matter is for the state to continue their practice of relying on the proven ability of industry to provide the state with aircraft services. I urge you and the Resources Committee to disallow Section 3 of Senate Bill No. 345.

Sincerely,

Dennis Brown
President

DB:sm

3

July 14, 1980

Mr. Jens Zehbe
Senate Resources Committee
943 West 6th Street
Anchorage, Alaska 99501

Dear Mr. Zehbe:

Enclosed herein are the papers from the Senate Resources Committee file on SB 345. I made copies of some of the basic information for our files here. However, I would like all contents back when the committee has finished using them.

I have also enclosed copies of meeting minutes for 2/27/80 and 3/3/80. The 2/27/80 tape (which we designated #6) was not received by the library. However, we are having the 3/3/80 tape (#8) duplicated; it will be mailed to you as soon as possible.

Further, no magcards nor rolodex appeared in the boxes we have here. I did ask the L.A.A. supply office to check their storage area. Unfortunately they have found nothing so far, but will continue to search. (Also, many of the storage boxes are inaccessible.)

Please let us know if we can be of further assistance.

Sincerely yours,

Kathryn H. Shelton
Librarian
Legislative Reference Library

Enclosures

DURING SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3701

OUT OF SESSION:
1016 WEST 6TH AVENUE
SUITE 418
ANCHORAGE, ALASKA 99501
(907) 276-4841

BILL SUMNER

Alaska State Senator

DISTRICT 7-E

February 23, 1980

COMMITTEES:
RESOURCES
CHAIRMAN
FINANCE
RULES
COMMITTEE ON COMMITTEES
JOINT INTERIM COMMITTEE
ON GAS PIPELINE FINANCING

Dennis Brown, President
Akland Helicopters
Box 302
Talkeetna, Alaska 99676

Dear Mr. Brown:

I appreciate your sharing with me your concern with the Department of Natural Resources' request for $5 million to purchase two Canadian CL-215 aircraft. Believe me, I was just as surprised as you when I saw the request.

The bill has been referred to Senate Resources which I chair and probably in the next few weeks the committee will take it up for consideration. I believe the department should contract with the private sector for this service -- in fact, repeatedly I've come out against the state competing with private industry. This is certainly a good example of their efforts and be assured I'll work to have those funds deleted from the bill.

Again, thanks for writing and I'm pleased we agree on their not needing the funds. I hope you'll continue to stay in touch on other matters of concern to you.

Sincerely,

Bill Sumner

BILL SUMNER
Senator

BS/cf

P.S. I'll also let you know what happens to the bill.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
State and Private Forestry
2221 E. Northern Lights Blvd., Suite 107
Anchorage, Alaska 99504

5100
October 11, 1979

Ray Settles, Assistant State Forester
Division of Forest, Land and Water Management
State Foresters Office
323 East 4th Ave.
Anchorage, Alaska 99501

Dear Mr. Settles:

Your call last week requesting me to prepare a cost analysis of the CL-215 caught me off guard. I had to make a rather hasty search for basic information from numerous sources within and outside Alaska. These are not included with this report as they only duplicate the information already contained in your "CL-215 EVALUATION".

I saw no reason to duplicate your cost analysis as it appeared to be accurate and well done. Instead, I concentrated on information that the manager must consider in his decision making process. I would hope that a timely decision will be made soon to purchase several of the aircraft if the State of Alaska is committing itself to protecting its lands. I know of no alternative. The idea of purchasing the CL-215 is a creative and cost-effective solution to long-term air attack needs on most state protected lands.

Unfortunately, many decisions of this nature are based on short-term political expediency without an in depth understanding of need and cost-effectiveness. I have witnessed many times when managers have cut costs by cutting out the training needed to make use of manpower and equipment more cost-effective in fire fighting. I often wonder if they ever realized the dollars it was costing to save pennies.

You will note that I have been candid in my analysis. I disagree with your depreciation period of 15 years. I feel 30 years could reasonably be expected with a reduction in the hourly cost. My investigation indicates that fuel consumption is around 200 gallons per hour during scooping and dropping operations resulting in an average use of 180 gallons per hour for tactical missions. All in all, the costs you project are probably a little higher than can be expected. At least it indicates that you have not tried to keep projected costs low to justify the purchase.

Sincerely,

Al Roberts

AL ROBERTS
Assistant Regional Fire Mgt.
Specialist

6300-11 (1-80)

COST EFFECTIVENESS OF THE CL-215 AIRCRAFT

There is a contir ing need in Alaska for initial attack aircraft with the capability of scooping water from lakes or seas and dro ping it on wildfires to support ground forces. The only air tankers currently available to fulfill this need are the PBY and CL-125. The PBY is nearing the end of a long and useful life and has not been produced since the 1940's. The CL-215 is currently in production and was designed for ve satility whereas the PBY was designed for military use and converted to air tankers. There is no reason to assume that the CL-215 will not have a life expectancy of 30+ years also.

The cost of the PBY's under contract is relatively cheap because the aircraft was depreciated long ago, and it was purchased cheaply as military surplus. When the PBY's are no longer available, air tanker contractors will have to purchase the CL-215 if they are to meet the same demand. We can anticipate that contract rates for the CL-215 will be more than double the current rates for the PBY. This will place the annual availability guarantee rate in the $120,000 to $150,000 range based on the current value of the dollar.

The availability guarantee rate may be much higher if actual use drops off. Contractors tend to bid lower guaranteed availability rates when there is likely to be a lot of paid flying time. In most cases, the availability guarantee rates is the rate paid to have the aircraft and pilots available for the fire season. The flight time for missions is a charge over and above the availability guarantee.

If the State of Alaska were to purchase the CL-215 at this time, operating costs would probably exceed contract costs for the PBY for the next 3 to 5 years. After that time, the CL-215 would be more cost-effective for the rest of its life expectancy. In the long-term, taxpayers would be saved thousands of dollars in aircraft costs and millions of dollars in values saved.

Since costs per hour to operate an aircraft includes depreciation, any added use of the CL-215 for missions other than fire (air rescue, cargo hauling, passenger hauling, etc.) will reduce the "per hour" operating cost. The PBY cannot haul cargo, personnel and/or smokejumpers as can the CL-215. This is important to remember as the cost to service a fire is much cheaper if personnel and cargo don't have to be transported to the fire in additional aircraft.

There is an excellent opportunity to reduce costs to the State of Alaska by sharing the cost of the CL-215 with the B.L.M. or other federal agencies thru a "Cooperative Agreement". One disadvantage to this type of arrangement is that the aircraft may be committed to another mission when it is needed to attack a State fire.

There is an existing system that can be installed aboard the CL-215 to meter "water extenders" into scooped loads to retard evaporation. This system is not a necessity but it does allow the aircraft to drop retardant for an extended period without returning to a retardant base after each drop if retardant is needed.

The CL-215 was designed for quick initial attack - the "stitch-in-time-that-saves-nine". It's effectiveness was demonstrated in 1978 and 1979. From personal experience, I'm sure that the high quality white spruce stands between the Gerstle and Tanana Rivers, with a value in excess of $10,000,000, would have been lost in the Delta Barley Fire had the CL-215 not been available. This one incident saved enough value to warrant purchase of the CL-215. It's just a matter of time until a potentially disastrous fire starts in the urban-wildland interface (such as Big Lake, Nancy Lake, Eagle River, East Anchorage, Kenai, etc.) that could be held if the CL-215 were available. When the fire does occur and destroys several million dollars in developments for lack of effective air attack, who is going to accept the responsibility?

I have reviewed the cost analysis prepared by Ray Settles on August 6, 1979. The analysis of cost is well prepared, but I suspect a little high. The depreciation would be somewhat lower if it were based on 30 years rather than 15 years. Fuel consumption will probably average around 180 gallons per hour, but this would make very little difference in cost. I see no benefit in preparing another analysis of cost.

I strongly urge that the State of Alska make a decision soon on what its role is going to be in protecting state and private lands from fire. The rapid transfer of land to the State of Alaska and subsequent release of 100,000 acres per year to the private sector makes a quick decision necessary. Fire incidence and value of improvements is going to increase rapidly; demanding more efficient and effective fire protection. It is more cost-effective to anticipate and prepare rather than wait until enormous values and resources are already lost. The value to fire protection should be measured in values saved. Air attack capability is but one facet of a total need.

Al Roberts

AL. ROBERTS
Ass't. Fire Management Specialist
U.S.D.A. - Forest Service, Region 10

BASIC ASSUMPTIONS

1.) By 1983, the State of Alaska will have 103 million acres for which fire protection will be needed and the responsibility will be accepted by the State.

2.) The public will not accept a "no protection" attitude from their elected officials.

3.) The public will successfully sue in court to recover damages from the State for losses to wildland fire (as they have done in other states).

4.) The State of Alaska will respond with necessary funds to support a cost-effective fire protection program commensurate with growing responsibility.

FACTS

1.) Air Attack is an accepted cost-effective tool for fire fighting and has been employed for many years.

2.) Fire protection contracted to other agencies is not free and may not necessarily be cost effective.

3.) It is only a matter of time until the State will have responsibility to protect 44 million acres of native lands from wildland fire.

4.) The State of Alaska does not have the equipment, personnel and training to meet anticipated fire protection responsibilities as lands are transferred.

5.) The State of Alaska must be prepared to prove "reasonable" levels of fire protection to protect itself from paying the cost of losses in civil suits. (Insurance companies hire good lawyers.)

Alaska State Legislature

HOME ADDRESS
1136 SUNSET DRIVE
FAIRBANKS, ALASKA 99701
HOME PHONE: 456-4610

WHILE IN JUNEAU
POUCH V
JUNEAU, ALASKA 99811
HOME PHONE 586-3393
OFFICE PHONE 465-3788



SENATOR
GLENN HACKNEY
REPRESENTING
SENATE DISTRICT O
"ALASKA'S GOLDEN HEART"

COMMITTEES:
FINANCE

HEALTH, EDUCATION & SOCIAL SERVICES
CHAIRMAN

State Senate

M E M O R A N D U M

TO: Senator Bill Sumner, Chairman
Senate Resources Committee

FROM: Senator Glenn Hackney

SUBJECT: SB 345

DATE: February 25, 1980

Attached is a copy of a letter from a constituent of mine in Fairbanks that concerns SB 345, a bill presently in your committee. Mr. Bursiel's comments are interesting and may be worth exploring further when this bill comes up for consideration in the Resources Committee.

February 25, 1980

Robert P. Bursiel, President
Wright Air Service, Inc.
P.O. Box 60142
Fairbanks, Alaska 99706

Dear Mr. Bursiel,

Just a note to tell you I have passed along a copy of your letter regarding the Canadair aircraft to the Resources Committee. That is the first committee of referral for SB 345, the supplemental proposing to purchase those two aircraft.

We'll see what happens in the Resources Committee and I will let you know. There are several more shots at this appropriation, including one in the Senate Finance Committee of which I am a member. I'm sure there will be some searching questions asked about this proposed purchase.

Sincerely,

Glenn

Glenn Hackney
State Senator

cc: Senator Bil Sumner, Chairman
Senate Resources Committee

BILL SUMNER

Alaska State Senator

DISTRICT T-E

DURING SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3701

OUT OF SESSION:
1016 WEST 6TH AVENUE
SUITE 418
ANCHORAGE, ALASKA 99501
(907) 272-4841

COMMITTEES:
RESOURCES
CHAIRMAN
FINANCE
RULES
COMMITTEE ON COMMITTEES
JOINT INTERIM COMMITTEE
ON GAS PIPELINE FINANCING

February 26, 1980

Robert P. Bursiel
Wright Air Service, Inc.
P.O. Box 60142
Fairbanks, AK 99706

Dear Mr. Bursiel:

Attached is the reply from Tom Bergstrom at the Department of Natural Resources regarding your inquiry about the Canadair CL 215's. We will be hearing this bill tomorrow before the Resources Committee and I plan on giving each member a copy of your letter as well as others we have received. In addition, I have scheduled several witnesses from the Alaska Air Carriers Association to address the matter.

I will keep you informed of any future developments.

Sincerely,

Bill Sumner

Bill Sumner
Senator

BS/jz

Wright Air Service, Inc.

Post Office Box 60142 • Fairbanks, Alaska 99706
Phone: 456-5502 or 452-7918

February 05, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
State Capitol Building
Juneau, Alaska 99811

Dear Senator Sumner:

I understand that a supplemental appropriations bill has been introduced which would authorize the Department of Natural Resources to purchase two Canadair CL-215 water bombers at a cost of more than $5 million.

It is my belief that the State of Alaska could obtain much better aerial fire suppression capabilities by putting bomber contracts out for bid to private industry rather than spending millions on state-owned aircraft that will be sitting idle for nine months out of every year. The $5 million cost of the two aircraft seems completely ridiculous, particularly since it would only be the tip of the iceberg--it would still be necessary to pay pilots, ground crew, and administrative personnel all at additional cost.

A PBY amphibious water bomber on a 90 day contract would cost in the neighborhood of $700/day and $600/flying hour--this would include the pilots and the maintenance, everything except for the fuel. Assuming the aircraft flies 200 hours in a very busy season, the cost to the state would be $63,000 for daily availability for 90 days plus $120,000 for 200 hours of flying, or a total of $183,000 for the year for the plane complete with a full crew to operate it. By dividing this cost into the $5 million purchase price of the two Canadair aircraft, it can be determined that two PBY's could be operated for 13 years. An additional consideration is that should the aircraft be destroyed or damaged during the performance of the admittedly hazardous duties, the state would not have to pay for it--it would be the responsibilities of the contractor and his insurance company.

The state is wasting money and enlarging the bureaucracy by trying to operate it's own air force. Last summer I observed that the state was using it's own Beaver aircraft for fire detection patrols. I cannot imagine a worse choice for this mission. Not only is the Beaver painfully slow, it costs more just to operate it than it does to charter many models of single engine aircraft that are much faster. I only mention this example to emphasize my point that the state should leave the flying to those who can do it best and most economically.

Sincerely,

Robert P. Bursiel
President

SOUTHEAST ALASKA AIRLINES

February 20, 1980

Senator Bill Sumner
Alaska State Senate
Pouch "V"
State Capitol Building
Juneau, Alaska 99811

Dear Senator,

Senate bill 345 has a real sleeper in it that is bad.

"Sec. 3 the sum of $5,067,000-for purchase of two canadian CL-215's" aircraft.

That's really the down payment on a STATE AIR FORCE. It will take many more millions forever to train crews and maintain aircraft of that size. Then they will need a hanger, then more office space,then a larger base then, more planes to justify the hanger expense ect. ect. It will grow like a cancer. We don't need it. Rely on the existing aviation businesses in the state and at the same time you will be helping support a vital transportation system throughout the state and aiding a sagging economy.

With twenty years experience as a military pilot and base commander I know what size monster you are growing if you purchase those planes. Please don't.

Sincerely,

Paul H. Breed
President

PB/cla

1515 TONGASS AVENUE, KETCHIKAN, ALASKA 99901 • (907) 225-6691
IN CRAIG CALL (907) 826-3372 – IN KLAWOCK CALL (907) 755-2272 • PAUL BREED, President

Akland Helicopters, Inc.
Box 302
Talkeetna, Alaska 99676
An Equal Opportunity Employer
(907) 733-2222

February 12, 1980

Senator Bill Sumner, Chairman
Resources Committee
Alaska State Senate
Pouch "V"
State Capitol Building
Juneau, AK 99811

Dear Senator Sumner,

I'm writing to you today in reference to Senate Bill No. 345, specifically Section 3 of the bill, which would appropriate $5,067,000.00 for the purpose of purchasing two Canadian CL-215 aircraft for the Department of Natural Resources. As an Alaskan citizen and member of the Alaskan business community, I am opposed to the state entering into business in direct competition with industry. The seasonal nature of the Department of Natural Resource's air logistical requirements alone dictates lease or contract services in lieu of user ownership.

What action has been taken to fund the operation of these aircraft? I believe, upon investigation, you will agree the best course of action in this matter is for the state to continue their practice of relying on the proven ability of industry to provide the state with aircraft services. I urge you and the Resources Committee to disallow Section 3 of Senate Bill No. 345.

Sincerely,

Dennis Brown

Dennis Brown
President

DB:sm

Wright Air Service, Inc.

Post Office Box 60142 • Fairbanks, Alaska 99706
Phone: 456-5502 or 452-7918

FEB 20 9 16 AM

February 05, 1980

Senator Bill Sumner
Alaska State Senate
Pouch V
State Capitol Building
Juneau, Alaska 99811

Dear Senator Sumner:

I understand that a supplemental appropriations bill has been introduced which would authorize the Department of Natural Resources to purchase two Canadair CL-215 water bombers at a cost of more than $5 million.

It is my belief that the State of Alaska could obtain much better aerial fire suppression capabilities by putting bomber contracts out for bid to private industry rather than spending millions on state-owned aircraft that will be sitting idle for nine months out of every year. The $5 million cost of the two aircraft seems completely ridiculous, particularly since it would only be the tip of the ic berg--it would still be necessary to pay pilots, ground crew, and administrative personnel all at additional cost.

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The state is wasting money and enlarging the buresucracy by trying to operate it's own air force. Last summer I observed that the state was using it's own Beaver aircraft for fire detection patrols. I cannot imagine a worse choice for this mission. Not only is the Beaver painfully slow, it costs more just to operate it than it does to charter many models of single engine aircraft that are much faster. I only mention this example to emphasize my point that the state should leave the flying to those who can do it best and most economically.

Sincerely,

Robert P. Bursiel
President

GOLDEN NORTH AIR SERVICE, INC.

MILE 131½ DENALI HWY. • P.O. BOX 9 • CANTWELL, ALASKA 99729 • Phone: (907) 768-2434

February 21, 1980

Senator Bill Sumner, Vice Chairman
Senate Resources and Finance Committee
Alaska State Senate Pouch "V"
Juneau, Alaska 99811

Dear Sir,

It has been brought to my attention that Senate Bill Number 345 has been introduced in the Legislature and has been referred to the Senate Resources and Finance Committee.

While we feel that it is in the public interest of Alaskans for the survey of State Lands, we do take issue with the appropirations allotted for "Fire Fighting (8,603,000.00) and most expressively the $5,607,000.00 for the purchase of two CL-215s.

It is not our intent to allow Alaska to burn to the ground, however..... we do feel that the expenditures for firefighting are excessive in that the Federal Government owns, or at least claims most of our State and that many of the fires under concern by the department are started by agencies of the Federal Government (The Alaska Railroad) which effect State Lands. Let the Federal Government be responsible for their responsibilities and damages!

Foremost we do oppose the acquisition of the two Canadair CL-215s. There is sufficient aircraft available to the State by the State Licensed Air Taxies within the State to fulfill the needs of the Department of Natural Resources. We do not need the implementation of a State Air Force for the needs of state agencies. We already have a Federal Air Force in the "Office of Aircraft Services" which is in fact a Federal Air Taxi, which depletes revenues from existing State and Federally approved Air Taxi operators.

We have enough "bureaucracy", we only seek freedom and the right to Private Enterprise.

We greatly appreciate your concern and responsibilites in this matter, and we hope that you will also consider the Alaskan citizen and business enterprise when you consider the merits of this Bill.

Sincerely yours,

James M. Wright

3

July 14, 1980

Mr. Jens Zehbe
Senate Resources Committee
943 West 6th Street
Anchorage, Alaska 99501

Dear Mr. Zehbe:

Enclosed herein are the papers from the Senate Resources Committee file on SB 345. I made copies of some of the basic information for our files here. However, I would like all contents back when the committee has finished using them.

I have also enclosed copies of meeting minutes for 2/27/80 and 3/3/80. The 2/27/80 tape (which we designated #6) was not received by the library. However, we are having the 3/3/80 tape (#8) duplicated; it will be mailed to you as soon as possible.

Further, no magcards nor rolodex appeared in the boxes we have here. I did ask the L.A.A. supply office to check their storage area. Unfortunately they have found nothing so far, but will continue to search. (Also, many of the storage boxes are inaccessible.)

Please let us know if we can be of further assistance.

Sincerely yours,

Kathryn H. Shelton
Librarian
Legislative Reference Library

Enclosures

of ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ADMINISTRATION & MANAGEMENT

MEMORANDUM

TO Jens Zehbe
Legislative Aide
Pouch V
Juneau, Alaska 99811

DATE February 22, 1980

FILE NO

TELEPHONE NO

FROM Tom Bergstrom
Director

SUBJECT Water Bomber Aircraft

This is in response to your constituant inquiry regarding the selection of Canadair CL-215 water bombers for State firefighting use. The decision criteria in choosing the CL-215 over the PBY were (1) reliability, (2) versatility, and (3) cost effectiveness.

1. Reliability: The PBY is a World War II - vintage aircraft ranging in age from 35 to 45 years old. In the past two years there have been two fatal water-scooping accidents due to airframe failure involving the PBY. Mr. Bursiel suggests a use period of thirteen years in his letter, however, by that time most PBY's would be nearing 60 years old. Clearly, even the PBY cannot last forever and replacement aircraft will only become more expensive to aquire as time passes. It is also obvious that with aircraft of the PBY's age, substantial down-time must be anticipated.

   The CL-215, on the other hand, is a new aircraft and our experience with it during last summer's demonstration project is that it is extremely reliable.

2. Versatility: The PBY carries water tanks in its cargo area when it is in a water bombing configuration and thus cannot be used to haul firefighters or cargo. Further, since PBY's would be on charter for firefighting, that is the only purpose they could be used for.

   The CL-215 has a large cargo-passenger area and can be used as a multi-purpose aircraft with no configuration change. Since it would be owned year-round by the State it could be used for oil spill patrol and oil disposal (the tanks can carry dispersant), fisheries patrol, remote sensing, and disaster relief.

3. Cost Efficiency: Mr. Bursiel states that the operating costs per PBY are $700 per day and $600 per flying hour on a 90 day contract based on 200 flying hours. This is somewhat understated, since the fire season is now approximately 150 days and we anticipate 300 hours of operation per aircraft. These corrections would bring Mr. Bursiel's costs to $285,000 per aircraft. Finally, both the standby costs and operating costs on a contract would be subject to inflation.

   Our estimated operating costs for the CL-215, including amortization of debt, crew costs, insurance, fuel, and maintenance, are $360,000 per aircraft. Actually, this figure is probably too high since the amortization cost is based on a highly conservative 20-year depreciation schedule.

There is no "enlargement of the bureaucracy," as Mr. Bursiel contends, since all flight operations and maintenance will be conducted by the Alaska Air National Guard. No State personnel will be added due to acquisition of the CL-215.

Finally, it should be pointed out that the State will realize a substantial capital gain by exercising its two CL-215 options. The option cost for the State is $2.5 million per aircraft and the current cost of a CL-215 for the new production run is $4.5 million per aircraft. The State will thus realize a gain of some $4.0 million by purchasing the planes.

SB-345 Resources
3/3/80 Fahrenkamp
Present - Meland, Bennett, Dinkworth, Sumner, McCahey, Kettle
Absent - ~~Fahrenkamp~~

Convened 1:40 PM. - Sumner ~~Stone~~ convened meeting & cont. w/ SB345
Hydros - need to get some solution re water boards structure -

Private Sector Availability
Jeff Haynes & Fred Smith testifying - Ray Settles
Smith compared PBY & CC 215
Smith went into a synopsis of SB 345 detailing each amount -

Then mtg went into the plans issue
Sumner asked - what contacts have been made to the private sector - re. what is available.

Take out CC 215 appropriation part of bill & let rest pass
Instructed dept. to look into other alternatives re: the private sector ie. Smith & Haynes need to come up with them

Certain wants Dept. to per his letter of 1/7 first.
Delete Section 3 Plans purchase By Central.
Insert Section 3 500 000 from General Fund to cover gravel survey

Jim Wilson 586-2030

6773

Inventory I.D. of material sources on lands in Lincoln County -

3304

4/22/80 Convened 1:40 Bennett Absent -

Hand Trolling Mage - Ken Ward Ward Air & Ak Air Carriers
Stating that he wanted private leasing
versus State purchase -

Q Kertula - Does private enterprise have the immediate
availability of fire planes?
Private operators have existing planes as well
as support facilities which the state would
have to build.

Comm - Would like data on types of aircraft available -
Kertula would like to know data on competitive
~~planes~~ companies and are they available

Pank - Justification for why we need these 2
aircraft,

Jim Anderson Jeff Haynes
Claude Hoffman - DNR Land-surveying
need funds Now in order to do the
Fall Land Disposal - Head start on
FY 81 program
Slide presentation on surveying techniques
Also examples of b/w and infra-red photography
of disposal areas. They are new techniques that
give you elevations, type of vegetation, water
depth, moisture content, water areas etc.
Explanation of the techniques - technical terms -
Summer/ 9 about integrity of land disposals
in comparison with previous disposals -
Will give comm. more back-up information

Bill - Simplified approach to people coming in
and selecting land Available next fall -
Wants to check into it

465 4:00

Salmon Cr

Or

SB-345 - Supplemental appropriation to the Department of Natural Resources

Senator Sumner opened the meeting with testimony from Claude Hoffman, Jim Anderson, Jeff Hagues and Fred Smith of the Dept. of Natural Resources.

Senator Sumner opened the meeting with testimony from Ken Ward of the Alaska Air Carriers Association on the issue of the state purchase of (2) CL 215's.

He was followed by testimony from Claude Hoffman, Jim Anderson, Jeff Hagues and Fred Smith speaking on cadastral land surveying. They addressed the need for a supplemental appropriation in order to complete the projects started. start surveying now for the Fall land disposals. They presented various visual aids on new techniques in surveying being used by the state. Next the Committee addressed the Fred Whot followed was a slide presentation on by Fred Smith on the appropriation for state fire fighting. Mr. Smith then answered questions from the Senators.

Senator Sumner moved to hold over the remainder of the testimony till the next meeting.

SB CSHB 588 - The bill was passed out of committee

~~for~~ relating to
SR 20. The bill was passed out of Committee.

SB-189 - Bob Hinman of the Department of Fish and Game gave testimony on this bill. ~~There was~~ There was a question of the legality of this bill, Senator Sumner requested with the committees agreement to hold this bill.

Meeting adjourned at 4:15 p.m.

[redacted]

2/27/80.

HB-66 - Check into it
↳ DNR will send copy of statement of how they feel about it

Fire Presentation - Ted Smith -
Explain Reasons for supp. appr. - ie BLM pulling out of present set-up.
11¢ per acre to BLM for initial attack

CSHB - 599 - 1 Passed out w 10
CR20 Passed out on individual Recommendation
Moved out

SB 189 - Held - check on where it came
Bob Hinman - of FTG. of attorneys - on constitutionality of bill
Q - Mulcahy - Legal Services - possibilities
to make exception
Redrafted for Residency - Leave like it is -

SB
418

From Dave Hutchens

MAR 21 1980

In 1979, the Alaska Legislature adopted SB 164 which authorized the Divisen of Lands to grant easements without charge to nonprofit electric and telephone corporations for rights of way for transmission and distribution lines. This easement procedure has worked well since its enactment.

Late last year the Division of Lands published a proposed revision of the portion of the Alaska Administrative Code dealing with their operations. Chapter 65 of these proposed regulations has the purpose of consolidating a number of special purpose easements and permits into a general category of land use permits. One of the specific easements which would be repealed by this action is 11-AAC-58.200 which provides for easements for utility rights of way. There are many provisions in the proposed Chapter 65, such as a ten year maximum term, which would make the new land use permits completely inappropriate for use in utility rights of way.

Mr. Ted Smith, Director of the Division of Lands, has predicted that these new regulations would become effective in the third quarter of 1980. In the public hearing in Anchorage on these proposals, Mr. Smith stated that it is his intent that in the future all utility rights of way will be granted through the lease procedure rather than through

the easement or permit procedure. SB 164 dealt only with easements, not leases. The proposed administrative action by the Division of Lands will have the effect of reversing the clear expression of legislative policy adopted unanimously by both Houses of this legislature less than one year ago.

This is an intolerable assumption of legislative authority which must not be allowed to stand. Either the Divison of Lands should maintain the easement process for utility rights of way, or the Legislature should reconfirm its policy position. Senate Bill 418 has been prepared as a legislative remedy for this problem if that course is necessary.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SB 418
Title Relating to electric or telephone cooperative associations
Requested by Senator Sumner Date 4/15/80

II. FISCAL DETAIL
Agency Affected Department of Natural Resources
Program Category Affected NRMFC
BRU, Program, or Subprogram(s) Affected
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The cost administration is negligible. Some revenue loss to the State could occur, but it is impossible to calculate as we do not know in advance the value of negotiated leases or how many cooperatives would apply for negotiated leases.

IV. DATE 4/15/80 PREPARED BY [signature]
AGENCY Natural Resources
PHONE 465-2400

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

602

Synopsis-- Senate Bill 418 by Kerttula

An Act relating to electric or telephone cooperative associations; and providing for an effective date.

This bill amends the Public Lands statutes by the addition of a new paragraph which states: The Commissioner of DNR shall lease state land for telephone or electric lines at less than appraised value if the lessee is a non-profit organization. Annual rental will be determined after the type of public service of the organization and the terms of the original acquisition of the land by the state are considered.

Gordon Parker Telephone Assoc.
Contact Lee Hutchins -

Thu

Spoke w/ Joe Guthrie in Legal Services -

Said we need to add on to bill - statement which cites the specific changes and annuls them.

Hen

Alaska State Legislature

Senate

Committee on Resources

Official Business

April 16, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate Bill 418

This bill amemds the Public Lands statutes by the additicn of a new paragraph which states: The Commissioner of the Department of Natural Resources shall lease state land for telephone or electric lines at less than appraised value if the lessee is a non-profit organization. Annual rental will be determined after the type of public service of the organization and the terms of the original acquisition of the land by the state are considered.

Senate Bill 418 is a response to the new Division of Lands regulations which take effect in the third quarter of this year. The regulations will consolidate a number of special purpose easements and permits into a general category of land use permits thereby repealing certain easements having to do with utility rights of way. Senate Bill 418 re-instates those easements having to do with non-profit organizations.

MAR 2 1 1980

From Dave Hutchens

In 1979, the Alaska Legislature adopted SB 164 which authorized the Divison of Lands to grant easements without charge to nonprofit electric and telephone corporations for rights of way for transmission and distribution lines. This easement procedure has worked well since its enactment.

Late last year the Division of Lands published a proposed revision of the portion of the Alaska Administrative Code dealing with their operations. Chapter 65 of these proposed regulations has the purpose of consolidating a number of special purpose easements and permits into a general category of land use permits. One of the specific easements which would be repealed by this action is 11-AAC-58.200 which provides for easements for utility rights of way. There are many provisions in the proposed Chapter 65, such as a ten year maximum term, which would make the new land use permits completely inappropriate for use in utility rights of way.

Mr. Ted Smith, Director of the Division of Lands, has predicted that these new regulations would become effective in the third quarter of 1980. In the public hearing in Anchorage on these proposals, Mr. Smith stated that it is his intent that in the future all utility rights of way will be granted through the lease procedure rather than through

the easement or permit procedure. SB 164 dealt only with easements, not leases. The proposed administrative action by the Division of Lands will have the effect of reversing the clear expression of legislative policy adopted unanimously by both Houses of this legislature less than one year ago.

This is an intolerable assumption of legislative authority which must not be allowed to stand. Either the Divison of Lands should maintain the easement process for utility rights of way, or the Legislature should reconfirm its policy position. Senate Bill 418 has been prepared as a legislative remedy for this problem if that course is necessary.

SB
579

Alaska State Legislature

Senate

Committee on Resources

May 15, 1980

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate Bill 579

This bill amends the Alaska Fish and Game statutes which relate to fees for resident hunting and fishing licenses. The bill allows veterans who have incurred 50% or greater disability during military service to receive a license at no charge.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SB No. 579
Title An act providing for free resident hunting & sport fishing licenses for disabled vets
Requested by Senate Resources Committee Date April 29, 1980

II. FISCAL DETAIL
Agency Affected Department of Revenue
Program Category Affected Fish and Game Support
BRU, Program, or Subprogram(s) Affected Fish and Game Licensing
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars) Revenue Effects

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						
Sport Fish Management Fund		(3.2)	(3.2)	(3.2)		
Game Management Fund		(3.8)	(3.8)	(3.8)		

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Statistics from the U.S. Veteran's Administration show that there are 464 veterans in Alaska with 50% or greater disability. Losses to the Sport Fish and Game Management Funds have been computed on the basis that 70% of that number would qualify for and apply for the free license.

IV. DATE April 29, 1980 PREPARED BY Linda Gene Lockridge
AGENCY Department of Revenue
PHONE 2376

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33--001 (Rev. 12/79)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SB No. 579
Title An act providing for free resident hunting and sport fishing licenses for disabled vet
Requested by Senate Resources Committee Date April 29, 1980

II. FISCAL DETAIL
Agency Affected Department of Revenue
Program Category Affected Fish and Game Support
BRU, Program, or Subprogram(s) Affected Fish and Game Licensing
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL	1.0	.5	.7	.9		
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	1.0	.5	.7	.9		

FUNDING (Thousands of Dollars)

GENERAL FUND	1.0	.5	.7	.9		
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Initial costs incurred would be for the printing of a special license for disabled veterans and dissemination of information regarding eligibility for this license to statewide license vendors. In future years information regarding this license would be included in our annual license order and mail out to vendors.

IV. DATE April 29, 1980 PREPARED BY Linda Gene Lockridge
AGENCY Department of Revenue
PHONE 465-2376

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF REVENUE

OFFICE OF THE COMMISSIONER

POUCH S
JUNEAU, ALASKA 99811

May 5, 1980

The Honorable Bill Sumner
Chairman
Senate Resources Committee
Capitol Building, Room 125
Juneau, AK 99811

Dear Senator Sumner:

SENATE BILL 579

Sentate Bill 579, an Act providing for free resident hunting and sport fishing licenses for disabled veterans, was introduced in the Senate on April 25, 1980 and was referred to the Senate Resources and Finance Committees.

For the consideration of the Senate Resources Committee, I am enclosing copies of two Fiscal Notes prepared by Linda Lockridge, Supervisor, Fish and Game Licensing Section of the Department of Revenue, concerning the proposed legislation.

Sincerely,

R. D. Stevenson

R. D. Stevenson
Special Assistant

Enclosures

cc: The Honorable John Sackett, Chairman
Senate Finance Committee

Joseph K. Donohue, Deputy Commissioner
Department of Revenue

Philip A. Wall, Director
Administrative Services Division
Department of Revenue

Linda Lockridge, Supervisor
Fish and Game Licensing Section
Department of Revenue

04-D2LH

Senate Bill 579- by the Commerce Committee

An Act providing for free resident hunting and sport fishing licenses for disabled veterans.

This bill amends the Alaska Fish and Game statutes which relate to fees for resident hunting and fishing licenses. The bill allows veterans who have incurred 50% or greater disability during military service to receive a license at no charge.

5/5 Requested Fiscal Note

SCR

41

SENATE AMENDMENT

By Senate Resources

To: Legal Services SENATE BILL No. SCR 41

To: _____ HOUSE BILL No. _____

PAGE: LINE:

Please see attached copy with the changes underlined.

Official Business

Alaska State Legislature

Senate

Committee on Resources

May 9, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Committee Substitute for SCR 41

This resolution deals with the adoption of a state policy for economic development. The major points are:

1) The state firmly supports diversifying it's economic base by utilizing it's human and natural resources in an effective manner.

2) Usage of the state's natural resources in a way which most benefits Alaskans.

3) Provide a clear indication to the business community, the basis on which the state encourages responsible investors.

4) Establishing a sound working relationship with industry to encourage further economic development.

Be it Resolved that the state should encourage economic development that:

1) Offers long-term benefits and increased employment to Alaskans.

2) Is environmentally sound and approved by the local citizens most affected.

3) Diversifies the states revenue, increases personal income, reduces the cost of living by the creation of new economic types of activity and further development of existing ones.

4) Does not impose additional governmental costs in excess of the positive effects of business development.

5) Has a positive effect on power and energy availability for present and future needs.

6) Promotes tax and revenue stability within the state.

Be it further Resolved that the state should:

1) Have an awareness of the many advantages and disadvantages

He also addressed the Department's need for enabling legislation to ~~establish~~ institute separate seasons for non-resident aliens hunting in Alaska.

Senate Concurrent Resolution 41- Senators Colletta and Hackney

A Resolution having to do with the adoption of a state policy for economic development. The major areas are:

1) The state firmly supports diversifying its economic base by utilizing its human and natural resources in a effective manner.
2) Usage of the states natural resources in a way which most benefits Alaskans.
3) Clear indication to the business community the basis on which the state encourages responsible investors.
4) Establishing a sound working relationship with industry to encourage further economic development.

Be it Resolved that the state should encourage economic development that:

1) Offers long-term benefits and increased employment to Alaskans.
2) Is environmentally sound and approved by the local citizens most affected.
3) Diversifies the states revenue, increases personal income, reduces the cost of living by the creation of new economic types of activity and further development of existing ones.
4) Does not impose additional governmental costs in excess of the positive effects of business development.
5) Has a politive effect on power and energy availability for present and future needs.
6) Promotes tax and revenue stability within the state.

Be it further Resolved that the state should:

1) Have an awareness of the many advantages and disadvantages to the state that will result from the development of various industries.
2) Provide the leadership to assist potential investors.
3) Identify in conjunction with the investors, the constraints imposed by federal regulations and work with the state's congressional delagation in resolving any problems created by these regulations.
4) Identify the changes that will result from this economic development.
5) Compete with other areas in attracting economic development by the usage of economic incentive...
6) Provide assistance to the investors to determine whether the proposed development is in the best interests of the investor and the state.
7) Provide a stable economic environment by sale of natural resources owned by the state to processors of the resource at a fixed price for a period necessary for amortization of capital investment by the processor.

SCR 41 suggestions:

Kelly Waller of Tanana Chiefs Conference

page 1, lines 7 to 10 include also insuring protection of environment and lifestyles of rural Alaska

~~page 2, line 24~~

page 2, line 1 suggests definition of local citizens

Harold Pomeroy

page 2, lines 7 - 9 questions what is intended by the statements

page 2, lines 13-16 not economically practical

page 3, lines 8 - 10, can't justify a subsidy to establish a competitive postion

Dave Harbour

page 3, lines 8 - 10 suggests to accomplish this that the state compare its investment climate to other states

~~the xxxxxxxxxxxxxxxxxxxxxxxxx~~

Ken Showalter

written suggestions

Paula Easley Resource Development Council

page 2, line 17 add after "state" under the direction of the Department of Commerce and Economic Development

page 2, lines 1 - 2, unanimously opposed to present wording and support Showalter's suggestions

page 2, lines 7 - 9, is a problem of defining "excess" -- something that is excessive now, may be good on a long term basis

page 2 lines 10 - 11, concerned that an industry that is energy intensive may be discouraged

page 2, lines 13-16 eliminate the minimum requirement

page 3, lines 1-4, suggested adopt Showalter's suggestions

page 3, lines [illegible]-17, questioned if this means that the royalty could be sold for less than the market price if is shown that such a sale would be beneficial to Alaskans

SENATE RESOURCES COMMITTEE
HEARING
on

SENATE CONCURRENT RESOLUTION 41

"Adopting a state policy for
economic development"

Friday, February 15, 1980

Court Building
303 K Street, Room 422
10 a.m.

Senator Jay Kerttula called the hearing to order. Also present was Senator Ed Dankworth and the panel was later joined by Senator Mike Colletta.

These individuals expressed the following comments:

KELLY WALLER, Tanana Chiefs Conference

SUGGESTION: The following changes be made: page 1, lines 7 - 10, should also include that such economic development will insure protection of the environment and lifestyles of rural Alaska.
page 2, line 24 expressed concern with "investors" -- who?
page 2, line 2 asked that "local citizens" be defined

WILLIAM WOOD, Mayor City of Fairbanks

Commented that the resolution does not address the state's developmental tasks. SUGGESTION: In a "whereas" clause, there should be a statement that any economic development should wisely utilize our resource base as an outlet for the human talent that the state already has.

PAM SMITH, Alaska Industry Support Alliance

Spoke on behalf of the A.S.I.A. who suggests that the legislature examine the purposes of taxation and its possible constraint to economic development.

HAROLD POMEROY

It is inexcusable the drag that regulations and requirments have on inhibiting and discouraging economic development. The state does not use the people and information it already has here, instead it brings in others from Outside to provide the expertise that is already available. The state should exercise caution against giving tax exemptions to businesses who without the exemption, would not

survive -- that's bad business. SUGGESTION: page 2, lines 7 - 9 questions what is intended by the statement; page 2, lines 13 - 16, suggests that this is not economically practical; page 3, lines 8 - 10, he can't justify a subsidy in order to establish a competitiveve position. Suggests the state utilize a practical economic evaluation procedure to determine what is cost effective.

LEE FISHER, People Against State Income Tax

Suggests that the abolition of individual and corporate taxes will be the best incentive to economic development.

DAVE HARBOUR, ARCO

Suggests that the state do a comparison of its investment climate to that of other states. Concerned that the resolution does not enumerate the constraints to economic development which are spelled out in last session's SCR 27. Suggests the House and Senate Resource Committee members, Department of Commerce and Economic Development and industry people get together to develop a consensus plan.

EUD DYE, Resource Development Council

States that the legislature is going to need to do more than simply pass a resolution. SUGGESTION: that the state:

-- implement the economic development program put together last year by Commerce and Economic Development;

-- determine why there is an adversary tax relationship between the state and oil industry;

-- make a statement that there will be "no more" taxes on the oil industry;

-- study the prohibitive effect of regulations on industry with the hope that regulation reform will decrease the cost of government (Resource Development Council is presently doing such a study). The end result of the above suggestions will be a predictable investment climate. Also suggests that a tax credit be established for any money made from specified projects that is re-invested into other specified projects.

KEN SHOWALTER, SOHIO

Concerned that the resolution only pertains to future businesses and does not address present businesses such as the oil industry. SUGGESTION: submitted a revised resolution which is contained in the committee's records as well as a copy of his comments.

PAULA EASLEY, Resource Development Council

The state desperately needs a clear-cut economic development policy and without one, the private sector is unable to

grow. SUGGESTION: The authority and responsibility of fullfilling the resolution's needs should be the responsibility of the Department of Commerce and Economic Development. On page 2, line 21, add to "the state should, under the direction of the Department of Commerce and Economic Development; page 2, lines 1 - 2, unanimously opposed to present wording; page 2, lines 7 - 9, is a problem of defining "excess" -- something may be excessive now but on a long term basis, it may be best; page 2, lines 10 - 11, concerned that an industry that is energy intensive may be discouraged; page 2, lines 13-- 16, eliminate the minimum requirement; page 3, lines 1 - 4, suggests adopting Showalter's suggestion; page 3, lines 14 - 17, questioned if the resolution would permit the state's royalty oil to be sold for less than the market price, if it is shown that such a sale would be beneficial to Alaskans.

DON LYON, Overall Economic Development Program, Mat-Su Borough

Investment incentives are needed. The state also needs to look beyond initial investment incentives (which often are viewed as subsidies) and instead, must examine the long-term benefits. Regulation reform, which can serve as a catalyst for development, should be a key part of economic development. Once the resolution is adopted, he hopes the necessary money follows in order to carry it out.

BOB DEMPSEY, Fairbanks Chamber of Commerce

The Fairbanks Chamber of Commerce will be submitting written testimony at a later time. Asks that there be avaialble government funding for projects that are to be undertaken by the private sector. Also urged that money be available to implement the intent of the resolution.

MYRON IGLANTOC, Tlingit and Haida of Anchorage

Energy efficient projects should be a priority and the long-term benefits of any project must be taken into consideration. Expressed concern about the high energy costs in Southeast and the fact that lines have not been extended to villages because it is not economically feasible. Also stressed that the state should take a look at utilizing natural gas in the northern areas.

WRITTEN COMMENTS

The following individuals and organizations submitted written comments:

-- C. W. Baer, General Manager, Greater Fairbanks Chamber of Commerce

-- Malcolm B. Roberts, Executive Director, Commonwealth North

-- Alfred R. Ketzler, Executive Director, Community Enterprise Development Corporation of Alaska

-- Arthur R. Hauver, Attorney-at-Law

-- Charles F. Becker, Economic Development Director, Municipality of Anchorage

-- Eddie J. Turner, President and Managing Officer, Peninsula Savings and Loan Association

Copies of the above comments follow.

THOSE ATTENDING HEARING

Mr. Bob Dempsey
Fairbanks Chamber of Commerce
550 First
Fairbanks, Alaska 99701

Mr. Paul A. Dunham
Machinists, Local 601
825 East 8th
Anchorage, Alaska 99501

Mr. Bud Dye
2301 Loussac
Anchorage, Alaska 99503

Mr. Wayne L. Fincher
Painters Union, Local 1140
1818 Northern Lights Boulevard
Anchorage, Alaska 99503

Mr. Lee E. Fisher, C.P.A.
430 West 7th Avenue
Anchorage, Alaska 99501

Mr. Dave Harbour
SRA Box 62-R
Anchorage, Alaska 99507

Mr. Martin Hoskins
Post Office Box 288
Anchorage, Alaska 99510

Mr. Ken Hume
225 Cordova, Building B
Anchorage, Alaska 99501

Mr. Myron B. Igtanloc
2201 West 48th Avenue
Anchorage, Alaska 99503

Mr. Dick Kloep
IUOE, Local 302
2510 Arctic Boulevard
Anchorage, Alaska 99503

THOSE ATTENDING HEARING

Mr. Don Lyon
Overall Economic Development Program
Matanuska-Susitna Borough
SR Box 5011
Wasilla, Alaska 99687

Mr. Ken Peavyhouse
FAA-AAL-4C
Box 14
Anchorage, Alaska 99513

Ms. Jennie Day Peterson
Public Employees, Local 71
Post Office Box 4-241
Anchorage, Alaska 99509

Mr. Harold Pomeroy
4048 Wright Street
Anchorage, Alaska 99504

Mr. Ken Showalter
Pouch 6-612
Anchorage, Alaska 99502

Mr. Patrick J. Smutz
HRDI
213 West 6th
Anchorage, Alaska 99501

Mr. Rudy J. Trosclair
Painters Union, Local 1140
1818 Northern Lights Boulevard
Anchorage, Alaska 99503

Mr. Frank N. Van Zant
Pouch 6607 H-280
Anchorage, Alaska 99502

Mr. Kelly Waller
Tanana Chiefs Conference
First and Hall Streets
Fairbanks, Alaska 99701

Dr. William R. Wood, Mayor
City of Fairbanks
619 Eleventh Avenue
Fairbanks, Alaska 99701



Greater Fairbanks
CHAMBER OF COMMERCE

Member:
U. S. Chamber of Commerce
Alaska State Chamber of Commerce

(907) 452-1105 550 First Avenue
FAIRBANKS
ALASKA 99701

February 14, 1980

Senator Bill Sumner, Chairman
Senate Resources Committee
Pouch V
Juneau, Alaska 99811

Re: Senate Concurrent Resolution No. 41

The Greater Fairbanks Chamber of Commerce is greatly encouraged by, and is in firm support of, the proposals contained in Senate Resolution No. 41 to adopt a state policy for economic development.

Adoption and implementation of such a policy will provide the basic structure for the orderly development of Alaskan resources through a partnership of government and private industry.

Toward this end I would urge that a framework be developed as a part of this resolution that would make possible governmental funding assistance for needed projects undertaken by the private sector. Such a provision would greatly facilitate joint development of worthwhile projects.

Further comment on these matters, on behalf of the Greater Fairbanks Chamber of Commerce will be provided by Bob Dempsey, Chairman of the Chamber's Economic Development Committee.

Sincerely,

C. W. Baer

C. W. Baer, General Manager
Greater Fairbanks Chamber of Commerce

CWB/sh



COMMONWEALTH
NORTH

February 18, 1980

Senator Bill Sumner
Pouch V
Juneau, AK 99811

Dear Bill:

Thank you for letting us know about the hearings last Friday and Saturday.

Enclosed is a copy of a letter to Senator Kerttula regarding the state policy on economic development.

Everywhere, I find great enthusiasm for the benefits the Susitna Project can mean to the entire railbelt. Although I was unable to attend that hearing, I believe it is fair to say that most of the Board and membership of Commonwealth North are 100% behind those who will make this project move, and move quickly.

With best regards.

Sincerely,

Malcolm B. Roberts
Executive Director

MBR/cds

Encl.

Governor William A. Egan, Co Chairman • Governor Walter J. Hickel, Co-Chairman
Max Hodel, President • Helen Fischer, Vice President • Morris Thompson, Vice-President • William Sheffield, Vice-President
Robert Hartig, Secretary • Millett Keller, Treasurer • Carl Brady, Sr. • Larry Carr • Henry Hedberg • Loren Lounsbury • Dr. Glenn Olds
Glenn Simpson • William J. Tobin
Malcolm B. Roberts, Executive Director

935 West Third Avenue / Anchorage, Alaska 99501 / 907-276-1414

COMMONWEALTH
NORTH

February 18, 1980

Senator Jalmar M. Kerttula
Pouch V
Juneau, AK 99811

Dear Senator Kerttula:

I am sorry I had to leave your hearings last Friday before I had a chance to testify.

We support Senate concurrent Resolution 41, adopting a state policy for economic development.

The current debate over the feasibility of a petro-chemical industry being established as part of the natural gas pipeline project focused the need for such a state policy. Industry across America and elsewhere in the world has received mixed signals as to what Alaska really wants.

Our committee studying the gas pipeline recommended a shorter version. Please see attached. But we have no problem with the intent or wording of the resolution as it stands, with the one suggestion that on page 3 line 15 the author probably meant "fixed terms" rather than "fixed price." The way the cost of resources is sky-rocketing, fixed price contracts may prove to be very unwise in the decades ahead.

With best regards.

Sincerely,

Malcolm B. Roberts
Executive Director

cc: Senator E. Dankworth
Senator M. Colletta

Governor William A. Egan, Co-Chairman • Governor Walter J. Hickel, Co-Chairman
Max Hodel, President • Helen Fischer, Vice President • Morris Thompson, Vice-President • William Sheffield, Vice-President
Robert Hartig, Secretary • Millett Keller, Treasurer • Carl Brady, Sr. • Larry Carr • Henry Hedberg • Loren Lounsbury • Dr. Glenn Olds
Glenn Simpson • William J. Tobin
Malcolm B. Roberts, Executive Director

935 West Third Avenue / Anchorage, Alaska 99501 / 907-276-1414

Recommended Resolution for the 1980
Alaska Legislature
Proposed by the COMMONWEALTH NORTH GAS PIPELINE STUDY COMMITTEE
Approved by the Commonwealth North Board of Directors, Nov. 20, 1979

WHEREAS the State of Alaska firmly supports and encourages responsible development that will strengthen and diversify the economy through the utilization of the human and natural resources of Alaska in an effective manner; and

WHEREAS adoption of a State Economic Development Policy that clearly sets forth the goals of achieving a healthy and growing economy would establish a sound working relationship with industry; and

WHEREAS an economic development policy would establish a basis upon which critical planning decisions could be made and alternatives could be evaluated;

BE IT THEREFORE RESOLVED that the Alaska Legislature adopts the following policy which sets forth the conditions and expectations under which the state will encourage economic development:

(1) offers long term employment opportunities to Alaskans

(2) improves the productivity of the existing economy

(3) contributes to the economy through capital investment

(4) increases energy availability for present and future needs

(5) does not cause a substantial adverse impact on the environment

(6) provides in-state processing of natural resources derived in the state in an amount equal to or greater than the State's royalty share of the resource;

BE IT FURTHER RESOLVED that the state should undertake activities to attract investment within these criteria to take advantage of the opportunities afforded by Alaska's abundant resources, and use its powers and resources as a catalyst for economic development. The Alaska Legislature therefore ordains that the state should:

(1) identify the many constraints to economic development imposed by the federal, state and local governments and work to eliminate unreasonable constraints as well as resolve the problems created by these constraints;

(2) establish a competitive position with other areas seeking to attract economic development and adopt incentives to attract industry

(3) provide a stable economic environment through the sale of natural resources owned by the state to those firms which will process those resources within Alaska.

February 13, 1980

The Honorable Bill Sumner
Chairman
Senate Committe on Resources
Alaska State Legislature
Pouch V
Juneau, Alaska 99801

Dear Senator Sumner:

With reference to SCR 41 which establishes the guidelines for a State policy on economic development, I would like to offer the following comments.

In rural Alaska one of the most expensive aspects of economic development is compliance with state and federal environmental laws. The main reason is existing fresh water systems, sewage treatment facilities and local electrical utilities are not capable of meeting the needs of major industrial activity. In fact, many communities have no utilities, no fresh water system and the sewage disposal systems are very crude.

Any kind of economic development in these areas must bear the additional cost of infrastructure development in order to acquire necessary licences and permits. Hotels, lodges, fish processing facilities and other activities requiring large amounts of power and fresh potable water are especially victimized by the high cost of infrastructure development.

Part of the state policy on economic development as outlined in SCR 41 should include a statement number 8 to be added on line 18 of page 3 which reads:

> "Provide utility infrastructure development funds to rural communities located within the unorganized borough to facilitate otherwise unfeasible projects that promote the general economic development goals of the State of Alaska."

CEDC

Community Enterprise Development Corporation of Alaska
1011 E. Tudor Road, Suite 210/Anchorage, Alaska 99503. 907-279-4551

State assistance is infrastructural development as outlined would generally lend itself to promoting resource based industries and ensuring local support and proper facilities to aid profitable business development.

Sincerely,

COMMUNITY ENTERPRISE DEVELOPMENT
CORPORATION OF ALASKA

Alfred R Ketzler

ALFRED R. KETZLER
Executive Director

ARK:kra

Arthur Ronald Hauber
Attorney At Law
P.O. Box 2782
Anchorage, Alaska 99510
(907) 694-3983

February 20, 1980

The Honorable Bill Sumner
Alaska State Senator
Chairman, Senate Resources Committee
Pouch V
Juneau, AK 99811

Dear Senator Sumner:

Thanks very much for your letter of February 6 and your invitation to attend the hearings on SCR 41 in Anchorage. Unfortunately, all of my efforts at setting the morning aside for that activity were in vain due to a number of matters which my clients classified as emergencies.

I have, in fact, reviewed Senate Concurrent Resolution No. 41 in detail. The proposal is, in my view, worthy of the Committee's attention and of its support.

Any critique will have to come from someone other than myself. I find it most difficult to find any problems with the Resolution at all. Perhaps my only change would be to underline numbered paragraphs (5) and (6) on page 3 as being particularly germane to the infrastructure and support systems -- such as the transportation system -- upon which new enterprises will depend for their long term existence. You are undoubtedly aware of the enormous economic hardship suffered by the Alaskan motor carrier industry in the last few years and the continuing losses which the railroad has suffered. While no single factor is the sole cause of the sundry liquidations, insolvencies, and bankruptcies, high costs of operation, poor management planning, and a dramatic diminution of traffic all were contributing factors. But, perhaps the most compelling force of all has been the widespread inadequate capitalization of these enterprises. While a few firms are beginning to emerge with substantial financial strength, the battle is far from over in this arena of essential support services and the State's efforts, both financial and regulatory, are essential to the maintenance and growth of a sound and stable system.

If the Legislature follows the light that has been illuminated by your Committee's Resolution, this will be an extraordinary session, indeed.

Respectfully,

Arthur R. Hauber

ARH:ag

PENINSULA SAVINGS AND LOAN ASSOCIATION

Eddie J. Turner
President
and Managing Officer

February 19, 1980

The Honorable Bill Sumner
Senate Committee on Resources
Pouch V
State Capital
Juneau, Alaska 99811

RE: SCR 41 - A state policy for economic development
Senate Bill No. 294

Dear Senator Sumner:

It was with regret that my schedule prevented attendance to the public testimony on Friday, February 15th in Anchorage.

SCR 41 is a very sound and basic policy which could benefit all of the residents of Alaska and enhance the development of our natural resources. I therefore support this resolution.

While the Susitna River hydroelectric project is outside my area of expertise, it is my opinion that the state as a whole will greatly benefit from such a project. The ever increasing need for energy demands that alternative sources be developed. Costs continue to soar, therefore it would appear such a project should be pursued with the greatest expediency.

The state presently has the fortunate opportunity to promote, through skillful leadership and proper funding, the beginning of a new era in the development of our abundant resources. It is always my pleasure to provide any input which might prove beneficial to these goals.

Sincerely,

Eddie J. Turner

EJT/jt

cc: Senator Colletta
Senator Hackney
File

Pouch 1000
Soldotna, Alaska 99669
907/262-9166
Blazy Mall — Sterling Highway

Testimony of

K. E. Showalter, Director Alaska Government Affairs

SOHIO ALASKA PETROLEUM COMPANY

Before the Senate Resources Committee

Anchorage, Alaska

February 15, 1980

Mr. Chairman and Committee members:

I am K. E. Showalter, Director Alaska Government Affairs for Sohio Alaska Petroleum Company.

Thank you for this opportunity to comment on Senate Concurrent Resolution No. 41. It is very encouraging to Sohio to read a proposed resolution such as this that actually is aimed at improving the business climate in Alaska. We heartily endorse your efforts.

We agree totally with the whereas clauses in this resolution. After studying the resolve clauses we had the impression that this resolution was only aimed at future businesses and did not seem to apply to the oil and gas exploration, production and transportation industries. Perhaps this was an oversight in your zeal to encourage new industries and that is understandable.

On the assumption that it was in fact an oversight, we have taken the liberty of adding several phrases and deleting a few words that we believe will improve the resolution and make it more all encompassing.

I have asked that a copy of our re-written version of SCR 41 be passed to each of you. You will note that we have simply re-written it as we are recommending, rather than offering several amendments.

With your indulgence I will go over our suggested changes and comment briefly on them.

(1) We have added to the end of resolve #1 the phrase "by building on its present economic base and encouraging new activities that are economically feasible." This will make it clear that you are encouraging existing businesses as well as new ones and indicates also that you want viable projects.

(2) The second resolve seemed to indicate that any group of local citizens, no matter how small, could stop a project that was of overriding importance to statewide concern. We have struck the words "wanted by" and replaced them with the phrase "undertaken after careful consideration of the views of". This assures that local concerns will be carefully considered in the balanced decision that a state administrator must make.

(3) We have added the phrase "adds to and where possible" at the beginning of this clause. We are all in favor of diversifying the State's revenues but believe that the resolution should allow for encouragement of those developments that may not, in fact, diversify revenues, such as oil and gas development.

(5) We have added after "effect" the phrase "where applicable and economicall feasible". As this clause was originally written it seemed to preclude developments that did not enhance power and energy availability and there may be many desirable developments that will be net users of power or energy. Our rewrite is not all that good and perhaps the committee can think of a better way to express the thought.

(6) We are overwhelmingly in favor of resolve #6.

(7) At the end of resolve #7 we have added the phrase "where economically feasible and in the state's best interest." We believe there could be many circumstances where a reguirement to process all of the state's royalty share of a resource within the state would in fact prevent the development of the resouce. No doubt there will be many others where it is possible.

Further resolves:

(1) The words "both existing and potential" have been added after the work "industries" to make it clear that expansion of existing industries is recognized as responsible economic development.

(2) After "aid" we have added the words "present and" to again include present industries. At the end after "evaluation" we have added a clarifying phrase "of new projects."

(3) We suggest that you strike the words "the many" and replace with the word "any" so as to make it all inclusive. After Federal we have added "and the state" to recognize that realistically there are many constraints to development in state laws and regulations and, contrary to the rhetoric, they are being added to on a daily basis.

(4) The wording has been changed to again include present and future basic industries.

(5) Here, after "areas" we have added "of the country" to indicate that the prime requirement is to compete within the U.S. where, from a practical political standpoint most markets for Alaska's resources will exist. After "tax incentives to" we have added "retain current industries and"; also we have replaced "various" with "future". This resolve is most important and has seldom been recognized here in the past. It would be a very positive signal to investors.

(7) We understand the objective of the "fixed price" language but are very apprehensive that this could result in unnecessary huge losses of recenue to the state. Our experience would indicate that no one has a good enough crystal ball to make long term, fixed price contracts that work fairly for both parties over the years. We suggest the word fixed be replaced by the phrase "competitive or most favored nation." This will signal that the state wants to be fair and will not let their buyer be undercut by a competitor who is getting a better price. It will also show that you want a reasonable price for your resources and will not subsidize uneconomic development.

Sohio applauds your efforts in fashioning this resolution. We believe our suggested changes retain the basic purpose and thrust while making it clear that current industries as well as new ones are to be encouraged.

We urge the passage of SCR 41 with amendments.

Thank you.

TESTIMONY OF

CHARLES F. BECKER

ECONOMIC DEVELOPMENT DIRECTOR

MUNICIPALITY OF ANCHORAGE

BEFORE THE SENATE RESOURCES COMMITTEE

ANCHORAGE, ALASKA

FEBRUARY 15, 1980

Mr. Chairman:

I am Chuck Becker, Economic Development Director for the Municipality of Anchorage. My position was created last year as a demonstration of Anchorage's commitment to planned and sustained economic development strategies and initiatives. Mayor Sullivan extends his personal regards to each of you and regrets he cannot be here personally.

It is a privilege to be here today to present the position of the Municipality of Anchorage on the Senate Concurrent Resolution Number 41, which would adopt a state policy on economic development.

We applaud this articulation of economic development policy by the State Legislature. The importance of conveying a clear and consistent statement of policy to Alaska's business community and to corporate offices throughout the United States cannot be underestimated. Consistent policy, consistent laws and consistent regulations are crucial if the State of Alaska is to retain our existing economic base and to expand that base. Business leaders and industrial leaders go to locations in which they are wanted. Throughout the country those places which are successful in retaining and attracting business and industry demonstrate governmental stability, a positive public attitude, a positive private sector attitude, in addition to having the social and cultural amenities which are contributory to a high standard of the quality of life.

Alaska has great potential for a healthy, vibrant economy. Your efforts to enact SCR 41 will be most beneficial in establishing the fertile soil for the seeds of healthy economic development.

Our specific observations on SCR 41 are as follows:

1. We would encourage you to modify the language slightly to focus more on the existing Alaskan entrepeneurs and industries currently

doing business within the State of Alaska.

2. In any community, vocal opposition will develop over proposed modifications to the status quo. These views must be encouraged, must be heard and must be carefully considered. If, however, public decision-makers conclude that the public good is best served by approving such modifications, those public officials must be free to act in accordance with their conclusions. We suggest that the second resolve clause be modified to reflect this observation.
3. Economic feasibility must be considered in each policy statement.
4. No statement should be contrary to that which is in the best interests of the State of Alaska and its citizens.
5. Although we in Alaska know all too well the impediments to a thriving economy which have been created by the federal government, we must always search for and rectify any similar impediments created by actions of the State or its political subdivisions.
6. Providing in state processors with a "fixed price" guarantee on our resources throughout the amortization period, could prove to be detrimental to the interests of the State. To be certain we should provide assurances of fairness and competitiveness. However a fixed price guarantee could prove detrimental to the State's best interest in the long term.

It may be inappropriate in this forum to offer comments not specifically germaine to the provisions of SCR 41, Mr. Chairman, and I will defer to your wishes on this matter, I do however, have some brief observations on the economic development structure of the State government along with similar observations on State government activities which I am prepared to offer at this time.

Addendum

First, the Municipality of Anchorage would encourage a reorganization of the State government's economic development structure. We would specifically wish a separation of the Department of Commerce which has certain regulatory functions potentially incompatible with efforts to establish a positive climate for development from that of the Economic Development operation.

Secondly, we would advocate elevating the Economic Development operation to a Departmental status.

Third, we would urge the consolidation of the various economic development activities presently scattered throughout several Departments, into the newly created Department of Economic Development.

Finally, we advocate the establishment of a formal mechanism for intergovernmental involvement in the economic development planning and implementation process.

Thank you for this opportunity to express the observations of the Municipality of Anchorage regarding economic development in Alaska.

draft 2-7-80
Harold Bronson
2/15/80

Alaska's destiny lies in its unique potentials and circumstances, not in attempting to emerge in the patterns applicable elsewhere under very different conditions.

Alaska's primary assets and potentials for support of an economically healthy society are: oil and gas; fishing; hard rock minerals; timber; tourism. Due to climate, related limitations and other adverse conditions, the agricultural industry has a very limited commercial potential.

Individual family farming, with the purpose of full or partial self support, has a substantial potential for social benefits as great or greater than for economic impact.

The successful development of our various potentials will take place as the economics of production make output competitive on the market, that is, when the price is enough to pay costs of production plus taxes and an acceptable profit.

Alaska is so much in the imagination of the beholder that we get diverted from reality by illusions expressed in slogans such as - diversify the economy; in-state processing; produce for our own consumption; develop agriculture; we are reaching "critical mass", meaning enough people for self generating expansion, primarily in production for internal consumption.

The reasons for little progress in these directions are based in competitive disadvantages starting with our being the highest cost area in the United States for living and doing business, and the distance from supplies and to markets.

There are obvious inherent economic advantages in the great diversified industrial and consumer products producing areas among the other states that bear on our potentials for competitive diversified production, both for export and local consumption. Items: mild climate; lower living costs; lower labor costs; inexpensive

transportation from supply sources and to consumer markets; the economy of size and the huge production volumes which in turn permit application of the most advanced technologies.

Some significant disadvantages relative to Outside, and which can be changed only very little or not at all, result in our importing almost all of what we consume and use, - autos, tires, hardware, appliances, furniture, pampers, soap, guns, ammunition, clothing, plastic products and all the thousands of other things people buy.

The effect is, of course, the handicap of fewer jobs available relative to total population than if we were in a more normal setting of diversified production and extensive trade among various areas specializing in activities in which they hold particular advantages. As a consequence unemployment tends chronically to be somewhat higher than it otherwise would be.

It is because of economics that almost a half century after President Roosevelt established the Matanuska Valley colony to give new hope to the impoverished of the Mid-west that we have only about 400,000 people - and that number after statehood and the biggest boom in our history.

And the small number of people, 23 years after the discovery of oil, is testimony to the fact that our destiny is primarily in producing and exploiting our resources, but not in attempting to force labor intensive activities that must make a profit primarily from the labor of workers rather than from invested capital.

In general terms this means, for example, producing logs, not furniture; fish but probably not consumer-ready fish sticks; copper ingots but not copper utensils; bulk products from crude oil but not sewing machine oil. The potentials for petro-

chemicals production are being pursued vigorously. The hope is that it will be economically competitive to operate the successive stages of processing to include various finished products. The successive stages become progressively more labor intensive, with perhaps some adverse economic features in packaging and transportation also. The more complete the processing the more employment at our non-competitive wages. It may be no more likely that hundreds of plastic and other consumer products from a petro-chemical plant can be produced here profitably than that a refinery here will produce all the products that can be made out of a barrel of oil. "Process it here" and "diversify" are heard so often in connection with oil and gas, and as to other resources to some extent, that many people believe extensive processing - manufacturing enterprises employing perhaps tens of thousands of people are in prospect. Such a conclusion is overly optimistic. What is done here depends on the difference between the cost of producing and shipping from here the consumer products made from a resource and producing Outside from the base ingredients shipped from here - oil, copper ingot, log, for example.

Economic development to make jobs for full employment for Alaskans - others stay out - seems such a worthy goal that serious problems are often overlooked.

A U.S. Supreme Court decision prohibits discrimination in employment on the basis of length of residence. For this reason and practical considerations, too, all levels of government and private enterprise employ without regard to how long here - with very few deviations.

There is continuous stiff competition from"non-residents" among the spouses and others in the families on rotation here, military and civilian, for available jobs. From those on military duty there is a continuing trickle of persons taking discharge or retirement here and going into employment, usually already lined up, because "Ijust like Alaska", or - "I can make more here".

Families on term duty here, military or civilian, are the stimulus for relatives and friends from Outside to come and visit. From among these there are a few who like what they see and want to live here.

From among employers and supervisors there is a little"recruiting" continuously to fill up-coming job openings from among relatives and close friends Outside who would like to spend a while here-or longer.

A considerable number of university students come here for summer work, often for more than one season, and seem to fare well. A few of these are taking into account, in the courses they are studying, qualifying for positions with the state or corporations here, on graduating.

Independently of all the foregoing, the lure of Alaska brings a constant, rotating stream of Outsiders who are looking for a different life or a greener pasture, or just the hoped-for higher earnings for a while, than the pay available Outside. Some look and leave after a few weeks, others get short-term jobs and may be shaky as to staying, still others work their way in to stay indefinitely. Many are vigorous, competitive seekers and will also "take anything" to get a toe-hold.

The somewhat unusual circumstances that bring Outsiders into competition for jobs here, plus the prohibition against discrimnation on the basis of residence, are partly responsible for the chronically high unemployment count. An often overlooked fact, demonstrated by experience, is that no matter how many people are employed by some new enterprise and accompanying general increase in level of economic activity, the unemployment count goes down temporarily, if at all, but soon resumes the characteristically high level. Even during the oil pipeline boom there was a high unemployment count. No matter what we said the Outsiders came - looking for the bonanza.

Economic development to make jobs for full employment for Alaskans - others stay out - is an unattainable goal. A program with the aim of carrying out this purpose is, instead, an endless process: an enterprise employs unemployed; this stimulates as many or more job seekers; more enterprise to employ the unemployed, then more people replenishing the pool of job seekers - and so on.

Whatever the intent, the effect is population growth, not a plateau of full employment.

This isn't a growth - no-growth issue. It concerns the erroneous proposition that subsidizing an enterprise that isn't viable on its own is nevertheless good business as it will employ unemployed "Alaskans" and reduce the pool of job seekers.

The unproductive outcome is compounded by the deficiency between normal state tax revenue and state expenditure - about $2,500 per person per year. Thus for every 1000 who may be added to the population by artificial stimulation of economic activity will cost the state $2,500,000 more out of oil income, in addition to whatever subsidies are paid out to "buy" the otherwise submarginal economic activity which triggers the additional 1000 people.

My name if PAM SMITH. I am Personnel Manager for Parker Drilling Company and an officer of the Alaska Support Industry Alliance. In my position as a Personnel Manager I have learned to appreciate the necessity of an estarlished development policy for the State. I have witnessed the benefits individual Alaskans realize from development and the frustration they endure due to the uncertainty many development projects face. I commend the sponsors of SCR 41 and agree that a well-planned development policy will benefit all Alaskans.

This resolution urges that we use our human and natural resources in an effective manner; that we take advantage of the opportunities afforded by our abundant resources, and use its powers as a catalyst for responsible economic development. To accomplish these goals the resolution outlines two key objectives:

1) To identify and resolve constraints to economic development;
2) Adopt various economic development incentives including tax incentives.

When we talk of constpaints and incentives as they pelate to economic development the question of Taxation is for many of us the first thing that comes to mind. We ask ourselves, "What is the purpose of taxation" and "is that purpose being served in Alaska today?"

I WOULD LIKE TO SHARE WITH YOU THE COMMENTS OF TWO INDIVIDUALS AND TWO ORGANIZATIONS WHICH CAN BE CONSIDERED COMPETENT ON MATTERS OF TAXATION.

FIRST: LET US CONSIDER THE FINDINGS OF THE ANCHORAGE ECONOMIC DEVELOPMENT COMMISSION.

"THE HIGH COST OF DOING BUSINESS IN ALASKS RANKS MANY TYPES OF INVESTMENTS MARGINAL. IN THIS CASE, INVESTMENT DECISIONS MAY HINGE ON THE POLITICAL ENVIRONMENT. TAXATION AND ENVIRONMENTAL POLICIES AT ALL LEVELS MILITATE AGAINST AN INVESTMENT DECISION. WHILE ALASKA MUST PROTECT ITSELF AGAINST PREDATORY OR UNSCUND INVESTMENTS, IT MUST STRIKE A RALANCE WHICH WILL ENCOURAGE INVESTMENT IN A LOCALITY THAT HAS GREATER ECONOMIC RISKS."

AND NOW A COMMENT MADE BY JUANITA KREPS, WHILE SERVING AS SECRETARY OF COMMERCE:

"AMERICA MUST BEGIN CUTTING BUSINESS TAXES TO ENCOURAGE THE MODERNIZATION OF INDUSTRIAL CAPACITY. INDUSTRIAL INNOVATION IS A MAJOR POLICY FRONTIER OF THE 1980'S. BUSINESS AND GOVERNMENT MUST WORK TOGETHER TO EXPAND THE FRONTIER IF AMERICAN INDUSTRY IS TO COMPETE WORLDWIDE IN THE DECADE AHEAD."

TOM WILLIAMS, ALASKA'S COMMISSIONER OF REVENUE HAS STATED:

"WHAT THE OIL INDUSTRY REGARDS AS ORDINARY RESTRAINTS ON THE

LEVEL OF TAXATION--SUCH AS ONE'S TAX BURDEN IN COMPARISION TO THAT OF THE OTHER STATES, OR A STATE'S CURRENT REVENUE REQUIREMENTS--MAY SEEM TO HAVE BEEN IGNORED OR EVEN DELIBEPATELY REJECTED IN RECENT YEARS. TO OFFSET THIS IMPRESSION AND TO ENSURE A FUTURE BASED ON REASONED DEVELOPMENT, A REASSURING PERIOD OF TAX STABILITY APPEARS TO BE IN ORDER."

FINALLY, I INVITE YOU TO HEAR THE OBSERVATIONS OF MERRILL LYNCH WHITE WELD IN A REPORT DONE FOR THE STATE LEGISLATURE:

"WHILE MANY OF THE CONDITIONS NATIVE TO OPERATION IN ALASKA ARE DISADVANTAGEOUS, CURRENTLY PERHAPS THE MOST OPPRESSIVE IS THE TAX CLIMATE. EFFECTIVE TAX RATES PRIOR TO THE PRUDHOE BAY DISCOVERY WERE THE LOWEST OF THE MAJOR OIL PRODUCING STATES, AND IN LITTLE MORE THAN A DECADE THEY HAVE RISEN TO BE THE HIGHEST. OIL TAXES ARE ESTIMATED TO HAVE INCREASED SOME 900% OVERALL DURING THIS PERIOD. THE RAPIDITY AND CONSTANCY OF CHANGES IN THE TAX LAW HAVE HELPED TO CREATE AN ATMOSPHERE OF INSTABILITY AND TRIGGERED A GUN-SHY ATTITUDE AMONG PRESENT AND POTENTIAL INVESTORS ALIKE."

THANK YOU FOR LISTENING TO THESE COMMENTS. I THINK THEY HELP TO DEVELOP SOME PERSPECTIVE. NOW I WOULD LIKE TO RECONSIDER THE GOALS OF THE RESOLUTION THAT WE OUTLINED A FEW MOMENTS AGO:

1) USE OUR HUMAN AND NATURAL RESOURCES EFFECTIVELY;
2) TAKE ADVANTAGE OF OUR RESOURCES AND USE THE POWER OF THOSE RESOURCES AS A CATALYST FOR DEVELOPMENT.

TO ACCOMPLISH THESE GOALS, THE RESOLUTION RECOMMENDS THAT WE:

1) IDENTIFY AND RESOLVE CONSTRAINTS; AND
2) DEVELOP INCENTIVES.

IN EXAMINING THE MATTER OF TAXATION, I THINK WE IDENTIFY A MAJOR CONSTRAINT. A CHANGE IN STATE TAX POLICY WOULD RESOLVE THAT CONSTRAINT AND SERVE AS A GREAT INCENTIVE.

IF WE ARE TO CONSIDER MAJOR CHANGES IN STATE TAX POLICY WE ARRIVE BACK TO OUR EARLIER QUESTIONS, "WHAT IS THE PURPOSE OF TAXATION/" AND "IS THAT PURPOSE BEING SERVED IN ALASKA TODAY?"

I BELIEVE THAT THE PURPOSE OF TAXATION IS TO PROVIDE FOR THE NECESSARY SERVICES OF GOVERNMENT. THE FACT THAT OUR ABUNDANT RESOURCES PROVIDE FOR THESE SERVICES OF GOVERNMENT BEFORE THE IMPOSITION OF INCOME TAXES, LEADS ME TO BELIEVE THAT THE PURPOSE OF TAXATION IS NOT BEING SERVED.

WHO BENEFITS FROM THE BURDEN OF TAXATION? WE FRIGHTEN OFF INVESTORS, DEPRIVE BUSINESSES OF REVENUES THEY NEED TO OPERATE AND EXPAND, AND THE JOBS THAT COULD HAVE BEEN NEVER HAPPEN.

IF THE INDIVIDUAL ALASKAN BENEFITS FROM THESE ADDITIONAL TAXES, HE HIS NOT CONVINCED. OVER TWENTY THOUSAND ALASKANS HAVE SIGNED A PETITION INDICATING THAT THEY, TOO, QUESTION THE LEGITIMACY OF OUR CURRENT TAX POLICIES.

THE FACT THAT YOU HAVE TAKEN THE TIME TO CONVENE THIS HEARING IS COMFORTING EVIDENCE OF YOUR AWARENESS AND YOUR CONCERN OVER OUR FUTURE. I HOPE YOU WILL AGREE THAT WE CAN IDENTIFY TAXATION AS ONE OF THE CONSTRAINTS TO ECONOMIC DEVELOPMENT. I URGE YOU TO CONSIDER MAJOR TAX CHANGES AS ONE METHOD FOR RESOLVING THAT CONSTRAINT AND PROVIDING INCENTIVES FOR DEVELOPMENT. THE ABUNDANCE OF OUR RESOURCES OFFERS US THE OPPORTUNITY FOR SUCH ACTION AND I AM HAPPY TO REPORT THAT SOME OF OUR LEGISLATORS HAVE ALREADY RECOGNIZED THIS FACT. THEY HAVE TAKEN EFFECTIVE ACTION BY INTRODUCING HOUSE BILL 554 WHICH WOULD REPEAL PERSONAL, CORPORATE, AND OIL AND GAS CORPORATE INCOME TAXES. HOUSE BILL 554 WILL GO A LONG WAY IN ACHIEVING THE GOALS AND OBJECTIVES SET FORTH IN SCR 41. I URGE YOU TO SUPPORT THE HOUSE BILL 554.

THANK YOU.

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SCR 41 suggestions:

Kelly Waller of Tanana Chiefs Conference

page 1, lines 7 to 10 include also insuring protection of environment and lifestyles of rural Alaska

~~page 2, line 27~~

page 2, line 1 suggests definition of local citizens

Harold Pomeroy

page 2, lines 7 - 9 questions what is intended by the statements

page 2, lines 13-16 not economically practical

page 3, lines 8 - 10, can't justify a subsidy to establish a competitive postion

Dave Harbour

page 3, lines 8 - 10 suggests to accomplish this that the state compare its investment climate to other states

~~xhexxesxixixexdexxxe~~

Ken Showalter

written suggestions

Paula Easley Resource Development Council

page 2, line 17 add after "state" under the direction of the Department of Commerce and Economic Development

page 2, lines 1 - 2, unanimously opposed to present wording and support Showalter's suggestions

page 2, lines 7 - 9, is a problem of defining "excess" -- something that is excessive now, may be good on a long term basis

page 2 lines 10 - 11, concerned that an industry that is energy intensive may be discouraged

page 2, lines 13-16 eliminate the minimum requirement

page 3, lines 1-4, suggested adopt Showalter's suggestions

page 3, lines 14-17, questioned if this means that the royalty could be sold for less than the market price if is shown that such a sale would be beneficial to Alaskans

Knowalski's Suggested Changes

IN THE SENATE

SENATE CONCURRENT RESOLUTION NO. 41

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

Adopting a state policy for economic development.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the State of Alaska firmly supports and encourages responsible economic development that will develop, strengthen and diversity its economic base by utilizing its human and natural resources in an effective manner; and

WHEREAS the use of the manifold natural resources of Alaska which most benefits Alaskans is for development of jobs in the state with expansion and diversification of the state's economic base through processing the resources in the state to the maximum about feasible; and

WHEREAS adoption of an economic development policy that clearly expresses the state goals of achieving a sound, healthy and growing economy for Alaska would clearly communicate to the business community the basis on which the state encourages responsible investors; and

WHEREAS a clearly communicated economic development policy would aid in establishing a sound working relationship with industry so that investors will be encouraged to develop further economic opportunities within the state that can proceed in the common interest of the state and the investors;

BE IT RESOLVED that the Alaska State Legislature adopts the following policy which is intended to clearly communicate to the business community the basis on which the state encourages responsible investors to come to Alaska and determine if various industrial projects are in our common interest; the

state should encourage economic development that

(1) offers long-term benefits and increased employment to Alaskans through strengthening and diversification of the state's economy [by building on its present economic base and encouraging new activities that are economically feasible;]

(2) is environmentally sound and is [undertaken after careful consideration of the views of] local citizens most impacted by the development;

(3) [adds to and where possible] diversifies the state's revenue, increases average personal income and reduces the cost of living by creating economic activity in economic sectors that do not presently exist or are not presently fully developed:

(4) has a positive effect on the revenue needs and fiscal conditions of the state and local communities and does not impose additional governmental costs in excess of this positive effect;

(5) has a positive effect [where applicable and economically feasible] on power and energy availability for present and future needs;

(6) promotes tax and revenue stability within the state;

(7) processes in the state a maximum feasible amount of any natural resource derived in the state with, as a minimum, processing in the state of that amount of any resource derived in the state equal to the state's royalty share of that resource [where economically feasible and in the state's best interest;] and be it

FURTHER RESOLVED that the state should actively undertake activities to attract investment within these criteria to take advantage of the investment opportunities afforded by Alaska's abundant resources, and use its powers and resources as a catalyst for responsible economic development of the state in

the interests of its citizens; the state should

(1) be aware of the many advantages and disadvantages to the state that will result from the development of various industries (6) both existing and potential and, through its various agencies, identify and evaluate these factors and make information available to investors and to governmental officials to aid in their evaluation of potential industrial projects;

(2) provide necessary leadership to aid (7) present and potential investors to acquire or develop necessary information which is unique to the state and required for their evaluation of new projects;

(3) with cooperation from investors, seek to identify any constraints (8) to economic development of the state imposed by the federal and the state government and to work with the federal government through the state congressional delegation and with the appropriate state departments to resolve the problems created by these constraints;

(4) identify how the economy will change as a result of normal growth (9) and evolution of present and possible future basic industries and evaluate proposals based on the criteria adopted;

(5) establish a competitive position with other areas (10) of the country seeking to attract economic development and adopt various economic development incentives including tax incentives to retain current industries and attract future industries;

(6) provide necessary assistance to responsible investors to aid in the determination of whether proposed development is in the interest of the investor and the state;

(7) provide a stable economic environment by sale of natural (11) resources owned by the state to processors of the resource at a competitive

or "most favored nation" price for a period necessary for amortization of capital investment by the processor.

Resource Development Council for Alaska, Inc.

RESOURCE REVIEW

BOX 516 ANCHORAGE, ALASKA 99510 MARCH/APRIL 1980

DATES FIRM FOR ANNUAL MEETING & TALKEETNA TRAIN TRIP April 25 and May 17

Ronald A. Zumbrun, President of the Pacific Legal Foundation, Sacramento, California, will be guest speaker at the Resource Development Council's Annual Meeting Luncheon on **Friday, April 25.**

The Luncheon will be held at the Sheraton Anchorage Hotel at 12 noon following a meeting of the state board of directors. The board will study and adopt policy guidelines for the coming fiscal year and hold elections.

The Alaska Liaison Office of the Pacific Legal Foundation is now open in RDC's building at 444 West 7th, Anchorage, telephone 907-278-1731. Among other subjects, Zumbrun will explain how Alaskans can take advantage of PLF's services through the liaison office.

May **17** is the final, absolute, unchangeable, definite date for the Council's annual fundraising charter train trip.

Talkeetna is the destination, where Alaska Miners Day will be celebrated, and guests are invited to come in Gold Rush costumes.

Folks from the Talkeetna Chamber are rolling out the gold carpet as part of their tourism promotion effort. An exciting array of activities is planned from a camp cookout and squaredancing to a championship softball game. Participants may even have a chance to view the antics of the Talkeetna Royal Air Force.

This year the charter is being limited to 400 paid passengers rather than the previous 600. A word of warning: Get your reservations in before publicity is released. Reservations are being guaranteed only with payment.

ALASKA DELEGATION VISITS PORT ANGELES

At the request of the Port Angeles Chamber of Commerce, a group of Alaskans met in Port Angeles, Washington in late February to discuss oil development impact in Alaska.

The request was stimulated by President Carter's selection of the Northern Tier pipeline project which would require a marine oil terminal in Port Angeles.

Anchorage Mayor George Sullivan, Kenai Mayor Vince O'Reilly, Valdez Mayor Pro-tem Chuck LaPage and RDC President Bud Dye led the delegation. Others participating were John Spencer of the Anchorage Municipality, Robert Childers, President of the Valdez Chamber of Commerce, Paula Easley, RDC executive director, Mano Frey of Laborers Local 341 and RDC past-president Robert Fleming.

The group was asked to provide Port Angeles citizens answers to a number of specific questions such as:

--change in character of the three cities represented after construction of oil facilities;

--economic changes in the communities;

--were local businesses able to take advantage of the development, and what could be done to maximize such participation:

--what has been the experience with regard to air and water quality degradation;

--specific data concerning tanker and harbor regulations, air emissions control and oil spill measurement and cleanup procedures.

Members of the delegation spent considerable time preparing material for the community and were well-prepared for the barrage of questions presented in a series of public and private meetings.

Timber is a substantial element of the Port Angeles economy; the community has had no experience with oil development and, among its concerns, was alarmed with fears of air and water quality degradation.

Those fears were somewhat allayed by statistics given by the group. In one public meeting, visible relief was noted at the comment that the Valdez

Continued next page

Coast Guard had given up measuring air emissions after two years of getting zero readings. Emissions are still measured by two other agencies.

Valdez Chamber President Childers gave the manager of ITT Rayonier heartburn when he observed that Valdez had never seen anything like the emissions coming from the Port Angeles pulp mills. Pulp mill operators are justifiably worried that any increase in overall emissions will result in expensive plant modifications imposed by the Environmental Protection Agency.

RDC President Dye told citizens the Council had long sought alternatives to shipping Alaskan oil through the Panama Canal and that construction of the line would hopefully encourage greater interest in Alaskan oil and gas exploration.

Outcome of the meetings and lively discussions was that local citizens and Northern Tier Pipeline Co. have begun "talking to each other."

FOLEY RARE II RELEASE BILL GAINING MOMENTUM

HR 6070 could be one of the most important pieces of land legislation of the 96th Congress. It reaffirms the President's decisions on the Forest Service Roadless Area Review and Evaluation Study of lands administered by the Department of Agriculture by requiring that the 36 million acres recommended by him for non-wilderness continue to be managed for non-wilderness multiple use in accordance with the Forest and Rangeland Renewable Resources Planning Act of 1974(RPA) as amended.

It sets a deadline of January 1, 1984 for Congress to act on the 15.4 million acres the President recommended for wilderness. If Congress does not designate the land as wilderness by that date it will be managed for non-wilderness multiple use in accordance with RPA.

Congress would have until January 1, 1987 to act on "further study" land which the Administration recommends for Wilderness between now and January 1, 1985. If at any time the Secretary of Agriculture determines that any of the land is not to be recommended for wilderness designation, that land immediately will be managed for non-wilderness multiple use.

Some current primitive areas were included in the RARE II study. The President recommended that some of these be returned to non-wilderness multiple use. HR 6070 directs release of this land for non-wilderness multiple use upon its enactment.

Just a few of the organizations backing HR 6070 are the National Cattlemen's Association, the American Petroleum Institute, the National Association of Manufacturers, the National Forest Products Association, the Brotherhood of Carpenters and Joiners and the National Grange.

RDC will assist Alaskan organizations wishing to research the legislation, take action and convey it to Congress.

RDC CELEBRATES FIFTH ANNIVERSARY

April 10 is the fifth anniversary of the Resource Development Council. Three of those years the Council operated under the name Organization for the Management of Alaska's Resources, or OMAR, as it was usually called.

The fifth anniversary kicks off a drive to raise the Council's membership to 10,000 this year. To accomplish this, a $5 membership raffle will be held during the period April 10 through May 16.

Persons buying the $5 memberships also get a chance on valuable gold and silver bars. Drawing for the ingots will take place on May 17 in Talkeetna, destination of the charter train trip. Ticket holders need not be present to win.

Orders for membership/raffle tickets are being taken by phone at 278-9615 and are available in books of ten on April 10.

The $5 memberships will be supporting in nature, and membership cards will be kept on file by city of residence. There may be occasions when these members will be contacted for Red Alerts otherwise their names will not appear on the Resource Review or other mailing lists. Postage and printing costs prohibit such communication.

PROPAGANDA MILL ON 24-HOUR SHIFT

The Spokane **Spokesman-Review** reprinted an editorial from **The Oregonian** this February which shows how much the author knows about Alaskan agriculture.

The editorial focused on the loss of cropland to "urban sprawlers and other farm predators," and stated that when grazing, pastures and forested lands were subtracted, the nation's bank of crop lands contained only 196,397,000 acres. (Only?) Last year the President's Council on Environmental Quality reported that the nation lost 3 million acres of farmland, including a million acres of prime crop lands, to development.

Alaska's Matanuska Valley was cited as a "tragic example of the misuse of land," with the valley being "gobbled up by sprawl spreading out from Anchorage like a giant oil slick."

"Protected by high mountains from the extremes of the climate, Matanuska Valley is virtually the only land in Alaska where it is possible to do much farming during the state's short growing season. Food that could have been raised in this fertile river valley must now be imported at great cost and expenditure of energy from the lower 48 states," the editorial added.

Members of RDC's Forestry and Agriculture Division are responding to the editorial, pointing out the real reasons food is imported and that the

Matanuska Valley consists of only 500,000 acres of tillable land of a total 20 million acres suitable for farming in the state.

Perhaps the author might go to bat for Alaskans to get more land out of government control and into private ownership to reduce the strain on nearby agricultural lands.

NOTABLE QUOTES

– ON TAX REPEAL –

"It boggles the mind that our elected officials are not jumping on the income tax repeal bandwagon right and left."

—Former state representative Lisa Rudd

(The income tax) repeal should be "retroactive to Jan. 1, 1979, so the taxpayers will at least receive parity with his or her representative. Remember, their pay raise is retroactive to Jan. 1, 1979."

– Larry A. Barnes, Anchorage

"It may be, as Mr. Hayes says, that most of the legislators are not on the road to tax repeal. It may well be that they are not on the road to re-election, either."

– Anchorage Times editorial

The government doesn't want to lose control of the gold, says a state legislator. State government's concept of the Golden Rule is "He who controls the gold makes the rules."

-- State Representative Dick Randolph

Referring to the 47% pay increases voted to legislators: "We are looking for 47% more effort down here."

– member of Citizen Delegation to Juneau lobbying for economic relief for Mat-Su Borough

"Alaska is where the environmental action is, where it is likely to be for a number of years. Alaska certainly is high on the Club's list of priorities, and there are great battles to be waged and victories to be won there. I think the Legal Defense Fund can rightfully claim that many of the victories won in Alaska are due to our efforts."

". . . We're devoting our resources to legal efforts in Alaska."

– Interview with Rick Sutherland, Director of the Sierra Club Legal Defense Fund

In explaining why Alaska must also develop support systems such as transportation and marketing as agriculture develops, the governor stated: "We must both lay the egg and hatch it simultaneously."

-- Governor Jay S. Hammond at the Second Annual Agricultural Symposium, Fairbanks

HEARTWARMING WORDS FROM MEMBERS

Tana Burrows of U.S. Borax's Public Affairs Department in Los Angeles called the Council recently and commended it for the quality of this publication, the **Resource Review.** Ms. Burrows said she had read many such news/information bulletins and found ours at the top of the list. We'd like to hear YOUR comments -- good or bad.

An executive director of another statewide group in Alaska passed on these good words: "The difference between your organization and a lot of others is that you spend considerable time informing your members of issues. I can always tell an RDC member by his knowledge of resource subjects, and this is important when you need action."

WORLD TRADE WEEK PROCLAIMED

The week of May 18 has been proclaimed by the President of the United States and the Mayor of Anchorage as World Trade Week, certainly an event of major significance to Alaskans.

The Mayor's proclamation asks business, agriculture, labor, education, government and individuals to promote the week's activities and "to increase awareness of the importance of world trade to our economy and relationships with other nations."

Over the past five years, participants in RDC's Thursday breakfast meetings have learned that for Alaska to realize its economic potential, it must more aggressively pursue expansion of international trade opportunities.

Last year's White House Conference on Export was attended by the Council's executive director and a host of members who said their eyes were opened to the problems and potentials for export development. Other members have studied RDC's reference files and now can discuss specific projects with a man well qualified on the subject: Jack Wilburn, Director of the International Trade Administration, U.S. Department of Commerce, Anchorage. Mr. Wilburn has been attending Council meetings since his arrival in Anchorage and will help anyone interested in developing resources for export.

Keep an eye open for World Trade Week events, and get involved!

SNAIL DARTER IS ALIVE AND WELL

Preservationists have opposed the Tennessee Valley Authority's (TVA) Tellico Dam on the grounds that a small fish, the snail darter, would be wiped out. According to the Wildlife Management Institute, **"TVA transplanted more than 700 of the small minnows from the Little Tennessee River project area to the Hiwassee River in 1975 and 1976."** TVA reports that **"those darters have multiplied and number around 2,500 now."**

(Continued next page)

The Institute goes on to say that there is "no consensus among fisheries scientists that the snail darter is a distinct species. One of those scientists recently stated that the fish was 'used' in a desparate effort to stop a public works project that should have been stopped for far more serious reasons." The Institute says the $130,000,000 million dollar dam is a waste of taxpayers' money.

ENVIRONMENTAL IMPACT STATEMENTS NEED ECONOMIC LOOK

The Interior Department intends to prepare environmental impact statements for proposals relating to the Alaska Peninsula, the Iliamna area and certain named rivers in Alaska.

John Katz, Special Counsel to Governor Hammond, commented on the Department's intentions in a recent letter to Bill Reffalt, Chief of the Alaska Native Claims section of the Fish and Wildlife Service in Washington, D.C.

Katz pointed out that the effects of particular land-use designations on the economy must be considered in any environmental impact statement. He wrote that the Department's notice of intent refers to "elements of the local economy." He maintained that "scrutiny should be expanded to include regional, statewide and national impacts." Restricting or prohibiting the use of resources "may have impacts which transcend local situations and we believe that a good environmental impact statement must assess these consequences."

Katz wrote that environmental impact statements "should consider the impact of any future federal land designation on state" and native and other private lands "which are located within or adjacent to" the federal land to be designated.

MINING ADVISORY COMMITTEE PROPOSED

Alaska Miners Association president J. P. Tangen has proposed a mining advisory committee and Lt. Governor Terry Miller has endorsed it and is working on funding. The committee would be made up of executives from departments of state government with an interest in mining. The committee would hear miners' problems and questions. Hopefully the committee members would gain more knowledge of mining in Alaska and communicate that knowledge to their departments.

IMPORTED LUMBER

The National Association of Home Builders (NAHB) reports that the United States imports almost one third of its lumber supply. The NAHB Builder newspaper blames the importation on government timber policies which restrict the amount of timber harvested in the national forest system to "far less than we are capable of harvesting."

And now... POND POWER!

Israeli scientists have developed a solar saltwater pond which can provide electricity year round, day and night, and even on cloudy days. A single pond, 70,000 square feet in area and eight feet deep can produce about 150 kilowatts. In Alaskan terms, this would be enough to supply eleven all-electric homes running at full capacity forever.

The pond's operating principle is basic. Sunlight warms the pond and creates convection currents. Warmer water rises and colder water falls. Salt is added near the bottom of the pond which creates a layer of denser water which resists rising to the top. A heat-exchanger system and turbogenerator harness the energy and turn it into electricity.

Although such ponds may never be a reality in Alaska, some Southern California companies are taking the research seriously. Southern California Edison is planning a five megawatt facility at the Salton Sea. Other areas under consideration are Utah's Great Salt Lake and sections of San Francisco Bay.

INFLATION

Sylvia Porter, columnist for the Anchorage Daily News, laments that "The marketbasket for which your parents or you paid $100 in '48 cost nearly $319 in December 1979."

She writes that there are no "real" federal anti-inflation policies. "Look back -- and you can see that we have failed to admit the challenge, much less to tackle it. Look forward – and you are warned that unless we act and act soon, our dollar is doomed to repeat the pattern of all paper currencies during more than 6,000 years of recorded history. This pattern is relentless erosion until the currency is extinct." "Why can't we, why don't we, concentrate on moves to raise our productivity, modernize our plants and equipment, restore faith in the fundamental stability of our economic system?"

COMMENTS ON FOREST PRACTICE REGS

Terry Brady, the president of Forests North, Ltd., and a consultant to RDC, testified on proposed timber and land use regulations at a recent Division of Forest, Land and Water Management hearing in Anchorage. Among the regulations on which he testified was one concerning negotiated sales. It "limits sales to 500 m.b.m. and one year duration. This section completely overlooks legislative action of two years ago that directed the Department of Natural Resources to make long term (up to 25 year) timber sales" under the conditions that there was underutilized sawmill capacity, underutilized resources and a high unemployment rate. Brady said that the regulation does not include initial volume guarantees. "This is unfortunate, for a logger today, to acquire the sophisticated har-

vesting equipment called for under environmental constraints needs to go to financial institutions with a known stumpage volume."

One proposed regulation would require logging firms to supply quarters for certain state personnel. Another regulation would indemnify logging firms who followed forest practice guidelines. Brady pointed out that these regulations would work hardship on the smaller logging firms. Small firms cannot afford to build and maintain quarters for state personnel.

One of the proposed regulations which received RDC's endorsement would require in-state primary manufacture if that primary manufacture were necessary to protect existing industry or to establish a new industry. Round logs should be exported only if such timber is surplus to current or officially projected statewide needs.

Commenting on the hearing itself, Brady made it clear that the time period between the announcement of the hearing and the hearing date was far too short. There was not enough time to do proper research to testify at the hearing. Notice of the hearing was received less than a week before it was held.

He pointed out that the Board of Forestry should have been asked to comment on the regulations before there was ever a hearing. The board was set up by the state to review proposed regulations and is composed of selected Alaskans who have interests in forest management. The Board, however, was not consulted.

U.S. SENATE WOULD LOCK UP IDAHO'S COBALT

The February Bulletin of the Northwest Mining Association (NWMA) reports that the Central Idaho Wilderness Act passed by the U.S. Senate in November included the richest known cobalt area in the United States. The area which the bill would place in wilderness is 2.3 million acres.

"We currently depend on foreign sources for cobalt, a strategic mineral used as an alloy in the manufacture of jet engines. There is no substitute. Forty-two percent of our cobalt comes from the unstable country of Zaire," NWMA said.

The bill, formerly known as the River of No Return Wilderness bill, was sponsored by Sen. Frank Church, D-Idaho. In early December, Sen. Church took the bill to the House Subcommittee on Public lands chaired by Congressman John Seiberling, D-Ohio. Miners are looking to Congressman Steve Symms, R-Idaho, for positive leadership in the subcommittee which has completed hearings and is ready to mark up the bill. According to Joe McAleer, chairman of the Central Idaho Wilderness ad hoc committee, if the bill passes the House in its present form, it will become the largest single area in the lower 48 ever to become wilderness.

The senate passed the bill in spite of testimony by NWMA and many others who pointed to the existence of old mineral districts and mining camps. The bill was passed in spite of known cobalt and other critical minerals. NWMA said the definition of wilderness as an area "untrammeled by man" was totally disregarded - most of this area has been thoroughly "trammeled." The bill even includes RARE II acreage recommended for **nonwilderness** by the administration.

FEDERAL OWNERSHIP OF THE OIL INDUSTRY

Nationalization of the oil industry, creation of a Federal Oil and Gas Company (FOGCO) and giving oil import authority to the federal government are current proposals for solving America's petroleum supply and price problems. However when these proposals are examined it becomes clear that the solutions are far worse than the problems they are meant to solve.

Nationalization would require compensation to stockholders of the oil companies. That compensation would be equal to one-quarter of the national debt, according to the American Petroleum Institute. A government operation would be subject to continual political interference. A government operation would operate much less efficiently than private companies. A Federal Energy Administration study of six U.S. private and six foreign government-operated oil companies found that the six private companies averaged 44.2 barrels of daily production per employee, compared to 6.6 barrels for the government companies. Finally, the federal government did not give the oil industry its assets and so has no right to take them away.

Those who propose a FOGCO maintain that it would permit greater public participation in energy production and provide a yardstick to measure the performance of private firms. Actually, taxpayers would have no more influence on FOGCO than they do on the U.S. Postal Service or on Amtrak. As for the "yardstick" argument, FOGCO would be given exemptions, preferences and privileges which would give a false measure of its performance and of the performance of private oil companies compared to it. As with a nationalized oil industry, FOGCO would be subject to continual political interference. Decisions would be made for reasons of political expediency and bureaucratic empire-building rather than to increase efficiency.

The proposal to vest importing authority in the federal government assumes that the federal government would be more effective in bargaining than private oil companies. A Federal Energy Administration study concluded that government-to-government purchase or barter agreements generally have not resulted in attractive prices for consuming country governments.

The cumulative expertise of oil-buying firms is greater than that available to a government purchasing agency. The effectiveness of oil-buying firms is enhanced by a multiplicity of decisions and decis-

ion-makers in various firms working in competition. Multiplicity of decisions and competition would be lacking in a centralized government agency.

The true causes of our petroleum supply and price problems are our dependence on foreign oil-producing countries with their arbitrary price increases and production decreases and U.S. government policies which have held down domestic production, encouraged wasteful consumption and, in times of tight markets, made shortages more severe, thus creating economic hardship.

WETLANDS

Kenai Borough Mayor Don Gilman has taken on the U.S. Fish and Wildlife Service, a principle agency in determining who may build in a wetlands area. It seems that the USFW may be in violation of its own regulations. Chester Cone, who was previously denied a permit for building on wetlands, has also filed complaints with the U. S. Army Corps of Engineers, the lead agency in granting any permit on wetlands.

Originally USFW wanted to construct a float plane facility complete with a docking ramp and a repair facility for several official float planes. These planes would be used to monitor the nearby refuge. However, the construction of the facility on Headquarters Lake would necessitate the filling in of some wetlands.

In a letter to the Corps of Engineers Gilman said "The principal federal agency responsible for stopping proposed development in 'wetlands' has not been able to identify that its own development actions were contrary to wetlands regulations."

Gilman questioned USFW's integrity and asked why its development was different from any other development.

Chester Cone, who had been stopped by the Corps from making similar modifications on wetlands on his private property said USFW's action was "the most blatant violation possible."

PROGRESS ON DEVELOPMENT POLICY

Although RDC's members never hesitate to disagree with each other, one issue has commanded support that can only be described as "unanimous."

That is the need for a clearcut economic development policy for Alaska. In past months this need has been a major focus of Council activities. Meetings with the Governor, state administrators and legislators have generated optimism and support but to date no concrete results.

Two senators, Mike Colletta and Glenn Hackney, introducted SCR 41 in January asking for adoption of a state policy for economic development and setting forth what that policy should be. The bill was referred to Senate Resources.

Prior to its introduction, 45 members of RDC worked on the draft, made available by Senator Colletta. Recommendations for revisions reflected their broad knowledge of Alaska's economic structure.

The Council's president, executive director and several members subsequently presented testimony on the resolution at a recent Senate Resources committee hearing. As a result of that testimony and some excellent revisions proposed by Ken Showalter of Sohio and others, we expect the Resources Committee to agree on a sound policy for economic development.

RDC will keep you informed of progress on the resolution and any action needed by members.

TRANS-ALASKA OIL PIPELINE COLLECTORS' ITEMS

Commemorative plaques and desk weights certified to contain oil from the FIRST BARREL OF OIL received at Valdez, Alaska, from Prudhoe Bay, July 28, 1977:

WALNUT PLAQUES Distinctive and elegantly designed, each plaque is numbered for one of 799 pipeline miles. The map of Alaska is carved in bas relief, set off by inset brass corners and inscribed plate, raised lettering and miniature pipeline containing Prudhoe Bay oil. Size: 12" x 14" Cost: $200

DESK WEIGHTS Clear lucite desk weight measures 4½ x 3¾ x 1½ inches with red base. Tube of oil, pipeline mile and inscription in center. Cost: $30

True colletors' items, only 799 of each were manufactured. Register of owners maintained at Resource Developement Council. Send check or money order to (Resource Development Council), Box 516, Anchorage, Alaska 99510.

SIGN UP TEN NEW MEMBERS THIS MONTH!

Membership Categories

Corporate/Business

Two categories of membership are available to businesses which include all publications and services,

(1) **Sustaining:** $100 to $2,000 (maximum) per month payable monthly, quarterly or annually

(2) **Supporting:** $100 to $1,200 per year, payable annually

Individual

Three categories of membership are available to individuals. Members in first two categories receive all membership privileges, are placed on priority mailing list and encouraged to participate in Red Alert campaigns.

(1) **Sustaining:** $25 (or more) per **month** includes monthly **Resource Review**

(2) **Subscribing:** $50 (or more) per **year** includes monthly **Resource Review**

(3) **Supporting:** $ 5 to $40 per year

Business/Individual name_____Phone _____

Person to contact_____Home Phone_____

Mailing address_____Zip _____

Type of membership desired: _____Sustaining _____Supporting _____Subscribing _____

Full payment enclosed in the amount of $_____

Please send monthly_____quarterly_____statement in the amount of $_____

Dated _____Signature _____

(The Resource Development Council is a non-profit trade association which operates under Internal Revenue Code Section 501 (c)(6). Business membership fees are tax deductible.)

Red Alert Authorization

The Resource Development Council is authorized to place my name on its Red Alert System. (All membership information, including your name, is confidential and may be released only with your permission.)

I will communicate - at my own expense -- with legislators, administrative leaders, and/or members of Congress, etc. when Red Alerts are called. I understand "Red Alert" may come to me by telegram, letter or telephone. I will notify you of address or telephone changes to keep your records current.

Signature_____

TAX AND REGULATORY REFORM - IT'S TIME FOR BOTH

When Malcolm Forbes Jr. addressed the Alaska Pacific Bank Economic Briefing on March 14, he said the cure for inflation was tax and regulatory reform. The Council seconds his analysis of the problems facing Alaska and America. Members have been pushing for a repeal of the personal income tax since last summer as well as a revision of business and corporate taxes.

Gearing up for more activity in the arena of regulatory reform, the Council heard from William McConkey, Executive Director of the Regulatory Reform Program. McConkey stated that Alaskans were currently paying over $52 million in salaries alone for state regulators. (This does not include office rent, utilities or travel.) This, however, is nothing compared to the losses absorbed by consumers because of delays, absurd regulations or over-zealous bureaucrats.

McConkey had been working with regulatory reform for a year and had plenty of horror stories. One example concerned two different divisions within the same department, both examining the same facilities every 90 days without ever running into each other. Another example was a proposed pipeline bridge on the North Slope that had an approved middle span but the two approach spans were tied up in permit hearings. In this latter example, Alaskans stand to lose the royalties from 80,000 barrels per day if the bridge is not built, not to mention the financial advantage to the builders of doing the project early and saved the inflationary costs of delay.

But the real horror story is that not much is being done to stop the proliferation of permits - much less turn the tide. Departments within state government are reluctant to correct the problem because it means a loss of prestige as well as staff. As a result, any attempts at streamlining from within the bureaucracy are generally considered doomed to failure.

McConkey pointed out three paths to resolving the dilemma. First, it would be necessary to consolidate as many of the permits as possible under as few authorities as possible. All matters relating to water, for instance, should be handled by a single divison. Second, it is necessary to let bureaucrats know that it is their function to streamline the current system, not create new stumbling blocks. Third, Alaskans need to stand up and complain very loudly.

Tom Fink, who reviewed the meeting in his Anchorage Times column on March 16, noted that as a result of over-regulation "a lot of money is wasted and we are the ones who pay for it. The cost of every service and commodity is substantially increased to every one of us."

Fink urged that the public become aware of the problem and demand that the legislature and the governor do something about it.

RDC's commitment to regulatory reform can only succeed if its thousands of members begin documenting regulatory abuse. Staff and volunteers will help.

Resource Development Council
for Alaska, Inc
Box 516, Anchorage, Alaska 99510

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Juneau, Ak. 99811

SCR 41

047-85 Kelly Waller TCC

1st page lines 1-10 also insure protection of env & lifestyles of rural AK

pg 2 ln 24 concern with investors } re-elaborate from tape

pg 2 ln 2 define local citizens

Dr Bill Wood mayor city of Fbks; Frb Ind Devel Corp

089-306 developmental tasks not addressed by state;

130-165 suggest Wheres clause
need for econ dev wrse utiliz res base as outlet for human talent we have (creativity)

urge development of sound export policy

re: pg 3 lines 14-17 } must have primary processing for local & regional needs

Pomeroy (con't.)

pg 2 lin 7-9
? what intended by stmnt

pg 2 (7) economicly not practicle

pg 3 (5) can't justify subsidy to establish a competitive position

diversification not possible when dealing with small quantities

practicle econ. evaluation procedure to determine what's cost effective.

People Against State Income Taxes

996-1248 Lee Fisher PASIT Inc



abolition of indiv + corporate taxes will be the best incentive to econ dev

Dave Harbour 1251 ARCO

1257-1491

pg 3 (5)
how AK compares to other state's investment climate
* severance tax + royalty tax = 25% of value
* property tax (20 mill) only to oil industry
* corporate
11 tax changes in 11 years
65% higher than nat'l avg in similar industries

(SCR 2-7 - intro last yr - enumerate)

Harbour (cont.)
problem in resol as does ~~ep~~
constraints to econ dev

→ suggest HS, Sen, Res Comm mbr, CED, industry to develop consensus

1493 - James
1670 **Bud" Dye** RDC, pres

going to need to do more than a resol. Suggests:
* implement ED program Dick Eakins put together last yr.
* determine why adversary TAX relationship between St and oil industry.
* Statement needs to be made that there will be "no more" taxes on ~~oil~~ ies promotive effect of.
* regulatory commissions (RDC are developing instances) hope reg reform ↓ cost of govt

recommend leg to implement

end result will be predictable, investment climate.

Suggests a tax credit for $ made from specified projects is the $ made to re-invested into other specified projects

6723 Linden Dr
02
243-0276

Paul Young Tlingit + Haida by anc

energy in bush

* gas above NSB – why can't be used to fuel villages

* SE hot springs thermal energy; also FBKS – use for villages. Home also & surrounding outlying communities

Susitna

not like to see what hap on pipeline with 90% labor Outside
* training prog } urge
* local hire }

reconvened 2 pm

HARRA 1685 - 1869

Ken Showalter Sohio ak Pet Co

concerned resolves only pertain to future businesses and not present businesses such as oil cn

submitted written changes

new
pg 2 line 3 - emphasizes
(1) encouragement of existing business

(2) assures local concerns considered but could not halt a project

(3) shld encourage activity even though may not diversify revenues

? (4) original lang precludes projects that

(5) could be circumstances where require this could prohibit development of a resource. Want flexability - not requirement

pg 3

(6) clarifies resp of existing

(7) " " " "

(8) recog ~~some~~ many restraints are at state level and not just fed

Showalter (cont.)

(9) present businesses

(10) current industry clarification

(11) insure investor NOT undercut by competitor allowed to get product at reduced price + at same time assure state gets what can as opposed to long term fixed price contract

87% of state's unrestricted revenues comes from oil, of the 87%, about 93% comes from Prudhoe

1873-1970 **Paula Easley** RDC

clearcut econ dev policy & plan is desperately needed. w/o it, private sector unable to grow.

streamline dev

↑ resp + authority on C+ED to fulfill these need

add → under the direc, C & ED Dept of
pg 2 line 20 ~~to~~ ; the state should...
add

pg 2 top (2) unan opposed to present wording (Showalter's v satisf) language

(4) problem of defining "excess" — something excessive now but may be good on long term basis

(5) energy intensive ind may be discourage

(7) eliminate minimum requirement as it ~~project is~~ reasonable. Colletta clarified to show intent is for the state to get the maximum out of the state's minimum

pg 3 (3) same as Showalter

(7) does this mean royalty / price sold less than mkt vlg shown could be beneficial to Alaskans

1978-2077 ~~Don~~ Don Lyon mat-Su Econ Dev Program

* investment incentives needed)

* need to look beyond initial invest incentives (subsidies) which often are viewed as and instead at long run benefits

* Reg reform that result it catalyst ~~to~~ for development. Shld be key part of econ developmnt

* Ofc resol adopted, hopes money follows to carry it out

(2070 a suggestion made that missed)

2078-2113 Bob Dempsey, Fbks CoC

(Fbks written testimony to be submitted)

govt funding assistance for projects undertaken by private sector
also urged
$ be there to implement

2114-2165 Myron Iglantoc Anch Native Council Tlingit + Haida of Anchorage

high energy costs in SE, even with Snedisham there won't extend lines to villages because not economically feasable. Also look at natural gas in northern areas. (2134)

pg 2 (5) energy-efficient projects shld be priority. Implement renewable projects with long term benefits taken into consideration

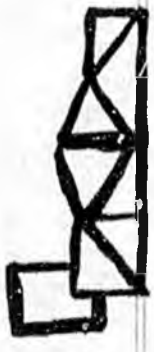
314-444 Pam Smith, Parker Drilling.
AK Industry Support Alliance

suggest
examine purposes of taxation. and its possible ~~deterrent~~ constraint to economic development

447-875 Harold Pomeroy

inexcusable the drag regs, requirements have (~~between state, corps of eng, etc~~) on inhibiting & discouraging development

~~AHRS have abandoned~~
don't use people, info we have here instead bring in others from outside



have to better understand interrelated anatomy of inter-relationships of businesses & communities

cautions against giving tax exemptions to business that w/o it wouldn't survive — that's bad business.

MOENING-GREY & ASSOCIATES, INC.
GEOLOGISTS AND ENGINEERS
715 L STREET, SUITE 8 ANCHORAGE, ALASKA 99501
TELEPHONE (907) 274-[illegible]314

February 11, 1980

Senator Bill Sumner
Chairman, Senate Committee on Resources
Pouch V
Juneau, Alaska 99811

Subject: Hearings on SCR-41, SB-294

Dear Senator:

Thank you for notice on the Fenruary 15th hearings.

I do plan to attend. If for any reason I am unable to do so, I will appoint a representative to appear on my behalf.

Sincerely,

MEONING-GREY & ASSOCIATES, INC.

Howard J. Grey

HJG/lg

Helping The Goose Produce.

Profitable business is the goose that lays the golden egg. In South Carolina, we're committed to helping the goose produce. We always have been.

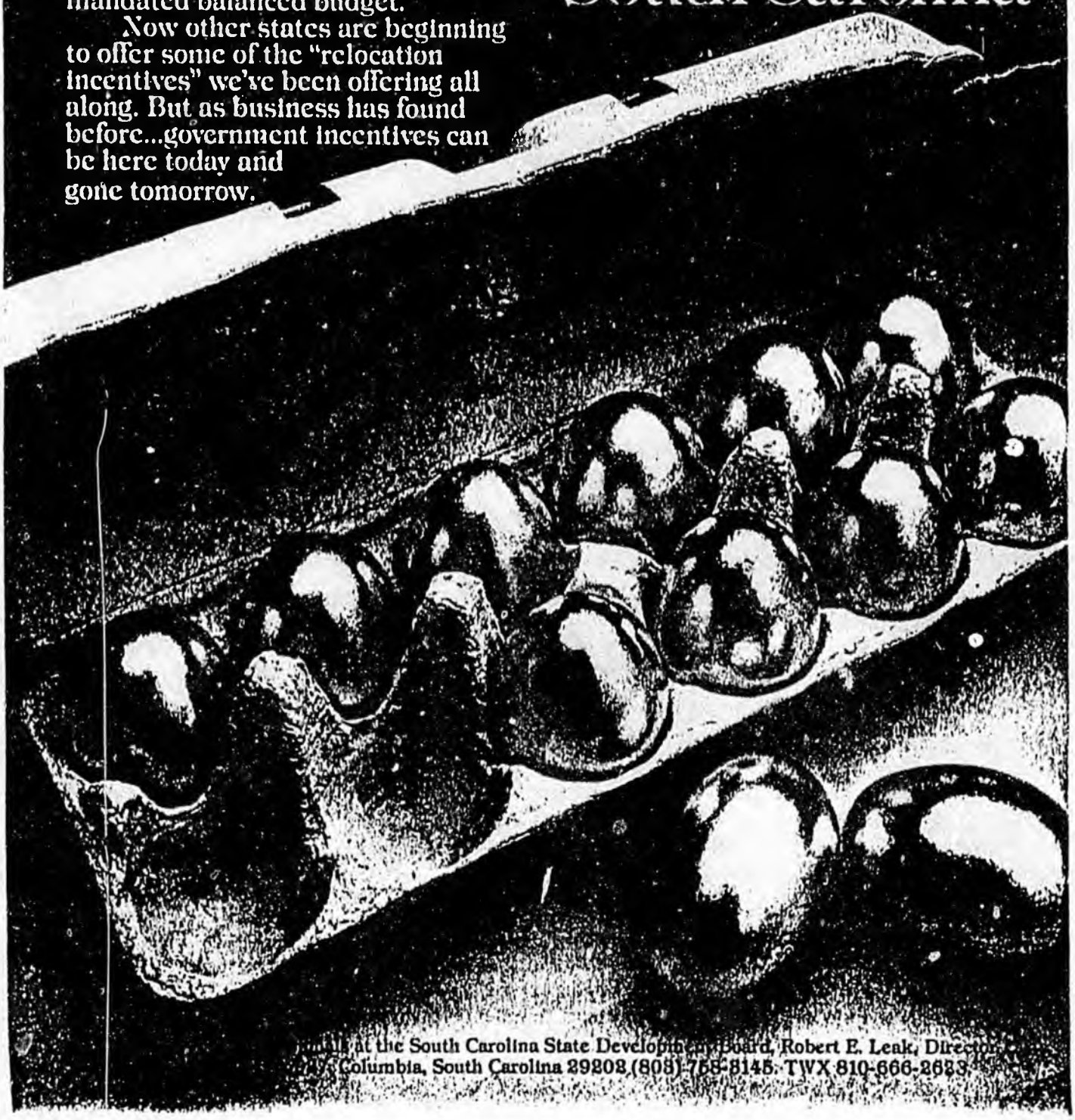
Back when dollars were hard to find, we scrimped and scraped to build America's most advanced employee training program. When times were tough, we went the extra mile to establish tax incentives to help industry grow. When other states were accumulating debt, we stuck to our constitutionally mandated balanced budget.

Now other states are beginning to offer some of the "relocation incentives" we've been offering all along. But as business has found before...government incentives can be here today and gone tomorrow.

What counts is attitude, stability, commitment...the things which have always made South Carolina different. The intangibles which no government can change.

In the fable, impatience and greed killed the goose that laid the golden egg. And in many places, they still do. But not in South Carolina. Being good for business is in our blood. It always has been. It always will be.

South Carolina



...at the South Carolina State Development Board, Robert E. Leak, Director...
...Columbia, South Carolina 29202 (803) 758-3145. TWX 810-666-2683.



So are we.

Taxes are equitable and stable in Georgia. Neither individual nor corporate income taxes bear an unreasonable proportion of governmental cost. And industry is given attractive location incentives. Georgia's new freeport law, for example, allows local governments broad options of exempting property taxes on various types of inventory. Our supportive tax system encourages industrial growth, creating jobs and naturally expanding the state's economy. It could provide just the environment your company needs to yield higher profits. For more information, including confidential site selection assistance, call or write: W. Milton Folds, Commissioner, Georgia Department of Industry & Trade, 404/656-3556, P.O. Box 1776, Atlanta, Georgia 30301, Dept. BW-03. **Georgia**

114 A

Senate Resources - SCR 41

attendance

name	address
Ken Peavyhouse	FAA - AAL-4C 701 "C" St Box 14 Anchorage 99513
Bob Dompsay	Fairbanks Chamber of Comm. 510 1st Ave Fairbks AK. 99701
Kelly Waller	Tanana Chiefs Conf. 1st & Hall St Fairbanks, AK 99701
Wayne C. Finchen	Painters L.U. # 1140 1818 W 1st No Lights Bot.
Rudy J. Troselair	" "
Dick Kloop	2510 Mach.o Blvd. City - Enos 302
Wm R. Wood	MAYOR OF FAIRBANKS % FIDC 619 Eleventh Ave FAIRBANKS, ALASKA, 99701 PHONE: 452-5400
Don Lyon	Overall Economic Development Prgm Mat-Su SR 5011 Wasilla AK 99687
Harold E. Pomeroy	4048 Wright St. Anchorage 99504
James G. Dye	2301 Lodisac Anch AK 99503
Lee E. Fisher, C.P.A.	430 W. 7th Ave Anchorage
Patrick J. Smutz	HROI - 213 W. 6th Anch. AK. 99501
Jennie Day Peterson	Public Employees Local 71 P.O. Box 4-241 Anch 99509
Ken Hamm	225 Cordova, Bldg B #309

Senate Resources hearing - SCR 41

attendance

name	address	
Martin Hoskins	P.O. Box 288	Anchorage 99510
DAVE HARBOUR	SRA BOX 62-R	Anch. 99507
Frank N. VanZant	POUCH 6607 H-280	Anch 99502
Paul A. Dunham – Machinists Local 601	825 E. 8th	Anch 99501
Ken Showalter	POUCH 6-42	anch. 99502
MYRON B IGTANLOC	2201 WEST 48th AVE.	ANCH. 99503

Testimony of

K. E. Showalter, Director Alaska Government Affairs

SOHIO ALASKA PETROLEUM COMPANY

Before the Senate Resources Committee

Anchorage, Alaska

February 15, 1980

Mr. Chairman and Committee members:

I am K. E. Showalter, Director Alaska Government Affairs for Sohio Alaska Petroleum Company.

Thank you for this opportunity to comment on Senate Concurrent Resolution No. 41. It is very encouraging to Sohio to read a proposed resolution such as this that actually is aimed at improving the business climate in Alaska. We heartily endorse your efforts.

We agree totally with the whereas clauses in this resolution. After studying the resolve clauses we had the impression that this resolution was only aimed at future businesses and did not seem to apply to the oil and gas exploration, production and transportation industries. Perhaps this was an oversight in your zeal to encourage new industries and that is understandable.

On the assumption that it was in fact an oversight, we have taken the liberty of adding several phrases and deleting a few words that we believe will improve the resolution and make it more all encompassing.

I have asked that a copy of our re-written version of SCR 41 be passed to each of you. You will note that we have simply re-written it as we are recommending, rather than offering several amendments.

With your indulgence I will go over our suggested changes and comment briefly on them.

(1) We have added to the end of resolve #1 the phrase "by building on its present economic base and encouraging new activities that are economically feasible." This will make it clear that you are encouraging existing businesses as well as new ones and indicates also that you want viable projects.

(2) The second resolve seemed to indicate that any group of local citizens, no matter how small, could stop a project that was of overriding importance to statewide concern. We have struck the words "wanted by" and replaced them with the phrase "undertaken after careful consideration of the views of". This assures that local concerns will be carefully considered in the balanced decision that a state administrator must make.

(3) We have added the phrase "adds to and where possible" at the beginning of this clause. We are all in favor of diversifying the State's revenues but believe that the resolution should allow for encouragement of those developments that may not, in fact, diversify revenues, such as oil and gas development.

(5) We have added after "effect" the phrase "where applicable and economicall feasible". As this clause was originally written it seemed to preclude developments that did not enhance power and energy availability and there may be many desirable developments that will be net users of power or energy. Our rewrite is not all that good and perhaps the committee can think of a better way to express the thought.

(6) We are overwhelmingly in favor of resolve #6.

(7) At the end of resolve #7 we have added the phrase "where economically feasible and in the state's best interest." We believe there could be many circumstances where a requirement to process all of the state's royalty share of a resource within the state would in fact prevent the development of the resource. No doubt there will be many others where it is possible.

Further resolves:

(1) The words "both existing and potential" have been added after the work "industries" to make it clear that expansion of existing industries is recognized as responsible economic development.

(2) After "aid" we have added the words "present and" to again include present industries. At the end after "evaluation" we have added a clarifying phrase "of new projects."

(3) We suggest that you strike the words "the many" and replace with the word "any" so as to make it all inclusive. After Federal we have added "and the state" to recognize that realistically there are many constraints to development in state laws and regulations and, contrary to the rhetoric, they are being added to on a daily basis.

(4) The wording has been changed to again include present and future basic industries.

(5) Here, after "areas" we have added "of the country" to indicate that the prime requirement is to compete within the U.S. where, from a practical political standpoint most markets for Alaska's resources will exist. After "tax incentives to" we have added "retain current industries and"; also we have replaced "various" with "future". This resolve is most important and has seldom been recognized here in the past. It would be a very positive signal to investors.

(7) We understand the objective of the fixed price" language but are very apprehensive that this could result in unnecessary huge losses of recenue to the state. Our experience would indicate that no one has a good enough crystal ball to make long term, fixed price contracts that work fairly for both parties over the years. We suggest the word fixed be replaced by the phrase "competitive or most favored nation." This will signal that the state wants to be fair and will not let their buyer be undercut by a competitor who is getting a better price. It will also show that you want a reasonable price for your resources and will not subsidize uneconomic development.

Sohio applauds your efforts in fashioning this resolution. We believe our suggested changes retain the basic purpose and thrust while making it clear that current industries as well as new ones are to be encouraged.

We urge the passage of SCR 41 with amendments.

Thank you.

SCR

44

May 5, 1980

Bill-

SCR 44 is on today's calendar and it deals with the Eureka Airstrip. When the state discovered that it did not hold full title to the land at the airstrip, it ceased maintaining and operating the airstrip. This resoulution calls for the Governor to direct DOT to resume maintenance and do whatever is necessary to acquire full title to the land so the state can permanently run the airstrip.

Eureka, located on Mile 128 of the Glenn Highway, is apparently the only airfield in the general vicinity and is needed for safe aviation due to increasing air traffic and the unpredictability of weather in the area.

At the Resources hearings on the bill, DOT sent over the only witness and he took no position on the bill. Otherwise, there was no oppostion to the resolution.

The Department estimates that were it to carry out this directive, the costs for maintenance would be $15,000 the first year and $10,000 for each succeeding year. Land acquisition costs would be approx. $100,000.

Jens

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

April 18, 1980

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate Concurrent Resolution 44

This resolution calls for the Governor to direct the Department of Transportation to resume maintenance of the Eureka Airstrip located on Mile 128 of the Glenn Highway. Due to the increase of air traffic along the the Chickaloon Pass corridor and the unpredictability of weather conditions in the area, an airstrip is necessary for safe aviation in the area.

It further requests that the Department do whatever is legally necessary to acquire title to land at Eureka so it can permanently run the airstrip. The State was previously charged with operation of the airstrip until it was discovered that it did not hold title to all the land at the site. Maintenance operations were then stopped at Eureka.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SCR 44
Title Relating to the Maintenance of the Eureka Airstrip
Requested by Senator Sackett Date 2/28/80

II. FISCAL DETAIL
Agency Affected Dept. of Transportation & Public Facilities
Program Category Affected Transportation
BRU, Program, or Subprogram(s) Affected SUMMARY
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL		15.0	* 10.0	* 10.0	* 10.0	* 10.0
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES	100.0					
700 GRANTS, CLAIMS, ETC.						
TOTAL		15.0	* 10.0	* 10.0	* 10.0	* 10.0
* PLUS INFLATION						

FUNDING (Thousands of Dollars)

GENERAL FUND	100.0	15.0	* 10.0	* 10.0	* 10.0	* 10.0
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		0	0	0	0	0
PART TIME		0	0	0	0	0
TEMPORARY		0	0	0	0	0

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

SEE PAGES 2 & 3

IV. DATE 2/28/80 PREPARED BY Ron Lind, Deputy Commissioner
AGENCY Dept. of Transportation & Public Facilities
PHONE 465-3900

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. SCR No. 44

Title Relating to the Maintenance of the Eureka Airstrip

Requested by Senator Sackett Date 2/19/80

II. FISCAL DETAIL

Agency Affected

Program Category Affected

BRU, Program, or Subprogram(s) Affected

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES	100.0					
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars)

GENERAL FUND	100.0					
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

To purchase 2 1/2 to 3 acres of private land constituting a portion of the basic airstrip to acquire roughly 20 acres of land from BIM plus any related improvements adjacent to the existing airstrip.

IV. DATE 2/25/80 PREPARED BY Jack Boline/Jonathan W. Scribner

AGENCY R/W & Lands

PHONE 364-2121 Ext. 245

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33 001 (Rev. 12/79)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SCR 44
Title Relating to the maintenance of the Eureka Airstrip
Requested by Senator Sackett (Alphie Morris) Date 2/20/80

II. FISCAL DETAIL
Agency Affected Department of Transportation & Public Facilities
Program Category Affected Maintenance and Operations Southcentral Region
BRU, Program, or Subprogram(s) Affected Aviation
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

		FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100	PERSONAL SERVICES						
200	TRAVEL						
300	CONTRACTUAL		15.0	* 10.0	* 10.0	* 10.0	* 10.0
400	COMMODITIES						
500	EQUIPMENT						
600	LAND & STRUCTURES						
700	GRANTS, CLAIMS, ETC.						
	TOTAL		15.0	* 10.0	* 10.0	* 10.0	* 10.0

* PLUS INFLATION

FUNDING (Thousands of Dollars)

GENERAL FUND		15.0	* 10.0	* 10.0	* 10.0	* 10.0
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		0	0	0	0	0
PART TIME		0	0	0	0	0
TEMPORARY		0	0	0	0	0

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The above figures are based on estimates for contract maintenance. The first year figure is higher to compensate for preparation work required. The following years would then be normal routine maintenance, which may be increased by normal inflation rate. Since this would be contracted work, no additional positions would be required.

THIS FISCAL NOTE ADDRESSES MAINTENANCE ONLY - LAND TITLE AND CONSTRUCTION WILL BE RESPONDED TO BY DESIGN AND CONSTRUCTION DIVISION OF THIS DEPARTMENT.

Patricia P. Ryan

IV. DATE February 26, 1980 PREPARED BY Jack Morrow
AGENCY Dept. of Transportation & Pub. Fac.
PHONE 835-4322

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

Synopsis-- Senate Concurrent Resolution 44
By the Rules Comm. by request of the Interim Transportation Comm.
Relating to the maintenance of the Eureka Airstrip.

This resolution calls for the Governor to direct the DOT to resume maintenance of the Eureka Airstrip located on Mile 128 of the Glenn Highway. It also requests that the DOT do whatever is legally necessary to acquire title to land at Eureka so it can permanently run the airstrip. The state used to operate the airstrip until it discovered that it did not own the entire thing. It then ceased maintenance at Eureka.

HB
118

THE FOLLOWING DOCUMENT(S) MAY NOT FILM LEGIBLY BECAUSE OF POOR QUALITY OF THE ORIGINAL.

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF FOREST, LAND AND WATER MANAGEMENT

ANCHORAGE, ALASKA

February 14, 1980

J.F. Tangen, President
Alaska Miners Association
P.O. Box 1211
Juneau, AK 99802

Dear Mr. Tangen:

On January 17, 1980, I met with you to briefly discuss HB 118 "An act relating to maintenance of stream flow and levels of water." At that time we discussed differences between this bill and a related bill considered by the 1977 Legislature.

While HB 118 would streamline a presently cumbersome state permitting and stipulation process for addressing stream flows for fisheries and navigation concerns, events at the federal level over the past year have increased the urgency for such legislation in Alaska as a matter of protecting state's rights. This urgency is related to a June 1979 Solicitor's Opinion regarding federal water rights of Department of Interior agencies. While the opinion clarified Interior's stance on reserved water rights for reserved Interior lands such as parks, monuments and wildlife refuges, it developed a heretofore unknown concept of non-reserved federal water rights. This concept is without previous judicial or statutory precedent in federal courts or congressional legislation.

To exercise the non-reserved rights, the federal government would first apply to the state under appropriate state water laws. For uses involving a diversion or withdrawal this is not a problem in Alaska since we can handle such claims under existing state law. In fact, since [illegible] with you we have received 30 water right applications from the U.S. Forest Service for water supplies for campgrounds and recreational facilities in the Chugach National Forest. We can handle such applications in an identical manner as we would handle water rights for industrial facilities. However, we are concerned where we cannot handle requests from the federal government for adjudication of rights for non-consumptive instream flow purposes for fisheries and navigation concerns. In such cases where a use is not recognized under state law the Secretary and Solicitor have stated that the agency would go to federal court to have the right established or decreed. Such an action would remove the federal government from state water law and procedures where we most consider multiple [illegible] state waters. Furthermore, such actions would be brought in federal court outside the State of Alaska, thereby making it difficult

10m10LM

and expensive to interface through the legal staff of the Department of Law, technical staff of the Department of Natural Resources and legal or technical staff of water users that may be adversely affected.

We feel we have an administrative option through enactment of HB 118 to bring the federal government under state administrative procedures and require their needs and claims to be considered on an equal basis with other public and private water users. We are interested in any comments the Alaska Miners Association may have on this issue and hope we may work together toward enactment of this legislation.

As promised during our January discussion I am providing the following documents for additional background:

1) Press release and opinion entitled "Federal Water Rights of the National Park Service, Fish and Wildlife Service, Bureau of Reclamation and the Bureau of Land Management" of June 1979.

2) "Response to the Solicitor's Opinion on Federal Water Rights" by the Western States Water Council, October 25, 1979.

3) DNR staff report regarding December 1979 meeting between Andrus and Western Governors on the Solicitor's Opinion in Salt Lake City.

Under Separate cover you should already have received a November 1979 DNR open-file report entitled Federal Lands in Alaska and Their Reserved Water Rights Discussions, Policies, and a Partial Inventory.

I hope to discuss this issue with you in the near future. If you have any comments or questions please do not hesitate to contact me at 907-279-5577.

Sincerely,

Kenneth W. Petrie, Chief
Water Management

THE PRECEDING DOCUMENT(S) MAY NOT FILM LEGIBLY BECAUSE OF POOR QUALITY OF THE ORIGINAL.

CSHB 118

FISCAL NOTE

I. REQUEST
Bill/Resolution No. CSHB 118 No.1
Title "An Act relating to rivers, lakes, streams and other bodies of water in the state; and providing for an effective date."
Requested by

II. FISCAL DETAIL
Agency Affected Department of Fish and Game
Program Category Affected Natural Resources Management & Environmental Conservation
BRU, Program, or Subprogram(s) Affected Habitat Conservation
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC						
800 MISCELLANEOUS		125.0	-0-			
TOTAL		125.0	-0-			

FUNDING (Thousands of Dollars)

GENERAL FUND		125.0	-0-			
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		3				
PART TIME		1				
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Oral Freeman, Vice Chairman
House Finance Committee
May 1, 1980

IV. DATE PREPARED BY
AGENCY
PHONE

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

CSHB 118

FISCAL NOTE

I. REQUEST
Bill/Resolution No. CSHB 118 No. 2
Title "An Act relating to rivers, lakes, streams and other bodies of water in the state; and providing for an effective date."
Requested by

II. FISCAL DETAIL
Agency Affected Department of Natural Resources
Program Category Affected Management of Forest, Land & Water Use Management
BRU, Program, or Subprogram(s) Affected Water Management; Water Use Management
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC						
800 MISCELLANEOUS		125.0	-0-			
TOTAL		125.0	-0-			

FUNDING (Thousands of Dollars)

GENERAL FUND		125.0	-0-			
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		3				
PART TIME		1				
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Oral Freeman, Vice Chairman
House Finance Committee
May 1, 1980

IV. DATE PREPARED BY
AGENCY
PHONE

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

Passed Out Unchanged by House Resources

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. CSHB 118
Title: An Act Relating to the Maintenance of Stream Flows and Levels of Water
Requested by [illegible] Date April 11, 1980

II. FISCAL DETAIL
Agency Affected: Department of Fish and Game
Program Category Affected: Natural Resources Management and Environmental Conservation
BRU, Program, or Subprogram(s) Affected: Habitat Protection BRU
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

		FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100	PERSONAL SERVICES	-0-	107.8	121.0	-0-	-0-	-0-
200	TRAVEL	-0-	11.0	13.4	-0-	-0-	-0-
300	CONTRACTUAL	-0-	60.4	66.4	-0-	-0-	-0-
400	COMMODITIES	-0-	5.0	5.5	-0-	-0-	-0-
500	EQUIPMENT	-0-	3.3	-0-	-0-	-0-	-0-
600	LAND & STRUCTURES	-0-	-0-	-0-	-0-	-0-	-0-
700	GRANTS, CLAIMS, ETC	-0-	-0-	-0-	-0-	-0-	-0-
	TOTAL	-0-	187.5	206.3	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		1	1			
PART TIME		4	4			
TEMPORARY		0	0			

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

An amendment to HB 118, now incorporated as CSHB118, would require the Department of Fish and Game to specify by July 31, 1982, the "various rivers, lakes and streams or parts of them that are important for the spawning, rearing, or migration of anadromous fish." The expenditures presented in this fiscal note are in response to that amendment. Funds represented herein would allow the Department to inventory the anadromous streams of the State, provide for public review and comment on the inventory in accordance with the provisions of the Alaska Administrative Procedures Act, and present the findings of the inventory and public review process in documents which are readily available to the public. (continued)

IV. DATE April 11, 1980 PREPARED BY Richard Logan
AGENCY Fish and Game
PHONE 465-4105

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-081 (Rev. 12/79)

III. ANALYSIS (Continued)

Line 100 expenditures under this fiscal note would provide for the employment of one permanent full-time Habitat Biologist III (Range 18), three permanent seasonal Fisheries Biologist II positions (Range 16), and one permanent seasonal Clerk Typist III position (Range 8). An inventory of the type being required will necessitate considerable travel to allow for on-the-ground accumulation and verification of information on fish occurrence. This travel will occur by way of commercial transportation (Line 200 expenditures) and charter of aircraft service from private industry (Line 300 expenditures). Per diem costs associated with travel and field activities is covered under Line 200. Line 300 expenditures also cover such fixed costs as rental and typewriter leasing and maintenance, and further provide for costs associated with printing and duplication of reports, advertising for public hearing or meetings, and telephone services. Cartographic and office supplies and purchase of publications associated with Alaskan fish science are costs considered in Line 400 expenditures. Line 500 funds will be put toward purchase of chairs, desks, tables, file cabinets and drafting equipment.

Maintenance of Stream Flows and Levels of Water

HB 118

1. Currently, there is no provision in law which will guarantee a perpetual supply of naturally occurring (instream) water for broad public purposes, including the maintenance and propagation of fish and wildlife, recreation, navigation, and sanitary/water quality uses.

2. It is important to understand the relationship of current administrative procedures to the new opportunities afforded by HB 118. Under current procedures, as far as they relate to fish and wildlife management, the Department of Fish and Game is required by statute to comment on all water right applications made to the Department of Natural Resources. In so doing, ADF&G identifies its concerns with the application insofar as it might affect the maintenance of sustained yields of fish and wildlife. To this end, ADF&G either recommends approval of the application without modification, recommends approval contingent upon the incorporation of specified conditions in the water right, or recommends denial of the application. DNR then uses these comments as one of eight factors in determining whether a permit should be issued.

   The current procedure allows the opportunity to administratively accommodate fish and wildlife needs; a "reservation" is not possible, but appropriations can be made with fish and wildlife concerns in mind. However, there is no long-term guarantee of fish and wildlife protection.

3. The decision-making process involved in reviewing a request for a water appropriation is not changed by HB 118. The public purposes listed in #1 do not represent an infringement on the "beneficial use" foundation of the Alaska Water Use Act. That is, all uses previously eligible for a water right are still eligible, with no additions to the list of beneficial uses and no priority established other than what is currently in law. In making a decision regarding the issuance of a water right for an instream appropriation, then, the decision-making criteria already in law are still applicable. This involves a weighing of a number of existing statutory considerations by the Department of Natural Resources.

4. HB 118 does not establish use of water for fish and wildlife, and the other public purposes listed in #1, as a superior beneficial use. Therefore, existing procedures for the procurement of water rights by the public are not preempted and a right to water use for fish and wildlife and other uses must be secured on a case-by-case, competive and "first come" basis in accordance with existing water law.

   A previous bill gave priority right to fish and wildlife, recreation, navigation and sanitary/water quality uses. This was primary cause for the Legislature to oppose previous versions of the bill.

5. As a corollary to #2, the instream flow bill would not provide for an automatic blanket appropriation to the public purposes listed in #1. Rather, it is explicit in the bill that appropriate detail will be used in defining needs, and requests for appropriation will be as site and needs specific as reasonable. The following is quoted from the bill:

> "The state or any political subdivision or agency of the state may apply to the commissioner to reserve sufficient water to maintain a specified instream flow or level of water at a specified point on a stream or body of water, or in a specified stretch of stream, throughout the year or for specified times of the year . . . ." (emphasis added)

6. The right to make a request for an instream water appropriation for the public purposes listed in #1 is given to local governments, state agencies and other political subdivisions of the State. There is much concern that just the State can reserve flows and that others may wish to claim the same right, or that local perspectives on fish and wildlife, recreation, navigation, and sanitary/water quality will be ignored. Clearly, the State is not alone in the ability to reserve flows under the provisions of HB 118.

7. There may be some concern that the additive effect of several instream appropriations by several political subdivisions for the several public purposes may result in a situation wherein there exisits no more water in a stream available for other uses.

   This is not the case. Each appropriation cannot be considered an additive amount to another. Rather, the limiting factor is the largest appropriation required. For example, if one party wishes to reserve 3cfs, another 4cfs, another 6cfs and a final 8cfs, it is not correct to say that 21 cfs (i.e., the addition) will be reserved. It is true that each could be issued a right to each of its requests. However, only a maximum of 8cfs of actual water will be reserved because that amount is sufficient to cover all interests.

8. The instream flow bill would be beneficial to the State because it would bring the federal government under the procedural control of the State in instances of federal application for instream, nonreserved federal water rights. And, in so doing it would also represent a fiscal savings to the State by avoiding court settlement of appropriation issues. See attached letter from Brent Petrie to J. P. Tangen.

9. HB 118 is fully compatible with recommendations on instream flow legislation made by Mr. Frank Trelease, the framer of the Alaska Water Use Act. Mr. Trelease was contracted by DNR in 1976 to review the Water Use Act, its implementation and its adequacy in meeting state needs in light of the passage of years. One of the recommendations resulting from that review was for the enactment of an instream flow bill; the present HB 118 being substantially similar to the bill he proposed.

10. The reservation of water for the public purposes listed in #1 will result in incidental benefit to other types of activities. For example, some power generation plants are run by water driven turbines. Assurances that a perpetual supply of water will be available instream will allow this type of activity to continue. As another example, placer mining by suction dredge techniques requires, for economic efficiency, that water be in the stream channel. Absent that, expensive, heavy equipment would need to be employed to move the sediments. This in turn would have a greater impact on habitat resources than would suction dredge operations. An instream flow bill would prove beneficial to both suction dredge operators and habitat quality.

    The National Council of State Legislators, staff assistants to the House Interim Committee on small hydroelectric projects, is on record as supporting amendment of HB 118 to include reservation of water options for power generation facilities, too. This would be a perfectly acceptable amendment.

11. The concept of a reservation of water for instream use--for the general public welfare--has foundation in the Alaska Constitution:

    > "Wherever occurring in the natural state, fish, wildlife and water are reserved to the people for common use." (Article VIII, Section 3) (emphasis added)
    >
    > "Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed and maintained on the sustained yield principle, subject to preferences among beneficial uses." (Article VIII, Section 4)
    >
    > "The legislature shall provide for the utilization, development, and conservation of all natural resources belonging to the State, including land and waters for the maximum benefit of its people." (Article VIII, Section 2) (emphasis added)

Official Business

Alaska State Legislature

Senate

Committee on Resources

Pouch V
State Capitol
Juneau, Alaska 99811

May 16, 1980

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: CSHB 118

This bill amends the Alaska Fish and Game Statutes relating to the protection of fish and game. The commissioner shall specify the rivers, lakes and streams that are important for the rearing of anadromous fish. The present statute deals only with their spawning and migrating areas.

The present statutes require a person or government agency to submit complete plans on any proposed construction as they relate to the protection of fish and game. This bill would empower the commissioner to reject the proposed plans if they are insufficient in protecting fish and game. There is also a hearing procedure instituted for the rejected applicant.

Title 46, Appropriation and Use of Water is amended by adding reservation of instream flows and levels of water as a beneficial use.

A new section is added entitled Reservation of Water. It specifies that the state, a political subdivision of the state, an agency of the United States or a person may apply for the right to reserve sufficient water to maintain a specified instream water flow or level of water in a part of the stream at all or specified times of the year. In applying, the applicant must meet certain criteria which are:

1) Protection of fish and wildlife habitat, migration and propagation.
2) A need for recreation and park purposes.
3) A need for navigation and transportation purposes.
4) A need for sanitary and water quality purposes.

The commissioner will issue a certificate reserving the water if:

1) It does not affect prior water reservation agreements.
2) Applicant has demonstrated a need for the reservation.
3) There is enough unappropriated water in the stream for the reservation.
4) The commissioner shall review each reservation every 10 years and may modify or revoke the reservation.

See attached fiscal note.

HJR 68 The Resources Committee has had HOUSE JOINT RESOLUTION NO. 68 (relating to the Alaska Power Authority and the incurring of revenue bond indebtedness of the Alaska Power Authority for the Golden Valley Electric Association waste heat power generation project near Fairbanks) under consideration and a majority of the committee recommends it be replaced with COMMITTEE SUBSTITUTE FOR HOUSE JOINT RESOLUTION NO. 68:

> Relating to the Alaska Power Authority and the incurring of revenue bond indebtedness of the Alaska Power Authority for the Golden Valley Electric Association waste heat power generation project near Fairbanks and the Black Bear Lake hydroelectric project on Prince of Wales Island.

and that it do pass. Concurring: Miles (Co-Chairman), Osterback (Co-Chairman), Carney, Cotten, Fuller and Zharoff. Not concurring: Chatterton has no recommendation.

HJR 68 was referred to the Finance Committee.

HJR 81 The Resources Committee has had HOUSE JOINT RESOLUTION NO. 81 (relating to decontrol of the price of oil produced from Upper Cook Inlet fields) under consideration and a majority of the committee recommends it be replaced with COMMITTEE SUBSTITUTE FOR HOUSE JOINT RESOLUTION NO. 81 (same title) and that it do pass. Concurring: Miles (Co-Chairman), Osterback (Co-Chairman), Chatterton, Carney, Cotten, Fuller and Zharoff.

HJR 81 was referred to the Rules Committee for placement on the calendar.

HB 118 The Finance Committee has had HOUSE BILL NO. 118 (relating to the maintenance of stream flows and levels of water) under consideration and a majority of the committee recommends it be replaced with the Resources COMMITTEE SUBSTITUTE FOR HOUSE BILL NO. 118:

> "An Act relating to rivers, lakes, streams and other bodies of water in the state; and providing for an effective date."

~~SF~~ CSHB 118 - 521

~~HB~~ Need Fiscal Note -

Provides for various groups to apply for the right to water.
Redefines water right

Beneficial Uses
1) Fish & wildlife protection
2) water Quality assimilate waste
3) Transportation purposes
4) Recreation activities

Bill allow person to apply for legal right to get above

House added to anadromous fish streams

Gordon Smith
243-3107
383-

HB
346

Official Business

Alaska State Legislature

Senate

Committee on Resources

Pouch V
State Capitol
Juneau, Alaska 99811

May 7, 1980

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: CSSSHB 346

This bill amends the Alaska Fish and Game Statutes by the addition of a new section which states:

The Board of Fisheries by regulation, installs fishing markers to close off certain areas to commercial fishing yet sometimes fails to remove the old existing markers. This bill would expressly permit fisning in the area between the old and new markers until the Board removes the old markers.

There is no fiscal impact. (See attached fiscal note)

Alaska Native Brotherhood

Camp Number 2 510 West Willoughby Avenue Juneau, Alaska 99801

April 3, 1980

The Honorable Bill Sumner
Alaska State Senate
Pouch V - M.S. 3100
Juneau, Alaska 99811

Dear Senator Sumner:

The Resources Committee has a House passed measure, namely CS HB 346, "an Act Relating to fishing area markers".

We would like to recommend passage, and offer consideration of an amendment to rectify a situation which we regard as a serious situation.

Presently, the markers for closed areas in the bays and other systems, are posted by order of the Board of Fisheries. The Department of Fish & Game has statutory authority to move the markers by emergency order. What has been occurring is when the stream guard sees that the salmon are moving outside of the closed markers, he arbitrarily goes to the shore and moves the markers out so that the salmon are in closed area. When the so-called "emergency" is over, the markers remain where they were moved to - and not back to where the Board has affixed the markers to be.

We recommend an amendment that would require an emergency order, with at least 24 hour notice -- and, that the markers be moved by the area biologist, not a stream guard -- and, that the markers be posted back to the original location. Or, prohibit movement of markers at all.

We thank you for this consideration.

Respectfully,

Robert Willard

Robert Willard, Chairman
Legislative Affairs Committee

RW:in

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SS HB 346
Title: An Act relating to fishing area markers
Requested by Resources Committee Date March 24, 1980

II. FISCAL DETAIL -
Agency Affected Department of Fish and Game
Program Category Affected Natural Resources Management
BRU, Program, or Subprogram(s) Affected Division of Commercial Fisheries
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	-0-	-0-	-0-	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND	-0-	-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	-0-	-0-	-0-	-0-	-0-	-0-
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

There would be no fiscal impact, provided the intent of the Legislature is to have the requirement applied to only the markers established by the Board of Fisheries by regulation or change in regulation, and does not apply to emergency orders or regulations used in season to manage the fisheries. Furthermore, it is recognized that the Department should do a better job when changing markers as requred by the Board of Fisheries regulatory action.

IV. DATE March 25, 1980 PREPARED BY Russell H. Clark
AGENCY Department of Fish and Game
PHONE 465-4120

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)
Office of the Governor-Keith Specking

33-001 (Rev. 12/79)

CSSSHB 346
on Monday's
Calenda

CSSSHB 346- by the House Resources Committee

An act relating to fishing area markers

This bill amends Alaska Fish and Game Statutes by the addition of a new section.

The Board of Fisheries by regulation, installs fishing markers to close off certain areas to commercial fishing yet sometimes fails to remove th old existing markers. This bill would allow fishing in the area between the old and new markers until the Board removes the old markers.

Alaska State Legislature

Senate

Committee on Resources

Agenda

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

Resources Committe Meeting
May 7, 1980
1:30 p.m.
Butrovich Room

CSSSHB 346 — Relating to fishing area markers
Testimony: Bob Willard- Alaska Native Brotherhood
Bob Clasby- Fish and Game
Mike Clemmons- Public Safety
Representative Zharoff- will attend the meeting but doesn't necessarily want to testify.

SB 581 — Sale of state land to holders of valid mining claims
Testimony: None scheduled

SB 547 — Preservation of green belts and open space
Testimony: None scheduled

HB
636

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

April 18, 1980

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Committee Substitute for House Bill 636

This bill amends the Amusement and Sports section of the Alaska statutes by the addition of the following:

Any person in the water using an underwater breathing device may:

1) Display a 12"X 12" red flag with a white diagonal stripe.
2) Be affixed to the boat or on a float device and extend at least 3 feet from the water.

I shall:

3) Be at or near the divers point of submergence and the diver is to remain within 100 feet of the flag while underwater.
4) Warn boat operators above water and within sight of the flag, to stay 100 feet away from the flag and slow to no-wake speed or 5 miles per hour.

There is no fiscal impact.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HB 636
Title "An Act requiring flags for divers."
Requested by Rep. Parker Date 2/13/80

II. FISCAL DETAIL
Agency Affected Public Safety
Program Category Affected
BRU, Program, or Subprogram(s) Affected
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		0	0	0		

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

No fiscal impact is projected.

IV. DATE February 13, 1980 PREPARED BY Mike Clemens
AGENCY Public Safety
PHONE 465-4336

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

STATE OF ALASKA

Inter-Department Route Slip

TO:
MAIL STATION NUMBER _____

DEPARTMENT _____

ATTENTION Senator Sumner

☐ Approval	☐ Note & Return
☐ Signature	☐ Initial & Return
☐ Comment	☐ Return As Requested
☐ Contact Me	☐ Return For Approval
☐ Prepare Reply	☒ Necessary Action
☐ For Your File	☐ Your Information

Remarks:

FROM:
MAIL STATION NUMBER _____

DEPARTMENT _____

BY Don Bennett DATE 4/11

02-002 (REV.10/73)



Introduced: 1/29/80
Referred. Community &
Regional Affairs

IN THE HOUSE BY PARKER AND MARTIN

HOUSE BILL NO. 636 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to requiring flags for divers."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 05.25 is amended by adding a new section to read:

Sec. 05.25.012. DIVER'S FLAG. A person who is in the water using an underwater breathing device [shall] may display a diver's flag constructed of rigidly supported material at least 12 inches by 12 inches in area of red background with a white diagonal stripe. This diver's flag [shall] may be displayed on a boat or surface float and [shall] may extend a minimum distance of three feet from the surface of the water. The diver's flag [shall] may be placed at or near the point of submergence and constitutes a warning that a diver is submerged and may be within 100 feet of the flag. A diver shall remain within 100 feet of the diver's flag while at or near the surface. A boat operator within sight of a diver's flag shall proceed with caution, steering clear of the flag by a distance of 100 feet. Boats maneuvering within a 100-foot radius of a diver's flag shall be slowed to no-wake speeds or five miles per hour, whichever is necessary to maintain steerage in the seaway. A diver's flag shall be displayed only while diving operations are underway.

Replace "shall" with "May"



NEVAQUEST



АЛЯСКА КОМИТЕТ ИССЛЕДОВАТЬ КОРАБЛЕКРУШЕНИЕ ФРЕГАТА НЕВЫ

☒ Dennis A. Cowals
P.O. Box 1044
Anchorage, AK 99510
907/344-4157

☐ Jon B. Jolly, Inc.
5416 California Ave. S.W.
Seattle, WA 98136
206/938-4166

☐ F.F. Wright, Ph.D.
P.O. Box 537
Douglas, AK 99824
907/364-2213

16 April 1980

Senator Bill Sumner
Chairman, Senate Resources Committee
Alaska State Legislature
Pouch V (MS 3100)
Juneau, Alaska 99811

Dear Senator Sumner:

Your Resources Committee currently has before it HB 636 am, "An Act requiring flags for divers." At a recent hearing, the bill was passed over because of the objections of Senator Don Bennett. I was able to meet with Senator Bennett last week during a business trip to Juneau and we were able to resolve the differences on the measure.

Fortunately for us divers, Senator Bennett became concerned about the language "requiring" flags and then dictating that divers "shall" do this or that. He was concerned that the present language would change what was designed as a safety measure into an enforcement statute. In the course of our discussion, I realized why he was objecting to the bill in the form approved by the House.

After working through the measure and considering the possible effects on sport and commercial divers, in both fresh and salt water, I acceded to Senator Bennett's proposed changes in language. They are:

-- changing the title from "An Act requiring flags for divers," to "An Act relating to flags for divers," and;

-- substituting the word "may" for the word "shall" in lines 10, 12, 13 and 14.

These changes rightfully place the burden of responsibility on the divers themselves; if they display the flag, then they may expect boaters to steer clear. Otherwise, boat operators would be absolved of any legal responsibility. At the same time, these alterations will not create any new and potentially costly enforcement burden for the state.

I hope you and your committee will approve the measure, and further that you will work to secure its passage in the Senate on behalf of your diver constituents. Nevaquest, by the way, is our working group for underwater archaeology. We are actively seeking two historic Russian wrecks in Alaskan waters at this time. Thank you for your help.

Sincerely,

Dennis A. Cowals
Director, Nevaquest

March 21, 1980

Senator Bill Sumner
Senate Resources Commission
2216 Culver Place
Anchorage, Alaska 99503

Dear Senator Sumner:

I am writing on behalf of a newly formed group, Southeast Alaska Underwater Council, based here in Ketchikan. Our main objectives lie in the safety and well being of divers here in Alaska.

House Bill number 636 should be supported and passed. Alaska is one of the only states in the United States of America that does not legally recognize the sport divers' red flag with a white diagonal stripe. The "divers down" flag is the only practical way of warning boaters of diving activities. As more and more Alaskans participate in diving, steps such as house bill 636 need to be enacted to insure safety in this rapidly developing area.

On behalf of the Southeast Alaska Underwater Council and the diving community at large, I thank you for your anticipated support and concern for divers' safety.

Sincerely,

Dianne Little

cc: Senator Bob Mulcahy
Senator Bob Ziegler

DL:lc

SYNOPSIS- HB 636am by Parker and Martin

An Act requiring flags for divers

The bill amends the Amusement and Sports section of the Alaska statutes by the addition of the following:

Any person in the water using an underwater breathing device shall:

1) Display a 12"X12" red flag with a white diagonal stripe.
2) It will extend at least 3 feet from the water and be affixed to the boat or on a float device.
3) It will be at or near the divers point of submergence and the diver shoud remain within 100 feet of the flag while underwater. and with sight of the flag
4) It will warn boat operators above water to stay 100 feet away from the flag and slow to no-wake speed or five miles per hour. within sight of the flag

Bill-

CSHB 636 is on today's calendar. It's the divers flag bill which says a diver may display a warning flag while underwater. Once he decides to display it, it will be at the point of submergence and he is to stay within 100 feet of the flag. All boat operators will stay 100 feet away from the flag and slow to no-wake speed or 5miles per hour.

The original bill required all divers to display such a flag but Senator Bennett objected to that hence he met with someone from the Divers Association and worked out the Committee Substitute. There was no opposition to the bill from divers or the Department of Public Safety.

HB 636 am

2/29 Called Public safety left message
with Mike Clemmons - requesting fiscal note
2/29 - will send copy of fiscal note

2/22 - Called Parkers office

Alaska State Legislature

Senate

Committee on Resources

Official Business

March 12, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: HB 636am

This bill amends the Amusement and Sports section of the Alaska statutes by the addition of the following:

Any person in the water using an underwater breating device ~~shall~~ may.

1) Display a 12"X 12" red flag with a white diagonal stripe.
2) ~~It will extend~~ at least 3 feet from the water and ~~will~~ be affixed to the boat or on a float device. and extend
3) It will be at or near the divers point of submergence and the diver is to remain within 100 feet of the flag while underwater. It shall
4) ~~It will~~ warn boat operators above water and within sight of the flag, to stay 100 feet away from the flag and slow to no-wake speed or 5 miles per hour.

There is no fiscal impact

Introduced: 1/29/80
Referred: Community &
Regional Affairs

IN THE HOUSE BY PARKER AND MARTIN

HOUSE BILL NO. 636 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act requiring flags for divers."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 05.25 is amended by adding a new section to read:

Sec. 05.25.012. DIVER'S FLAG. A person who is in the water using an underwater breathing device ~~shall~~ MAY display a diver's flag constructed of rigidly supported material at least 12 inches by 12 inches in area of red background with a white diagonal stripe. This diver's flag shall be displayed on a boat or surface float and shall extend a minimum distance of three feet from the surface of the water. The diver's flag ~~shall~~ MAY be placed at or near the point of submergence and constitutes a warning that a diver is submerged and may be within 100 feet of the flag. A diver ~~shall~~ MAY SHOULD remain within 100 feet of the diver's flag while at or near the surface. A boat operator within sight of a diver's flag shall proceed with caution, steering clear of the flag by a distance of 100 feet. Boats maneuvering within a 100-foot radius of a diver's flag shall be slowed to no-wake speeds or five miles per hour, whichever is necessary to maintain steerage in the seaway. A diver's flag ~~shall~~ MAY be displayed only while diving operations are underway.

100 ft radius

2 Town ui

venture dredging.

7H

DIVERS FLAG LEGISLATION

Briefing paper for an act:

"An Act requiring flags for divers"

By Parker and Martin

Eleventh Legislature - Second Session

Every month, diver training programs in Anchorage, Fairbanks, Juneau, Sitka, Ketchikan and elsewhere are certifying an average of 50 new divers. Given the seasonal variation in interest, it's safe to say 500 or more divers are certified every year around the state.

And why not? With more miles of coastline than the other states combined, Alaska offers the underwater explorer a richness and variety of marine life found nowhere else in the U.S. The tropics are the deserts of the sea. The real riches -- as in commercial fishing -- are to be found in the high latitudes, north and south.

While there are no statistical data to confirm or refute what follows, the consensus among diving instructors puts the total number of certified divers living in Alaska in the five figure bracket. Although the guesses vary, the number of qualified -- not necessarily active -- divers in the state could easily be 20,000 or more; 10,000, certainly, is a credible number. And, it's a number that equals or exceeds the number of boats berthed in coastal harbors around the state.

DIVERS FLAG LEGISLATION
Briefing paper/2

So far, there have not been any diver-boat accidents. But, the growing numbers of divers and the growth of the recreational fleet state-wide raise the likelihood of such an occurrance from a possibility to a probability. At present, very few divers use the divers flag, saying either that the boaters do not know what it means, or that there are so few boats that the risks are minimal. Boaters, likewise, are generally unfamiliar with the ensign although its meaning is covered in Coast Guard boater safety courses.

In other states, the campaign for the adoption and recognition of the divers flag has used photographs showing the hideous pattern of propeller slashes across the back or side of an accident victim. Unless this legislation is adopted and a vigorous information campaign is launched such photographs could appear in the Alaskan press. Simply put, the growing numbers of divers and boaters using the same waters makes it mandatory that the divers flag be adopted and recognized as a warning that people are submerged and that boaters should steer clear of the area.

The onus is not on the divers or the boaters; the responsibility is mutual. Divers must display the flag if they want boaters to avoid the area in which they are diving. And boaters, no less than motor vehicle operators seeing a stop sign, must come to recognize the divers flag as an acceptod warning symbol, as appropriate in Alaska's oceanic and lake environments as the stop sign is in every community.

Alaska is one of 13 states which as yet have not formally adopted or recognized the divers flag. All of tho others have adopted or formulated some regulations defining conditions for its display and response by boaters. While specifics vary from state to state, most

Therefore, the recommended draft legislation covering the use and display of the divers flag in Alaska calls for 150 feet of boater clearance and no-wake speeds. Hopefully, its enactment will prevent needless tragedy in Alaska waters.

FISCAL NOTE

I. REQUEST

Bill/Resolution No. HB 636

Title "An Act requiring flags for divers."

Requested by Rep. Parker Date 2/13/80

II. FISCAL DETAIL

Agency Affected Public Safety

Program Category Affected

BRU, Program, or Subprogram(s) Affected

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		0	0	0		

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

No fiscal impact is projected.

IV. DATE February 13, 1980 PREPARED BY Mike Clemens

AGENCY Public Safety

PHONE 465-4336

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

March 12, 1980

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FROM: Jens Zehbe, Staff Member

REGARDING: HB 636am

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There is no fiscal impact

Introduced: 1/29/80
Referred: Community &
Regional Affairs

IN THE HOUSE BY PARKER AND MARTIN

HOUSE BILL NO. 636 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

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Replace shall with may

DIVERS FLAG LEGISLATION

Briefing paper for an act:

"An Act requiring flags for divers"

By Parker and Martin

Eleventh Legislature - Second Session

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THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST

Bill/Resolution No. HB 636

Title "An Act requiring flags for divers."

Requested by Rep. Parker Date 2/13/80

II. FISCAL DETAIL

Agency Affected Public Safety

Program Category Affected

BRU, Program, or Subprogram(s) Affected

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

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	TOTAL		0	0	0		

FUNDING (Thousands of Dollars)

GENERAL FUND							
FEDERAL FUNDS							
OTHER (Specify Fund Source)							

POSITIONS

FULL TIME							
PART TIME							
TEMPORARY							

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

No fiscal impact is projected.

IV. DATE February 13, 1980 PREPARED BY Mike Clemens

AGENCY Public Safety

PHONE 465-4336

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

HB
779

Jens – HB 779

Brent Petree – water Resources

Dave Deng –

Chakroff

979-5577

DNR Contact also for 779

Frank Rue / Contact — in DNR

David Dennig - Shakroff
in Anchorage @ 279-6577



Per Gerard Rogers

Brent Petrie

Essentially wrote the bill -
& a DNR bill came from
recommendations of NCSL
Nat Conference of State
Legislatures

NATIONAL CONFERENCE OF STATE LEGISLATURES

ENERGY PROGRAM -- GEOTHERMAL PROJECT
PROPOSED TECHNICAL ASSISTANCE PROGRAM FOR ALASKA

Study Areas

A. Resource Characterization

B. Resource Access

C. Resource Allocation

D. Permitting

E. Finance

F. District Heating

G. Public Utility Commission

Staff Responsibilities

NCSL Energy staff, in conjunction with legislative staff, will identify issues, conduct research, analyze policy concerns, investigate administrative responses and prepare legislative proposals, as needed.

Task	Staff	Status
Project Introduction	NCSL	completed
Issue Identification	Joint	completed
Research & Analysis	NCSL	in progress
Supplemental Field Research	Joint	in progress
Project Milestones		
- Policy Profile	NCSL	completed
- Options & Recommendations	NCSL	11/1/79
- Discussion Bill Drafts	Optional	12/79
- Draft Legislation	Optional	1/80
Review of Proposed Legislation		

ACKNOWLEDGEMENT

NCSL would like to acknowledge the contribution to this report made by: David Denig-Chakroff (Div. of Research and Development/DNR); Robert Sanders (Div. of Minerals and Energy Management/DNR); Brian Petrie (Office of Water Management/DNR); and Don Markle (Div. of Power and Energy Development/DNR). NCSL expresses its appreciation for their assistance.

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PROPOSED GEOTHERMAL RESOURCES ACT 2

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INTRODUCTION

The NCSL Geothermal Project is assisting the Alaska Legislature in a review of geothermal policies. To date project staff have conducted field research on two occasions, as well as participating in a public workshop (9/13/79) co-sponsored by the Joint Special Committee on Renewable Energy Policy. As a result of these activities NCSL proposed a State Technical Assistance Program (see Appendix A) which was ratified by the committee leadership (9/14/79).

This document has been prepared pursuant to the state workplan as background material for a committee meeting (11/8/79) intended to consider the policy recommendations herein. The study areas identified in the state workplan are treated as follows:

I. Proposed Comprehensive Geothermal Resources Act

- includes resource characterization (definition), resource access (leasing), water law, permitting and well regulation, and resource allocation.

II. Financial Package

- includes a review of various tax and other incentives for geothermal producers and users, as well as suggestions regarding a state geothermal fund (this section should be considered in conjunction with the NCSL Small-Scale Hydro Policy Report which contains additional material regarding state financing of energy development).

III. District Heating

- includes a proposal to authorize publicly-owned heating districts, as well as a review of utility regulatory issues.

IV. Miscellaneous

- includes funding for administrative agencies, life-cycle costing, building codes and zoning, amendments to the Water Use Act and environmental procedures.

I. PROPOSED GEOTHERMAL RESOURCES ACT

Synopsis

It is recommended that the existing geothermal statute (38.05.181) be repealed and re-enacted in a simplified form. The NCSL draft geothermal statute is proposed for discussion purposes.

The proposed act would:

(1) redefine geothermal resources via a temperature threshold (120°C/248°F)
(2) provide for mineral leasing of geothermal resources on state lands
(3) establish statewide regulatory authority in the Division of Minerals and Energy Management over geothermal drilling activity
(4) indicate the applicability of the Water Use Act (46.15) to geothermal development
(5) provide for simplified access to state lands for low-temperature development
(6) establish regulatory authority over low-temperature development in the Division of Forest, Land and Water Management

The overall design of the proposed act is to distinguish between the development of high-grade thermal resources by major projects (e.g., electrical generation, industrial process heat) and the development of "hot groundwater" for small-scale direct uses (e.g., space heating, greenhouses, aquaculture). The proposed act would also establish the relationship of geothermal development to existing water uses. Certainty, simplification of procedures and stimulation of development are the objectives.

DISCUSSION DRAFT

TITLE 38. PUBLIC LANDS

Chapter ____. Geothermal Resources Act

Article
1. Declaration of Policy and Definitions
2. Geothermal Leasing and Regulation
3. Low-Temperature Development

ARTICLE 1. DECLARATION OF POLICY AND DEFINITIONS

Sec. 1

A. It is declared to be in the public interest to foster and promote the discovery, development, production, utilization and disposal of geothermal resources in the state of Alaska in such a manner as will prevent waste, provide for maximum economic recovery, protect correlative rights, and safeguard the natural environment and the public welfare.

B. It is declared to be in the public interest to foster and promote, under existing law, the utilization of the thermal energy contained in the groundwaters of the state of Alaska in an efficient and environmentally sound fashion.

Sec. 2

This act shall apply to all lands in the state of Alaska, including federal and Alaskan Native lands to the extent allowed by law. When any of these lands are committed to a unit agreement involving lands subject to federal jurisdiction, the operation of this act or any part of this act may be suspended, provided that the unit operations are regulated by the United States and that the conservation of geothermal resources is accomplished under such unit agreement.

Sec. 3

Administration of this chapter shall be under the principle of multiple use of public lands and, insofar as feasible, shall allow for the coexistence of other permits or leases of the same lands for other purposes. Leases or permits issued for lands withdrawn or acquired in aid of the functions of the Department of Natural Resources shall carry such conditions as will conform the lease operations to the purposes of such lands.

Sec. 4

A survey of the state's geothermal resources shall be performed by the state geologist and included in the complete geological survey of the state authorized by AS 41.07.020. A statement of the progress of the geothermal resources survey shall be contained in the annual report required by that section. A geothermal resources file shall be maintained and made available to the public in the offices of the State Geological and Geophysical Survey (and/or the State Division of Energy and Power Development).

Sec. 5

As used in this act, unless the context requires otherwise:

A. "byproduct" means dissolved or entrained minerals and gases (exclusive of hydrocarbon substances and helium) associated with geothermal resources,and demineralized water;

B. "correlative rights" means the right of each geothermal owner in a geothermal system to produce without waste his just and equitable share of the geothermal resources in the geothermal system;

C. "division" means the Division of Minerals and Energy Management in Article 2 of this chapter and means the Division of Forest, Land and Water Management in Article 3 of this chapter;

D. "geothermal area" means the general land area which is underlain or reasonably appears to be underlain by geothermal resources;

E. "geothermal fluid" means brines, water and steam naturally present in a geothermal system;

F. "geothermal resources" means (1) the natural heat of the earth at temperatures greater than 120 degrees Celsius; (2) the energy in whatever form, present in, resulting from, created by or which may be extracted from that natural heat, including pressure; (3) the material medium containing the energy; and (4) all dissolved or entrained minerals and gases which may be obtained from the material medium, but excluding hydrocarbon substances and helium;

G. "geothermal system" means any strata, pool, reservoir or other geologic formation containing geothermal resources;

H. "material medium" means geothermal fluids or water and other substances artificially introduced into a geothermal system to serve as a heat transfer medium;

I. "operator" means any person drilling, maintaining, operating, producing or in control of any well;

J. "owner" means any person who has the right to drill into, produce and make use of geothermal resources;

K. "person" means any individual, business entity, political subdivision or body politic of this or any other state;

L. "waste" means any inefficient, excessive or improper production, use or dissipation of geothermal resources, including, but not limited to:

(1) drilling, transporting or storage methods that cause or tend to cause unnecessary surface loss of geothermal resources;

(2) locating, spacing, drilling, equipping, operating, producing or venting of any well in such a manner that results or tends to result in reducing the ultimate economic recovery of geothermal resources.

M. "well" means any well drilled, converted or reactivated for the discovery, testing, production or subsurface injection of geothermal resources, or of groundwater valuable for its thermal energy.

ARTICLE 2. GEOTHERMAL LEASING AND REGULATION

Sec. 1

A. The Division of Minerals and Energy Management shall have and is hereby given jurisdiction over all persons and property, public and private, necessary to enforce the provisions of this article, and shall have the power and authority to make and enforce rules, regulations and orders reasonably necessary to carry out the purposes of the act.

B. Any affected person may apply for a hearing before the division, or the division may initiate proceedings upon any questions relating to the administration of this article, and jurisdiction is hereby conferred upon the division to hear and determine the same and enter its rule, regulation or order with respect thereto.

Sec. 2

The state of Alaska shall own all geothermal resources where it has title to the minerals or subsurface estate. Rights to explore for, develop and utilize geothermal resources owned by the state of Alaska may be obtained solely in accordance with the provisions of this article.

Sec. 3

The division may designate geothermal resource areas and declare certain of these, or portions thereof, as a "competitive geothermal resource area," each of which shall contain at least one well capable of producing geothermal resources in commercial quantities.

Sec. 4

A. The division may, under rules and procedures it shall adopt, grant prospecting permits and leases to any qualified person in order to explore for, develop or utilize state-owned geothermal resources.

B. Where title to the surface is held by a person other than the state, such person shall have a preferential right to a prospecting permit or lease for such parcel.

Sec. 5

A. On lands which have not been designated as a geothermal resource area, the division shall issue a prospecting permit to the first qualified applicant.

Such permit shall convey an exclusive right, for a period of two years, to prospect for geothermal resources on lands included within the permit. The division may, at its discretion, renew the permit for an additional one year. The division may revoke a permit should it find that the permittee has failed to dilligently prosecute efforts to discover geothermal resources.

B. A holder of an exclusive prospecting permit shall have the right, within the permit term or thirty days thereafter, to convert such permit to a lease. Should the lands included within the permit be declared a "competitive geothermal resource area" during the permit term, the permittee must make application for a lease within thirty days or forfeit his conversion privileges and his exclusive right to prospect.

C. On lands which have been designated a geothermal resource area, prospecting permits may be granted on a non-exclusive basis for a one-year term. Such permits may, at the discretion of the division, be renewed annually. Holders of non-exclusive prospecting permits shall have no right to convert such permits to a lease; however, the division may allow expenditures made under such permits to be credited against lease payments for any lease covering the same lands, which is subsequently issued to the permittee.

Sec. 6

A. On lands which have not been declared a "competitive geothermal resource area," and which are not included under an exclusive prospecting permit, the division may issue a geothermal lease to the first qualified applicant.

B. On lands declared to be within a "competitive geothermal resource area," and which are not included under an exclusive prospecting permit, the division may issue geothermal leases by public auction to the highest qualified bidder. At the discretion of the division, competitive lease sales may be by oral or sealed bid, on the basis of a cash bonus, profit share or other single factor.

Sec. 7

A. The division shall, on all permits and leases, attach such conditions as it shall deem necessary to provide for multiple use of state lands, protect the rights of other persons holding an interest in the same lands, prevent waste and safeguard the natural environment and the public welfare.

B. The division shall require a geothermal permittee or lessee to compensate the owners of prior interests in the same lands for damage to those interests, or to post a sufficient bond pending judicial determination of the matter.

Sec. 8

A. Prospecting permits and leases granted under this article shall normally be issued on parcels at least 40 acres in size, but in no case more than 2560 acres in size.

B. No person shall own, or hold an interest in, geothermal leases covering more than 51,200 acres; except that leases in commercial production, individually or in concert, shall not be counted against this acreage limitation.

C. All prospecting permits and leases shall be subject to an annual rental, payable in advance, of at least one-dollar per acre.

Sec. 9

A. Geothermal leases shall be issued for a primary term of ten years and shall be renewed for an additional term of five years if the lessee is actively engaged in drilling operations. Geothermal leases shall be valid for the duration of commercial productior up to a term of 40 years.

B. The division may renegotiate the provisions of a geothermal lease, including rentals and royalties, beginning 15 years after the initiation of commercial production and at 10 year intervals thereafter.

Sec. 10

A. The division shall charge a royalty of at least 10% but not more than 15% on the gross revenues derived from the production, sale or utilization of geothermal resources under a state lease. It shall also charge a royalty of at least 2% but not more than 10% on the net proceeds derived from the production, sale or utilization of byproducts under such lease. In no case shall the combined royalties on a lease be less than two-dollars per acre.

B. The division may, at its discretion and in the public interest, reduce, suspend or waive the royalties otherwise due under a state lease. In such cases, the lessee shall pay a minimum annual rental of three-dollars per acre.

Sec. 11

A. The division shall promulgate a development program on each discernible geothermal system, including well-spacing and pooling orders, limits on production and reinjection requirements, in order to prevent waste, promote maximum economic recovery and protect correlative rights.

B. Lessees on a geothermal system, or part thereof, may enter into a unit agreement for cooperative development, with the approval of the division. The division may suspend or modify its development program in accord with such unit agreement.

C. Should the owners of two-thirds of the leasehold interests in a geothermal system ratify a unit agreement approved by the division, the divisi may enforce the agreement as to lessees not a party to the agreement by allocating production under the principle of correlative rights and by apportioning costs and revenues.

D. Lease operations under a well-spacing and pooling order or an approved unit agreement shall be deemed to be in compliance with individual lease requirements.

Sec. 12

A. The division shall promulgate regulations covering the siting, spacing, drilling, casing, cementing, testing, logging, operating, producing and abandonment of geothermal wells so as to prevent:

(1) geothermal resources, water or other fluids, and gases from escaping into strata other than that in which they are found (unless in accordance with an approved reinjection program);

(2) pollution of surface and ground water;

(3) premature cooling of any geothermal system by water encroachment or otherwise;

(4) blowouts, cavings and seepage; and

(5) unreasonable disturbance or injury to neighboring properties, prior water rights, human life, health and the natural environment.

B. The division shall cause the operator of any geothermal well or wells to file adequate individual or blanket surety bonds to ensure compliance with its regulations.

C. The division shall have the right to enter upon any property, public or private, to inspect a geothermal operation for compliance with its regulations.

D. Geothermal wells regulated by the division shall be exempt from Oil and Gas Commission jurisdiction under AS 31.05.030(g).

Sec. 13

A. Operators shall, prior to drilling a geothermal well, file a notice of intent with the Chief Officer of the Water Management Section of the Department of Natural Resources. Such notice shall contain sufficient information to enable the Chief Officer to determine whether the operation of such well will interfere with and impair an existing water right.

B. Operators shall not commence the drilling of a geothermal well without the approval of the Chief Officer, who shall grant such consent upon finding that:

(1) the proposed geothermal well operation will not significantly interfere with or substantially impair an existing water right; or

(2) the geothermal owner has acquired through purchase or condemnation adequate water rights to offset the potential interference or impairment; or

(3) the geothermal owner has obtained and dedicated an equivalent amount of replacement water of comparable quality to the affected party or parties.

The Chief Officer shall retain his jurisdiction, including the authority to suspend well operation, in the event of unforeseen interference which occurs subsequent to his approval.

C. The withdrawal of geothermal fluid from a geothermal well and its sale or utilization for primary energy production shall not otherwise be subject to the Water Use Act (AS 46.15). The secondary use of spent geothermal fluids or of demineralized water obtained as a byproduct shall be subject to the provisions of the Water Use Act. However, the geothermal owner shall have a preferential right to appropriate such geothermal fluids or demineralized water, in order to make beneficial use thereof.

ARTICLE 3. LOW-TEMPERATURE DEVELOPMENT

Sec. 1

A. The Division of Forest, Land and Water Management shall have and is hereby given jurisdiction over all persons and property, public and private, necessary to enforce the provisions of this article, and shall have the power and authority to make and enforce rules, regulations and orders reasonably necessary to carry out the purposes of the act.

B. Any affected person may apply for a hearing before the division, or the division may initiate proceedings upon any questions relating to the administration of this article, and jurisdiction is hereby conferred upon the division to hear and determine the same and enter its rule, regulation or order with respect thereto.

Sec. 2

A. It is hereby declared that the beneficial use of groundwater includes the extraction for sale or use of thermal energy contained therein for domestic, commercial, industrial, agricultural, aquacultural or other purposes approved by the division.

B. Priority of appropriation includes the right to preserve thermal aspects of groundwater use from subsequent impairment.

C. The utilization of groundwater for thermal purposes shall be governed by the provisions of the Alaska Water Use Act (AS 46.15) and regulations promulgated thereunder.

Sec. 3

A. The division shall have the authority to issue a special land use lease to any qualified person who applies to use the surface of a state land parcel to construct a facility utilizing groundwater for thermal purposes, or utilizing spent geothermal fluids in a secondary application.

B. Prior to the issuance of such lease, the division shall determine that there is available unappropriated groundwater or spent geothermal fluids sufficient to achieve the purposes of the lease. In the case of groundwater, the appropriation shall be made in the name of the state of Alaska and dedicated to the benefit of the leasehold. Upon termination of the lease, the water right shall revert to the state, unless the division grants an extension of the water right for good cause and in the public interest.

Sec. 4

A. The division shall exercise discretion with regard to the term, renewal and acreage (not to exceed 160 acres in size) of any special land use lease issued under this article. Such conditions shall correspond to the intended use to be made of the state parcel. The division shall attach such other conditions to the lease as to protect the public interest and conform the lease operation to other established uses of such lands.

B. Lease payments to the state of Alaska shall be on the basis of an annual rental, payable in advance, or on the basis of a profit share, such payments to be negotiated between the lease applicant and the division. In no case shall such lease payments total less than three-dollars per acre.

Sec. 5

A. The division shall promulgate such regulations as are necessary to control the drilling of any groundwater wells for thermal purposes so as to prevent:

(1) groundwater from escaping into strata other than that in which they are found (unless in accordance with an approved reinjection program);
(2) pollution of surface and ground water;
(3) impairment of prior water rights by premature cooling, or reduction in quality or quantity; and
(4) unreasonable disturbance or injury to neighboring properties, human life, health and the natural environment.

B. The division shall have the authority to require any operator of a groundwater well for thermal purposes to file a notice of intent and receive the approval of the division prior to commencing actual drilling. The division may require the maintenance of such records and well logs as it may require and may enter upon any property, public or private, to inspect the operations for compliance with its regulations.

C. If the division finds that an encounter of oil, gas or other hazardous substance is likely to result from well drilling, the provisions of AS 31.05.030(g) shall apply.

ADDENDUM TO THE GEOTHERMAL RESOURCES ACT

Art. 1 § 1 B: (deletion)

It is declared to be in the public interest to foster and promote (under existing law) the utilization of the thermal energy . . . .

Art. 1 § 5: additional definition (E): reletter subsequent definitions

"geothermal effluent" means the material medium subsequent to electrical production or other primary energy extraction process;

Art. 1 § 5 F: (deletion)

. . . (3) the material medium (containing the energy); and . . . .

Art. 1 § 4 B: additional material

. . . preference right to a prospecting permit or lease for such parcel. Such right must be exercised at the time of the first application for a permit or lease on such lands, or it shall be forfeited.

Art. 1 § 5 A: additional material

. . . designated as a geothermal resource area or withdrawn from entry, the division shall issue . . . .

Art. 1 § 7: additional material (B); reletter existing B as C

B. Lease conditions shall include diligence requirements regarding drilling and lease development. Failure to comply with such conditions shall be grounds for termination of the lease, unless they be waived or suspended by the division for good cause shown and in the public interest.

Art. 2 § 10 B: addition and (deletion)

B. The division may, for good cause shown (at its discretion) and in the public interest, reduce, suspend or waive the minimum rentals and royalties otherwise due under a state lease. (In such cases, the lessee shall pay a minimum annual rental of three-dollars per acre.)

Art. 2 § 11 A: addition and (deletion)

. . . promulgate a development program on each producing (discernible) geothermal system . . . .

Art. 2 § 11 D: addition and (deletion)

D. Lease operations under an approved development program (a well-spacing and pooling order or an approved) or unit agreement shall be deemed . . . .

Art. 2 § 13 B: addition

. . . in the event of unforeseen interference to prior rights which occurs subsequent to his approval.

Art. 2 § 13 C: addition and (deletion)

. . . The secondary use of geothermal effluent (spent geothermal fluids) or of demineralized water . . . . preferential right to appropriate such geothermal effluent (geothermal fluids) or demineralized water . . . .

Art. 3 § 2 B: delete entire section; reletter C to B

Some degradation of thermal aspects should be allowed, by analogy to allowable changes in the "condition of water occurrence" (AS 46.15.050). Excessive or unreasonable thermal degradation can be prevented via the regulatory authority regarding the prevention of "premature cooling" (Art. 3, § 5 of the proposed act).

Art. 3 § 3 A: addition and (deletion)

. . . or utilizing geothermal effluent (spent geothermal fluids) in a secondary application.

Art. 3 § 3 B: addition and (deletion)

. . . available unappropriated groundwater or geothermal effluent (spent geothermal fluids) sufficient to achieve . . . . Upon termination of the lease, (the) such groundwater right shall revert to the state, unless the division grants an extension (of the water right) for good cause shown and in the public interest. Water rights to geothermal effluent shall also be relinquished upon the termination of such lease and shall be available for subsequent appropriation, subject to the preference right of the original geothermal owner.

Art. 3 § 5 B: addition and (deletion)

. . . the maintenance of such records and well logs as it deems necessary (may require) and may enter . . . .

II. FINANCIAL PACKAGE

A. Tax Incentives

(1) Relevant tax incentives for geothermal producers relate to the income tax and the property tax. With regard to the income tax, Alaska follows the Internal Revenue Code. Thus, the geothermal tax incentives enacted in the National Energy Act of 1978 will be available to geothermal producers in the state. These include: deductions for intangible drilling costs for development purposes; a declining depletion allowance; and, an additional investment tax credit (not necessarily applicable to state income taxes). The legislature may wish to consider allowing intangible costs for exploration purposes to be deducted and insuring that a state investment tax credit is allowed.

The ad valorem property tax looms as the major disincentive to geothermal development. Front-end capital costs to develop a geothermal lease are quite high -- a single well may cost from half to more than a million dollars. Assessing an ad valorem tax on the value of the resource in place during these early years and before commercial return, may constitute an unbearable financial burden. Alternative approaches include: exemption from property taxation until commercial production begins; deferral of property tax payments until commercial production begins; and, substitution of a well-head yield tax for ad valorem assessment.

(2) Relevant tax incentives for geothermal users also relate to the income and property taxes. Income tax credits for expenditures for equipment to use geothermal resources (or alternate energy sources) can significantly reduce front-end capital costs and reduce payback periods. A federal alternate energy income tax credit is available, but many states have enacted supplemental legislation. Another option is to exempt the added value of a home or business due to installation of geothermal (or alternate energy sources) equipment from property taxation. A bill draft along these lines developed by the Alaska Division of Power and Energy Development, as well as an NCSL bill draft on the subject, is attached (see Appendix B).

B. Funding of Energy Development (see Small-Scale Hydro report)

Many funding avenues are available for consideration by the legislatures; a memorandum from the Legislative Finance Division listing these possibilities is attached (see Appendix C). With regard to geothermal development, three options are particularly attractive:

(1) direct funding (via grants or low-interest loans) for exploration and drilling costs incurred by municipalities. Revenue bonding is inapplicable to discovery and drilling costs due to the inherent risk. Use of general obligation bonds for such purposes is subject to debt limits and political constraints. Direct state funding would constitute an important alternative (see HB 309, Appendix C).

(2) "double barrel" bonding is the pledge of both project revenues and general revenues (full faith and credit) to secure bond issues. Given the risky nature of reliance on "new" energy sources such as geothermal, such authority may enhance the marketability of municipal geothermal bond issues (see HB 241, Appendix C).

(3) state bond guarantees would be another option to enhance the marketability of geothermal bond issues. Using state funds to guarantee bonds rather than to directly fund project construction should allow the available dollars to go farther. In addition, private capital markets would be the primary source of equity, rather than state revenues. Such involvement of the private sector should be encouraged; direct state funding would reduce such participation.

III. DISTRICT HEATING

A. District heating is an attractive and potentially near term application of geothermal resources and hot groundwater. Indeed, even normal gradient groundwater may be effeciently utilized via a water-to-air (groundwater referenced) heat pump. Given the lack of a power transmission grid in Alaska, direct geothermal uses such as district heating may turn out to be the most widespread type of development.

Alaska has expressed a strong constitutional (Art. X, Sec. 5) and statutory (29.63.090(d)) preference against the creation of new political entities to provide services which might be provided by existing ones. Municipalities (boroughs/cities) are already authorized to provide "heat, light, power (and) water" services (29.48.030). This seems adequate to cover district heating services. Borough service areas (29.63.090), public corporations or other municipal instrumentalities (29.59.010) are possible district heating vehicles. Municipal bonding, taxing, property, franchise, regulatory and other powers also are adequate for implementing district heating (see Appendix D).

While the existing authority seems adequate, it may enhance the marketability of municipal bonds to enact a statute declaring that municipal bonds may be issued to finance heating districts using geothermal, waste heat and alternate energy services. Also, such bonds might be accredited as legal investments for banks, trust funds and other institutional investors.

Alaska has a statute regarding Area Redevelopment (41.30) which is administered by the Board of the State Development Corporation. The statute authorizes cooperation with political subdivisions and industry to promote business expansion in redevelopment areas, including loans to aid financing. It is suggested that the legislature direct the Board to consider the organization of heating districts for industrial/commercial parks utilizing geothermal resources in its administration of the redevelopment program.

B. Public Utility Commission policies relating to the certification of new utilities (i.e., heating districts), service rates and reliability of service may have a significant impact on the development of district heating. NCSL will be conducting additional field research on these issues during its November visit to Alaska and may make recommendations on these matters at a later date.

IV. MISCELLANEOUS

A. Agency Funding

Agencies designated to administer the proposed Geothermal Resources Act will require adequate staff and funding levels to implement its provisions. These agencies and their responsibilities under the act include:

(1) State Geological and Geophysical Survey - conduct a statewide assessment of geothermal resources and maintain files available to the public.

1. the Division of Energy and Power Development might also be directed to maintain public geothermal files under the proposed statute.

(2) Division of Energy and Minerals Management - designate geothermal resource areas, issue prospecting permits and leases, conduct lease sales, manage geothermal system development, regulate geothermal wells, promulgate rules and procedures and inspect geothermal operations.

(3) Division of Forest, Land and Water Management - investigate the impact of geothermal operations on existing water rights, issue leases, grant hot groundwater rights, regulate groundwater wells, promulgate rules and procedures, and inspect thermal groundwater operations.

The legislature may, if the act is adopted, memoralize these agencies with regard to submission of an annual operating budget request sufficient to fund the above activities. Such funding might be derived from general revenues, by earmarking geothermal and special land use lease payments, or a combination thereof.

Boroughs and cities will also be impacted by geothermal development. Such impact may include preparing geothermal zoning elements, revising land use plans, issuing various local permits and providing increased local services. Earmarking of geothermal lease revenues for such purposes is a possible funding option in this regard. A bill has been proposed in the California legislature directing the conveyance of federal geothermal lease payments to impacted counties. The administration is recommending an alternative bill. Copies of these proposals are attached (Appendix E).

B. Life-Cycle Costing

Life-cycle costing is a vital concept for the development of alternate and renewable energy sources. Construction of facilities to generate power from and installation or retrofitting of equipment to use such sources entails large front-end costs. The economic advantage of alternate energy sources vis-a-vis conventional fuels emerges only when costs are compared over the total useful life of a facility or building. That is, alternate energy development is capital intensive with relatively fixed, low fuel costs. Conventional fuel development is often less capital intensive -- due to established infrastructure -- but fuel costs are high and subject to escalation.

Thus, life-cycle costing should be incorporated into economic analyses of state-financed loans or grants for energy development (see the Small-Scale Hydro report on this subject).

Also, construction, expansion or revamping of public buildings should include life-cycle costing of various energy systems. An NCSL bill draft on this subject is attached (see Appendix F).

C. Building Codes and Zoning

Local building codes and zoning ordinances can constitute a severe impediment to the utilization of alternate energy systems. On the other hand, innovative ordinances such as the San Diego County solar hot water requirement and the Portland insulation program can serve as a stimulus to the commercialization of alternate energy. NCSL is building capacity regarding these initiatives and may be able to offer assistance to legislative policy reviews. One option would be the adoption of a Joint Resolution expressing the sense of the legislature with regard to removing local ordinance impediments.

D. Water Use Act

The Office of Water Management is in the process of promulgating regulations (11 AAC 93) to implement the Water Use Act (46.15 AS). Clarification of the ability to condition certificates of appropriation has been identified as a desirable remedial amendment (see the discussion of HB 186 in the Small-Scale Hydro report). With regard to geothermal and hot groundwater three initiatives are worth of examination:

(1) explicitly authorize the protection of thermal aspects of a water right via priority of appropriation;

(2) explicitly authorize the Office to appropriate thermal groundwaters in the name of Alaska on state lands and dedicate those water rights to special land use lessees;

(3) declare geothermal fluids (over 120°C) to be exempt from appropriation and the Water Use Act.

E. Environmental Procedures

Alaska's Environmental Procedures Coordination Act (EPCA) has not been thoroughly implemented (see the Small-Scale Hydro report for further analysis). With regard to geothermal development, the legislature may wish to direct that all the relevant permits be included within the EPCA process. In addition, it might be appropriate to develop a true master permit application for hot groundwater development, whereby only a single form would need to be completed. This is suggested as a method of simplifying the permit process for small-scale developers.

APPENDICES

A. Alaska Technical Assistance Program/Geothermal

B. Tax Credit Proposals

C. Alaska Funding Options

D. District Heating Article

E. California Proposals on Earmarking Geothermal Lease Revenues

F. Life-Cycle Costing Bill

APPENDIX A

Alaska Technical Assistance Program/Geotherma

APPENDIX B

Tax Credit Proposals

ALTERNATIVE ENERGY DEVICE TAX CREDIT

1979

GENERAL SESSION

Discussion Draft

_____B. No._____ By_____

AN ACT RELATING TO ALTERNATIVE ENERGY DEVELOPMENT: DEFINING ALTERNATIVE ENERGY DEVICES; PROVIDING AN INCOME TAX CREDIT FOR SUCH DEVICES; ALLOWING A CARRY OVER TO SUCCEEDING TAXABLE YEARS; PROVIDING FOR AMORTIZATION OF ALTERNATIVE ENERGY DEVICES IN COMMERCIAL USE; DESIGNATING THE STATE TAX COMMISSION TO ADMINISTER THIS ACT AND ESTABLISH STANDARDS IN CONJUNCTION WITH THE UTAH DIVISION OF WATER RIGHTS AND THE UTAH ENERGY OFFICE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF UTAH:

SECTION I. Definition of Terms

As used in this act:

(a) "Alternative energy device" means (1) any system, mechanism or series of mechanisms which uses solar radiation, wind or geothermal resource for space heating, water heating or cooling, or for generation of mechanical or electrical energy for use but not for resale, (2) a system that employs a fluid-to-air heat pump operating on groundwater reservoir or a fluid reservoir heated by solar radiation or geothermal resource, and (3) equipment necessary to utilize and connect to a private or municipal system for purposes of heating and cooling that employs an alternative energy device or heat from an industrial or utility cogeneration system.

(b) "Cogeneration system" means a system which produces electrical energy and steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating or cooling purposes.

(c) "Installation costs" means the costs, as determined according to standards established in the administration of this act, for acquisition, installation, construction, reconstruction or remodeling properly attributable to the use of an alternative energy device.

SECTION II. Residential Tax Credit

(1) Any resident individual taxpayer who completes installation of an alternative energy device for use in such taxpayer's principal dwelling prior to June 30, 1985, or who acquires title to a dwelling prior to June 30, 1985,

which dwelling is to be used as a taxpayer's principal dwelling and is supplied energy from an alternative energy device for which the credit allowed by this section has never been claimed, shall be entitled to claim a tax credit in an amount equal to thirty-five percent (35%) of the installation costs of such system or three thousand dollars ($3,000), whichever is less, against the income tax liability imposed against the taxpayer pursuant to Title 59 Chapters 14 and 14A of the Utah Code Annotated, 1953. Such tax credit shall be deducted from the taxpayer's income tax liability for the taxable year in which the alternative energy device was completed or acquired and placed in service by the taxpayer.

(2) If the amount of such tax credit exceeds the taxpayer's income tax liability for such taxable year, the amount thereof which exceeds such tax liability may be carried over for deduction from the taxpayer's income tax liability in the next succeeding taxable year or years until the total amount of the tax credit has been deducted from tax liability.

(3) The provisions of this section shall be retroactive to the 1979 taxable year.

SECTION III. Commercial Tax Credit

Any taxpayer who completes installation of an alternative energy device upon real property located within this state prior to June 30, 1985, which real property is either used in a trade or business or held for the production of income, or any taxpayer who acquires title to real property located within this state prior to June 30, 1985, which real property is used in a trade or business or held for the production of income and is equipped with an alternative energy device for which the credit allowed by this section has never been claimed, shall be entitled to claim an income tax credit in an amount equal to thirty-five percent (35%) of the installation costs of such system or six thousand dollars ($6,000) or an amount equal to the taxpayer's income tax liability in the taxable year for which the credit is claimed, whichever is less, against the tax liability imposed against such taxpayer pursuant to Title 59 Chapters 14 and 14A of the Utah Code Annotated, 1953. Such tax credit shall be deducted from the taxpayer's tax liability for the taxable year in which such system is acquired and placed into service by the taxpayer. This provision shall apply retroactively to include the 1979 taxable year.

SECTION IV. Federal Tax Credit

The federal income tax credit for an alternative energy device as defined in this act shall be subtracted from the state credit prior to obtaining the state credit so that the combined credit, state and federal, would be 35% or $3,000 for claimants under Section II, and for claimants under Section III, 35% or $6,000.

SECTION V. Amortization of Alternative Energy Device

(1) Retroactive to the 1979 taxable year, and in addition to the income tax credit allowable, any taxpayer who completes installation of an alternative energy device upon real property located within this state prior to June 30, 1985,

It is the policy of the State of Alaska to reduce the State's dependency on fossil fuels for internal use. It is the policy of the State to utilize these resources to garner income to the State for needed improvements and services.

FOR AN ACT ENTITLED "ALTERNATE ENERGY TAX CREDIT AND POLICY".

I. Be it enacted by the State of Alaska that a State Corporate or Income tax credit of 75% of the cost of installing an Alternate Energy System in a home or business be granted to the installers.

A. Alternate Energy System is defined as systems that have the means of energy production utilizing energy sources other than fossil or nuclear fuels.

B. This would include but not be limited to: Solar, Wind, Biomass, Low head hydroelectric and geothermal energy systems.

If credit exceeds tax liability for year of installation, it can be carried forward to future years until tax credit is used entirely. This Act will remain in effect until 1991.

II. The State of Alaska authorizes local taxing authorities to exempt property with alternate energy systems from increased assessment due to the system. Exemption extends until the last day of December 1999. This applies to new construction and retrofits.

III. Energy conservation techniques and passive solar design qualify for the tax credit under the following criteria:

A. New construction can qualify if it saves more than 10% of the yearly fossil fuel or electrical resistivety consumption of the latest ASHRAE or State of Alaska lighting and thermal standard facility whichever is most energy efficient.

B. Retrofit homes or business can qualify for the exemption based on a 10% savings of energy consumption for the previous year resulting from passive design or energy conservation measures.

C. After the last day of December 1982, retrofit homes will qualify only on the portion of passive solar design or energy conservation measures that reduces fossil fuel or electrical resistivety consumption 10% above the latest ASHRAE or State lighting and thermal standards whichever is the most demanding.

D. Maximum tax credit allowed is $10,000 combined Federal and State allowances. Federal credits must be taken first before state tax credits will be allowed.

IV. All new multiunit housing facilities must have individual metering for heating and lighting controls to qualify for this tax credit.

APPENDIX C

Alaska Funding Options

Alaska State Legislature

House

JUNEAU ALASKA

April 3, 1979

M E M O R A N D U M

TO: The Honorable Ernie Haugen
House Finance Committee

FROM: Milt Barker, Fiscal Analyst
Legislative Finance Division

SUBJECT: Power Project Financing

Following is a summary of the various funding sources and mechanisms that might be used to finance power projects:

1. General Funds can be appropriated to fund entire projects, front-end costs (reconnaissance and feasibility studies, engineering, etc.), reserves for revenue bonds, or partial project costs. Appropriation of general funds can be designated as coming from the reserve for energy facilities development account which is allocated 5% of mineral rents, royalties, and bonuses, or the reserve for capital outlay account which is allocated 25% of mineral revenues.

If the appropriation is made as a grant, it should probably be viewed as a subsidy. This would allow undertaking of projects that would not otherwise occur, although it is conceivable that a project would be subsidized even if capable of being conventionally financed in order to lower costs to users, say to fight inflation or provide or promote economic development.

If the general funds are appropriated as a loan or to the power project revolving fund or water resources revolving fund to be passed on as a loan which will ultimately be paid back out of project revenues, the appropriation may or may not involve a subsidy depending on the terms of the loan.

The payback of loans from these revolving funds will eventually create another source of funding; however, at present there are essentially no unloaned funds in these revolving funds.

2. Revenue bonds can be sold by the State or the Alaska Power Authority for construction costs. If the State were to combine its full faith and credit with the pledged revenues in a "double-barreled" bond a lower interest rate could be obtained. (See attached materials on HB 241 which proposes this combined revenue-general obligation bond.) Such bonds would need voter approval.

3. Guarantees of revenue bonds have been proposed from permanent fund income in HB 414. Bond underwriters estimate this technique could get interest rates down to within 1/4 to 1/2 of a percentage point of G.O. bonds. The advantage of this proposal is that permanent fund income is the only available source of revenue that can legally be dedicated, thus avoiding the necessity of making a large appropriation to a reserve or guarantee fund to assure the bondholder of monies to be paid in the event of a default.

4. Subsidies of revenue bonds are proposed in CSHB 414 (attached) by setting aside 50% of permanent fund income for guarantees of bonds for which it is estimated that project revenues will not be sufficient to pay debt service.

5. G.O. bonds or double-barrel bonds could be issued for projects that were not capable of paying the debt service. This would be another way of providing subsidies where needed and determined to be appropriate.

6. A loan can be made from the permanent fund principal. However, it will usually be cheaper for the State to issue bonds, at least G.O.'s or guaranteed revenue bonds, at tax-exempt interest rates of say 6% than to appropriate or loan their general and permanent funds which can be invested in taxable securities earning more like 8%.

7. The Alaska renewable resources corporation could fund power projects from their 5% of mineral revenues; however, generally their mandate is to assist innovative projects rather than standard hydroelectric facilities.

MBD:pw

Attachments

APPENDIX D

District Heating Article

Geothermal Resources Council, TRANSACTIONS, Vol. 3 September 1979

DISTRICT HEATING: LEGAL & INSTITUTIONAL PARAMETERS

Kenneth A. Wonstolen

National Conference of State Legislatures - Denver, Colorado
Geothermal Policy Project

ABSTRACT

District heating is a proven vehicle for the direct application of geothermal energy. Successful systems currently exist in Iceland, France and the U.S., with numerous others in planning or construction stages. As geothermal resources come on-line, district heating is likely to be a widespread method of utilization. Such systems will provide centralized space-conditioning, as well as "cascaded" uses where feasible. Legal and institutional factors should be examined to ensure an adequate foundation for implementing geothermal district heating.

INTRODUCTION

District heating basically means the centralized distribution of heat to multiple end-users within a particular service area. Cascaded utilization would involve the successive use of progressively cooler fluid (e.g. industrial process heat, space-conditioning, greenhousing, aquaculture). The heat source may be geothermal, solar or fossil fuel. The use of cogenerated or waste heat would be especially appropriate. If alternate energy sources are used, supplemental fossil fuel capacity may be necessary to meet peak demands or emergencies. Various entities, both private and public, may constitute vehicles to develop and operate a heating district. Such a heating district will be presumed to be a utility.

INVESTOR-OWNED UTILITIES

The private sector may organize a heating district by incorporating an investor-owned utility. Some existing utilities may already have a steam distribution system in place. In other states, specific legislative authorization for utilities to provide district heating services may be required. Such authorization should allow the production and transmission of various heat mediums, including geothermal, for public and private use.

In order to incorporate a new investor-owned utility, or expand the scope of an existing one, certification from the Public Service Commission (PSC) will ordinarily be necessary. Such a "certificate of public convenience and necessity" may be difficult to obtain where the heating district would impinge on an existing heating utility (gas/electric) service area. State legislatures should consider exempting heating districts using alternate fuel sources or waste heat from the certification requirement. Alternatively, they may direct the PSC to grant certification where the public interest would be served, despite competition with an existing utility.

- Investor-owned utilities are under the rate-making jurisdiction of Public Service Commissions, although this may not be clear where heating/cooling services are newly authorized. PSC control of utility rates normally is justified due to the monopoly status accorded a utility in a particular service area. State legislatures may consider, as an incentive to investment, exempting heating districts using alternate or waste heat sources from PSC rate-making jurisdiction.

Thus, legislatures should review at least three aspects of district heating via investor-owned utilities: the authorization to provide district heating services; the requirement of PSC certification; and, the applicability of PSC rate-making jurisdiction.

PUBLICLY-OWNED UTILITIES

Counties, municipalities, special districts and other political subdivisions also are possible vehicles for implementing district heating. However, most political subdivisions possess no inherent powers. Thus, specific enabling legislation often will be necessary to authorize a political subdivision to organize a heating district. In some cases, municipal utility codes or authorizations to provide "water" may be liberally construed to cover district heating services. "Home rule" entities also may be able to implement district heating on their own initiative.

Where new enabling legislation is required, at least two approaches are possible. One is to enact a comprehensive, specific statute such as Oregon's Geothermal Heating Districts Act (ORS Chap. 523, 1977). Such an approach has the advantage of authorizing entities with a specific, single mandate. Alternatively, an existing political subdivision charter may be amended to include district heating, as Idaho has done with

its municipal code (S. 1062, 1979). While the district heating mandate to such entities may be diluted by existing functions, this approach has the advantage of utilizing personnel and infrastructure in place. In addition, where existing bonding and other powers are already adequate, the legislative drafting job is simplified.

Special districts, a species of local government, offer several advantages as district heating vehicles. They may usually cross other political subdivision boundaries and may sometimes include non-contiguous areas, important factors in matching resource and service load centers. Special districts may be able to impose differential taxing coincident with service areas. Their bond issues normally are exempt from constitutional debt limitations applied to cities and counties. And, they are organized and operated to perform a narrow range of similar functions.

Whatever political subdivision is chosen as a district heating vehicle, certain basic parameters need to be established. These relate to the method of heating district formation, the nature of its boundaries, its purposes and its powers, especially financial.

Formation of a heating district will normally involve resolutions of the governing bodies of participating political subdivisions or, perhaps, a local citizen initiative. A referendum on the matter may be required, especially where the district would have property taxation (ad valorem/special assessment) power. State legislative and/or Public Service Commission approval also may be necessary, although this is less common.

A heating district should have flexibility with regard to its boundaries. The crossing of municipal and county lines, and the inclusion of non-contiguous areas, may be necessary to match the heat source with load centers. Annexation capability would be a useful adjunct. The district also may require extra-territorial jurisdiction over sources of supply and facilities.

The purposes of a heating district will generally be to produce, distribute, utilize, sell and dispose of geothermal resources and other heat mediums for domestic, commercial and industrial use. The authority should be broad enough to include geothermal and cogenerated or waste heat sources, as well as the use of fossil fuels for peaking or emergencies such as well shut-downs. While centralized space-conditioning may often be the primary function, integrated development of cascaded uses should be within the purview of the district.

Since political subdivisions are inherently not risk-taking entities, the exploration function may require an innovative approach. Exploration may be an appropriate function for the district where the geothermal resource is demonstrated or where outside (state/federal) capital is available. Otherwise, joint enterprise ability - joint power authorities (with other political subdivisions) and joint ventures (with private industry) - may be necessary to obtain financing. Alternatively, franchises may be granted to private companies to explore for and produce the resource under a contract of sale. Exemption of such production from PSC rate-making jurisdiction would be an appropriate incentive to attract private risk capital. Publicly-owned utilities already are exempt from PSC jurisdiction in most states.

A geothermal heating utility will require the range of powers of a body corporate and politic: legal status to sue and be sued; ability to contract for services and employ personnel; ability to acquire and dispose of property (within and without the district); ability to fix rates for service; ability to apportion user charges and enforce collection (usually w/ liens); and, the ability to generate capital.

The most likely avenue for capital financing of a geothermal heating district will be revenue bond issues. Service charges would be designed, and may be statutorily required, to retire revenue bond principal and interest, as well as covering operating expenses. However, the ability to levy special assessments may be a necessary concomitant in order to cover revenue shortfalls. Revenue bond issues are not subject to constitutional debt limits and usually need not be approved in an election.

Where the district has ad valorem taxation power, it may be authorized to issue general obligation bonds. Such bonds also may be retired by project revenues but are supported by the full faith and credit (taxes) of the issuing district. General obligation bonds will usually be subject to debt limits if the issuing authority is a municipality or county. Debt limits for special districts are less common, and if applicable, special district debts are generally not cumulative with other local political subdivision debt. General obligation bond issues may need to be approved in an election.

Whatever the bond option chosen, marketability is subject to legislative initiative. State legislatures should consider declaring heating district bonds a legal investment for all banks, trust funds, school funds and other institutional investors. Such accreditation would expand the capital market for the bonds.

A final consideration regarding the powers of heating districts is the grant of easements and eminent domain. Easements along, across or under public byways and existing transmission corridors would assist the district in forming its distribution network. The power to condemn easements on certain private property also may be necessary to complete the system. Consideration may be given to extending the eminent

domain power to existing geothermal wells and sources of supply, although such a proposal is likely to be controversial.

The problem of condemning existing wells or their forced incorporation into a heating district may be unavoidable where single or multi-family wells are already in use. Geothermal production for a heating district may result in reservoir drawdowns, rendering such wells useless. District monetary liability for such events, as opposed to the issuance of an injunction restraining operations, would result, as a practical matter, in condemnation. A possible method to minimize such liability would be the designation of system-wide economic drilling levels, above which no liability would accrue to the district.

Thus, a legislative agenda for public district heating is manifest. The charters of existing political subdivisions should be examined to identify suitable candidates and amended as necessary. Alternatively, a comprehensive, new district heating statute may be enacted. Formation, boundaries, purposes and powers are the parameters which need to be established for public heating districts.

CONCLUSION

While this paper has focused on the specific legal and institutional parameters of geothermal district heating, there are additional factors subject to legislative initiative which will generally affect the pace of implementing such systems. These include: public funding for demonstration projects; geoheating public buildings; innovative and compatible building codes and zoning ordinances; public education and technical assistance; loan programs and tax incentives for alternate energy systems; royalties and taxes on resource production; streamlined regulatory and leasing procedures; and, resolution of ownership and water rights issues. While beyond the scope of this paper, the NCSL geothermal project is prepared to assist states to deal with these policy areas.

APPENDIX E

California Proposals on Earmarking Geothermal Lease Revenues

State-mandated local program: no.

The people of the State of California do enact as follows:

SECTION 1. Chapter 6 (commencing with Section 3790) is added to Division 3 of the Public Resources Code, to read:

CHAPTER 6. GEOTHERMAL REVENUES

3790. All moneys received by the state from the federal government for sales, bonuses, royalties, and rentals of public lands within the State of California under the federal Geothermal Steam Act of 1970, as amended (Chapter 23 (commencing with Section 1001) of Title 30 of the United States Code) shall be deposited in the State Treasury and allocated by the Department of Finance to the counties socially or economically impacted by the federal geothermal leases generating such revenues. The revenues allocated to counties under this section shall be for the purpose of planning, construction and maintenance of public facilities, and provision of public services.

SEC. 2. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

Moneys will be received from the federal government in July from geothermal revenues and it is essential that act be effective at that time.

O

FACT SHEET

COMPARISON OF THE GEOTHERMAL RESOURCES DEVELOPMENT FUND (GRDF) AND THE BOSCO BILL (AB1905)

- Both bills establish procedures for dispersing the revenues returned to the State as a result of base scales on federal land pursuant to the Federal Land Policy and Management Act (FLPMA). Under FLPMA, half the revenue from bonus bids on geothermal leases, as well as from rentals and production royalties are returned to the State. The State is directed to place priority on using the funds to offset the impacts of geothermal development.

AB 1905	GRDF
o All of the funds returned to the State go directly to the county where the lease sale is held (county of origin)	o 60% of the funds go to the county of origin. 25% is available to assist other counties with known or potential resources plan for such development 15% is available to supplement State agency programs which will promote environmentally sound and expeditious geothermal development.

	o Specifies that funds would be available to local governments and State agencies to provide public services necessary to support geotherma activities.
o No such provision	o Would make funds available to local governments and State agencies to install geothermal district heating systems and demonstrate other direct heat and electrical applications.
o No such provision	o Provides for an interagency counsel with local and public membership to determine proje: which merit funding support.
o No such provision	o Requires biennial reporting of expenditures and accomplis ments made as a result of projects undertaken.
o No such provision	o Requires reevaluation of program at the end of 10 years.

o Allows counties of origin to spend funds on anything.	o Requires that funds only be expended on geothermal related activities.
o Funds would go only to counties where a federal lease sale has occured. There are at least 17 counties in California with geothermal resources on federal, state or private lands. At least 4 of these counties will not have a federal lease sale, although there will be development occuring on State and private lands. They would receive no funds under this bill to plan for geothermal development.	o Funds would be available to all counties where it is needed to plan for geothermal development and not just counties with federal lands or lease sales.
o Counties of origin will not be able to receive funds until 6 to 12 months after the lease sale has occured. This would make it difficult, if not impossible, to carry out advance planning prior to development pressures already occuring.	o Funds would be available for all counties, well ahead of lease sales and development pressures.
	o Specifies that funds would be available to local and State agencies to permit, monitor and inspect geothermal activities.

APPENDIX F

Life-Cycle Costing Bill

LEGISLATIVE INTENT

It is the intent of the Legislature to encourage alternative energy development in the State. Further, the Legislature recognizes that California has substantial geothermal energy potential. Geothermal resources offer excellent energy sources which are advantageous in that: (1) they are indigenous to California; (2) their development provides a stimulus to the State's economy; (3) the environmental impacts of geothermal direct heat may be more acceptable than those associated with traditional electrical generation, and mitigation of such impacts is better understood than those associated with traditional electric generation technologies; (4) their development reduces dependence on other fossil fuel sources; (5) geothermal power plants are small scale distributed technologies which can increase system reliability and flexibility; and (6) the lead time for electric power plant construction is relatively short. Based on the opportunities afforded by geothermal development, it is the intent of the Legislature to promote environmentally sound geothermal resources development.

POLICY

It is the policy of the Legislature to encourage environmentally sound geothermal resources development. It is further the policy of the Legislature to reduce the State's dependency on scarce fossil fuels. Therefore, in order to ensure that geothermal development occurs in an orderly and sound fashion, the Legislature hereby declares that all revenues derived from the U. S. Bureau of Land Management's activities under the Geothermal Steam Act of 1970 and distributed through Section 317 of the Federal Land Policy and Management Act (FLPMA), PL 94-579, be appropriated in the following ways:

GENERAL PURPOSES

All monies returned to the State pursuant to Section 317 of FLPMA shall be used to promote geothermal resources development related activities including, but not limited to:

(1) Carrying out necessary planning activities to ensure orderly, environmentally sound geothermal development in as expeditious a manner as possible, including, but not limited to:

(A) resource assessment and exploration technology

(B) local and regional planning and policy development and implementation for complying with State and federally mandated programs

(C) identification and incorporation of feasible mitigation measures necessary to offset adverse impacts to the State's natural resources including the necessary collection of baseline data and monitoring

(D) preparing geothermal elements to county general plans, zoning and other ordinance and accompanying environmental and planning documents.

(2) Providing the necessary public services required to implement, mitigate and enhance geothermal resources development, including, but not limited to:

(A) processing requests and preparing permit applications related environmental documents, monitoring and inspection of geothermal activities to insure compliance with local, regional and State laws, regulations, ordinances and other geothermal related activities: identifying and carrying out actions necessary to mitigate impacts as well as participating in research and development activities

(B) planning, construction, operations and maintenance of necessary public services.

(3) Projects demonstrating the technical feasibility and economics of geothermal direct heat and electrical applications.

(4) Other projects that can be shown to promote development consistent with the policies of this Act.

SPECIFIC PROVISIONS

Public Services means those services which local jurisdictions must provide as a result of geothermal development activities.

Local Jurisdictions means legal subdivisions of the State, including cities, counties, and special districts.

County of Origin means any county in which the Bureau of Land Management lease sale occurred.

Geothermal Resources Development Account means the account established in the State Controller's Office which shall consist of all monies returned to the State by the U. S. Treasury pursuant to Section 317 of the Federal Land Policy and Management Act.

Geothermal Resources Development Fund means those funds which are earmarked for disbursement by the Council and which shall consist of 40 percent of the Geothermal Resources Development Account.

Potential or Known Geothermal Resources means those areas of the State in which there is an identified geothermal resource either as: a) known geothermal resource area (KGRA) as designated by the U. S. Geological Survey; b) geothermal resource areas as designated by the Division of Oil and Gas; or, c) areas with surface manifestations and other indications of the presence of a geothermal resource.

The Geothermal Resources Development Fund and the Geothermal Resources Development Account are hereby created. All monies in the Account shall be expended for the purposes stated in the Act.

There is in the Department of Finance an advisory body known as the Geothermal Coordinating Council, hereafter known as the Council which shall establish guidelines for the administration of monies in the Geothermal Resources Development Fund.

The Council shall have the authority to determine which local jurisdictions have potential or known geothermal resources for the prescribed purposes of this Act.

The Council shall coordinate with the California Energy Commission's statewide planning policy and research and development efforts, as well as other affected State agencies' geothermal planning and program activities, for the promotion or regulation of geothermal energy resources in establishing its guidelines for the administration of the Geothermal Resources Development Fund.

ASSEMBLY BILL No. 1905

Introduced by Assembyman Bosco
(Principal coauthor: Senator Keene)

May 21, 1979

REFERRED TO COMMITTEE ON RESOURCES, LAND USE, AND ENERGY

An act to add Chapter 6 (commencing with Section 3790) to Division 3 of the Public Resources Code, relating to geothermal revenues, and declaring the urgency thereof, to take effect immediately.

LEGISLATIVE COUNSEL'S DIGEST

AB 1905, as introduced, Bosco (Res., L.U., & E.). Geothermal resources: federal lease sales: disposition of revenues.

Existing state law does not provide for the distribution of moneys received by the state from federal geothermal lease sales of public lands. Existing federal law provides for 50 percent of the moneys received for geothermal leases under the federal Geothermal Steam Act of 1970, as amended, to be paid to the state where the leased lands are located.

This bill would provide that all moneys received by the state from the federal government for federal geothermal leases within California be deposited in the State Treasury and allocated by the Department of Finance to the counties socially or economically impacted by the federal geothermal leases generating the revenues.

This bill would take effect immediately as an urgency statute.

Vote: ⅔. Appropriation: no. Fiscal committee: yes.

ALTERNATIVE ENERGY SYSTEMS FEASIBILITY STUDY ACT

1979

GENERAL SESSION

Discussion Draft

_____B. No._____ By_____

AN ACT RELATING TO THE PREPARATION OF FEASIBILITY STUDIES ON ALTERNATIVE ENERGY SYSTEMS FOR NEW OR RENOVATED PUBLIC BUILDINGS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF UTAH:

SECTION I. A new clause (c) is added to Section 63-9-49 (2) (UCA 1953) to read:

(c) (new material) Prepare an alternative energy systems feasibility study prior to the commencement of siting, construction or major renovation of buildings owned by the State of Utah and its political subdivisions. This provision applies to buildings having more than 20 000 square feet of usable floor space. The study shall employ life cycle cost analysis and include simulations of system performance over a year's operating period. At least two non-fossil energy systems shall be evaluated, including the utilization of geothermal or hot water resources where available. The study shall guide the selection of building site, design and energy systems.

which real property is either used in a trade or business or held for the production of income, may elect to amortize the adjusted basis of the alternative energy device based upon a period of sixty (60) months. In computing Utah taxable income, such amortization shall be allowed as a deduction from Utah adjusted gross income ratably over such sixty-month period beginning with the month in which such alternative energy device was completed or acquired and placed into service by the taxpayer. The election of the taxpayer to claim the amortization deduction allowed by this section shall be indicated in an appropriate statement attached to the taxpayer's income tax return for the taxable year in which such alternative energy device was completed or acquired and placed into service. As used in this section, "adjusted basis of the alternative energy device" shall mean an amount that is properly attributable to the construction, reconstruction, remodeling, installation or acquisition of such system.

(2) In any case where a taxpayer, hereinafter referred to as transferor, has qualified and elected to amortize the adjusted basis of an alternative energy device pursuant to subsection (1) and the real property equipped with such system is acquired and used in a trade or business or held for the production of income by another taxpayer, hereinafter referred to as transferee, and the transferor has not fully amortized the adjusted basis of such system as provided in subsection (1), the transferee shall be entitled to amortize that portion of the transferor's adjusted basis of such system remaining unamortized, but the total amount to be amortized by the transferee shall not exceed said transferee's adjusted basis in the system. The transferee shall amortize such remaining amount based upon the remaining portion of the sixty-month period unused by the transferor. The amount by which the transferee's adjusted basis exceeds the amount of the transferor's adjusted basis remaining unamortized shall be amortized over the useful life of the system.

SECTION VI. Administration

The Utah State Tax Commission in conjunction with the Utah Division of Water Rights and the Utah Energy Office is hereby authorized to administer this act and shall prescribe such rules, regulations and standards as may be deemed necessary to carry out the purposes of this act.

Alaska House of Representatives

COMMITTEE ON NATURAL RESOURCES
POUCH V • JUNEAU, ALASKA 99811

MEMORANDUM

TO: House Legislators

FROM: Bill Miles

RE: CS for Sponsor Substitute for House Bill 779

DATE: April 15, 1980

Attached is a Sectional Analysis for CS for Sponsor Substitute for House Bill 779 - an act relating to State resources and the development of geothermal resources. The bill is tentatively scheduled for floor consideration Wednesday, April 16.

CO-CHAIRMEN
REP. ALVIN STERBACK (465-3719) • REP. BILL MILES (465-3770)
VICE-CHAIRMAN
REP. FRED ZHAROFF
REP. PAT CARNEY • REP. C.V. "CHAT" CHATTERTON • REP. SAM COTTEN
REP. DICK ELIASON • REP. JACK FULLER • REP. RICK HALFORD

SECTIONAL ANALYSIS FOR COMMITTEE SUBSTITUTE FOR SPONSOR SUBSTITUTE FOR HOUSE BILL 779

Section 1 - Declaration of Policy

Section 2 - Technical amendment; adds geothermal resources to mineral and surface use reservation clause

Section 3 - Technical amendment; geothermal resource users must make provision to pay surface owners for all damages sustained by the owner relating to the development of the resource.

Section 4 - Permits and Leases:

A. Commissioner is authorized to grant prospecting permits and leases to qualified persons. When the surface title is held by someone other than the State, he has the preference right to a permit or lease for the area underlying the surface parcel.

B. Competitive geothermal areas may be designated by the Commissioner on the basis of "substantial geologic indications" or "competitive interest".

C. Commissioner may issue prospecting permits to the first qualified applicant in areas not designated for competitive sale or withdrawn from geothermal prospecting. Permits are for two years, and may be renewed for an additional one year term. If the permit holder discovers commercial quantities of geothermal resources, he has the right to convert the permit to a lease within 30 days after the expiration of the permit.

D. Competitive leases must be issued to the highest bidder on State land designated competitive and not subject to a prospecting permit. Competitive sales may be by oral or seal bid on the basis of a cash bonus, profit share, or royalty share.

E. Prospecting permits and leases must include at least 40 acres but not be more than 2,560 acres. No person may hold more than a total of 51,200 acres. Geothermal leases in commercial production do not count against the acreage limitations. Permits and leases are subject to a $3.00 per acre per year rental. Rentals are credited against royalties for the same year.

F. Geothermal leases are issued for a primary term of 10 years and may be renewed for an additional term of 5 years if the lessee is actively drilling. Leases are good for the duration of commercial production. Royalties and rentals may be renegotiated by the Commissioner 20 years after the initiation of commercial production and at 10 year intervals thereafter.

G. Royalties are no less than 10% and no more than 15% of gross revenues. They may be taken in kind or in value.

Section 5 - Definition:

"Geothermal resources" - Over 120 degrees celsius.

Section 6 - Geothermal resource development. This section, which gives the Commissioner jurisdiction over all persons and property subject to the police power of the State, authorizes the regulation of the geothermal resource. It prohibits waste, requires development and operation plans and authorizes the Commissioner to issue well spacing and pooling orders, limits on production and reinjection requirements in order to "prevent waste, prorote maximum economic recovery, and protect correlative rights". Lessees are authorized to enter into unit agreements, with the approval of the Commissioner. If more than two-thirds of the leasehold interests ratify a unit agreements, the Commissioner may enforce the agreement as to all parties. Production under these agreements is allocated under principle of correlative rights; costs and revenues apportioned among the participants. The Commissioner must also adopt drilling regulations with respect to the development and abandonment of geothermal wells. Geothermal resources which are regulated by the Commissioner under this chapter are exempt from the jurisdiction of the Alaska Oil and Gas Conservation Commission.

Operators need approval before beginning drilling operations. The date of filing the application for approval establishes a priority as to later appropriators of non-geothermal fluids. Approval may be conditioned to protect prior water rights. However, geothermal fluid is not subject to appropriation of Water Use Act, and no priority may be established among geothermal owners in a geothermal system.

Section 7 - Requires the state geologist to conduct surveys to determine geothermal resource potential.

Section 8 - Appropriation permits required under the Water Use Act may be terminated under the Administrat ve Procedures Act if the permitee has violated a term of the permit.

Section IX - Appropriation certificates may contain conditions including conditions that are necessary to protect the prior rights of other persons and the public interest.

Section X and XI - Geothermal resources are not water, for purposes of the constitutional requirement that water is subject to appropriation. The Constitution exempts "mineral and medicinal water" from this requirement. Geothermal resources are "mineral and medicinal waters".

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

March 21, 1980

Representative Bill Miles
Co-chairman
House Resources Committee
Alaska State Legislature
Pouch V
Juneau, AK 99811

Dear Representative Miles:

SSHB 779, the proposed legislation relating to the development of geothermal resources, contains a subsection in its drilling regulations section (Sec. 41.06.040, page 7, line 27) that says:

> (d) Geothermal wells regulated by the commissioner under this chapter are exempt from the jurisdiction of the Alaska Oil and Gas Conservation Commission under AS 31.05.030(g).

This subsection was included at the request of the AOGCC in order to clarify that the commission would not be responsible for geothermal resources under the "hazardous substance" clause in Sec. 31.05.030(g) (attached). It has been brought to my attention that the proposed Sec. 41.06.040(d) does not accomplish this purpose and creates some confusion as to when AOGCC regulations do apply.

Sec. 31.05.030(g) provides that the AOGCC may designate areas where there is likelihood of an unexpected encounter of oil, gas or other hazardous substance, and specify drilling depths in those areas below which any well or boring would be subject to AOGCC regulations.

According to the definition in proposed Sec. 41.06.060(9) of SSHB 779, geothermal well "means a well drilled converted or reactivated for the discovery, testing, production or subsurface injection of geothermal resources." Thus, exempting "geothermal wells" from AS 31.05.030(g) does not release the AOGCC from responsibility if a person drilling for some other purpose unexpectedly encounters geothermal resources or hot water under pressure.

Furthermore, by exempting "geothermal wells" from the jurisdiction of AS 31.05.030(g), we are in essence saying that if a geothermal operator drills in an area of the state designated by the AOGCC as an area where there is likelihood of an unexpected encounter of oil, gas, or other hazardous substance, the geothermal operator would not be subject to AOGCC regulations and requirements, even when drilling below the depth

specified by AOGCC. Consequently, if the geothermal operator drilling in a designated area does encounter oil, gas or a hazardous substance other than geothermal resources below the specified depth, it is not clear whether or not his operation is subject to AOGCC regulations. Common sense dictates that it should be. However, the specific exemption of "geothermal wells" from AS 31.05.030(g) indicates that it may not be.

The Department of Natural Resources has drafted a new proposal to replace subsection (d) of proposed Sec. 41.06.040 in SSHB 779 that we feel will accomplish the purpose for which it was intended and avoid confusion in determining when AOGCC regulations apply. The attached DNR proposal establishes a mechanism whereby persons drilling for purposes unrelated to geothermal resources who unexpectedly encounter geothermal resources or hot water under pressure will be regulated by geothermal well drilling regulations under 41.06.040--not AOGCC regulations. It also specifically exempts geothermal resources and hot water under pressure from the term "hazardous substance" as used in AS 31.05.030(g).

The Department feels that this proposal could be further improved by deleting the last sentence that clarifies the term "hazardous substance" and actually amending AS 31.05 to define that term. DNR has offered assistance to the AOGCC if it wishes to submit such an amendment to be included in SSHB 779.

Sincerely,

Amos C. Mathews
Director

Attachments

DNR proposed replacement for Sec. 41.06.040(d) in SSHB 779 (page 7, line 27):

(d) Whenever a person engaged in a drilling operation not otherwise subject to this chapter encounters geothermal resources or water hot enough or under such pressure as to be hazardous, he shall be subject to regulations and requirements adopted under this chapter. When the commissioner finds sufficient likelihood that drilling in an area of the state will result in such an unexpected encounter, he may designate the area and specify conditions under which wells or any borings into the soil not otherwise subject to this chapter are subject to regulations and requirements adopted under this chapter. Neither geothermal resources nor water hot enough or under such pressure as to be hazardous shall be considered a "hazardous substance" for the purposes of AS 31.05.030(g).

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER / POUCH M – JUNEAU 99811

March 13, 1980

Representative Bill Miles, Co-Chairman
House Resources Committee
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Representative Miles:

The Department of Natural Resources appreciates this opportunity to comment on SSHB 779, "An Act relating to the development of geothermal resources." The Department has worked closely with the National Conference of State Legislatures (NCSL) during the drafting of this bill. We believe this bill is a tremendous improvement over the lengthy and outdated Geothermal Resources Act (AS 38.05.181) now on the books, and we strongly support the bill's intended purpose of encouraging the beneficial use of thermal resources in Alaska, especially direct applications of hot-water resources.

The Department feels that SSHB 779 effectively consolidates the essential aspects of our Geothermal Resources Act and appropriately deletes nonessential items to produce a shorter, more concise bill that will ease administration of and remove obstacles to development of thermal resources.

We are in favor of the bill's separation of functions and authorities affecting only state-owned lands and resources from statewide police powers, by retaining the former in Title 38 and placing the latter in Title 41. This is consistent with the approach of other state statutes and helps clarify the applicability of the proposed legislation.

The Department is particularly supportive of the bill's provision to define "geothermal resources" based on a temperature threshold (120°C.). This will allow for simplified procedures for obtaining rights to the use of hot-water resources (below 120°C.) by requiring nothing more than an ordinary water appropriation as opposed to the much more stringent leasing requirements. Consequently, it provides an incentive for the small scale development and local use of thermal energy, thus decreasing dependency on more expensive, nonrenewable energy resources.

10JOBLIST

We also support the submission of the Water Use Act "housekeeping" amendment, HB 186, as a companion bill to this legislation. Attached is DNR's recommended substitute bill for HB 186. Since HB 186 was introduced in the first session, the Revisor of Statutes has made several of renumbering and punctuation changes proposed in HB 186. The attached substitute deletes those sections of HB 186 that are now irrelevant for housekeeping purposes and contains minor modifications to make it more compatible with SSHB 779.

DNR's recommended substitute for HB 186 contains several provisions that are significant to SSHB 779 and that will prevent conflicts between geothermal development and water rights. Sec. 46.15.120 would clarify the State's ability to place conditions on certificates of appropriation in order to protect the correlative rights of geothermal owners in a geothermal system. Sec. 46.15.115 would clarify the grounds for termination of a permit as provided in AS 46.15.100. This would emphasize the State's ability to enforce safety and resource conservation aspects of drilling hot-water resources (below 120°C.) acquired under the Water Use Act.

The recommended HB 186 substitute would also include a definition of the phrase "mineral and medicinal water" which appears in both the constitution and the Water Use Act. "mineral and medicinal water" would be defined to include springs reserved by the federal government as was the intent of the framers of the Constitution, and also to include "geothermal fluids." In the Water Use Act, "water means all water of the state, surface and subsurface, occurring in a natural state except mineral and medicinal water." Therefore, the definition of "mineral and medicinal water" in HB 186 would exempt geothermal fluids from the definition of water in, and thus management and appropriation under the Water Use Act.

This provision is absolutely essential to SSHB 779. If geothermal fluid were not exempted from the definition of "water", SSHB 779 would create severe legal conflicts with the Water Use Act that would diminish or prevent the beneficial effects it was meant to encourage.

In analyzing SSHB 779, the Department has identified potential conflicts between the management of geothermal resources and water. We feel that SSHB 779 goes a long way to preventing these conflicts. However, there are some questions that have not been totally resolved. Due to the complexity of this issue, it is likely that some questions may not be resolved short of litigation and a judicial ruling DNR believes the intended purpose of SSHB 779 is extremely worth while and, if enacted with DNR's recommended substitue for HB 186, we think it would achieve that purpose. Once the Department has had some experience with the management

of geothermal resources and its relationship to water under this new legislation we will be in a position to consider potential amendments to resolve conflicts or questions which may arise.

Sincerely,

Robert E. LeResche, Commissioner
Dept. of Natural Resources

Alaska Water Resources Board
323 East Fourth Avenue
Anchorage, Alaska 99501

PRESS RELEASE - March 17, 1980

For immediate release

For further information contact:
Richard H. Sims - Kodiak
486-3157, 486-3613

WATER BOARD RECOMMENDS GEOTHERMAL, STREAMFLOW, FLOOD LEGISLATION

Meeting in Juneau on Tuesday through Friday the seven-member state water resources advisory board to the Governor has approved resolutions supporting legislation revamping the state's geothermal leasing laws, a bill establishing a process to adjudicate claims to instream flows of waters for navigation and fisheries, and a repeal of a territorial statute which provides broad liability of the state for flood control projects. The Board considered the existing geothermal leasing act a complex impediment to development and supported a provision in SSHB 779 which set a low end temperature cut-off of 120°C for geothermal leasing although some recommended a lower temperature. Water under 120°C would be handled as a relatively simple water right rather than by lease. The Board stongly endorsed HB 118 to set up a process for solving disputed claims to streamflows for navigation, fisheries, and other purposes. The Board recommended additional language to close a loophole in existing state law and require the federal government to use this procedure as well as state or local agencies.

In a surprising vote, the generally conservative board recommended the licensing of operators of highly portable suction dredges as a means to limit their unauthorized use on existing

valid mineral claims and fish streams by an expected influx of inexperienced outsiders from the lower 48.

In Thursday action the Board met with officials of the Yukon Territory Water Resources Agency and discussed common concerns over the expected summer "gold rush" from inexperienced non-resident operators. On Friday the Board reviewed Department of Environmental Conservation water quality studies and proposals related timber harvesting, mining, and road construction.

Members of the Board are Chairman Richard Sims - Kodiak, LeVake Renshaw - Anchorage, Charles Johnson - Nome, Peg Tileston - Anchorage, Wayne Westberg - Anchorage, David Vanderbrink - Homer, and Frederich Boness - Anchorage.

ALASKA WATER RESOURCES BOARD
323 E. Fourth Avenue
Anchorage, AK. 99501

March 14, 1980

Honorable Jay S. Hammond
Governor
State of Alaska
Pouch A
Juneau, Alaska 99811

Dear Governor:

At its March 11-12, 1980 meeting in Juneau the board heard testimony and discussed several pieces of pending legislation. Attached are the Board's recommendations on HB 186, HB 118, SSHB 779, and SB 395. Because of the possibility of imminent mark-up of some of these bills, by copy of this letter I am transmitting the Board's recommendations to members of the House Resources Committee.

We would be happy to elaborate on our position regarding this legislation. We feel all four bills are very important and we support their passage with the changes we have recommended.

Sincerely,

Richard H. Sims, Chairman

cc: Representative Miles
Representative Osterback
Representative Zharoff
Representative Carney
Representative Cotten
Representative Fuller
Representative Chatterton
Representative Eliason
Representative Halford

ALASKA WATER RESOURCES BOARD

March 1980

Resolution 80-1

Whereas HB 118 introduced in the Eleventh Legislature proposes changes in the Water Use Act that would allow the inclusion of maintenance of instream flow and water level under the provisions of the Water Use Act; and

Whereas in Alaska the maintenance of instream flows and water levels is important to navigation, fish and wildlife habitat, recreation and other beneficial uses of streams, rivers and lakes; and

Whereas the present statute governing water rights, the Water Use Act, AS 46.15, presently states that a diversion, impoundment or withdrawal is a prerequisite for a use of water to be considered an approporiation and maintenance of instream flows and water levels does not meet this prerequisite; and

Whereas instream flows and water levels are presently being reserved under procedures that are distinct from the Water Use Act, creating reservations that have no standing in time within the water rights system, resulting in duplication and conflicts in water management efforts and delays in resolving conflicts and may not be enforceable in problem situations; and

Whereas the federal government may assert water rights in federal court when no state procedures exist for quantification of federal water rights; and

Whereas the lack of state procedure for allocation of stream flows and water levels is the only area in existing state statutes where the federal government does not come under state procedures for the allocation of claimed "non-reserved" federal water rights; and

Whereas state rules for the adjudication of water use are preferable to federal court action on such issues; and

Whereas the provision in HB 118 resolve these problems and streamline the state's water management system; and

Whereas HB 118 is a necessary companion bill to effect implementation of HB 953.

Now therefore be it resolved that the Alaska Water Resources Board recommends passage of HB 118 with the following changes:

page 1. line 16 add "," after subdivision, delete "or" and add after state "or agency of the United States."
page 1. line 23 add "and other beneficial uses" and most importantly
page 2. line 1 delete "exists" and insert "is demonstrated"

Dated this 14th day of March, 1980

Richard H. Sims, Chairman

Alaska Water Resources Board
Resolution 80-2

Whereas a DNR substitute for HB 186 proposed in the Eleventh Legislature, second session proposes changes in the Water Use Act that will make it compatible with and a necessary companion to HB 779, the Geothermal Resources Act; and

Whereas HB 186 also proposes housekeeping amendments to the Water Use Act which will streamline and improve the efficiency of water rights processing in Alaska;

No therefore be it resolved that the Alaska Water Resources Board recommends passage of the DNR substitute HB 186 with the provision that in section 46.15.120, "correlative rights" be changed to "leasehold rights" since allocation of correlative rights would involve more than one leaseholder and since even a single geothermal leaseholder may need protection against later depletion of geothermal medium by subsequent water users.

Dated this 14th day of March, 1980.

Richard H. Sims, Chairman

Alaska Water Resources Board
Resolution 80-3

Whereas SSHB 779 introduced in the Eleventh Legislature, second session proposes changes in state law concerning development of Alaska's geothermal resources; and

Whereas the existing statutes are unnecessarily long and complex, and do not distinguish between large scale high temperature development and small scale lower temperature uses of geothermal resources and are an impediment to the development of geothermal resources;

Whereas SSHB 779 makes significant improvement in these deficiencies and attempts to remedy potential conflicts between high temperature geothermal development and rights in groundwater use.

Now therefore be it resolved that the Alaska Water Resources Board recommends passage of SSHB 779 in conjunction with Department of Natural Resources proposed substitute for HB 186.

Dated this 14th day of March, 1980

Richard H. Sims, Chairman

Alaska Water Resources Board
Resolution 80-4

Whereas, Senate Bill No. 395 has been introduced to repeal AS 44.80.020 to AS 44.80.050, an act relating to flood control project damages; and

Whereas, the existing legislation provides automatic liability on behalf of the State for any flood control project; and

Whereas, under existing legislation that measure of liability is that of a private party rather than that of the sovereign; and

Whereas, each individual federally funded flood control project requires an acceptance of only federal liability by the State or municipality upon completion.

Therefore be it resolved, that the Alaska State Water Resources Board strongly recommends passage of Senate Bill 395.

Date this 14th day of March, 1980

Richard H. Sims, Chairman

Alaska Water Resources Board

Resolution 80-5

Whereas the Water Resources Board perceives that the increased value of precious metal has triggered a large influx of inexperienced persons who wish to prospect for those metals through the use of small protable suction dredges; and

Whereas there is a significant potential for degradation of Alaskan streams through the increased use of small portable suction dredges; and

Whereas the use of portable suction dredge can have great detrimental effect on water quality and the habitat of anadromous fish; and

Whereas the extreme portability of the suction dredge and their use in non-established mineral claims results in great difficulty in preventing damage through stream surveillance.

Now therefore be it resolved that the Department of Environmental Conservation via legislation or regulation adopt a policy of licensing the operators of portable suction dredges on other than established mineral claims as a means of insuring that these operators are aware of the constraints placed on all citizens concerning stream degradation and protection of anadromous fish streams.

Dated this 14th day of March, 1980.

Richard H. Sims, Chairman

PHONE MEMO

TO Sam

DATE 4/18

TIME AM PM

FROM M OF Dave Deviglia INR

AREA CODE—TELEPHONE NO.—OR OPER. 279-5577

EXTENSION # ~~6x1230~~

MESSAGE

will testify on bill

CSSSHB 779-

Dan Mottet Dept Commerce Econ

SIGNED

Phoned ☐ Call Back ☐ Returned Call ☐ Wants To See You ☐ Will Call Again ☐ Was In ☐ See Operator ☐

AICO-UTILITY Line Form No. 50-176 NCR-4BP Co.

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new bill

CSSSHB 779

Original sponsor: Gardiner

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 241

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to state bonding."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

Section 1. AS 37.15.010 is amended by adding a new subsection to read:

(b) General obligation bonds issued for acquiring, constructing, improving and equipping a state-owned utility or other revenue-generating enterprise may be additionally secured by a pledge of the revenue derived from operation. The bonds may contain the covenants which the state bond committee considers advisable concerning

(1) the rates or fees to be charged for services rendered by the public facilities, the revenue of which is pledged to the payment of the bonds;

(2) the deposit and use of the revenue of the public facilities;

(3) the issuance of additional bonds payable from revenue of the public facilities;

(4) the rights of the bondholders in case of default in the payment of the principal or interest on the bonds, including the appointment of a receiver to operate the public facilities;

(5) other covenants as the state bond committee determines.

CSSSHB 779- Synopsis

Cheryl-

This isn't an in-depth analysis in that I talked with someone at DNR in Anchorage to give it to me in a nutshell.

The present statutes dealing with geothermal resources are long, complicated and cumbersome. This bill would simplify the present statutes by:

1) Clearly defining the difference between geothermal and a water resource. Geothermal constitutes any water source found while drilling that is over 120 degrees Celsius. Anything under would be just a water resource.

2) The reason for the distinction is if the source is defined as geothermal, then it will fall into the same category as oil, minerals etc. The state then has a much higher interest particularly in land disposal areas and may want to develop the resource.

3) If the source is not geothermal, someone finding water under 120 degrees Celsius [redacted] may use it for their own purposes and not be subjected to the present complicated permit process.

According to the guy at DNR, no one is against the bill or at least didn't testify against it at the House Resources hearings.

Fiscal impact is approx. $48,400 the first year, by the creation of one civil engineering position at DNR.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HB 779
Title An Act relating to the development of geothermal resources
Requested by House Resources Committee Date 2/25/80

II. FISCAL DETAIL
Agency Affected Department of Natural Resources
Program Category Affected NRMEC
BRU, Program, or Subprogram(s) Affected Water Management
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		38.4	40.3	42.3		
200 TRAVEL		4.5	4.5	4.5		
300 CONTRACTUAL		3.0	3.0	3.0		
400 COMMODITIES		1.0	1.0	1.0		
500 EQUIPMENT		1.5	.5	-0-		
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		48.4	49.3	50.8		

FUNDING (Thousands of Dollars)

GENERAL FUND		48.4	49.3	50.8		
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		1	1	1		
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

SEE ATTACHMENT

IV. DATE 2/29/80 PREPARED BY Dave Denig-Chakroff
AGENCY Division of Research & Development, DNR
PHONE 279-5577

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

02 0018 (Rev. 10/76)

STATE of ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RESEARCH AND DEVELOPMENT

MEMORANDUM

FR/file

TO: JEFF HAYNES, Deputy Commissioner
Department of Natural Resources

DATE: February 29, 1980

FILE NO:

TELEPHONE NO:

FROM: MO MATHEWS, Director
Division of Research & Development

SUBJECT: Fiscal Note for House Geothermal Bill

The House Resources Committee has requested a Fiscal Note for the proposed geothermal bill, HB 779. Most of DNR's responsibilities with respect to this bill are already adequately covered in the FY 81 budget. These include DGGS' inventory project, a project to revise geothermal leasing regulations and support for a modest level of geothermal leasing. Descriptions of these projects are attached to the Fiscal Note. However, additional funding will be needed as HB 779 will create increased demands on the Department in three important areas not addressed in the FY 81 budget:

1. regulation of resource conservation and operation safety aspects of geothermal development;

2. management of water associated with thermal resources; and

3. technical assistance for geothermal and low-temperature hydrothermal development, and groundwater heat pump applications.

As indicated on the attached Fiscal Note, I feel that the increased demands on the Department for FY 81 can best be met by establishing one Civil Engineer II position in the Water Management Section of the Division of Forest, Land and Water Management. This position would set up a regulatory and procedural framework to meet DNR's safety and conservation responsibilities for geothermal resources and handle the increased water management responsibilities that accompany development of non-leasable (below 120° C.) hot-water resources that HB 779 is designed to encourage. The Water Section already has statewide responsibilities under the Water Use Act, regardless of surface land ownership, and this position could provide construction review and assistance in development on non-state lands as well. Both Tom Cook and Ross Schaff have been contacted by phone and have indicated that they have no problem with placing the regulatory responsibility in the Water Management Section. For future budget cycles, we can appropriately integrate these management and regulatory aspects of hot-water and geothermal resource use into the project budget framework.

The Fiscal Note for HB 779 should be forwarded to the Legislative Finance Committee and Bob Speed in the House Speakers Office as soon as possible.

cc: Tom Cook
Ross Schaff
Ted Smith/Brent Petrie

Alaska Department of Natural Resources
2/27/80

III ANALYSIS FOR HB 779

The Governor's FY 81 budget includes several projects that relate to geothermal resource inventory and management. (See attached budget sheet.) Because of this, the department feels that much of HB 779's fiscal impact can be absorbed without appropriating additional funds by redirecting slightly these already scheduled projects. However, additional support is necessary to carry out the department's new statewide responsibility per HB 779 for regulating the safety and resource conservation aspects of geothermal development.

Not only does HB 779 give to DNR this important, new regulatory responsibility for geothermal resources, but the department is also given the responsibility to regulate all hydrothermal resources that fall below the 120°C temperature threshold that is used to define geothermal resources. Recent experience indicates that sub-120°C hot water resource development (such as the Pilgrim Hot Spring project) may require regulation for safety and conservation purposes even though the resources involved are not considered "geothermal resources" for leasing purposes.

This fiscal note outlines what is needed for the department to expand its geothermal resource management program to include resource conservation and operation safety regulation of geothermal and hydrothermal development on a statewide basis. Specific program objectives are:

1. Develop and adopt simple and workable regulations and procedures dealing with operation safety and resource conservation of geothermal and hydrothermal development on all lands in Alaska as provided by HB 779;

2. Develop and maintain a program to promote safety and prevent waste of geothermal and hot water resources in the state.

The program would also include provisions for technical assistance to those wishing to develop geothermal resources and other agencies that are involved in such resource development.

To accomplish these objectives in FY 81, the department needs a minimum of one full time Civil Engineer II with special knowledge of drilling methods and operations, groundwater geology and fluid mechanics. A detailed description of this position's duties and associated position costs are outlined in the attached Request for New Position Form 13.

	POSITION TITLE			RANGE/STEP	BARG. UNIT	LOCATION		APPROV.	DISAPV.
1	CIVIL ENGINEER II			20A	G	Anchorage	GOV.		
	TYPE OF POSITION	STAFF MONTHS	IRP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE			
2	PFT	12		NEW			LEG.		

	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
4	PERSONAL SERVICES: SALARY $2,532/month	30,384	
5	BENEFITS	4,548	
6	FICA	1,975	
7	HEALTH INS.	1,524	
8	TOTAL PERSONAL SERVICES		38,431
9	TRAVEL		4,500
10	CONTRACTUAL		3,000
11	COMMODITIES		1,000
12	EQUIPMENT		1,500
13	OTHER		
14	TOTAL COST		48,431

	CODE	FUNDING SOURCE	
15		FED RCPTS	
16		GF MATCH	
17		GEN FUND	48,431
18		I-A RCPTS	
19		I/A RCPTS	
20		OTHER	
21	CONTINUATION		
22	ADDITION	X	

FOR B&M USE ONLY

4A KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

Proposed legislation requires that the Department of Natural Resources adopt regulations and implement a program to prevent waste, contamination and injury caused by exploration, development and production of geothermal resources in the state. This new position will prepare regulations based on the new geothermal legislation and develop guidelines, standards and administrative procedures to implement DNR's new regulatory responsibilities. For each geothermal development project in the state, the position will (1) review and evaluate development and operation plans to determine compliance with its regulations; (2) perform site inspections of projects to ensure adherence to plans and specifications; (3) provide technical assistance with engineering and hydrologic problems as needed; and (4) maintain records on all aspects of development. Finally, in order to allow appropriation of hot water under AS 46.15 (Water Use Act) for the use of its heat value, to ensure an appropriator's right to that water and its thermal properties, to protect the rights of prior appropriators and to protect the public interest, this position will develop and apply criteria and standards for evaluating permit applications, issuing permits and making appropriations for the use of hot water. The position will also perform site inspections to ensure that appropriations are being perfected in accordance with the water use permit and to provide technical assistance to hydrothermal development projects.

In addition to the general civil engineering position

AGENCY Department of Natural Resources PROGRAM AREA NRMEC

BRU Wate Mana~ement

COMPONENT Water Use Management

FY 81

13 REQUEST FOR NEW POSITION.

REVISED DATE _____

requirements, this position will require knowledge and experience in drilling high pressure fluids for monitoring the design, operation and maintenance of water, oil or gas wells; groundwater hydrology and fluid mechanics.

Because the position will be responsible for implementing a safety and resource conservation program for hot-water and higher temperature geothermal resources that is independent of state-land ownership, considerations include but are not limited to development of state geothermal leases, and because of the inextricable connection between Water Use Act procedures and those tasks outlined above, this position and its support will be placed in the Water Management Section of the Division of Forest, Land and Water Management.

The responsibilities of the Water Management Section under the Water Use Act, especially its function of reviewing water use permits and making water appropriations, already transcend state-land management. The Department therefore feels that the safety and resource conservation regulatory aspects of hot-water and geothermal development is most efficiently and effectively placed with the Water Management Section.

AGENCY Department of Natural Resources PROGRAM AREA NRMEC

BRU Water Management

23 13 CONTINUED

COMPONENT Water Use Management

Page 2 of 2

REVISED DATE

FY 81

-1023 (Rev. 7/78)

Project: Field Investigations of Coal Fields

Coal is a resource which is abundant in Alaska, although the obstacles to producing and transporting it are serious in many areas. It is desirable to conduct detailed investigations of potential large coal prospects to assist the State in the development of this resource. Under this Project, the Department would initiate a series of field projects to map coal fields where information is needed to assess the State's coal resources, and would compile coal resource atlases. Field study would be conducted at the Herendeen Bay/Chignik Bay coal district on the Alaska peninsula or a like area.

COMPONENT: Geothermal Leasing/Development

Project: Geothermal Resource Inventory/Analysis

Geothermal energy, a renewable resource, is the least known of Alaska's energy resources. Nevertheless, indications are that a large portion of Alaska may constitute a geothermal resource province. As the cost of importing energy into rural areas continues to increase in real terms, local development of geothermal energy resources for power generation and/or heat becomes increasingly attractive. Geothermal prospects which are cooler than the boiling point of water may be used to heat buildings or be employed with greenhouses for commercial agriculture. Geothermal steam may be converted into electrical energy through the construction of power generating plants. Planning for any future geothermal development will require investigation of hot springs (surface indications of potential prospects) as well as volcanic and intrusive igneous rocks. The Department's current drilling program at Pilgrim Hot Springs in Nome and its assessment of hot springs and geothermal anomalies around the State are generating important information about geothermal prospects which are suitable for development, and should be continued. Under this Project, the Department will complete by FY 1982 a geothermal atlas, and design development plans based on detailed geologic investigations for 12 specific hot springs sites; it will also complete detailed geologic investigations of at least three specific quaternary volcanic sites including relative volcanic hazard potential and advisability of site selection.

Project: Revision of Geothermal Regulations

Alaska presently has on the books a Geothermal Steam Act which governs the leasing, use and development of geothermal energy. is Act was adapted from Federal legislation and is probably much too complicated to be suitable for development purposes in Alaska. Anticipating legislative action during FY 1980, the Department wishes to be prepared to revise its regulations at the beginning of FY 1981 to prepare for lease sales in FY 1981. Under this Project, the Department would (1) develop and adopt revised State regulations dealing with geothermal energy resources management and utilization, (2) establish intra- and interdepartmental procedures to implement the regulations, and (3) develop a program to promote utilization of geothermal resources where in the public interest.

Project: Geothermal Lease Sales

Pending outcome of Statewide geothermal resource inventories, the Department will not be certain of the best prospects for development. Consequently, it cannot be stated at this time what the ownership status is of lands determined to be good prospects. Nevertheless, the Department anticipates having this information by FY 1981 and desires to be prepared to lease geothermal prospects occuring on State land. Under this Project, the Department will conduct one or more geothermal lease sales during FY 1981.

	PROJECT COSTS							Associated Capital
	100	200	300	400	500	Other	Total	
Revisions of Mining Rights Acquisition Regulations*	11.2	.6	.2	.1	0		12.1	
Mineral Claim Adjudication	72.9	1.8	1.9	.9	.5		78.0	
Plans of Operation/Mining and Exploration	13.1	1.0	.1	.1	.5		14.8	
Mining Offices	173.3	0	0	6.8	0		180.1	
Public Assays	62.9	0	0	3.8	0		66.7	
Mineral Development Policy Analysis*	7.2	.5	.2	.1	0		8.0	
Surface Mining Control	36.7	5.1	.2	.1	0		42.1	
Revision of Coal Regulations*	3.1	0	2.7	0	0		5.8	
Field Investigations of Coal Fields	98.3	6.8	10.4	2.6	0		118.1	
Geothermal Resource Inventory/Analysis*	190.0	12.2	84.7	4.7	0		291.6	
Revision of Geothermal Regulations*	10.0	.6	4.6	.2	0		15.4	
Geothermal Lease Sale*	10.0	4.0	5.8	.2	0		20.0	
Total projects within continuation	457.2	14.7	12.6	14.3	1.0		499.8	
Total incremental projects	231.5	17.9	98.2	5.3	0		352.9	
Total all projects	688.7	32.6	110.8	19.6	1.0		852.7	

*submitted as an increment on Form 6
**not submitted in detailed budget

AGENCY Natural Resources PROGRAM AREA NRMEC

DRU Mineral & Energy Development

FY 81

2 ANALYTIC STATEMENT

Page ____ of ____ REVISED DATE ____

02-1002 (Rev. 7/79)

File with
material
for
HB 779
(1980)

BOB SPEED
SPEAKER'S OFFICE

MANAGEMENT OF LAND, WATER AND HYDROTHERMAL RESOURCES ASSOCIATED WITH HOT SPRINGS IN ALASKA

Dave Denig-Chakroff
Geothermal Program Coordinator

STATE OF ALASKA
Department of Natural Resources
Division of Research and Development
Policy Research/Land Entitlement Section

January 1980

Jack

Please return this document when through with it.

Thx

Bob Speed

MANAGEMENT OF LAND, WATER AND HYDROTHERMAL RESOURCES ASSOCIATED WITH HOT SPRINGS IN ALASKA

Dave Denig-Chakroff
Geothermal Program Coordinator

STATE OF ALASKA
Department of Natural Resources
Division of Research and Development
Policy Research/Land Entitlement Section

January 1980

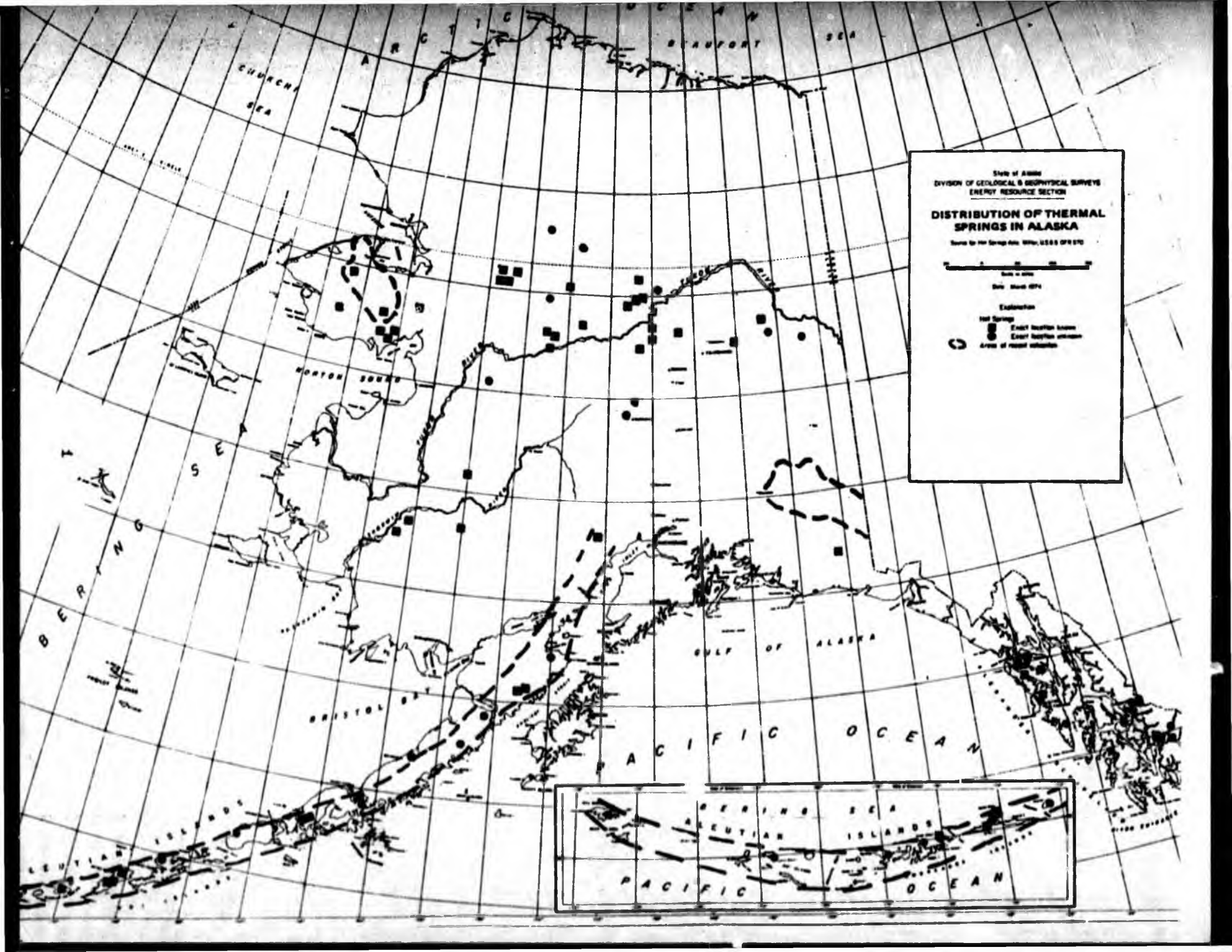

State of Alaska
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
ENERGY RESOURCE SECTION
DISTRIBUTION OF THERMAL SPRINGS IN ALASKA
Explanation
Hot Springs
ARCTIC OCEAN
BEAUFORT SEA
CHUKCHI SEA
BERING SEA
GULF OF ALASKA
PACIFIC OCEAN
ALEUTIAN ISLANDS
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PACIFIC OCEAN

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Introduction

The Department of Natural Resources has recently completed a review of legal and institutional issues relating to geothermal resources in Alaska in order to develop recommendations for amendments to state statutes affecting the management of those resources. During this review, a number of issues have been raised and ambiguities noted regarding the management of land, water and hydrothermal resources associated with hot springs.

Questions regarding land management which have been raised and will be addressed in this paper include:

- What federal laws apply to land surrounding hot springs, and what is their effect?
- What is the ownership status of land containing hot springs in Alaska?

Water management questions to be addressed include:

- What are the state and federal government's respective roles regarding the management of water associated with hot springs?
- What is the effect of federal reserved water rights?
- What is meant by the phrase "mineral and medicinal waters" in the Alaska Constitution and why does the Constitution exclude such waters from appropriation under state water law? What is the effect of this exclusion?

Finally, the following questions regarding hydrothermal resources management will be addressed:

- What is the potential for use of thermal resources associated with hot springs in Alaska?
- What is the effect of federal laws on such use?
- What state laws apply to the use of th thermal resources and what is their effect?

Federal Land Withdrawals Affecting Hot Springs

A series of executive and public land orders issued as early as 1911 have had a significant effect on the lands surrounding hot springs in Alaska. These orders have reserved for federal use an area around hot springs outside national forests which were located on vacant, unreserved land in 1911.

The first federal law specifically addressing land containing hot springs in Alaska came in the form of Executive Order 1324½ signed by President Taft, March 28, 1911 (Appendix 1). It withdrew and reserved for public purposes 160 acres around every hot spring on public land in the Territory of Alaska. This order was later amended by Executive Order 1883 of January 24, 1914 (Appendix 2) so that it would not apply to land within national forests.

In 1947, Public Land Order 399 (Appendix 3) revoked Executive Orders 1324½ and 1883, and amended Executive Order 5389 of July 7, 1930 (Appendix 4) to take their place. Executive Order 5389 withdraws public land containing hot springs or springs "the waters of which possess curative properties" and reserves such land for lease for the construction of facilities or improvements to accommodate the public. Prior to the issuance of PLO 399, Executive Order 5389 did not apply to Alaska; however, as amended, it applies to land in Alaska except for land within national forests.1/

Section 704(a) of the Federal Land Policy Management Act of 1976, 43 U.S.C. §1701, (FLPMA), repealed the authorizing statutes under which Executive

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1/ A 1961 Department of the Interior Solicitor's Opinion (M-36625) indicates that any public land on which wells are drilled for the development of geothermal water would be subject to withdrawal and reservation under Executive Order 5389. The Solicitor's basis for this opinion is that "there is no language in [Executive Order 5389] or the regulations issued pursuant thereto which restricts the term 'hot spring' to a spring created solely by the forces of nature." This opinion, however, has been reversed by a more recent Solicitor's Opinion (M-36914, June 25, 1979). Although the 1979 Opinion discusses a 1926 Executive Order which withdraws land containing springs and water holes, it states that the general approach adopted also applies to Executive Order 5389. In his 1979 Opinion, the Solicitor states, "I cannot agree . . . with the inference in some of the opinions of my predecessors that the . . . Order causes a reservation of all artificially developed water sources . . . I am therefore overruling expressions in prior opinions . . . to the extent they apply the . . . Order to artificially developed water sources on the public lands." The Solicitor further defines the term "spring" to mean "a discrete natural flow of water emerging from the earth at a reasonably distinct location . . ." (emphasis added).

Order 5389 was issued.2/ Consequently, hot springs which come into existence after the effective date of FLPMA (October 21, 1976) are not withdrawn by Executive Order 5389, but could be withdrawn under other, still-existing legislative authority.3/

FLPMA appears to have a potentially significant effect on land containing hot springs within national forests. Even though such land was not withdrawn by Executive Order 5389 as amended, the State has been prevented from receiving title to it. When land within a national forest is selected, it is removed from the forest system and placed in the public domain prior to transfer. At that point, the land was (before FLPMA) subject to Executive Order 5389 and could not be transferred if it were within the prescribed locality of a hot spring. FLPMA, however, has repealed the federal statutes which authorized Executive Order 5389. All previously withdrawn land remains unaffected by the repeal, but no new withdrawals can be made. Since Executive Order 5389 never withdrew lands containing hot springs in national forests in Alaska; and now, cannot withdraw them if they are removed from the forest system, it appears that the Order no longer prohibits the State from selecting and receiving title to such land through the forest selections process.

In a few cases in Alaska, lands containing hot springs were in private ownership prior to Executive Order 1324½ of 1911; otherwise, all such lands outside national forests have been withdrawn and reserved by the federal government. Regulations pursuant to Executive Order 5389 require that applicants, in order to select land outside national forests, must show that no hot springs exist on the land or within the area prescribed by the order (43 C.F.R. 2311.2(a), Appendix 5B). Since Executive Order 5389 was in effect before Statehood and no title to land containing hot springs within national forests has been obtained, the State does not control any hot springs by virtue of its land ownership.

2/ Section 10 of the Act of December 29, 1916 (43 U.S.C. §300) and The Pickett Act of June 25, 1910 (43 U.S.C. §141).

3/ Solicitor's Opinion M-36914 of June 25, 1979 implies that Executive Order 5389 has withdrawn lands containing hot springs regardless of whether the water source is known to exist or has been specifically located. Thus, the fact that a hot spring in existence before October 21, 1976 was not identified until after that date would not affect the withdrawal of land around it.

Summary of Federal Laws Affecting Land Containing Hot Springs

Date	Law	Effect	Appendix
June 25, 1910	43 U.S.C. §141 (Pickett Act)	Authorizes the President to make withdrawals of public lands in certain cases.	-
March 28, 1911	E.O. 1324½	Withdraws land containing hot springs in Alaska.	1
January 24, 1914	E.O. 1883	Amends E.O. 1324½ to exclude land in national forests.	2
December 29, 1916	43 U.S.C. §291	Authorizes reservation of land containing public springs and water holes.	-
March 3, 1925	43 U.S.C. §971	Authorizes leasing of withdrawn land containing hot springs for resort purposes.	5A
July 7, 1930	E.O. 5389	Withdraws land containing hot springs in the U. S. except for Alaska.	4
August 20, 1947	PLO 399	Revokes E.O.'s 1324½ and 1883, and amends E.O. 5389 to include land in Alaska except for land in national forests.	3
October 21, 1976	43 U.S.C. §1701 (FLPMA)	Repeals Acts of 1910 and 1916; however, existing withdrawals remain in force unless changed in accordance with FLPMA.	-

Water Rights

The federal orders and subsequent regulations affecting hot spring locations are fairly clear as to their intent with respect to withdrawal and reservation of land. However, the issue of water rights remains somewhat clouded not only on this land, but on all federal withdrawals and reservations. Federal versus state water rights has been the subject of several landmark Supreme Court cases and a recent Department of the Interior Solicitor's Opinion. A review of federal legislation, Court decisions relating to water law and the recent Solicitor's Opinion can help clarify the issue of water management on federal land containing hot springs in Alaska.

Water Rights in the State of Alaska are based on the appropriation doctrine. Under this doctrine, the federal government generally recognizes the State's authority to manage and appropriate surface and subsurface waters.

The Act of Congress of 1866 as amended by the Act of 1870 established the appropriation doctrine of water rights in the western United States.4/ The Act of 1866 is primarily a mining law; however, Section 9 contains provisions which give formal sanction of the federal government to appropiations of water on public lands of the United States when such appropriations are obtained through, and are acknowledged by, local customs, laws and court decisions. The Act further provides that the rights of appropriators will be protected by state or territorial laws.

The appropriation doctrine received further support in western states with the enactment of the Desert Land Act of 1877.5/ This Act provides that water rights on desert land are subject to prior appropriation and that all unappropriated water should be held free for appropriation by the public subject to existing rights. In 1935, a Supreme Court decision held that the Desert Land Act applied not only to desert land but to all land of the public domain in the affected states and territories.6/ It further held that the Act severed all waters from the public land leaving waters subject to appropriation under the laws of the states and territories.

In Alaska, the United States District Court at Sitka recognized and applied the appropriation doctrine as early as 1890, holding that prior appropriations were entitled to protection under the Act of Congress of 1866.7/ It was 100 years after the enactment of the Act of 1866 that

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4/ 14 Stat. 253, 89 (1866) and 16 Stat. 217 (1870).

5/ 19 Stat. 377 (1877), 43 U.S.C. §321 et seq. (1964).

6/ California Oregon Power Co. v. Beaver Portland Cement Co., 295 U. S. 142, 160-163 (1935).

7/ Noland v. Coon., 1 Alaska 36, 37-38 (1890).

the State of Alaska, in 1966, adopted the Water Use Act based on the appropriation doctrine.8/

Although the laws and court decisions thus far cited affirm state regulatory authority over water rights in the western United States, several Supreme Court decisions have placed limitations on this authority. These limitations have traditionally been referred to as "federal reserved water rights" or the "Winters Doctrine." This doctrine gives the federal government reserved rights to water on federally reserved lands. These water rights are protected against subsequent state appropriations.

The Winters Doctrine was foreshadowed by the 1899 Supreme Court case of United States v. Rio Grande Dam and Irrigation Company. This Court decision held that the United States, as owner of lands bordering a stream, cannot be deprived by a state of the right to the continued flow of the stream's waters as may be necessary for the beneficial use of the property.9/

The Winters Doctrine was later articulated in the 1908 case for which it was named, Winters v. United States.10/ In the "Winters" case, the Supreme Court held that the Indians of the Fort Belknap Indian Reservation in Montana were entitled to reserved water rights which were protected against rights acquired later under state law.

The next judicial influence on the Winters Doctrine came in the 1955 Supreme Court case of Federal Power Commission v. Oregon (also known as the "Pelton Dam" case).11/ The Court's decision essentially extended the Winters Doctrine to apply not only to Indian reservations, but to any lands "withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws."

The decisions of the "Winters" and "Pelton Dam" cases have subsequently been reaffirmed in two Supreme Court cases. In the 1963 case of Arizona v. California, the Court granted reserved water rights to the Indians of the Colorado Indian Reservation and went on to say that the United States has the power to reserve water rights for other federal reservations and property.12/ In discussing its Arizona v. California decision in a 1971 case, the Supreme Court said:

> [T]he Federal Government had the authority both before and after a State is admitted into the Union "to reserve waters for the use and benefit of federally reserved lands." . . . The federally reserved lands include any federal enclave.13/

8/ A.S. 46.15.

9/ 174 U. S. 690 (1899).

10/ 207 U. S. 564 (1908).

11/ 349 U. S. 435 (1955).

12/ 373 U. S. 546 (1963).

13/ United States v. District Court in and for the County of Eagle, 401 U. S. 521 (1971).

A concise description of the effect of the Winters Doctrine as it had evolved to this point was written in 1971 by Frank Trelease, a noted authority on water law and primary author of the Alaska Water Use Act.

> If the United States by treaty, act of Congress or executive order reserves a portion of the public domain for a federal purpose which will ultimately require water, and at the same time the government intends to reserve unappropriated water for that purpose,14/ then sufficient water to fulfill that purpose is reserved from appropriation by private users. The effect of the doctrine is twofold: 1) when water is eventually put to use the right of the United States will be superior to private rights in the source of water acquired after the date of the reservation, hence such private rights may be impaired or destroyed without compensation by the exercise of the reserved rights, and 2) the federal use is not subject to state laws regulating the appropriation and use of water.15/

Mr. Trelease describes the doctrine as "wild cards that may be played at any time, blank checks that may be filled in for any amount or may never be cashed."16/

In more recent years, however, two Supreme Court cases have resulted in a curtailment of the effects of the Winters Doctrine. A 1976 Court decision stated, "the implied-reservation-water-rights doctrine, however, reserves only that amount of water necessary to fulfill the purpose of the reservation, no more . . ."17/ The most recent modification of the Winters Doctrine came in July of 1978 in the case of United States v. New Mexico.18/ In its decision, the Supreme Court held that the Gila National Forest in New Mexico has reserved water rights only for the primary purposes for which it was established, but not for any secondary purposes. It also stated that "[w]here water is only valuable for a secondary use of the reservation . . . there arises the contrary inference that Congress intended . . . that the United States would acquire water in the same manner as any other public or private appropriator."

14/ The government's intent to reserve water need not be explicitly stated. A 1976 Supreme Court decision holds that this intent "is inferred if the previously unappropriated water is necessary to accomplish the purpose for which the land reservation is created," (Cappert v. United States, 426 U. S. 128). Historically, federal reserved water rights have most often been created by implication rather than by express reservation.

15/ F. Trelease, Federal-State Relations in Water Law, 109 (1976).

16/ Id. at 160.

17/ Cappaert v. United States, 426 U. S. 128 (1976).

18/ 98 S. Ct. 3012 (1978).

A recent Department of the Interior Solicitor's Opinion affirms the U.S. v. New Mexico Supreme Court decision.19/ In his 1979 Opinion, the Solicitor states:

> The United States retains water rights by reserving federal lands and waters necessary to fulfill specified purposes . . . . [T]here is an important distinction between the purposes of a land reservation and secondary or subsidiary management apart from the reservation purpose(s); i.e., only the former obtain water rights by the act of reserving the land for particular purposes. [Emphasis added.]

The Solicitor later acknowledges that "land management agencies of the Department of the Interior have, throughout their history, appropriated water on the lands they administer . . . This appropriation of water . . . . is necessary to carry out the secondary uses for which many federal reservations are administered." He advocates continuance of this policy saying, "application should be made pursuant to state procedural law for all uses of water interior land management agencies are making and plan to make on the federal lands they manage which are not covered by reserved rights . . ."

According to the Solicitor, the purposes of a federal withdrawal may require reservation of the "total yield" of a water source. Such is the case, in his opinion, on lands containing a spring or water hole withdrawn by a 1926 Executive Order.20/ The Solicitor broadly interprets the primary purposes of the 1926 Order to include, "(a) stockwatering, (b) human consumption, (c) agriculture and irrigation, including sustaining fish, wildlife and plants as food and forage sources, and (d) flood, soil, fire and erosion control."

Unfortunately, the Solicitor does not specifically address the amount of water reserved by Executive Order 5389, but says only that "[t]he general approach adopted . . . in relation to the 1926 Order is . . . applicable to these reservations." He does acknowledge, however, that "reserves [created by Executive Order 5389] are generally local in character or otherwise minor." Unlike the broad purposes of the 1926 Order which require reservation of the "total yield," Executive Order 5389 has a very specific purpose which could certainly be fulfilled with a much smaller water reservation in most cases. The lands withdrawn by Executive Order 5389 have only one primary purpose, which is clearly stated in the Code of Federal Regulations, 43 C.F.R. 2311.0-3(b)(2) (Appendix 5B):

> Purpose of withdrawal. The Executive order [5389] . . . was designed to preserve for general public use and benefit the unreserved public lands, containing hot springs or springs the waters of which

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19/ Solicitor's Opinion #M-36914, (June 25, 1979), Leo Krulitz, Solicitor.

20/ Executive Order of April 17, 1926 which creates Public Water Reserve No. 107, withdraws and reserves vacant, unappropriated, unreserved public land which contains a spring or water hole, or other body of water needed or used by the public for watering purposes. Alaska was excluded from the reserve created by this Order by Executive Order 5106 of May 4, 1929.

possess curative properties, in order that they might be leased under the provisions of the act of March 3, 1925 (43 Stat. 1133; 43 U.S.C. 971), and the regulations issued thereunder, contained in §2311.4.

Thus, the federal water reservation would, presumably, be limited to an amount needed for "bathhouses, hotels, or other improvements for the accommodation of the public," as stated in the provisions of 43 U.S.C. 971 (Appendix 5A) and 43 C.F.R. §2311.4 (Appendix 5B). Any water available over and above this reservation would be subject to appropriation under state law.

This state appropriation authority is acknowledged in the federal regulation pertaining to both Executive Order 5389 and the 1926 Order (43 C.F.R. §3211--Public Water Reserves, Appendix 5B). In granting a permit to conduct water from a public water reserve to a point outside the reserve, including unreserved public land, Section 2311.3(f) requires, "[t]hat the right to appropriate the waters of the State to the uses contemplated shall be obtained within 1 year from and after the issuance of the permit and the permittee shall file a certificate to that effect issued by the proper State Authority . . . . In the event that the State certificate as to the right to appropriate the water is not filed within 1 year, . . . then such permit shall become and be subject to cancellation." Since the 1926 Order reserves the total water yield at each source, this section is apparently applicable only to lands withdrawn by Executive Order 5389.

In the past, there has been a great deal of misunderstanding with respect to the appropriation and granting of rights to water associated with hot springs in Alaska. In some cases, the State of Alaska has denied issuance of water appropriation certificates based solely on the fact that the water in question was naturally hot. However, the federal regulations, Solicitor's Opinion and Supreme Court decisions cited above indicate that such denials are not justified unless the water is reserved and needed for use by a resort on a federal leasehold containing a hot spring. If this is not the case, the water is subject to appropriation under the state Water Use Act.

Alaska Constitution

Water rights are addressed in the Constitution of the State of Alaska in Article VIII, Section 13, which states:

> Water Rights. All surface and subsurface waters reserved to the people for common use, except mineral and medicinal waters, are subject to appropriation. Priority of appropriation shall give prior right. Except for public water supply, an appropriation of water shall be limited to state purposes and subject to preferences among beneficial uses, concurrent or otherwise as prescribed by law, and to the general reservation of fish and wildlife.

Inherent in this statement are two often-asked questions: (1) What are "mineral and medicinal waters"? and (2) Why are they excluded from the appropriation doctrine? The answers to these questions can be found in the Alaska Constitutional Convention Proceedings (selected portions in Appendix 6). Transcripts of the proceedings indicate that by inserting the phrase "except mineral and medicinal waters" into Article VIII, Section 13, delegates intended to preclude appropriation by the State of "hot springs or springs with proven medicinal value." The following quotes from the proceedings show that this preclusion was made in deference to federal law which allegedly maintained the authority for such appropriations.

January 18, 1956
[morning]

> TAYLOR: . . . the federal law provides that all hot springs or springs with proven medicinal value are reserved to the federal government, so people can have beneficial use of those springs--those waters that do have a distinct medicinal value. And I thought, . . . in the section which is now 13, we could include some provisional clause along that line.

[afternoon]

> RILEY: . . . this goes to the question raised by Mr. Taylor earlier today. He drew attention to the fact that the federal government reserves the disposition of hot springs. And some of us have talked with some of the federal land office people since that time, in an attempt to arrive at language as nearly like the federal reservation as possible, and this ["except mineral and medicinal waters"] is what we have offered.

It appears that the federal law to which the delegates were referring was Executive Order 5289 of July 7, 1930 and its subsequent amendment and regulations (Appendices 3-5). However, these orders and regulations effect a withdrawal and reservation of land and do not specifically give the federal government authority for the disposition of waters. As noted above, this issue was left for the courts to decide.

At the time of the Constitutional Convention in January of 1956, the Winters Doctrine was well established; and in the previous year, the Supreme Court had held, in the "Pelton Dam" case, that federal reserved water rights applied to any lands "withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws."21/ Thus, the understanding of the delegates, that the law withdrawing lands containing hot springs included a reservation of the waters, was certainly well founded. However, the exemption of "mineral and medicinal waters" from the water appropriation clause in the Constitution is misleading in the following ways:

1) The phrase "mineral and medicinal waters" does not adequately describe what the delegates intended to exclude from the appropriation clause. Furthermore, this phrase is not defined either in the Constitution or in the Water Use Act where it is also used.

2) The exclusion of "mineral and medicinal waters" singles out one type of federal withdrawal (lands containing hot springs) for which the State acknowledges federal reserved water rights by Constitutional reference, whereas the Court has declared that the federal government maintains certain water rights on all withdrawals and reservations where they are needed.

3) The exclusion of "mineral and medicinal waters" could be interpreted to mean that the federal government reserves rights to all water associated with hot springs. However, the Supreme Court has held, in recent years, that federal reserved water rights apply only to the primary purposes for which the withdrawal was made.22/ Other water uses are subject to appropriation under state law, a fact acknowledged by the Court, federal regulations and a Department of the Interior Solicitor's Opinion.

These ambiguities could be clarified by amending the Water Use Act to define "mineral and medicinal waters" to mean waters of a hot spring or spring with curative properties, that is reserved by the federal government under PLO 399 and Executive Order 5389. This would not resolve the disparity caused by a Constitutional reference to one type of federal reserved water right and not to others; however, it would certainly help explain the intent of delegates to the Constitutional Convention and would clarify the State's role with respect to water management on land containing hot springs.

21/ 349 U. S. 435 (1955).

22/ United States v. New Mexico, 98 S. Ct. 3212 (1978).

Hydrothermal Resources

Due to their close proximity to the surface, the thermal resources associated with hot springs are easily utilized. In addition to traditional uses for baths and spas, these resources have potential for a wide variety of other applications such as space heating, district heating, agriculture and aquaculture uses, food processing and small-scale electric power generation. In Alaska, hot springs have historically been used for bathing purposes; first by Native Alaskans and later by immigrants to the state. Homesteaders developed most of the privately owned lands containing hot springs as spas or resorts in the early 1900's; and in a few cases, also used thermal energy from these hot spring waters for space heating and agricultural purposes. The State of Alaska is currently engaged in a geothermal demonstration project at Pilgrim Hot Springs located about 50 miles north of Nome where 90°C. (194°F.) water has been encountered at a depth of 90 feet. The thermal resources at Pilgrim have the potential for supporting a large agriculture or aquaculture facility and some geologists believe they may even be capable of supplying a district heating system for the City of Nome.

The Act of March 3, 1925 (43 U.S.C. 971, Appendix 5A) was rather narrow in its scope, providing for leasing of federal lands containing hot springs for "bathhouses, hotels or other improvements for the accommodation of the public." However, a growing awareness of geothermal resource potential and advancement of geothermal technology to pursue it led to the enactment of the Geothermal Steam Act of 1970 (84 Stat. 1566). This federal law provides for leasing and utilization of geothermal resources on both the public domain and withdrawn lands. Lands containing hot springs withdrawn by Executive Order 5389 fall under its authority and may be leased for hydrothermal uses other than hotels and bathhouses. However, these uses would not be considered a primary purpose of the withdrawal.

Currently, two State laws could apply to hydrothermal development on federal or private lands containing hot springs in Alaska. The Oil and Gas Conservation Act provides that the Alaska Oil and Gas Commission may regulate drilling, producing and plugging of wells drilled to a specified depth when it is likely that a hazardous substance may be encountered (AS 31.05.030(g)). Recently, the Commission established that hot groundwater under pressure is hazardous. Also, any withdrawal of water from a groundwater source is subject to the Water Use Act. Even in the case of land withdrawn under Executive Order 5389, it appears (based on past Supreme Court decisions), that development of hydrothermal resources for anything other than bathhouses, hotels or other resort improvements would be subject to prior appropriation under the state Water Use Act, since such development would not be a primary purpose of the withdrawal. Furthermore, this type of development on federal land would require a lease under the Geothermal Steam Act, which states, "[n]othing in this act shall constitute an express or implied claim or denial on the part of the Federal Government as to its exemption from State water laws." (84 Stat. 1573, Sec. 22.). It is anticipated that the State Legislature will consider amendments to statutes affecting geothermal resources

management during the 1980 legislative session. The application of state laws to hydrothermal development on federal and private lands containing hot springs could be affected by such legislation.

Conclusions

Based on the above discussion and citations pursuant to questions set forth in the Introduction, I have reached the following conclusions concerning the management of land, water and hydrothermal resources associated with hot springs in Alaska.

Land Management:

- Federal laws (summarized in the Table on page 4) have withdrawn and reserved vacant, unappropriated land in the state surrounding all hot springs which were in existence prior to October 21, 1976 and which were not within a national forest. This land is reserved for leasing for bathhouses, hotels or other improvements for the accommodation of the public. Land containing hot springs which is within a national forest is neither withdrawn nor reserved for such purpose and may be able to be selected under the forest selections process.

- Land containing hot springs which was occupied, appropriated or otherwise reserved prior to March 28, 1911 may be in private ownership. Otherwise, land in Alaska surrounding hot springs is in federal ownership.

Water Management:

- On federal withdrawals containing hot springs, the federal government maintains reserved rights to an amount of water needed for bathhouses, hotels or other improvements for the accommodation of the public. All other surface and subsurface water is subject to state jurisdiction under the Water Use Act.

- The effect of the reserved water right is that when water is eventually put to use for the purpose specified in the federal withdrawal, water rights for that purpose are superior to rights granted by the State after the date of the federal withdrawal. Water reserved for the federal purpose is not subject to the state Water Use Act.

- The phrase "mineral and medicinal waters" as used in the Alaska Constitution means waters of a hot spring or spring with curative properties, that are reserved by the federal government under PLO 399 and Executive Order 5389. The State Constitutional Convention excluded these waters from appropriation under state law in deference to the federal reserved rights which pertain to them. This exclusion affects only an amount of water needed to fulfill the primary purpose of the withdrawal. All other water is subject to the Water Use Act.

Hydrothermal Resources Management:

- There is great potential for the use of hydrothermal resources associated with hot springs in Alaska including applications to

space heating, district heating, agriculture and aquaculture uses, food processing and small-scale electric power generation.

- Federal withdrawals containing hot springs may be leased under provisions of the Act of March 3, 1925 for bathhouses, hotels or other improvements for the accommodation of the public. Withdrawn land and land in the public domain may be leased for geothermal development under provisions of the federal Geothermal Steam Act of 1970.

- State statutes which could affect hydrothermal development on federal or private lands containing hot springs include the Oil and Gas Conservation Act (AS 31.05) and the Water Use Act (AS 46.15). The Oil and Gas Conservation Act regulates development for safety and resource conservation purposes. The Water Use Act provides for determination and adjudication of rights in the waters of the state; and for water appropriation and distribution. The application of state statutes to hydrothermal development may be affected by a pending proposal for amendments to statutes affecting geothermal resources development in Alaska.

References

Brooks, Heidi Topp, "Reserved Water Rights and Our National Forests," Natural Resources Journal, 19:2:433-443, University of New Mexico, School of Law, April, 1979.

Ellis, Harol H. and J. Peter DeBraal, "Federal-State Relations: The Proprietary Power and the Reservation Doctrine," in Water Rights Laws in the Nineteen Western States by Wells A. Hutchins, J. D., 3:21:38-53, Washington D. C., U. S. Dept. of Agriculture, 1977.

Hutchins, Wells A., completed by Harold H. Ellis and J. Peter DeBraal, "Water Rights Systems Pertaining to Water Courses: Establishment of the Appropriation Doctrine in the West," Water Rights Laws in the Nineteen Western States, 1:159-180, Washington, D. C., U. S. Department of Agriculture, 1977.

_____, "Appendix: Summaries of the State Water Rights Systems--Alaska," Water Rights Laws in the Nineteen Western States, 3:141-161, Washington, D. C., U. S. Department of Agriculture, 1977.

Kitchen, Gerald J., "Geothermal Leasing Practices," Land and Water Law Review, 13:1:25-59, University of Wyoming, College of Law, 1977.

Markle, Donald R., Geothermal Energy in Alaska: Site Data Base and Development Status, 1:15-22, Klamath Falls, Oregon, Geo-Heat Utilization Center, April, 1979.

Sacarto, Douglas M., State Policies for Geothermal Development: Uncovering a Major Resource, Denver, Colorado, National Conference of State Legislatures, 1976.

APPENDICES

APPENDIX 1

(COPY)

DEPARTMENT OF THE INTERIOR

WASHINGTON

March 27, 1911.

Sir:

The Commissioner of the General Land Office has called to my attention the fact that there are a number of hot springs and and other springs in the District of Alaska, the waters of which possess curative medicinal properties and suggest that the public interest, particularly that of the natives of Alaska, would be served by the withdrawal of the lands containing such springs from disposition pending the consideration by Congress of some measure providing for their use.

Under existing laws, lands containing mineral springs, not of a saline character, are subject to sale under the general land laws applicable to Alaksa with the exception of the acts relating to the sale of mineral lands.

I concur in the opinion of the Commissioner with respect to public lands containing these springs and have the honor to submit with favorable recommendation an order of withdrawal.

Very respectfully,

(Sgd) Walter L. Fisher,

Secretary

E.C.F.

(1324½)

ORDER OF WITHDRAWAL.

It is hereby ordered that the following described lands be, and the same are, hereby withdrawn from settlement, location, sale, or entry and reserved for public purposes; to wit, to enable Congress to consider legislation providing for the use of medicinal springs in the public lands in the District of Alaska, subject to all the provisions, limitations, exceptions, and conditions contained in the Act of Congress entitled, "An Act to authorizie the President of the United States to make withdrawals of public lands in certain cases," approved June 25, 1910.

All tracts of public lands in the District of Alaska upon which hot springs, or other springs, the waters of which possess curative medicinal properties, are located, to the extent of 160 acres surrounding each spring, in rectangular form with side and end lines equidistant, as near as may be, from such spring or group of springs.

(Signed) W.H.Taft

President.

Referred to the Commissioner
of the General Land Office for appropriate action.

March 28, 1911.

(Signed) WALTER L. FISHER

Secretary of the Interior.

Executive Order

ALASKA

Under authority of the Act of Congress entitled "An Act To Authorize the President of the United States to make withdrawals of public lands in certain cases," approved June 25, 1910 (36 Stat., 847), as amended by the Act of August 24, 1912 (37 Stat., 497), it is hereby ordered that the Executive Order dated March 28, 1911, withdrawing "all tracts of public lands in the District of Alaska upon which hot springs, or other springs, the waters of which possess curative medicinal properties, are located, to the extent of 160 acres surrounding each spring, in rectangular form with side and end lines equidistant, as near as may be, from such spring or group of springs," be revoked so far as it applies to lands within National Forests.

WOODROW WILSON

THE WHITE HOUSE,
24 January, 1914.

[No. 1883.]

APPENDIX 3

[Public Land Order 369]

UNITED STATES AND ALASKA

REVOCATION OF EXECUTIVE ORDER 1224½, WITHDRAWING PUBLIC LANDS CONTAINING HOT OR MEDICINAL SPRINGS IN ALASKA AND AMENDING EXECUTIVE ORDER 5389 WITHDRAWING SUCH LANDS IN UNITED STATES

By virtue of the authority contained in section 1 of the act of June 25, 1910, c. 421, 36 Stat. 847 (U. S. C., Title 43, sec. 141), and pursuant to Executive Order No. 9337 of April 24, 1943, it is ordered as follows:

Executive Order No. 1224½ of March 28, 1911, withdrawing certain public lands in the Territory of Alaska containing hot or medicinal springs, as amended by Executive Order No. 1883 of January 24, 1914, is hereby revoked; and Executive Order No. 5389 of July 7, 1930, withdrawing certain public lands containing hot or medicinal springs, exclusive of such lands in Alaska, is amended by deleting therefrom the words "exclusive of Alaska", so that the said order shall apply to lands containing hot or medicinal springs in both Alaska and the United States. Executive Order No. 5389, as herein amended, shall not apply to lands within National Forests.

This order shall not otherwise become effective to change the status of the surveyed or unsurveyed public lands in Alaska released from withdrawal by this order until 10:00 a. m. on October 22, 1947. At that time, subject to valid existing rights and the provisions of existing withdrawals, the unsurveyed lands shall become subject to settlement and other forms of appropriation in accordance with applicable laws and regulations, but the surveyed lands shall become subject to application, petition, location, or selection as follows:

(a) *Ninety-day period for preference-right filings.* For a period of 90 days from October 22, 1947, to January 20, 1948, inclusive, the surveyed public lands in Alaska released from withdrawal by this order shall be subject to (1) application under the homestead laws, or the small tract act of June 1, 1938 (52 Stat. 609, 43 U. S. C. sec. 682a), as amended, by qualified veterans of World War II, for whose service recognition is granted by the act of September 27, 1944 (58 Stat. 734, 43 U. S. C. secs. 279-283), subject to the requirements of applicable law, and (2) application under any applicable public-land law, based on prior existing valid settlement rights and preference rights conferred by existing laws or equitable claims subject to allowance and confirmation. Applications by such veterans shall be subject to claims of the classes described in subdivision (2).

(b) *Twenty-day advance period for simultaneous preference-right filings.* For a period of 20 days from October 2, 1947 to October 21, 1947, inclusive, such veterans and persons claiming preference rights superior to those of such veterans, may present their applications, and all such applications, together with those presented at 10:00 a. m. on October 22, 1947, shall be treated as simultaneously filed.

(c) *Date for non-preference right filings authorized by the public-land laws.* Commencing at 10:00 a. m. on January 21, 1948, any of the lands remaining unappropriated shall become subject to such application, petition, location, or selection by the public generally as may be authorized by the public-land laws.

(d) *Twenty-day advance period for simultaneous non-preference right filings.* Applications by the general public may be presented during the 20-day period from January 1, 1948, to January 20, 1948, inclusive, and all such applications, together with those presented at 10:00 a. m. on January 21, 1948, shall be treated as simultaneously filed.

Veterans shall accompany their applications with certified copies of their certificates of discharge, or other satisfactory evidence of their military or naval service. Persons asserting preference rights, through settlement or otherwise, and those having equitable claims, shall accompany their applications by duly corroborated affidavits in support thereof, setting forth in detail all facts relevant to their claims.

Applications for these lands, which shall be filed in the proper district land office in Alaska, shall be acted upon in accordance with the regulations contained in § 295.8 of Title 43 of the Code of Federal Regulations (Circular No. 324, May 22, 1914, 43 L. D. 254), to the extent that such regulations are applicable. Applications under the homestead laws shall be governed by the regulations contained in Part 65 of Title 43 of the Code of Federal Regulations and applications under the small tract act of June 1, 1938, shall be governed by the regulations contained in Part 257 of that title.

Inquiries concerning these lands shall be addressed to the proper district land office in Alaska.

The lands released from withdrawal by this order and for which applications may be filed as stated above are described as follows:

All surveyed public lands in Alaska containing hot springs, or other springs the waters of which possess curative medicinal properties, to the extent of 160 acres surrounding each spring, in rectangular form with side and end lines equidistant, as near as may be, from such spring or group of springs; not including, however, any smallest legal subdivision of the public land surveys which contains a hot spring, or a spring the waters of which possess curative properties.

C. GIRARD DAVIDSON,
Assistant Secretary of the Interior.

AUGUST 20, 1947.

[F. R. Doc. 47-8007; Filed, Aug. 27, 1947; 8:45 a. m.]

Executive Order

Withdrawal of Public Lands Containing Medicinal Springs

United States

Under authority of the act of Congress approved June 25, 1910 (36 Stat. 847), as amended by the act of August 24, 1912 (37 Stat. 497), it is hereby ordered that every smallest legal subdivision of the public land surveys which is vacant unappropriated unreserved public land and contains a hot spring, or a spring the waters of which possess curative properties; and all land within one-quarter of a mile of every such spring located on unsurveyed public land, ~~exclusive of Alaska~~, be, and the same is hereby, withdrawn from settlement, location, sale, or entry, and reserved for lease under the provisions of the act of March 3, 1925 (43 Stat. 1133), subject to valid existing rights.

This order shall remain in full force and effect unless and until revoked by the President or by act of Congress.

HERBERT HOOVER

THE WHITE HOUSE,
July 7, 1930.

[No. 5389]

Title 15, the right of way granted in sections 966–970 of this title shall be forfeited without further action or declaration on the part of the Government or any proceedings or judgment of any court. Apr. 12, 1910, c. 155, § 5, 36 Stat. 296.

§ 971. Bathhouses, hotels, etc., adjacent to mineral, medicinal, etc., springs on public lands

The Secretary of the Interior, upon such terms and under such regulations as he may deem proper, may permit responsible persons or associations to use and occupy, for the erection of bathhouses, hotels, or other improvements for the accommodation of the public, suitable spaces or tracts of land near or adjacent to mineral, medicinal, or other springs which are located upon unreserved public lands or public lands which have been withdrawn for the protection of such springs: *Provided*, That permits or leases hereunder shall be for periods not exceeding twenty years. Mar. 3, 1925, c. 458, 43 Stat. 1133.

CHAPTER 23.—GRANTS OF SWAMP AND OVERFLOWED LANDS

Sec.

981. Indemnity to States on sale of lands.
982. Grant to States to aid in construction of levees and drains.
983. Lists and plats of lands, for governors of States.
984. Legal subdivisions mostly wet and unfit for cultivation.
985. Patents to prior purchasers and locators.
986. Selection of lands confirmed.
987. Lands to be certified to State of California within one year.
988. Act extended to Minnesota and Oregon.
989. Homestead entries by purchasers from Missouri of lands declared not to be swamp lands.
990. Grant to Missouri.
991. Title of purchasers of unconfirmed lands in Arkansas confirmed.
992. Sale of erroneously designated water-covered areas in Arkansas.
993. Sale of lands in Louisiana; preference rights; application for purchase; appraisal; payment for land.
994. Sale of lands in Wisconsin.

§ 981. Indemnity to States on sale of lands

Upon proof by the authorized agent of the State, before the Director of the Bureau of Land Management that any of the lands purchased by any person from the United States, prior to March 2, 1855, were "swamp lands," within the true intent and meaning of the Act

1902 (32 Stat. 388; 43 U.S.C. 372 et seq.), respectively.

(3) With respect to mineral lands, the said orders do not prevent prospecting, locating, developing, mining, entering, leasing, or patenting of the withdrawn lands, under the provisions of the applicable mineral or mineral leasing laws.

§ 2300.0-5 Definitions.

As used in §§ 2351.1 to 2351.6, and 2357.1, the term "withdrawal or reservation" means "withdrawal, reservation, or restriction" and "land" includes both land and water areas.

PART 2310—WITHDRAWALS—BUREAU OF LAND MANAGEMENT

Subpart 2311—Public Water Reserves

Sec.
2311.0-3 Authority.
2311.0-8 Lands subject to withdrawal.
2311.1 Selections, filings, or entries.
2311.2 Application to select or enter lands.
2311.3 Use of lands withdrawn as public water reserves.
2311.4 Leasing of public lands near or adjacent to springs, for bath houses, hotels or other improvements.

Subpart 2313—Stock Driveways

2313.0-3 Authority.
2313.1 Application for stock-driveway withdrawal.

Subpart 2317—Public Aviation Fields

2317.0-3 Authority.
2317.0-7 Cross references.
2317.1 Procedures.

Subpart 2311—Public Water Reserves

Authority: Sec. 11, 39 Stat. 868; 43 U.S.C. 301, unless otherwise noted.

Source: 35 FR 9552, June 13, 1970, unless otherwise noted.

§ 2311.0-3 Authority.

(a)(1) *Withdrawal of lands from settlement, location, sale, or entry; reservation for public use.* By executive order of April 17, 1926, it was ordered that every smallest legal subdivision of the public-land surveys which is vacant, unappropriated, unreserved, public land and contains a spring or water hole, and all land within one quarter of a mile of every spring or water hole located on unsurveyed public land be, and the same is hereby, withdrawn from settlement, location, sale, or entry, and reserved for public use in accordance with the provisions of section 10 of the act of December 29, 1916 (39 Stat. 865; 43 U.S.C. 300), and in aid of pending legislation.

(2) *Purpose of withdrawal.* The Executive order of April 17, 1926, was designed to preserve for general public use and benefit unreserved public lands containing water holes or other bodies of water needed or used by the public for watering purposes. It is not therefore to be construed as applying to or reserving from homestead or other entry lands having small springs or water holes affording only enough water for the use of one family and its domestic animals. It withdraws those springs and water holes capable of providing enough water for general use for watering purposes.

(b) *Withdrawal of land from settlement, location, sale, or entry; reservation for lease.* (1) By E.O. 5389, July 7, 1930, as amended by P.L.O. 399 of August 20, 1947, it was ordered "that every smallest legal subdivision of the public land surveys which is vacant, unappropriated, unreserved public land and contains a hot spring, or a spring the waters of which possess curative properties; and all land within one-quarter of a mile of every such spring located on unsurveyed public land be, and the same is hereby, withdrawn from settlement, location, sale, or entry, and reserved for lease under the provisions of the act of March 3, 1925 (43 Stat. 1133), subject to valid existing rights."

(2) *Purpose of withdrawal.* The Executive order mentioned in paragraph (b)(1) of this section was designed to preserve for general public use and benefit the unreserved public lands containing hot springs or springs the waters of which possess curative properties, in order that they might be leased under the provisions of the act of March 3, 1925 (43 Stat. 1133; 43 U.S.C. 7[illegible]) and the regulations issued thereunder contained in [illegible]

§ 2311.0-8 Lands subject to withdrawal.

(a) Lands not needed or used by the public for watering purposes. (1) The object of the Executive order of April 17, 1926, was to:

> • • • preserve for general public use and benefit unreserved public lands containing water holes or other bodies of water needed or used by the public for watering purposes.

(2) In the States of Alabama, Arkansas, Florida, Louisiana, Michigan, Minnesota, Missouri, Mississippi, and Wisconsin the springs or water holes, if any, on the public lands are not needed or used by the public for watering purposes. The conditions in those States are entirely different from those in the other public-land States where grazing is carried on to a considerable extent and not only springs and water holes but other available sources of water supply are sometimes quite scarce. There are no lands in the States mentioned that come within the purview of the Executive order of April 17, 1926. Therefore, a nonwater hole and nonspring statement is not required in connection with applications for lands in such States. Neither will such statement be required in connection with applications for lands in Federal reclamation projects.

(3) By E.O. 5106 of May 4, 1929, Alaska was excluded from the public water reserve created by E.O. of Apr. 17, 1926.

§ 2311.1 Selections, filings, or entries.

(a) It must be shown by a duly corroborated statement in connection with every selection, filing, or entry made upon or subsequent to the date of Executive order of April 17, 1926, or theretofore filed but not allowed, that no spring or water hole exists, if it be a fact, upon any legal subdivision of the land sought to be appropriated, if surveyed, and if unsurveyed, within one-quarter of a mile from the exterior boundaries of said land. If there be any spring or water hole the showing should state the exact location and size thereof, together with an estimate of the quantity of water in gallons which it is capable of producing daily, and any other information necessary to determine whether or not it is valuable or necessary as a public water reserve.

(b) The showing mentioned will not be required in connection with proposed State exchanges or indemnity school and other State selections, involving public lands in grazing districts, where agreements as to the exchanges or selections have been reached by representatives of the State, and the Bureau of Land Management.

(c) Where orders of designation under the said acts contain the quoted paragraph in paragraph § 2311.0-8(a) of this section, it will not be necessary for an entryman to make the showing required by §§ 2311.1(a) and (b) of this section.

(d) *Application of order of withdrawal to specified cases.* (1) In case the attempted appropriation of the land is one the allowance of which is within the discretion of the Secretary of the Interior or the Bureau of Land Management, the showing required by § 2311.1(a) of this subpart must be furnished, irrespective of the date of filing of the application, entry, or selection, before favorable action is taken thereon.

(2) This requirement shall not apply, however, to selections or filings made in pursuance of grants which have been determined to be "grants in praesenti," and to have attached and become effective prior to April 17, 1926.

(3) Geological Survey designation lists, under the Enlarged Homestead Acts will contain a paragraph that:

> This area contains no springs or water holes of the type intended to be withdrawn by Executive order of April 17, 1926, creating public water reserve No. 107, and, therefore, is unaffected by it.

§ 2311.2 Application to select or enter lands.

(a) *Showing as to hot or medicinal springs required with applications to enter or select; permission to enter lands.* (1) An applicant to enter or select lands situated outside of a national forest in any State must show that no hot spring or other spring having waters possessing curative

properties exists. If it be a fact, upon any legal subdivision of land sought to be appropriated, if surveyed, and if unsurveyed, that no portion of the land applied for is within an area of one-quarter of a mile from such spring.

(2) If there be any such spring upon or adjacent to the land as staked, the applicant must show the exact location and size thereof, together with an estimate of the quantity of water in gallons which it is capable of producing daily and any other information necessary to determine whether or not it is valuable or necessary within the meaning of said Executive order. The showing must be duly corroborated.

(3) Permission may be obtained to use or improve lands containing such springs under the said act of March 3, 1925.

(4) The showing mentioned will not be required in connection with proposed State exchanges or indemnity school and other State selections involving public lands in grazing districts, where agreements as to the exchanges or selections have been reached by representatives of the States and the Bureau of Land Management.

(b) *Application of order of withdrawal to specified cases.* (1) In case the attempted appropriation of lands is one of the allowance of which is within the discretion of the Secretary of the Interior or the Bureau of Land Management, the showing referred to in paragraph (a) of this section must be furnished irrespective of the date of filing of the application, entry, or selection before favorable action is taken thereunder.

(2) Geological Survey designation lists, under the Enlarged Homestead Act, will contain a paragraph stating:

This area contains no spring of the type intended to be withdrawn by Executive order of July 7, 1930, No. 5389, and therefore is unaffected by it.

(3) Where orders of designation under the Enlarged Homestead Acts contain the above-quoted paragraph, it will not be necessary for entrymen to make the showing required by paragraph (a) of this section.

(4) Also in cases of applications or entries for lands within Federal reclamation projects, where a report is made by the Bureau of Reclamation that the lands contain no spring of the type intended to be withdrawn by E.O. 5389, July 7, 1930, it will not be necessary for the claimant to make the showing required by paragraph (a) of this section.

(R.S. 2478; 43 U.S.C. 1201)

§ 2311.3 Use of lands withdrawn as public water reserves.

(a) *Authority; governing regulations.* Permission may be obtained to use or improve lands withdrawn as or in connection with public water reserves, under the act of June 25, 1910 (36 Stat. 847; 43 U.S.C. 141-143, 16 U.S.C. 471), or any other act, by filing application for such permission under the act of February 15, 1901 (31 Stat. 790; 43 U.S.C. 959), in accordance with the regulations governing said act, as found in Parts 2850, 2860, and 2870 of this chapter, as supplemented by this section.

(b) *Who may make application; form and contents.* (1) Any citizen or association of citizens of the United States, or any corporation, duly created and existing under and by virtue of the laws of any State of the United States, who may desire to improve the productivity of any water hole or source of water supply within the boundaries of any public water reserve, or to conduct such waters from their source within such a reserve to a point or place more convenient for public use, may file in the proper office for the district within which the reservation is situated, an application for permission so as to use the reserved land, or conduct the waters over or through the same.

(2) Such application should be in the form of a statement, duly corroborated by at least two persons, setting forth in detail the plan of the applicant for the improvement and care of the public water reserve, the public necessity for such improvement, the reasons why such plan will be more conducive to the public good and better conserve the waters for public use, and any other facts and circumstances pertinent thereto.

(c) *Map and field notes required when water is to be conducted outside of the reserve.* If the waters are to be conducted from their source within the reserve to a point outside of the reserve, the application should be accompanied by a map and separate field notes in duplicate, the map being delineated upon tracing linen, and prepared in accordance with the regulations governing the submission of applications under the act of February 15, 1901, also evidence that applicant has applied to the proper State official for permission to appropriate the waters to the uses contemplated and has prosecuted such application in good faith to date of the filing of the application.

(d) *When reservoir declaratory statement may be required.* If the place of use of the water is upon unreserved public land the applicant may be called upon to file a reservoir declaratory statement under the act of January 13, 1897 (29 Stat. 484; 43 U.S.C. 952-955), as well as the application under the act of February 15, 1901, if deemed advisable.

(e) *Stipulations and agreements required.* As a condition precedent to the granting of any such permission, the applicant will be required to execute such stipulations and agreements as may be deemed proper and necessary by the authorizing officer of the proper office, to safeguard the public interests, after investigation of the facts, circumstances, and conditions in connection with each individual case.

(f) *Conditions of permit; failure to comply with the same.* (1) Each permit shall contain, besides those found necessary in individual cases, the following conditions:

(i) That the right to appropriate the waters of the State to the uses contemplated shall be obtained within 1 year from and after the issuance of the permit and the permittee shall file a certificate to that effect issued by the proper State authority.

(ii) That the proposed system shall be fully completed in substantial conformity with the plan upon which the permit is predicated, within 2 years from and after the issuance of such permit, unless a different period is specifically provided for in such permit.

(iii) That of the permittee shall during the month of January, in each year after the completion of such system, file with the authorizing officer of the proper office within which the system is located, a statement of maintenance, in substantially the following form: ————————, (Name) of ———————— (Address), states that he is the President of the ——— company (or person) to whom permit (give land district and serial number), was issued by ———, (give date), in connection with public water reserve No.—— that the system as set forth and described in said permit has been kept in repair and water sufficient for the public needs has been kept therein during the whole of the calendar year of 19——, that the same has been kept open to the public at all times during the year, and that the said permittee has in all things, complied with the provisions of said permit, and the stipulations therein contained and the acts under which said permit was issued.

———— ————

(Signature) —— ——

————————

(Date)

(2) In the event that the State certificate as to the right to appropriate the water is not filed within 1 year, or proof of the construction of the system, consisting of the statement of the permittee duly corroborated by two witnesses within 2 years or such other period as may be mentioned in the permit, or statement of maintenance is not filed as hereinbefore provided or in case any of the terms, conditions, provisions, or stipulations of the permit shall not be well and in good faith performed, observed, and carried out, then such permit shall become and be subject to cancellation. Nothing hereinbefore contained, however, is to be construed as limiting the power or authority of the authorizing officer to cancel and terminate the permit at any time when in his judgment such action is desirable.

(3) Permits issued hereunder are transferable only upon the written authority and consent of the authorizing officer.

(g) *Changes in system or new structures may be authorized.* If, at any time, it becomes necessary for the permittee to change his system or to erect structures other than those authorized by his permit, application for permission so to do, in the form of a statement setting forth in detail the reason and necessity for the change must be filed, and no such change shall be made until authorized in writing by the authorizing officer.

(R.S. 2478; 43 U.S.C. 1201)

§ 2311.1 Leasing of public lands near or adjacent to springs, for bath houses, hotels, or other improvements.

(a) *Statutory authority.* The act of March 3, 1925 (43 Stat. 1133; 43 U.S.C. 971) authorizes the issuance of leases for periods not exceeding 20 years of tracts of land near or adjacent to mineral, medicinal, or other springs located upon unreserved public lands or public lands withdrawn for the protection of such springs, for the erection of bath houses, hotels, or other improvements for the accommodation of the public. Leases may issue under the act to any responsible persons or associations, which words are construed to include private corporations and municipalities.

(b) *Lands which may be leased.* Leases may be issued for surveyed or unsurveyed unreserved public lands in the several States, situated near or adjacent to mineral, medicinal, or other springs, which are located upon unreserved public lands, and for public lands which have been withdrawn for the protection of such springs.

(c) *Form and contents of application.* An application for lease should be filed in duplicate in the proper office and should include the following:

(1) Applicant's name and address.

(2) If applicant is a private corporation, a certified copy of the articles of incorporation.

(3) If applicant is a municipality, the law or charter and proceedings taken by which the municipality has become a legal body corporate. An application by a private corporation or municipality should show that it is legally qualified to take the lease requested and that the taking of such lease has been duly authorized by its governing body.

(4) An accurate description of the land desired. If the land is surveyed it should be described with reference to the public-land surveys. A lease may be granted for part of a legal subdivision or for more than one legal subdivision, in the discretion of the manager.

(5) The names and addresses of three persons to whom reference may be made as to applicant's reputation and business standing and as to his ability, both from a financial standpoint and otherwise, to carry out the contemplated project.

(6) The period of time for which the lease is desired, not to exceed 20 years, and the purpose for which the lease is sought, whether for the erection of a bathhouse, hotel, or other improvement for the accommodation of the public. It is important that the application should specify all purposes for which it is intended or desired to use the land, as a lease, if issued, will authorize the use of the land only for the purposes specified in the application, and its use for any other purpose will not be permitted. Thus, if an applicant for a hotel in addition to using the land for ordinary hotel purposes, wishes to operate a billiard hall or moving-picture theater, etc., on the land, that fact should be disclosed in the application.

(7) Details as to the proposed improvements, including the estimated cost of construction and of subsequent maintenance; also the time when construction work will begin and when it will be completed, if the proposed lease is granted.

(d) *Granting of lease is discretionary.* The granting of an application for lease is discretionary, and any application may be granted or denied in part or in its entirety as may appear to be warranted in the particular case.

(e) *Authority of the authorizing officer to regulate prices.* All leases issued under the act of March 3, 1925, will contain stipulations authorizing the

authorizing officer to fix the rates and prices for accommodations and services whenever this is deemed necessary. The charges which may be made may or may not be regulated by the authorizing officer as may be deemed proper in the particular case.

(43 Stat. 1133; 43 U.S.C. 971)

Subpart 2313—Stock Driveways

Source: 35 FR 9554, June 13, 1970, unless otherwise noted.

§ 2313.0-3 Authority.

The reservation of driveways for stock provided for in section 10 of the act of December 29, 1916 (39 Stat. 865; 43 U.S.C. 300) will be considered on application of parties interested on recommendation of other departments of the Government, or on the reports of agents of this Department. Lands withdrawn for driveways for stock or in connection with water holes can not thereafter be entered.

§ 2313.1 Application for stock-driveway withdrawal.

(a) Upon the receipt in the proper office of a duly executed application, in duplicate, for the withdrawal of public lands for a stock driveway by responsible parties in interest, the lands described therein shall be segregated from disposition temporarily, pending final action thereon by the Bureau of Land Management.

(b) Pending and during such temporary segregation, applications to enter or select any affected lands may be received and suspended.

(c) Lands withdrawn for driveways for stock or in connection with water holes are not subject to entry or disposition, and applications for the acquisition of lands so withdrawn will be rejected by the authorizing officer. Applications for the exchange of such lands, which show that they are filed pursuant to a program for the improvement of stock driveways, and applications to lease or use such lands under any appropriate public land law, until such time as they may be needed for the purposes of the withdrawal, and where the proposed use will not interfere with such purpose, will receive consideration.

Subpart 2317—Public Aviation Fields

Source: 35 FR 9554, June 13, 1970, unless otherwise noted.

§ 2317.0-3 Authority.

(a) The act of May 24, 1928 (45 Stat. 728; 49 U.S.C. 211), as amended, authorizes the Secretary of the Interior to withdraw lands for beacon lights and other air-navigation facilities, under such rules as he may prescribe.

(b) Under the authority given to the President by the act of June 25, 1910 (36 Stat. 847; 43 U.S.C. 141, 16 U.S.C. 471) to withdraw lands for public purposes, withdrawals may be made for beacon lights, emergency or intermediate landing fields, except terminal airports.

§ 2317.0-7 Cross references.

To the extent applicable, the procedures in Part 2350 of this chapter shall apply.

§ 2317.1 Procedures.

(a) Withdrawals under the act of May 24, 1928 (45 Stat. 728; 49 U.S.C. 211) may be made on motion of the Bureau of Land Management, or upon application of the Federal Aviation Agency or any other Federal agency, or the lessee of a terminal airport or the applicant for such a lease.

(b) In addition to the requirements of Part 2350 of this chapter, all applications for withdrawal shall contain a statement by the authorized officer of the Federal Aviation Administration as to the need and feasibility of the facility for which the withdrawal is requested.

PART 2320—WITHDRAWALS FOR OTHER INTERIOR AGENCIES

Subpart 2322—Bureau of Reclamation

Sec.
2322.0-3 Authority.
2322.0-5 Definitions.
2322.0-7 Cross references.
2322.1 Effect of withdrawals.
2322.1-1 Under first form.

JAN. 18, 1956

PRESIDENT EGAN: What is your pleasure, Mr. Riley?

RILEY: Mr. President, I move its adoption.

PRESIDENT EGAN: Mr. Riley moves the adoption of the proposed amendment.

ROBERTSON: May we have it read again, please.

PRESIDENT EGAN: Will the Chief Clerk please read it again.

(The Chief Clerk read the proposed amendment again.)

PRESIDENT EGAN: Mr. Riley so moves. Do you ask unanimous consent, Mr. Riley?

RILEY: I do, Mr. President.

PRESIDENT EGAN: Mr. Riley asks unanimous consent for the adoption of the proposed amendment. Mr. Ralph Rivers.

R. RIVERS: I object, just for the moment, Mr. President. Would we not say "subordinate property rights" instead of "inferior"?

RILEY: Either would do, I would think. This is one proposed by a delegate and the Committee accepted it.

R. RIVERS: That could be referred to Style and Drafting. I will support that.

PRESIDENT EGAN: Is there objection to unanimous consent request for the adoption of the amendment? If there is no objection, the proposed amendment is ordered adopted. Are there other amendments to Section 17? Section 18? Mr. Taylor.

TAYLOR: Seventeen, Mr. President. I have a question regarding that particular section. It says the person should not be divested of his right to use of waters, except for a superior beneficial or public use. I was thinking about matters which have not been brought up by the Committee, and I brought it up today: the federal law provides that all hot springs or springs with proven medicinal value are reserved to the federal government, so people can have the beneficial use of those springs -- those waters that do have a distinct medicinal value. And I thought, possibly, in 17, or in the section which is now 13, we could include some provisional clause along that line.

PRESIDENT EGAN: Do you have an amendment, Mr. Taylor?

TAYLOR: I have no amendment right now. I just brought it up, that we might prepare an amendment after the dinner recess.

PRESIDENT EGAN: Mr. Ralph Rivers.

R. RIVERS: Mr. President, I have an amendment to Section 16, if I may have the privilege of backing up a bit. The new Section 16.

PRESIDENT EGAN: The Chief Clerk will please read the proposed amendment to the new Section 16.

CHIEF CLERK: "Line 13, page 6, delete the period after the word 'law' and add 'with just compensation'."

PRESIDENT EGAN: Mr. Ralph Rivers.

R. RIVERS: Mr. President, I move the adoption of the amendment. I might state that I talked to Mr. Riley and a couple of others on the Committee; I don't know whether I referred it to the Committee as a whole, but I talked to members of the Committee about it.

PRESIDENT EGAN: Mr. Ralph Rivers moves the adoption of the proposed amendment. Is there a second?

TAYLOR: Would you read it again?

KNIGHT: I'll second it.

PRESIDENT EGAN: Mr. Knight seconds the motion. Would the Chief Clerk please read the proposed amendment.

(The Chief Clerk read the amendment again.)

TAYLOR: I'd like to raise a point of inquiry. Do you think it would not be better if that were done only by operation of law "and with just compensation".

PRESIDENT EGAN: Mr. Ralph Rivers.

TAYLOR: Do you want a conjunction in there?

R. RIVERS: I don't care whether the "and" is in there or not. That would be for Style and Drafting. I'm not sure if "operation of law with just compensation". I think it's adequate with the "and". Mr. President and delegates, the reason I bring this up is that the very next section says "Proceedings in eminent domain may be undertaken for private ways of necessity to permit essential access for extraction or utilization of resources."

JAN. 18, 1956

PRESIDENT EGAN: That would be at the end of the line. Mr. Riley asks unanimous consent that the proposed amendment be adopted. Is there objection? Hearing no objection, it is so ordered. Are there other amendments from the Resources Committee?

CHIEF CLERK: "Page 5, line 14, strike 'nonmetallic'."

PRESIDENT EGAN: Mr. Riley.

RILEY: I ask unanimous consent, Mr. President, for the adoption of the amendment.

PRESIDENT EGAN: Mr. Riley asks unanimous consent for the adoption of the amendment. Is there objection? Hearing no objection, the proposed amendment is ordered adopted.

CHIEF CLERK: "Page 3, Section 8, line 13, strike lines 13 and 14, and insert in lieu thereof: 'selection of lands granted to the State by the United States and for the administration of the State public domain.'"

RILEY: Mr. President, I ask unanimous consent for the adoption of the amendment.

PRESIDENT EGAN: Mr. Riley asks unanimous consent for the adoption of the amendment. Would the Chief Clerk please read the amendment once more.

(The Chief Clerk read the proposed amendment again.)

PRESIDENT EGAN: Is there objection to the unanimous consent request for adoption of the amendment? If not, the proposed amendment is ordered adopted.

CHIEF CLERK: "Page 5, Section 13, line 20, after the word 'use' insert a comma, and add 'except mineral and medicinal waters'."

PRESIDENT EGAN: Mr. Riley.

RILEY: Mr. President, I ask unanimous consent for adoption of the amendment.

PRESIDENT EGAN: Mr. Riley asks unanimous consent for the adoption of the amendment. Is there objection?

COOPER: I object.

PRESIDENT EGAN: Objection is heard by Mr. Cooper.

COOPER: Just for a point of clarification -- "except mineral waters" -- what is that?

PRESIDENT EGAN: Mr. Riley.

RILEY: Mr. Cooper, this goes to the question raised by Mr. Taylor earlier today. He drew attention to the fact that the federal government reserves the disposition of hot springs. And some of us have talked with some of the federal land office people since that time, in an effort to arrive at language as nearly like the federal reservation as possible, and this is what we have offered.

PRESIDENT EGAN: Mr. Cooper.

COOPER: Mr. President, I'll have to ask further. The term "mineral waters" -- anyone living in this area certainly is well aware of the fact that there is plenty of mineral in this water; and, therefore, there could be a question at a future date.

PRESIDENT EGAN: Mr. Riley, do you have an explanation? Do you so move, Mr. Riley, for the adoption of the amendment?

RILEY: I have, yes.

PRESIDENT EGAN: Mr. Riley moves. Is there a second to the motion?

KNIGHT: I'll second it.

PRESIDENT EGAN: Mr. Knight seconds the motion. The question is open for discussion. The question is, "Shall the proposed amendment, as offered by the Committee on Resources, be adopted by the Convention?" All those in favor of adopting the proposed amendment will signify by saying "aye", all opposed, by saying "no". The "ayes" have it and the proposed amendment is ordered adopted. Are there other amendments?

CHIEF CLERK: No more committee amendments.

PRESIDENT EGAN: If not, then we will start with the second time around on the amending process.

KILCHER: Mr. President.

PRESIDENT EGAN: Mr. Kilcher.

KILCHER: Will this be the second reading?

PRESIDENT EGAN: Does the Committee desire a recess at this time, for the purpose of hearing any proposed amendments? Mr. Smith.

SMITH: I would like to ask if there are amendments to be offered?

proposed amendment will signify by saying "aye"; all opposed, by saying "no". The "ayes" have it, and the proposed amendment is ordered adopted. Are there other proposed committee amendments?

CHIEF CLERK: "Page 4, lines 1 and 2, strike 'or interests therein'."

RILEY: Mr. President, I move the adoption of the amendment as read.

STEWART: I second the motion.

PRESIDENT EGAN: Mr. Riley moves the adoption of the amendment, seconded by Mr. Stewart. Mr. Riley.

RILEY: That is simply a redundancy. It appears in a subsection and it appears earlier on page 3 in the language qualifying the subsection.

PRESIDENT EGAN: Mr. Riley has moved, it has been seconded that the proposed amendment be adopted by the Convention. Mr. Hurley.

HURLEY: May I ask Mr. Riley again where it appears before that?

RILEY: On page 3, Mr. Hurley, on line 24.

PRESIDENT EGAN: Is there further discussion? If not, the question is, "Shall the proposed committee amendment be adopted by the Convention?" All those in favor of adopting the amendment will signify by saying "aye"; all opposed, by saying "no". The "ayes" have it and the proposed amendment is ordered adopted. Are there other committee amendments?

CHIEF CLERK: "Page 5, line 20 --"

RILEY: I would like to suggest to the Clerk that the word "the" might help the sense of that amendment. Shall I read the amendment?

CHIEF CLERK: Yes, please.

PRESIDENT EGAN: Mr. Riley.

RILEY: On line 20, we had, by action of the Convention, inserted, "except mineral and medicinal waters". That particular insert should, under this amendment, follow the word "shall" instead of the word "use". It was adopted following the word "use", but in the judgment of the Committee it would better follow the word "shall" for clarity of meaning -- "except mineral and medicinal waters" inserted after the word "shall"

and set off by commas. I move its adoption.

PRESIDENT EGAN: Mr. Riley moves the adoption of the proposed amendment. Is there a second to the motion?

KNIGHT: I second it.

PRESIDENT EGAN: Mr. Knight seconds the motion. Mr. Taylor.

TAYLOR: I am not objecting; this is just for information. Mr. Riley, did your Committee, in considering this amendment as to mineral springs or mineral and medicinal waters--is that the definition as given in the Bureau of Land Management regulations?

RILEY: I would say that it is not full, but representatives of BLM in town, in Fairbanks that is, suggested to us that it would satisfy the point raised by you and others the other evening.

TAYLOR: That is right. I think that was my amendment and I wasn't sure whether that was as it was set forth.

RILEY: Yes, that is right. I am sorry I didn't check with you before.

PRESIDENT EGAN: Mr. Hellenthal.

HELLENTHAL: Mr. Riley, I take it this is a matter of substance or we wouldn't be asked to pass on it.

RILEY: I would say it is a matter of substance.

HELLENTHAL: How is it a matter of substance?

RILEY: As I read it now, Mr. Hellenthal, it states, "All waters reserved to the people for common use except mineral and medicinal waters..." which would suggest that mineral and medicinal waters may not be reserved to the people for common use; but, if it is read following the word "shall": "All waters reserved to the people for common use shall, except mineral and medicinal waters, be subject to appropriation." There is a prospect there of misunderstanding, we feel, of a substantive nature. The point of the whole sentence is that these waters with that exception shall be subject to appropriation. We don't want to suggest that all other waters except mineral and medicinal waters are subject to reservation. The reservation applies across the field.

HELLENTHAL: Style and Drafting can still work on it after this amendment?

RILEY: I am sure, but with this to clarify our meaning.

PRESIDENT EGAN: The question is, "Shall the proposed amendment be adopted by the Convention?" All those in favor of adopting the proposed amendment will signify by saying "aye"; all opposed, by saying "no". The "ayes" have it, and the proposed amendment is ordered adopted. Are there other committee amendments?

CHIEF CLERK: "Page 5, line 24, strike 'of' and substitute 'among'."

RILEY: Mr. President, I move the adoption of the amendment.

PRESIDENT EGAN: Mr. Riley moves the adoption of the amendment. Is there a second?

MARSTON: I second the motion.

PRESIDENT EGAN: Mr. Marston seconds the motion. Mr. Riley.

RILEY: The Committee feels that the substitution of the word "among" in that instance ties in more clearly with the concept of concurrent use. That, too, might have been a Style and Drafting change but we feel that it does touch on substantive matter.

PRESIDENT EGAN: The question is, "Shall the proposed amendment be adopted by the Convention? All those in favor of adopting the proposed amendment will signify by saying "aye"; all opposed, by saying "no". The "ayes" have it and the proposed amendment is ordered adopted. Are there other amendments?

CHIEF CLERK: "Transpose Sections 7 and 8, page 3."

PRESIDENT EGAN: Transpose Sections 7 and 8. Mr. Riley.

RILEY: Here, Mr. President, I would waive the motion to adopt, thinking it would serve the purpose to call the matter to the attention of Style and Drafting.

PRESIDENT EGAN: Are there other amendments for Committee Proposal No. 8/a?

R. RIVERS: May I address a question to Mr. Riley?

PRESIDENT EGAN: If there is no objection, Mr. Rivers.

R. RIVERS: Mr. Riley, I refer to page 3, first to line 7, which I have marked down as a new Section 8, and it speaks of "lands and interests therein". The same question applies to new Section 10 on line 24, "or interests therein", and I would like to know what that means: "or interests therein"?

RILEY: I should like to ask for a five-minute recess and

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

OFFICE OF THE GOVERNOR

ALASKA ENERGY OFFICE

338 DENALI STREET – ANCHORAGE 99501
PHONE 907-272-0527

April 23, 1976

The Honorable Kathryn Ostrosky
State House of Representatives
Pouch V
Juneau, Alaska 99811

Dear Representative Ostrosky:

In July, 1975, the Energy Office and the Geophysical Institute of the University of Alaska co-sponsored a conference on the potential use of wind and geothermal power in Alaska. Over 250 people attended and participated. The National Science Foundation funded the convention and the report.

After the two day conference several working groups continued to work on analyzing these two alternative energy sources. Enclosed is a copy of the report of that conference and its working groups.

Alaska is blessed with alternative energy sources. Careful and planned use may well allow us to improve the standard of living for all Alaskans, protect our environment and provide for many of our energy requirements while still being the major domestic source for our nation's oil and gas needs.

I will be pleased and honored to answer any questions you might have concerning this document and energy research and development within Alaska.

Sincerest best wishes,

William C. McConkey

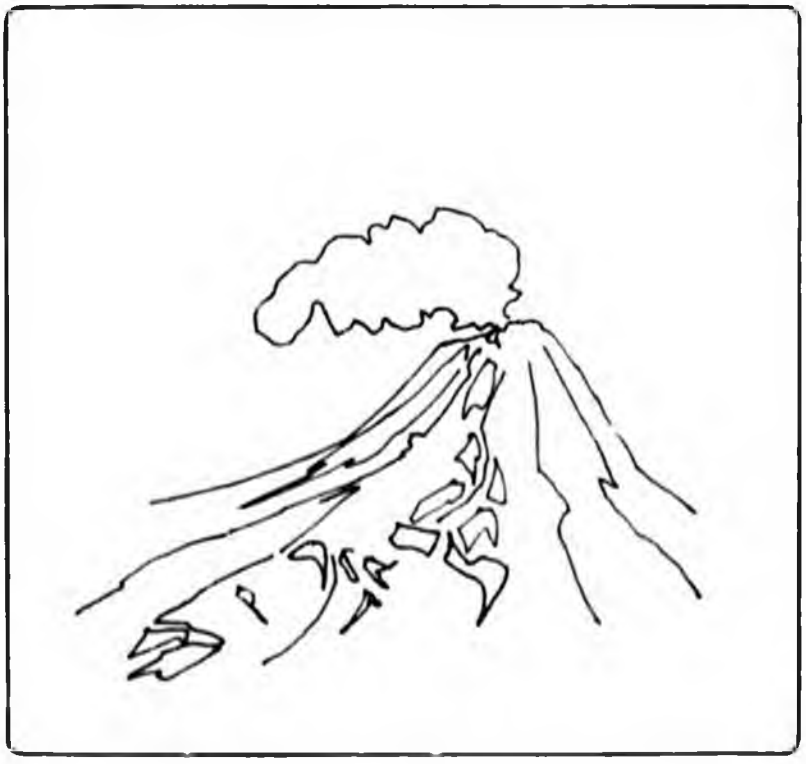
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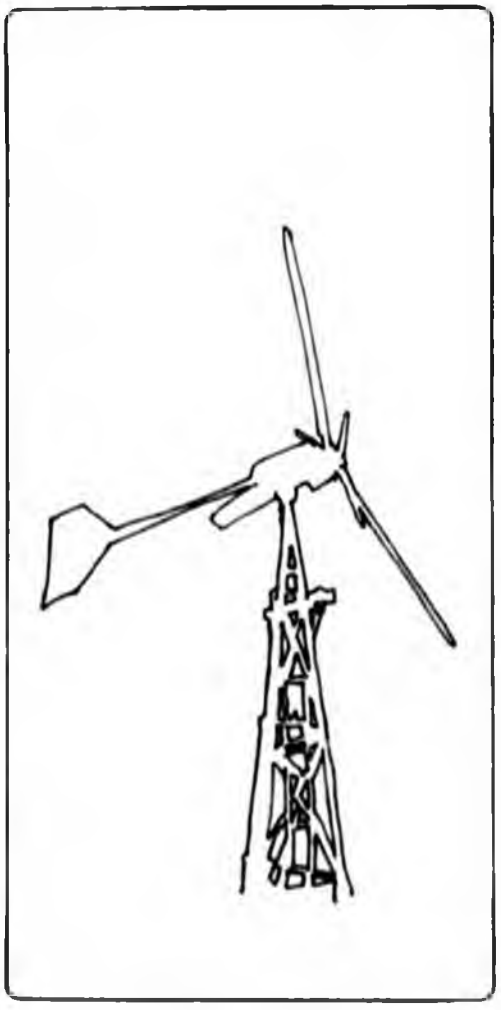
GEOTHERMAL ENERGY AND WIND POWER . . .

ALTERNATE ENERGY SOURCES FOR ALASKA

Resource assessments and recommended plans and programs developed from the proceedings of the Alaskan Geothermal and Wind Power Resources Planning Conference, July 8-9, 1975; Anchorage, Alaska

EDITED BY
ROBERT B. FORBES





Sponsored and organized by:
The Alaska Energy Office
Office of the Governor
State of Alaska
and
The Geophysical Institute
University of Alaska
College, Alaska

With financial aid from:
National Science Foundation Grant No. AER75-20207

April 1976

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William McConkey, Director

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Grant GAER75-20207

The 1973 oil embargo by the OPEC (Oil Producing Export Countries) shocked the United States and its leaders and accented the seriousness of the nation's declining energy reserves. Project Independence, as initiated by Richard Nixon and reaffirmed by President Ford, was designed to achieve American "energy self-sufficiency" by 1980. However, our dependence on foreign oil imports has actually increased since the embargo was lifted. Crude oil imports during the first six months of 1975 were 24.5% above the same period in 1973. At the same time, domestic production of crude oil and lease condensate during the first half of 1975 decreased 5.2% from the same period in 1974.

Diminishing oil and gas reserves in the "Lower 48" states will result in the accelerated consumption of Alaskan oil and gas when these resources are developed and available for delivery. It is clear that Alaska and the nation must find and develop alternate energy sources as rapidly as possible.

Rising transportation and petroleum product costs, particularly in rural Alaska, accentuate the need for alternate energy sources. Preliminary surveys have indicated that the State of Alaska has many areas which have high wind power potential, as well as known geothermal resource areas.

On July 8 and 9, 1975, over 150 people, including scientists, state and federal government officials, and representatives from the private sector, attended the Alaska Geothermal and Wind Resources Planning Conference in Anchorage, Alaska (see Appendix B).

Objectives of the Conference were:

(1) To review and evaluate the potential of geothermal and wind resources as alternative Alaskan energy sources,

(2) To assemble a small and highly competent group of conferees, from Alaska and other states, to conduct an assessment as outlined in (1) above,

(3) To encourage dialogue between potential Alaskan consumers, scientists and planners, with special attention to rural and native populations,

(4) To develop short- and long-range plans and programs for the utilization of Alaskan geothermal and wind resources in harmony with national and international needs and priorities, and

(5) To produce, publish and distribute a comprehensive report which summarizes the findings of the conferees on (1), (3) and (4) above.

Working groups were formed to define plans and programs in several areas including:

1. agriculture
2. electrical power
3. fisheries and aquaculture
4. geothermal resource research and development
5. space heating and industrial application
6. wind power development and applications

Conference data including the technical program, the list of attendees and working group assignments are contained in Appendices A, B and C.

This report attempts to define Alaskan energy problems which can be alleviated through the efficient use of wind power and geothermal resources, and to present recommended short- and long-range plans for the initiation of state and federal programs in the more promising areas.

The content of this report is based on input from Conference working groups and many published (acknowledged) and unpublished sources, including data from various state and federal agencies.

We are particularly grateful to the Geothermal Program Office, National Science Foundation, for a grant (NSF #AER75-20207), which helped defray Conference expenses and the publication costs of this report.

We hope that future accomplishments show that the Alaskan Geothermal and Wind Resources Planning Conference was a very important first step in the efficient and timely development of alternate energy resources in Alaska.

The Organizing Committee
Alaska Geothermal and Wind
Resources Planning Conference

ACKNOWLEDGMENTS

So many people have contributed so much to this report, that it is neither possible nor practical to personally acknowledge all of the contributors. However, I do wish to offer my special thanks to the following persons who played key roles in the organization of the Planning Conference and the completion of this report.

Mr. William Ogle, energy consultant to the Alaska Energy Office, contributed his expertise to many sections of this report; he was also one of the principal architects of the Planning Conference.

Mr. Tom Miller, of the U. S. Geological Survey, Anchorage, was a major contributor to the section on Alaska's Geothermal Potential; and much of the recent material on Alaskan geothermal and resource assessment has been derived from the work of Tom and his co-workers.

Ms. Clarissa Quinlan, of the Alaska Energy Office, helped prepare the section on Energy Economics and devoted weeks of her time to the organization and planning of the Conference.

My special gratitude to Mrs. Fran Pedersen, my secretary, who typed, assembled and indexed the manuscript and supervised the final compilation and publication of the report.

We are deeply grateful to the National Science Foundation for a grant which defrayed many of the costs associated with the Planning Conference and the preparation and publication of this report.

RBF

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ALASKA AND THE "ENERGY CRUNCH"

(R. B. Forbes and W. McConkey)

Socio-Economic F[illegible]work

Alaskan Economic Setting: When conside[illegible] Alaskan energy problems, it is important to remember that Alaska may have more in common with the developing countries of Africa and Latin America than it does with the other forty-nine states. At first hearing, this sounds like an over-statement, but hard facts reinforce this comparison.

Alaska, the largest of the fifty states, has a land area which is equal to about one-fifth the total area of the continental United States. The Alaskan population is around 300,000. Alaska has only three communities (Anchorage, Fairbanks and Juneau) which could be classified as cities when compared to other states.

Over one-half of the Alaskan population lives in or immediately adjacent to these three cities. The residual population is scattered throughout the rest of the state in hundreds of towns, villages, and settlements. Very few of these outlying communities can be conveniently reached by any form of transportation other than air. Modern communications are often limited to a single radio facility located in a Bureau of Indian Affairs or state-operated school, or some other federal or state administrative facility. Traditionally, long transportation routes and high maintenance costs have made the Alaskan cost of living higher than that in other states. Rural communities are at the end of the "logistics pipeline" as emphasized by the cost of fuel oil, for example, which exceeds $1 per gallon in many villages (Table 1).

The Alaskan economy tends to be resource oriented, and most of the revenue is derived from the export of raw materials to other states or

TABLE 1

Representative Fuel Prices in Rural Alaska

VILLAGE	OIL/per GALLON	GAS/per GALLON
ALAKANUK	$1.00	$1.00
AMBLER	.95	1.19
ARCTIC VILLAGE	2.10	2.20
BARROW	2.40	2.37
BEAVER	2.00	1.85
BETTLES	1.60	1.60
CHEVAK	.85	1.05
EMMONAK	.97	.82
HOOPER BAY	.93	1.27
KIANA	1.74	1.25
KIPNUK	.82	.91
KOTLICK	.80	1.00
NULATO	1.00	1.25
PILOT STATION	1.00	1.00
SHUNGNAK	.95	1.30

ALASKA STATE ENERGY OFFICE
November, 1975

countries where they are processed, marketed and consumed. Fish, timber, metals and petroleum comprise the major exports. Alaska's small population base, high operating costs and lack of local markets have discouraged resident processing and manufacturing.

Alaska shares the problems of underdeveloped countries which have become the economic domains of more highly industrialized nations. In common with such countries, a significant portion of Alaska's population (about 20%) lives in poverty. This segment of the population is dominated by Natives who exist, for the most part, in socio-economic limbo between traditional hunting and fishing economies and the complexities of 20th century civilization. The Native peoples account for a little over one-half of the state's rural population; and it is these Alaskans who suffer the most from the nation's economic problems and continuing inflation. Cross-cultural blocks and the lack of investment capital have left many villages with little cash income other than welfare checks. Few villagers are regularly employed, and if so, the jobs are usually government related. Generally speaking, the economic base of rural Alaska is that provided by federal and state support.

Consumer Prices Versus Income and Earnings: High Alaskan consumer prices have received worldwide attention, dating back to the days of the Klondike and Nome gold stampedes. It does indeed cost more to live in Alaska than elsewhere in the United States. A quotation from a recent report, "Consumer Prices, Personal Income and Earnings in Alaska," by the University of Alaska's Institute of Social, Economic and Government Research (Tussing and Thomas, 1974), summarizes the current economic differential:

"Almost everything costs more in Alaska than it does in the 'lower forty-eight.' How much more varies widely among places in the state, with the lowest differential occurring in the Anchorage area. The highest differentials occur in the northern and western regions, with costs there sometimes two or three times the national average. Alaska price differentials also vary by commodity. For instance, the costs of housing and all construction in Alaska exceed the U.S. average far more than the costs of such factory-manufactured or processed goods as automobiles, food, or clothing.

"Table 2 summarizes autumn 1973 family budget costs for three levels of living in Anchorage, relative to the U.S. urban average. Housing accounted for the largest part of the absolute difference between the Anchorage budget and the U.S. urban average: 39 percent of the difference between the budgets of the lower income families and 42 percent in the budgets of intermediate and higher income families.

"Living cost differentials between Alaska and other states are *steeply biased against low income families*. The total cost of a budget for higher income families in Anchorage in 1973 was 26 percent higher than its U.S. average urban counterpart, but the 'lower level' budget was 47 percent higher. Differentials are greatest in the lower income budget level in almost every expenditure category, but as previously stated, the most extreme contrasts are in housing costs. The Anchorage cost of housing, for lower level income families was 92 percent higher than the national urban average, but only 45 percent higher for the higher income families."

Although Alaskans enjoy a 14% nominal income advantage over "average" United States residents, this advantage does not offset even the Anchorage cost of living differential (+31%) which is probably the lowest of any locality in the state of Alaska, based on the U.S.D.C. Consumer Price Index for 1974. If one compares the per capita income data in Table 2 with the market basket food costs and average annual food expenditures in Tables 3 and 4, respectively, it is painfully apparent that many seasonally-employed residents in rural Alaska communities are living at poverty levels.

TABLE 2

Per Capita Personal Income and Comparative Ratios for Alaska and the United States, 1969 and 1972

			Ratio to State Total (Alaska=100)		Ratio to U.S. Total (U.S.=100)	
	1969 Census	1972 BEA[a]	1969 Census	1972 BEA	1969 Census	1972 BEA
Aleutian Islands	$3,317	$8,354	88	162	106	186
Anchorage	4,242	5,582	113	109	135	124
Anchorage City	4,741		126		151	
Spenard	4,639		123		148	
Barrow	1,833	10,831	49	211	59	241
Bethel	1,326	2,456	35	48	43	55
Bristol Bay Division	1,637	3,753[b]	97	73	116	84
Bristol Bay Borough	3,641		43		52	
Cordova-McCarthy	4,072	7,189	108	140	130	160
Fairbanks	3,932	5,606	106	109	127	125
Fairbanks City	5,049		134		161	
Haines	3,662	3,906	97	76	117	87
Juneau and Angoon		8,020[b]		156		179
Angoon	516		14		16	
Juneau	5,053		134		161	
Kenai-Cook Inlet	3,806	4,197	101	82	121	93
Ketchikan	3,720	5,606	99	109	119	125
Kobuk	1,527	2,658	41	52	49	59
Kodiak	3,356	5,245	89	102	107	117
Kuskokwim	1,670	3,578	44	73	53	80
Matanuska-Susitna	2,894	4,051	77	79	92	90
Nome	1,932	3,300	53	64	63	73
Outer Ketchikan	2,634	3,091	70	72	84	82
Prince of Wales	4,056	7,470	108	146	129	165
Seward	3,508	4,067	93	79	112	90
Sitka	3,899	5,673	104	110	124	126
Skagway-Yakutat	3,339	4,641	89	90	106	103
Southeast Fairbanks	3,250	3,913	86	76	108	87
Upper Yukon	3,961	4,648	105	90	126	103
Valdez-Chitina-Whittier	4,353	4,279	116	83	139	95
Wade Hampton	1,069	1,877	28	37	34	42
Wrangell-Petersburg	3,376	4,051	90	96	108	110
Yukon-Koyukuk	3,369	3,219	89	63	107	72
State Total	3,765	5,142	100	100	120	114
U.S. Total	3,169	4,492	83	87	100	100

[a] Bureau of Economic Analysis

[b] Because of typographical errors in source tables, BEA figures for "Bristol Bay" and "Juneau and Angoon" were estimated by interpolation between per capita income figures for adjacent census divisions, SMSA's or counties.

Source: U.S. Department of Commerce, Bureau of the Census, *1970 Census of Population, General Social and Economic Characteristics, Alaska and United States Summary*, and *Survey of Current Business*, May 1974.

(Taken from Tussing and Thomas, 1974)

TABLE 3

Market Basket Food Costs[a] in Selected Alaska Cities and Seattle, Washington, 1963-1974

	1963	1964	1965[b]	1966	1967	1968	1969	1970	1971	1972	1973	1974 (March)	1974 (June)
Anchorage	$22.67	$22.68	$20.80	$22.26	$22.03	$22.00	$23.05	$22.97	$24.32	$25.03	$23.43	$34.32	$34.04
Bethel	N/A	N/A	N/A	N/A	N/A	32.19	33.79	35.09	37.24	38.40	41.19	45.02	45.84
Fairbanks	25.26	25.13	23.34	24.45	23.99	24.44	25.82	26.35	26.71	27.01	30.83	35.55	35.57
Juneau	21.11	21.54	20.67	21.40	21.19	21.90	22.76	22.63	23.78	24.99	29.01	32.99	33.17
Kenai-Soldotna	N/A	N/A	N/A	N/A	N/A	23.42	24.36	24.32	25.01	26.47	30.53	33.90	37.09
Ketchikan	20.40	20.85	19.89	10.75	20.85	21.62	22.73	23.24	23.54	24.62	27.92	30.86	31.78
Kodiak	22.91	22.82	21.43	22.33	22.38	23.25	24.47	25.96	26.79	27.96	31.67	34.77	36.12
Nome	28.91	29.55	28.70	28.96	29.45	30.28	31.66	33.20	35.03	36.59	39.97	45.40	49.17
Palmer	21.85	21.85	21.14	21.91	21.23	21.65	23.13	23.65	24.21	24.89	28.60	33.03	34.53
Petersburg	21.12	21.46	21.24	22.02	22.17	23.01	24.03	24.29	25.43	27.11	30.92	33.79	35.83
Seward	22.50	22.25	21.77	22.36	21.94	23.05	24.08	24.73	25.44	26.80	31.57	36.41	37.75
Sitka	21.01	22.20	21.82	22.70	22.44	23.23	24.02	24.90	25.42	26.32	29.62	33.17	33.54
Valdez	N/A	N/A	N/A	24.60	24.50	25.31	26.67	28.42	28.52	29.03	34.02	38.49	39.17
Seattle	17.70	17.90	N/A	N/A	18.69	17.36	18.45	19.08	19.63	20.71	23.69	26.81	27.45

[a]At home food costs.

[b]Change in combination of forty-five food items used in market basket.

Source: "Retail Prices of 45 Food Items in Thirteen Alaska Cities," Palmer: Alaska Agricultural Experiment Station.

(Taken from Tussing and Thomas, 1974)

TABLE 4

Average A[illegible]l Food Expenditures for Twenty-four Alaska [illegible]mmunities (October 1972 Survey) and Comparisons with Anchorage Data

Alaska Community	Expenditures Per Household	% of Anchorage Food Expenditures Per Household	Expenditures Per Person	% of Anchorage Food Expenditures Per Person
Anchorage	$2,9[illegible]	100	$ 971	100
Barrow	3,878	131	954	98
Bethel	4,156	140	950	98
Cold Bay	3,033	104	1,178	121
Cordova	3,175	107	1,006	104
Dillingham	4,420	149	1,319	136
Emmonak	3,103	105	601	62
Fairbanks	3,206	108	1,035	107
Fort Yukon	4,426	150	1,070	110
Haines	3,858	130	1,024	105
Juneau	2,879	97	920	95
Kenai	3,436	116	987	102
Ketchikan	3,625	122	731	75
Kodiak	3,862	130	1,163	120
Kotzebue	4,484	151	1,030	106
Nenana	4,129	139	1,214	125
Nome	3,406	115	902	93
Palmer	3,388	114	942	97
Seward	3,244	110	894	91
Sitka	4,150	140	1,145	118
Tanana	5,340	180	951	98
Valdez	3,369	114	1,193	123
Wrangell	2,653	90	884	91
Yakutat	4,255	144	1,324	136
Summary – All locations	3,185	108	978	101

Source: State of Alaska, Division of Personnel, *Survey of Salaries and Benefits, Housing and Food Costs and Salary Recommendations, Part III Housing and Food Costs*, December 1972

(Taken from Tussing and Thomas, 1974)

Rural Alaskan Economics: Although some villages owe their locations to aboriginal subsistence patterns involving fishing sites, caribou migration routes and various animal populations, others are situated according to more recent developments including gold camps, river transportation routes and airstrips. In some cases, the present location of settlements and villages reflects old patterns or activities which no longer exist; and in others, natural and/or man-made changes have created a hostile environment for village life.

Poverty is said to be a state of mind Although both native and white rural Alaskans do not think of themselves in those terms, living conditions in most rural areas would be equated with poverty based on inadequate lighting, the lack of central heating or plumbing, and fresh fruits and vegetables. According to Tussing and Thomas (1974), the lowest per capita incomes were found in rural divisions with predominantly native populations (e.g., Angoon, Wade Hampton, Bethel, Kobuk).

Poverty in rural Alaska is related to high import costs and little or no local cash income. A dollar expended for a gallon of fuel oil or a head of lettuce leaves the village....never to return. Under current conditions, there is very little cash flow within the village communities.

Energy Problems in Villages and Remote Areas: To most Americans, the energy crisis is something new. To rural Alaskans, it is a way of life. Isolation, high transportation costs and unforgiving winters have equated energy conservation with survival. Inflation and the recent "energy crisis" have brought an added increment of economic hardship.

Heat is a precious commodity in the Alaskan arctic. All communities in the more isolated areas are forced to import expensive fossil fuels to maintain adequate communications and living standards. Most of the

fresh produce consumed by such villages is also imported. Electricity, where present, is generated by gasoline- or diesel-powered generators, resulting in an additional fossil fuel demand -- and a dependence on exterior supply.

The high cost of imported fossil fuels in the outlying communities restricts improvements and depresses the standard of living. The high cost of fresh and canned vegetables creates an additional economic stress on these communities and is a source of dietary problems in the more isolated populations during the winter.

Before any discussion of Alaska's geothermal and wind potential can be undertaken, it is necessary to address two important issues affecting the State's future. These are the Native Land Claims Settlement Act and the further development of Alaska's onshore and offshore oil and natural gas reserves.

The Alaska Native Claims Settlement Act: Stewart French (1972) has conducted an excellent analysis of the Native Claims Settlement Act. French's introductory statement introduces the reader to the social and economic impact of the Act on the peoples of Alaska:

> "No event since the 1968 Prudhoe Bay oil discovery, and perhaps even Statehood in 1958, has had as great a potential social and economic impact on the people of Alaska--both Native and non-Native--as has the enactment of the Alaska Native Claims Settlement Act (Public Law 92-203, 85 Stat. 688). The Act is a complex legislative resolution of a 104-year old question and a source of conflict that have been bars to full achievement of the social and economic aspirations of Natives, non-Natives, and the State."

The Native Claims Settlment Act provides that the Native peoples of Alaska will receive:

(1) legal title to 40 million acres of land together with mineral estate, plus nearly a billion dollars from federal appropriations and shared revenue from state and federal mineral leases;

(2) membership in regional (profit) and village (profit or non-profit) stockholder corporations;

(3) an Alaskan Native Fund, totaling $462,5 million in federal monies, to be paid over 11 years; and $500 million derived from 2% of the revenues acquired from mineral leases on state and federal lands.

Among many other benefits, new mechanisms and sources of support for village improvement will become available, including help from the respective regional corporations. The potential now exists for cooperative village development programs and economic experiments, as joint enterprises between native and federal and/or state agencies.

The Alaskan Native, represented through 12 regional native corporations and a multitude of village corporations, will become one of the largest landowners in the State along with the federal and state governments. The growth and development policies of these corporations will play key roles in shaping the State's future economic, environmental and social systems.

Petroleum Impact: Completion of the trans-Alaska oil pipeline, with an estimated total cost of over $6.5 million, is scheduled for July, 1977. Employing over 20,000 workers during peak construction periods, the pipeline is the largest privately-financed project in history.

The impact of this construction on Alaska's social, economic and governmental institutions has been considerable and may not be totally understood for several years to come. The very foundations of the State's economic structure are being altered by this first large-scale development of an Alaskan energy source. Routing of the natural gas

pipeline from the North Slope is another major issue which must be decided within the next year or so. If the trans-Canadian pipeline the next year or so. If the trans-Canadian pipeline is selected rather than the trans-Alaskan route, it is possible that the State will experience a significant slowdown in economic activity.

What lies ahead? By 1978 only two major oil fields (Cook Inlet and North Slope) containing an estimated 20 billion barrels of oil will be in a production mode; however, the recoverable petroleum reserves in Alaska total 76.1 billion barrels. Continuation of the "energy crisis" in the "lower forty-eight" and the depletion of other domestic petroleum resources over the next few years will most certainly mean additional exploration and development of Alaska's onshore and offshore oil and gas reserves. Needless to say, the impact of these activities on the State will be extensive.

Statewide Requirements

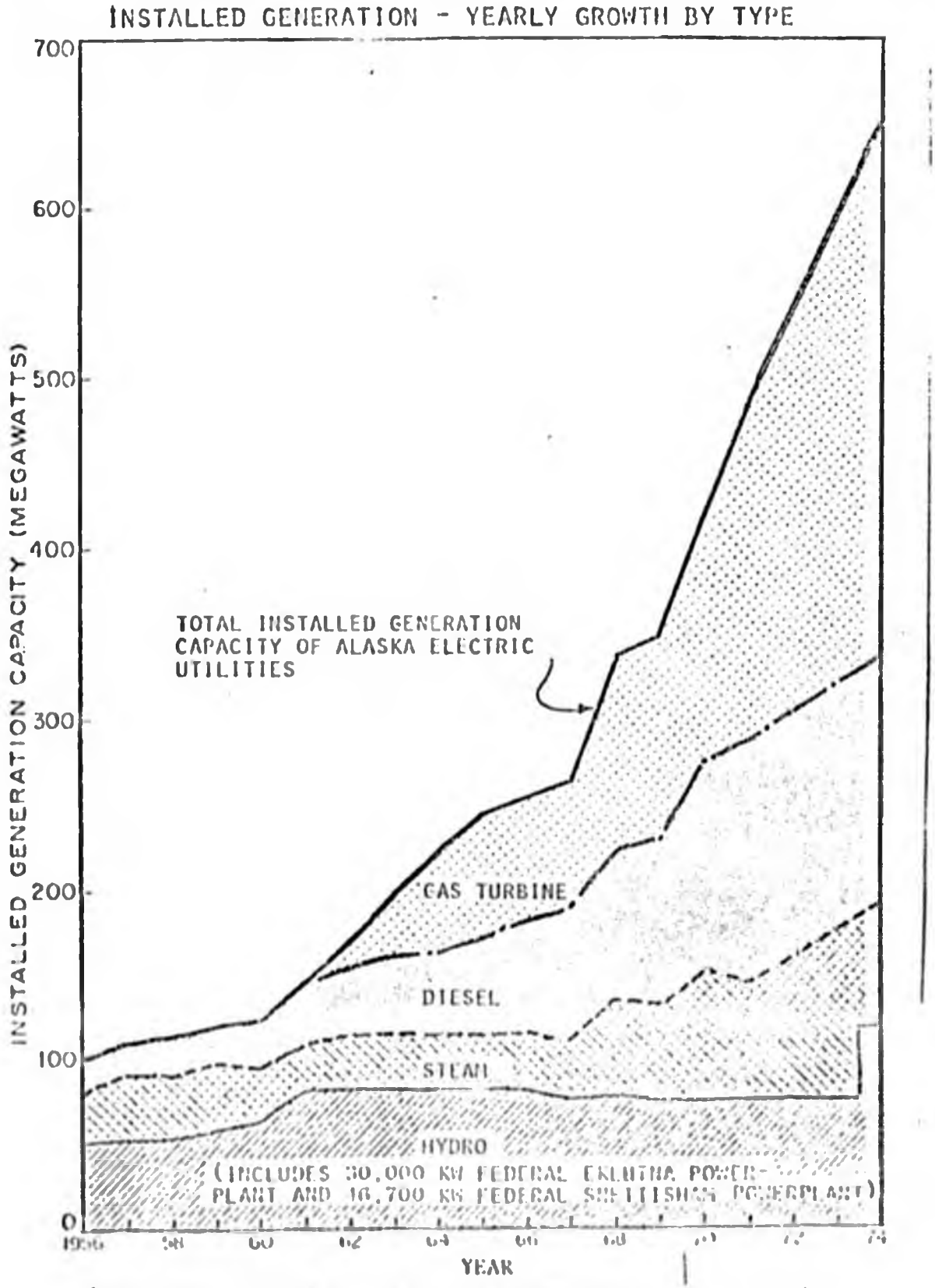
The electric utilities operations in the State of Alaska bear little resemblance to the complex systems of the lower 48 states. Although Alaskan generation and transmission equipment is modern and efficient, the great distances between population centers prohibit grid system interties, and there is no long-range service to outlying rural communities. The Alaskan power scene is much like that which existed in the United States before the rural electrification drive which took place in the early 1930's.

Alaskan electricity is derived from several sources including hydro-electric, oil-fired and coal-fired steam, gas turbine and diesel-generating systems (Figure 1). Figure 1 shows the relatively large contribution of diesel-electric power plants. The increasing use of diesel-electric power is creating a problem in Alaska which geothermal energy sources could help to alleviate. Although the portability and relatively low capital cost of diesel-electric plants has brought electricity to many communities in rural Alaska, the high cost of fuel and accompanying maintenance problems are escalating the cost of electricity in remote areas.

Urban Electric Power

Anchorage, Fairbanks, Juneau and Ketchikan have electric utility systems comparable to those in small cities in the other states (without the interties with larger systems). In 1970 these systems were providing electricity to homes in Alaska at an average rate of 3.01¢ per KWh

ALASKA ELECTRIC UTILITIES



(Taken from Alaska Electric Power Statistics, 1960-1970)

Figure 1: Diagram showing cumulative and individual growth curves for electric generating plants (by type) in Alaska.

as compared to 2.10¢ per KWh for the rest of the nation. This is a small differential considering the higher cost of living in Alaska, and the absence of power-sharing with larger systems. As of 1970, the electric power consumed by the urban communities (which include unusually large peripheral suburban areas) accounted for 75% of the yearly electricity consumed in the State of Alaska. Some idea of the present variation between power costs in Alaska and those in another state can be seen in Table 16.

The success of urban power systems and the related abundance of accessible fossil fuels indicate that the bulk of the State's electrical power requirements can be met by such facilities. The large natural gas reserves and relatively untouched hydroelectric potential of the south-central region should insure an adequate supply of low-cost electricity to the Anchorage area for many years to come. The coal resources of interior Alaska, coupled with access to crude from the trans-Alaska pipeline, should more than meet power requirements of the Fairbanks area, the second largest urban area in the State. The Juneau area is presently supplied with hydroelectric power, and the hydroelectric potential of the area is more than adequate to meet projected needs over the next 50 years. It is unlikely that geothermally-produced electricity could be economically competitive in the foreseeable future with the present systems in these cities.

Alaskan urban energy use patterns are similar to those of the 48 states, in that consumption approaches available supply until limits are established by economic constraints. The usual diurnal and seasonal load cycles are amplified by Alaskan winters. Figure 2 shows monthly cycles and peak loads for Anchorage, Fairbanks and Ketchikan from 1963 to 1971.

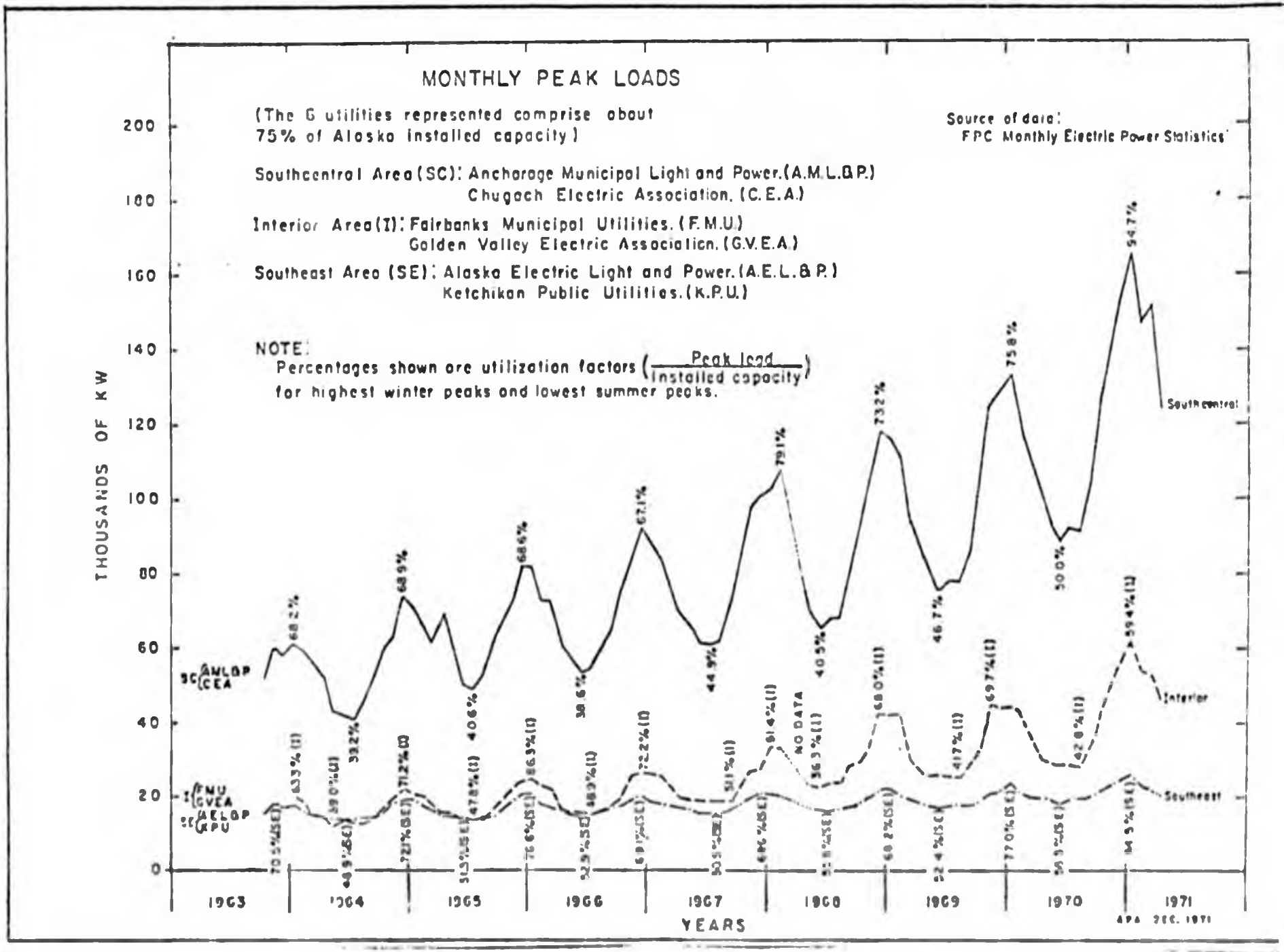


Figure 2: Monthly peak loads in three Alaskan geographical areas (on major utilities; most rural suppliers not included)

Energy Consumption in the Rural Communities

Larger Communities: Small communities, such as Barrow, Bethel, Cold Bay and Kotzebue, are either too remote to use the large power plants and grids which supply Anchorage and Fairbanks, or are unable to use local energy resources (if they exist). For instance, Cold Bay and Bethel have no local energy resources, but Kotzebue is in potential range of rich but undeveloped coal fields. Barrow is powered largely by local subsurface gas fields, but cost rate increases and pressure depletion may make this usage unattractive in the near future. The above cities are powered by small, privately-owned utility companies (about 0.7 to 3.0 MW).

The important point here is that these communities (except Barrow) derive most electricity and heat from expensive fuel oil which is transported over large distances. The utilities currently pay about 40¢/gal. Costs to individuals now range from 50¢ to above $2/gal. in the bush communities. The requirement for more highly refined grade number one versus grade number two fuel oil, due to the cold, increases the oil costs.

The Villages: Of the nearly 200 small villages in Alaska with 50 to 300 inhabitants, about 50 communities are powered by the Alaska Village Electric Cooperative (AVEC). Many other villages have no central source of electricity. Energy use patterns vary considerably, but electricity is chiefly used for lighting, communications and household appliances. Heat is mostly derived from oil stoves. The accelerated use of over-snow and all-terrain vehicles has caused a recent increase in gasoline consumption in the bush communities.

A vivid example of the energy situation in a typical Alaskan native village is presented in a paper entitled "Chevak's Current Energy Picture: A Study of a Southwestern Alaskan Eskimo Village" (see Appendix D).

Rural Electric Power

As mentioned previously, the lack of interties between urban electric utility systems prevents power distribution from larger systems to remote areas. There are many communities throughout the State which have less than 1,000 people and which must produce their own power.

The agency which has had the most experience in such systems is the Alaska Village Electric Cooperative, Inc. (AVEC). This non-profit power co-op was formed in 1967, and received its initial operating capital from the Rural Electrification Administration of the U. S. Department of Agriculture. Since its formation, AVEC has installed power systems in 48 Alaskan villages which previously had little or no electricity. These systems range in size from 100 KW at Shaktolik, a small Eskimo village on Norton Sound, to the 450 KW plant at Savoonga on St. Lawrence Island in the Bering Sea.

Due to the small power needs of these villages, diesel-electric generators have been installed. But the high diesel fuel and maintenance costs in these remote areas have resulted in power costs up to 20¢ per KWh. This rate is highly damaging to the village consumer as it is roughly six times the cost of electricity in other parts of Alaska; the average annual cash income of rural residents is far below that of the urban population, and this imposes the highest cost on those least able to pay.

Forecast of Alaska Power Requirements

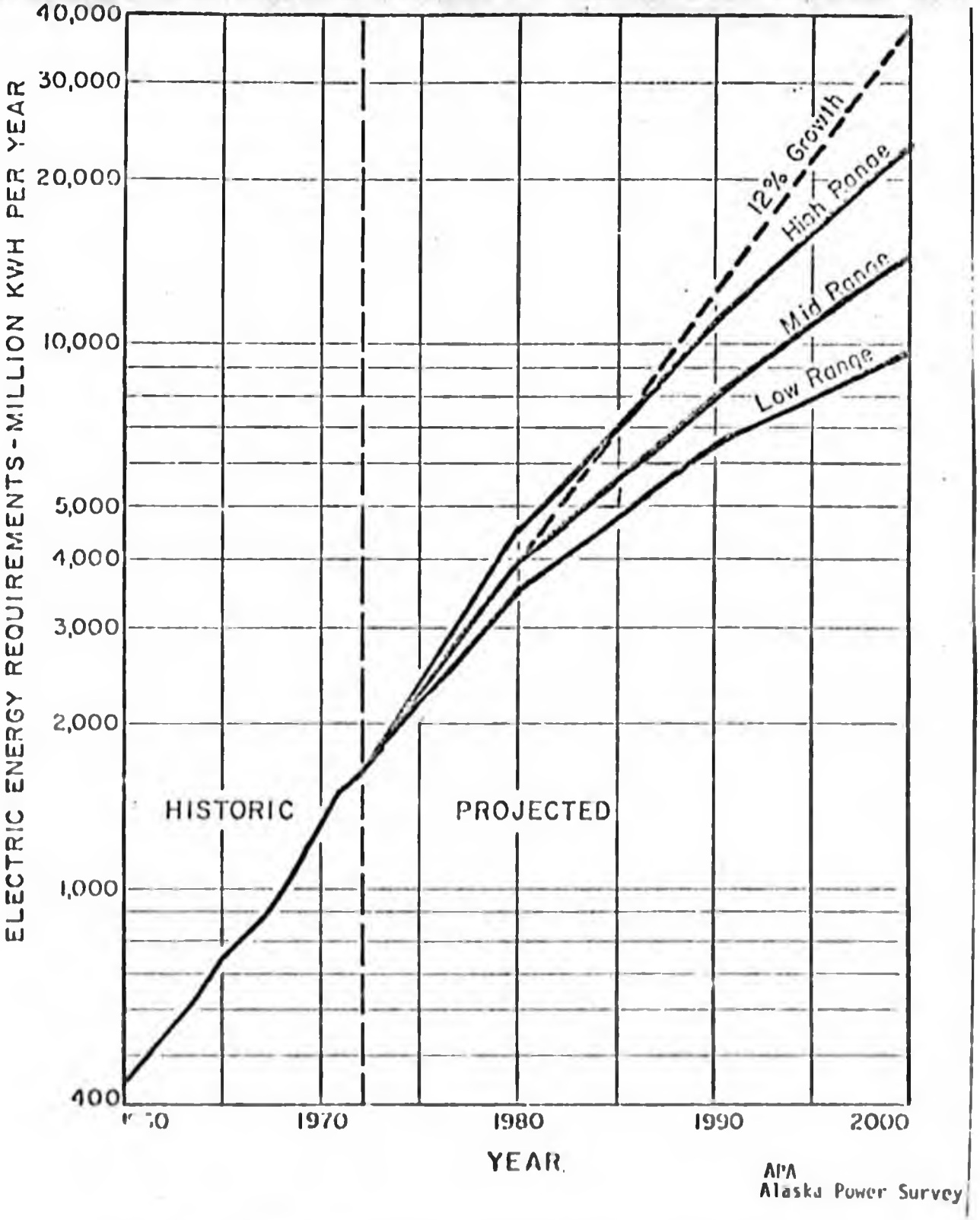
A current overview of statewide power system needs and alternatives is contained in the 1974 Reports of the Advisory Committee for the Federal Power Commission's Alaska Power Survey. The more important points are summarized below (see Figures 3, 4 and 5).

1. The power survey indicated statewide electric energy requirements of 2.6 billion kilowatt-hours in 1972 and installed generating capacity of one million kilowatts in mid-1973. The largest portion of the requirements is for the electric utility system (1.6 billion kilowatt-hours in 1972) and utility loads have been increasing about 12 percent per year (doubling every 5 to 6 years). Self-supplied industrial power systems and national defense installations account for the remainder of the power requirements.

2. Requirements of 3 to 10 million kilowatts of new generating capacity will be needed by the year 2000 under alternative assumptions for future development in the State.

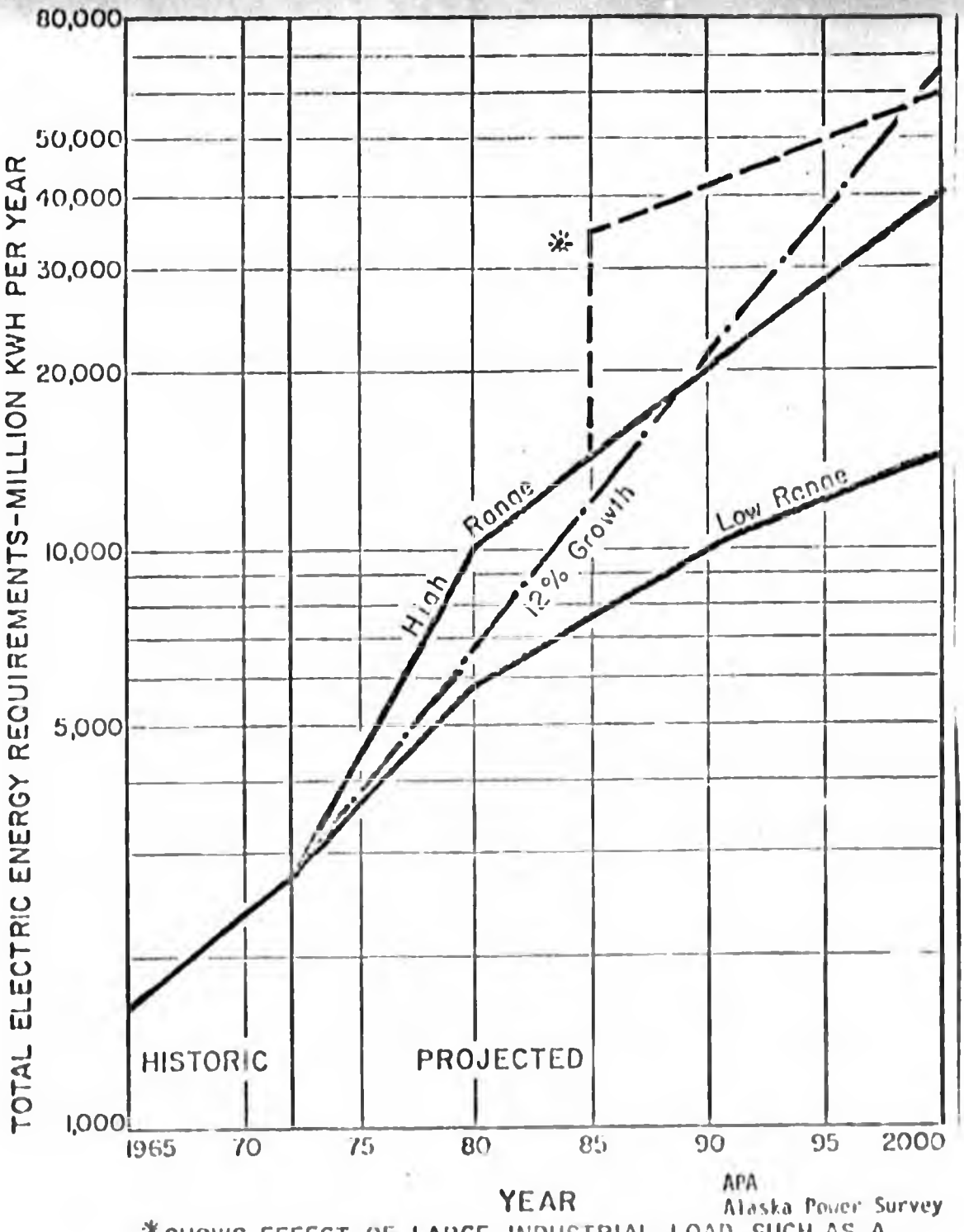
3. In recent years, most new generator additions have been oil and natural gas-fired units, and in 1972 about 60 percent of the State's total electric energy came from these premium fuels. Based on current trends, this percentage may increase to about 90 by 1980; hence the very real concern for considering alternative power sources.

4. Unlike the rest of the U.S., Alaska does not have extensive power grid systems. The load centers in the various regions of the State are served by isolated power systems. Anchorage and nearby areas in the Matanuska-Susitna and Kenai Peninsula Boroughs



(Taken from Alaska Electric Power Statistics 1960-1970)

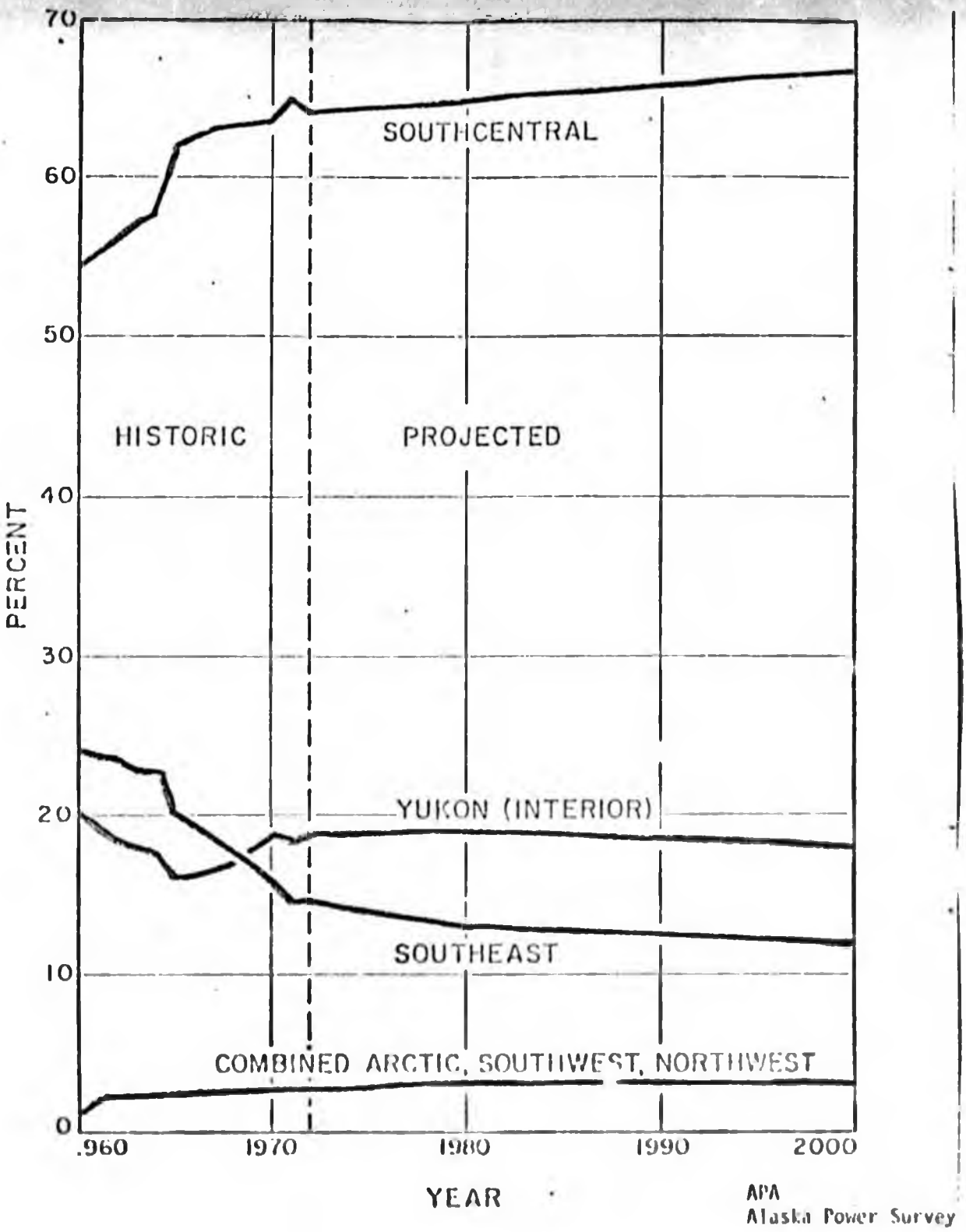
Figure 3: Utility system power requirements 1960-2000.



*SHOWS EFFECT OF LARGE INDUSTRIAL LOAD, SUCH AS A NUCLEAR FUEL ENRICHMENT PLANT OR OTHER VERY LARGE ENERGY INTENSIVE FACILITY.

(Taken from Alaska Electric Power Statistics 1960-1970)

Figure 4: Total Alaska Power Requirements 1965-2000.



(Taken from Alaska Electric Power Statistics 1960-1970)

Figure 5: Regional Utility Power Requirements, Percent Statewide Total

account for roughly one-half of the total statewide power requirements. The Fairbanks area and a handful of coastal cities from Ketchikan to Kodiak account for most of the rest.

5. There is a unique set of power concerns for Alaska's remote cities and villages. These number around 175 and account for around 2 to 3 percent of total State power needs. Included are a few fairly large regional centers (Bethel, Nome, Kotzebue, and Barrow with populations of 2,000 to 3,000). Most of the rest have populations of 100 to 500. Barrow now has access to natural gas; most of the rest are totally dependent on costly, imported petroleum products for their energy needs. Many of the smaller villages don't even have power systems.

6. There is likelihood the major railbelt load centers will be fully interconnected in about 10 years, and the railbelt area power requirements will be about 70 to 80 percent of total State needs for the foreseeable future. There are possibilities that regional power systems will develop in other portions of the State, but many of the remote cities and villages will likely remain isolated from larger power systems for the foreseeable future.

Geothermal Energy in the National Interest

Until the last few years, the United States has not shown much concern or interest in the assessment or development of its geothermal resources. More recently, however, possible worldwide energy shortages, growing pollution problems and the awakening of a national environmental conscience have developed an accelerated interest in geothermal energy. This new cognizance has been reinforced by the Congress with the passage of the "Geothermal Steam Act of 1970" (84 Stat 1566), which authorizes and delineates geothermal resource "provinces" and "areas," and defines leasing and regulative policies fo. federal lands.

U. S. Geological Survey Circular 647, "Classification of Public Lands Valuable for Geothermal Steam and Associated Geothermal Resources" (Godwin, et al., 1971), presents the criteria for determining which federal lands are classifiable as geothermal steam and associated geothermal resources lands under the Geothermal Steam Act of 1970 (84 Stat 1566). Thi publication includes a map of Alaska showing lands classified for geothermal resources as of December 24, 1970 (Figure 6).

The Alaska Geothermal Resources Act of 1971

The State of Alaska enacted a Geothermal Resources Act in 1971, which establishes procedural, regulatory and administrative policies governing future exploration, development and production of geothermal resources on state lands (see Appendix C).



Figure 6: Map of Alaska showing lands classified for geothermal resources effective December 24, 1970. Numbers correspond to localities shown in inset. From U. S. Geological Survey Circular 647, Godwin, et al., 1971.

1. Pilgrim Springs
2. Geyser Spring Basin and Okmok Caldera
3. Wrangell Mountains

Classification of Geothermal Resources

A comprehensive assessment of potential Alaskan geothermal resources or targets must consider the following:

1. Surface Resources
    a. Thermal springs
2. Subsurface Resources
    a. Two phase reservoir systems (steam and water)
    b. One phase reservoir systems (hot water)
    c. Geopressured hot water reservoirs
    d. Hot water reservoirs in sections with normal geothermal gradients
    e. Hot dry rock
        (1) Potential reservoir rocks; water injected from surface
        (2) Impermeable rocks; reservoir space must be artificially created by hydrofracture or explosives
    f. Hot dry rock in volcanic piles adjacent to subsurface magma bodies, or recently extruded plugs or domes
    g. Subsurface magma tap

Previous Work and Publications

The earliest contribution to our knowledge of the geothermal framework of Alaska was G. A. Waring's "Mineral Springs of Alaska" (1917), a pioneering work which included data on the geologic setting, chemistry, and thermometry of Alaskan hot springs which were known to the author in 1917. This work, and the accompanying spring location map, was the authoritative reference for over 50 years.

In 1971, Ms. Norma Biggar, Geophysical Institute, University of Alaska, compiled a revision of Waring's map (Figure 7), which showed the location and temperature range of known Alaskan thermal springs.

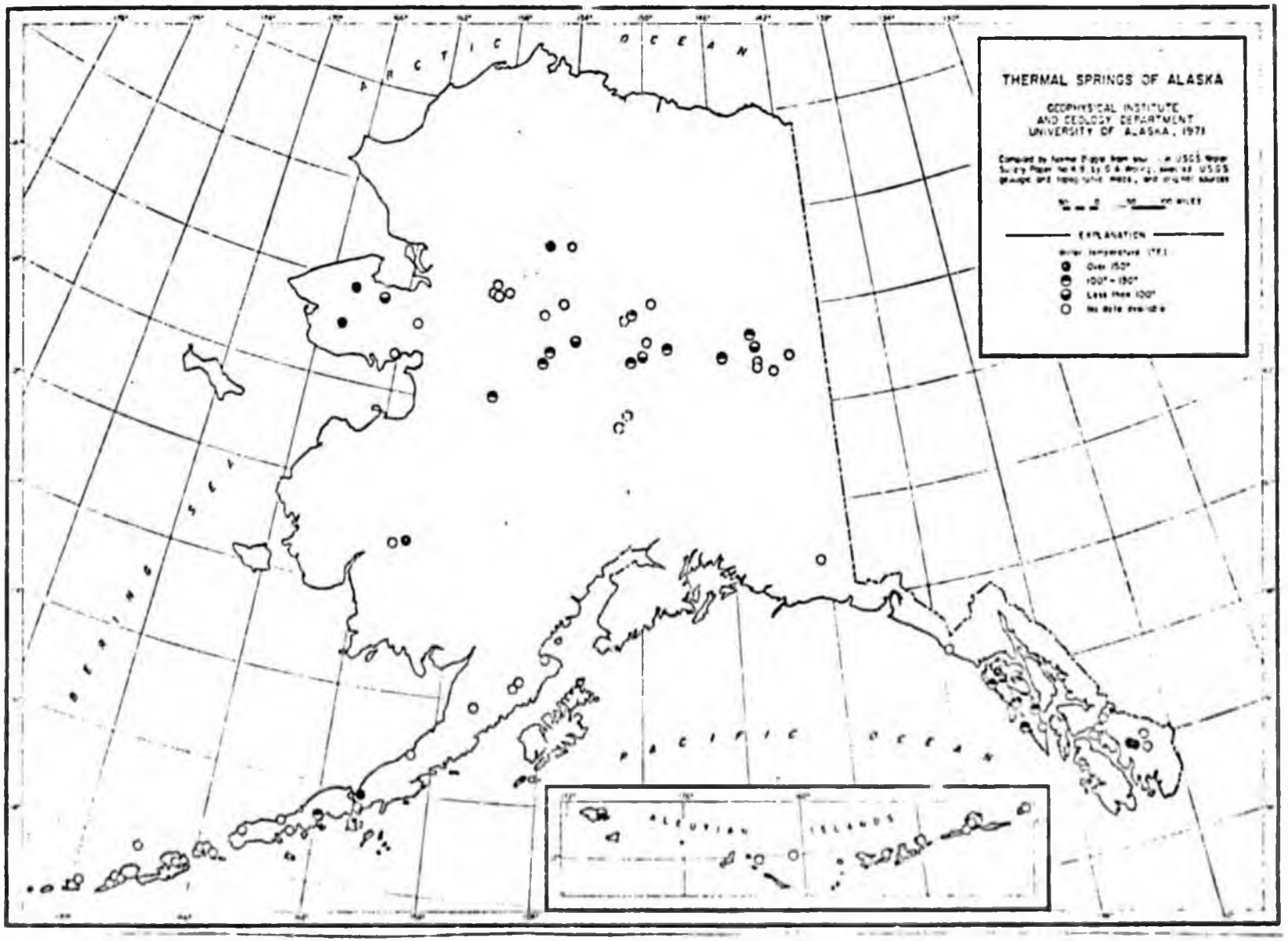


Figure 7: Location map of Alaskan thermal springs as compiled by Ms. Norma Biggar in 1971.

Biggar's map was accompanied by relevant tables of data on spring water temperature and chemistry. Subsequently, T. P. Miller, Alaskan Branch, U.S.G.S., produced a similar location map which included more recently-discovered thermal springs and new chemical and temperature data from the collaborative work of Ivan Barnes, of the U.S.G.S. (1973). A more recent report entitled "Geologic setting and chemical characteristics of hot springs in West-Central Alaska" (Miller, et al., 1975), provides additional data on the geothermal potential of thermal springs in that region.

Ms. Biggar completed a University of Alaska M.S. dissertation on "A geological and geophysical study of Chena Hot Springs, Alaska" in May 1973. The thesis investigation included geomagnetic, microseismic and soil temperature surveys, in addition to site geology and geochemistry (Biggar, 1973).

Forbes, et al. (1975), conducted geophysical studies of Pilgrim Springs in summer 1974. The data and findings of this study are contained in "A Geophysical Reconnaissance of Pilgrim Springs, Alaska," a report published by the Geophysical Institute, University of Alaska.

U.S. Geological Survey Circular #726, "Assessment of Geothermal Resources of the United States - 1975," contains new and relevant material on Alaska's geothermal resource potential, with particular attention given to hot-water and high-temperature hydrothermal convection and volcanic systems.

Heat Flow and Thermal Gradients

High heat flow and/or geothermal gradients are the characteristic signatures of economically significant geothermal anomalies. Although

high heat flow values can be obtained on many active Alaskan volcanoes, published heat flow determinations in drill holes have not exceeded 2.6 hfu (one heat flow unit = 1 microcalorie/cm^2/sec.).

We know very little about the thermal gradient at Alaskan localities other than those located in the petroleum provinces, and there are only a few reliable heat flow measurements reported for Alaska (Lachenbruch and Marshall, 1969; Lachenbruch, personal communication).

According to Lachenbruch (personal communication), no more than 20 reliable heat flow measurements have been recorded from Alaskan localities although temperature data are available for many holes which have been drilled in Alaskan petroleum provinces. Heat flow values calculated from data taken from drill holes near Cape Thompson, Barrow and Umiat (Lachenbruch and Marshall, 1969) were not far from the world average, and low to average values (1.3 microcalories/cm^2/sec.) have been reported by Sass and Munroe (1970) for the Amchitka deep drill holes.

Heat flow data have been taken from other drill holes in the Cook Inlet and Prudhoe Bay areas, but analyses of these data are still in process (Lachenbruch, personal communication). Preliminary data from a deep test hole near Eielson Air Force Base (Fairbanks district), however, indicates that the heat flow is anomalously high at this locality (Lachenbruch, personal communication). Although it is not known at this time whether the anomaly is more than 1.5 times that of the worldwide average of 1.5 microcalories/cm^2/sec., the presence of Chena and Circle Springs, and other thermal springs in the Salcha River drainage, indicates that the Yukon Tanana Uplands deserve additional study.

Volcanism and Geothermal Resources

Alaska has more than 80 late Cenozoic volcanoes. Most of these have been active within the last million years (Miller and Barnes, in press) and more than 40 have erupted during historic time (Figure 8). Geothermal resources are closely associated with geologically-young volcanoes and volcanic fields, with particular emphasis on silicic volcanism (i.e., rhyolitic-dacitic domes and ejecta) and collapsed calderas.

Silicic Volcanism: The most promising Alaskan volcanic targets are located in the Aleutian-Alaska Peninsula segment of the circum-Pacific volcanic belt and in the Wrangell Mountains. Following the views of Smith and Shaw (1975) and others, silicic magmas are more likely to be stored and/or erupted from shallow (<10 km) chambers than basaltic (basic) melts, in the circum-Pacific volcanic belt. Conversely, however, basaltic melts are stored and erupted from shallow magma reservoirs under Kilauea Volcano, Hawaii, in the oceanic setting.

Following Smith and Shaw's rationale, geothermal targets are more likely to be associated with young silicic volcanic centers, where silicic magmas may still remain in the subsurface conduit and reservoir system. Such targets may range from hot dry rock to convective systems in suitable reservoir rocks. Possible subsurface targets would be signalled by very young (<10 million years) silicic domes and collapsed calderas with peripheral blankets of silicic pyroclastic rocks. The silicic ejecta domes and/or caldera association is known to occur at Katmai, Peulik, Aniakchak, Black Peak, Veniaminof, Emmons and Dana

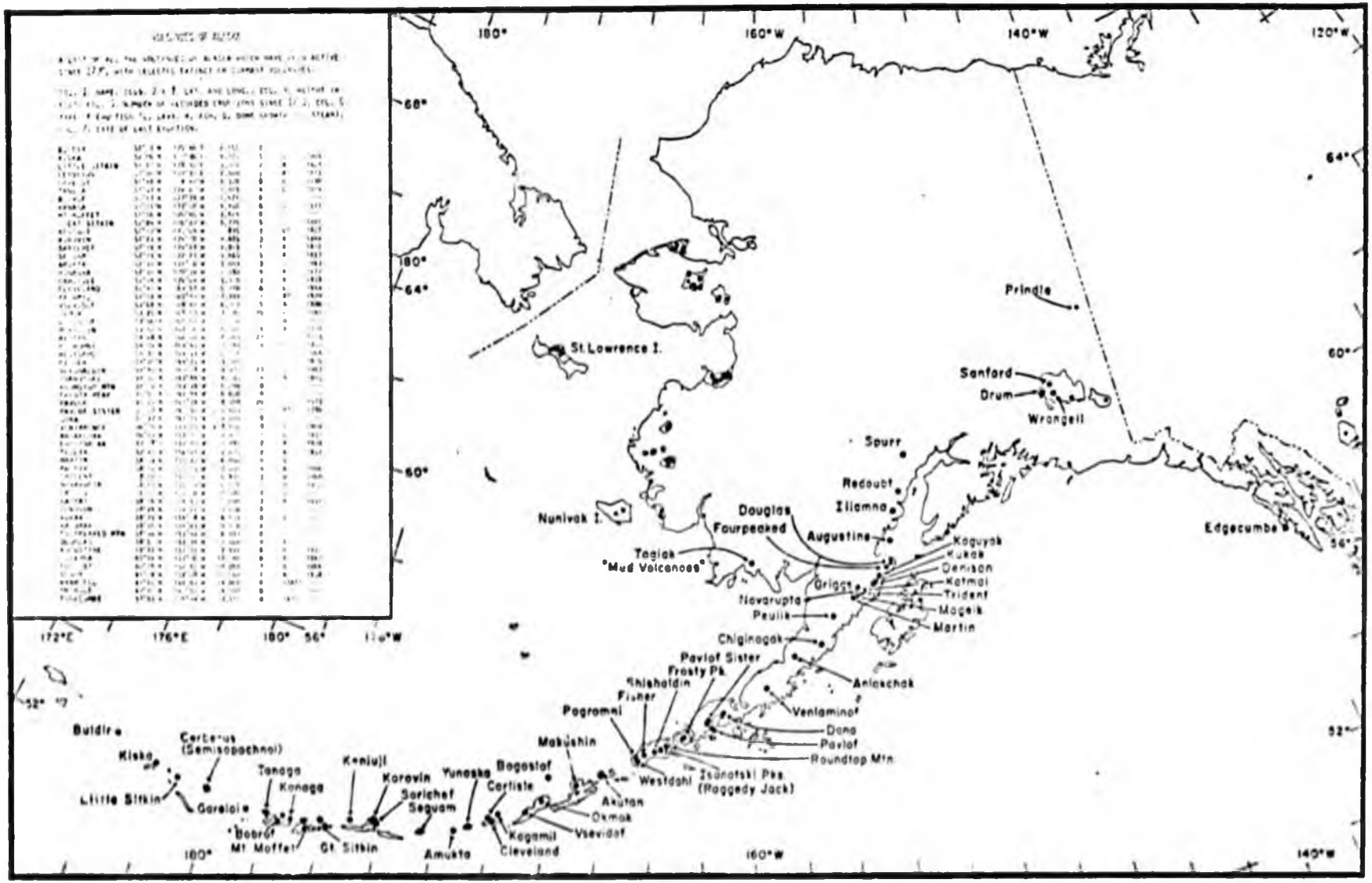


Figure 8: Location of the main volcanic centers in Alaska showing volcanoes active in the last 200 years and other important recent volcanoes of the Aleutians, recent volcanoes of southern and southeastern Alaska, and alkalic Tertiary and Quaternary volcanic centers of western and eastern Alaska. (Taken from Kienle, 1974)

Volcanoes on the Alaska Peninsula, Fisher Volcano on Unimak Island, and Mt. Drum in the Wrangell Mountains (recent reconnaissance work by Miller, Barnes and Smith [Miller and Barnes, in press]).

All the known late Cenozoic volcanoes of the Aleutian volcanic arc could be considered as potential geothermal target areas because they indicate anomalously high heat flow in geologically recent time. The maximum depth at which geothermal systems might be exploited is thought to be less than 10 km (Muffler and White, 1972; White, 1973). Geothermal target areas can therefore be reduced, as a first approximation, to those volcanoes that hav , or had, large magma chambers relatively close to the surface. A possible criterion for selection of such sites is the presence of a collapsed caldera, which in itself implies a magma chamber at relatively shallow depths for collapse to have occurred following magma withdrawal. Furthermore, Smith and Shaw (1973) have postulated that most large (10^2 - 10^5 km^3) magma chambers that have formed in the upper 10 km of the crust are either silicic or have silicic differentiates.

Powers (1958) listed 20 known calderas in the Aleutian volcanic ar . One of these, the Buldir depression in the western Aleutian Islands, has since been referred to as a volcanic-tectonic depression rather than a true caldera (Marlow and others, 1970). Recent work has shown that at least three more calderas on the Alaska Peninsula, including Black Peak, Peulik, and Emmons can now be added to the list of known calderas (Miller and Barnes, in press).

Because of the length and subsequent remoteness of the Aleutian Islands, the calderas on the aska Peninsula such as Peulik,

Aniakchak, Black Peak, Dana and Fisher and those on the easternmost islands, perhaps as far west as Okmok Caldera on Umnak Island, may be considered as having more immediate potential for commercial development. Calderas farther out on the Islands such as Great Sitkin or Kanaga may have some potential for use by military bases. Some of these calderas could be eliminated from consideration because of inaccessibility. The conjectured caldera at Davidof, for instance, is under water and the Veniaminof caldera is completely filled with ice and snow.

Basaltic Volcanic Fields: Late Cenozoic volcanic rocks underlie a total area of about 25,000 km^2 (9,600 mi^2) in interior Alaska, mostly in the western part of the region. These volcanic rocks are chiefly olivine tholeiite and alkalic basalt; no intermediate or silicic rocks of Pliocene or younger age have been reported in this part of Alaska. Potassium argon (K/Ar) age dates obtained on basalt from the western part of this province range from 6.12 $\pm$ 0.18 million years (m.y.) to 30,000 $\pm$ 20,000 years Before Present (B.P.) on Nunivak Island (Hoare and others, 1968) and from 2.19 $\pm$ 0.1 m.y. to 65,000 $\pm$ 100,000 years B.P. on the Pribilof Islands (Cox and others, 1966). Stratigraphic and morphological evidence, moreover, suggests that volcanic activity has continued almost to the present time; Hopkins (1963) states that the Lost Jim Lava Flow on the Seward Peninsula may be as young as a few hundred years.

The volcanic province, ranging in age from 6 m.y. to 30,000 years or younger, may still be volcanically active. No hot springs, fumaroles or other manifestations of current volcanic activity, however, occur within areas underlain by these basalts and the known thermal springs in interior Alaska show no spatial association with them.

Volcanism in Southeastern Alaska: Late Cenozoic volcanic rocks occur in a few scattered localities in southeastern Alaska. The most important occurrence is Mount Edgecumbe, an inactive composite volcano about 980 m in elevation located about 26 km west of Sitka. The volcano (Figure 8) is part of a volcanic field of Quaternary age that covers about 260 km^2 on the southern end of Kruzof Island and ranges in composition from olivine-augite basalt to rhyolite. Radiocarbon dates indicate that eruptions that deposited ash and lapilli as far away as 225 km occurred as recently as 9,000 to 11,000 years B.P. (Brew and others, 1969; McKenzie, 1970). Volcanic rocks of probable late Cenozoic age also crop out in several other small areas in southeast Alaska. As is the case with Quaternary volcanic rocks of interior Alaska, little or no spatial relation is shown between the thermal springs of southeastern Alaska and the young volcanic rocks.

The geothermal energy potential of areas underlain by late Cenozoic volcanic rocks in interior parts of southeastern Alaska appears to be low. Most geothermal areas now exploited in other parts of the world are associated with calc-alkaline volcanism whereas the Quaternary volcanic rocks of interior Alaska are primarily basalt and basaltic andesite and probably originated from considerable depth without large magma chambers relatively close to the surface. These volcanic areas display no signs of current activity such as fumaroles, geysers or thermal springs. The Mount Edgecumbe volcano area, however, with its relatively recent calc-alkaline volcanism, has higher geothermal potential.

Estimated Magnitudes and Heat Contents of Alaskan Volcanic Systems: Smith and Shaw (1975) have calculated estimated magnitudes and heat contents of Alaskan volcanic systems. These data are shown in Table 5.

Direct Extraction of Energy From Volcanoes

In the last few decades, the production of geothermal power has experienced a very slow growth, based on the discovery and development of vapor phase reservoirs. New concepts, such as artificially-induced reservoirs in hot-dry rock and the direct magma tap, offer new avenues for the exploitation of geothermal energy. Two approaches seem to offer the most promise for the direct extraction of volcanic energy:

1) Production and packaging of hydrogen, produced from the disassociation of water by volcanic heat

2) Generation of electricity by heat transfer from a magma to a conventional power plant on the surface via a heat exchanger immersed in the magma (an approach under investigation by Sandia Laboratories)

The problem, however, is to locate a suitable shallow magma reservoir, which is amenable to such an experiment. Very little is known about the physical characteristics of magma reservoirs and the internal plumbing of volcanoes. It is not certain that molten lava pools exist at depth. The geophysical evidence for magma at depth is highly speculative and inferential.

The depths of the magma chambers discussed in the literature range from about 4 km to greater than 60 km. Unfortunately, we do not yet know of one proven shallow magma reservoir in Alaska, although recent seismic studies (Eaton, et al., 1975) indicate such a reservoir under Yellowstone Park.

Magnitudes and Heat Contents of Identified Volcanic Systems
(As taken from Smith and Shaw, 1975)

ALASKA

S-S No.	NAME OF AREA	LAT	LONG	COMPOSITION LAST ERUPTION	AGE DATA	CHAMBER AREA	CHAMBER [illegible] RANGE	[illegible] VOLUME	SOLIDIFICATION STATE	ΔQ TOTAL CALORIES	ΔQ NOW CALORIES	ΔQ OUT CALORIES	REMARKS	
A-1	[illegible]	52°03 N	[illegible] W	BASIC	[illegible]								>10 KM DEPTH	
A-2	NISHA	52°08 N	177°36 E	BASIC	ACTIVE								>10 KM DEPTH	
A-3	SEGULA	52°00 N	178°03 E	BASIC SILICIC?	<10° ?								NEED MORE DATA ON COMPOSITION AND AGE	
A-4	DAVIDOF	51°58 N	178°23 E	NO DATA	<10° ?	5 A_c	175 V_c	125	>650°	7	7			
A-5	LITTLE SITKIN	51°57 N	178°32 E	BASIC	ACTIVE	75 A_c	40 V_c	75	>550°	41	41			
A-6	SEMISOPOCHNOI (CERBERUS)	51°56 N	179°35 E	BASIC	ACTIVE	42.0 A_c	[illegible]	150	>550°	86	86			
A-7	SUGARLOAF	51°54 N	177°36 E	BASIC	<10° ?								>10 KM DEPTH	
A-8	GAREL OI	51°48 I	178°53 W	BASIC	ACTIVE								>10 KM DEPTH	
A-9	TAHAGA	51°53 N	178°05 W	BASIC ?	ACTIVE	65.9 A_c	313 [illegible]	420	>850°	230	230			
A-10	TANADAKHA	51°52 N	178°33 W	BASIC ?	<10°	69 A_c	325 [illegible]	>225	>850°	13	13			
A-11	BOBROF	51°55 N	177°27 W	BASIC ?	<10° ?								>10 KM DEPTH ?	
A-12	MANUA	51°53 N	177°03 W	BASIC ?	ACTIVE	850 A_c	575 [illegible]	75	>550°	43	43			
A-13	MOFFET	51°55 N	176°13 W	BASIC	<10° ?								>10 KM DEPTH	
A-14	ADAKNAN	51°55 N	176°36 W	BASIC	<10° ?								>10 KM DEPTH	
A-15	GREAT SITKIN	52°04 N	176°07 W	BASIC	ACTIVE	18 A_c	47 [illegible]	<1	>550°	3	3			
A-16	KASATOCHI	52°11 N	175°30 W	BASIC ?	ACTIVE ?								>10 KM DEPTH ?	
A-17	AGUTUJI	52°13 N	175°02 W	BASIC ?	ACTIVE ?								>10 KM DEPTH ?	
A-18	SEGULE	52°19 N	174°25 W	NO DATA	NO DATA								NEED COMPOSITION AND AGE DATA	
A-19	KOROVIN	52°23 N	174°10 W	BASIC	ACTIVE								>10 KM DEPTH	
A-20	KLIUCHEF	52°19 N	174°03 W	NO DATA	NO DATA	286 A_c	73 [illegible]	>100		58			NEED COMPOSITION AND AGE DATA	
A-21	SARICHEF	52°19 N	174°03 W	BASIC ?	ACTIVE ?								>10 KM DEPTH	
A-22	SEGUAM	52°19 N	172°23 W	NO DATA	ACTIVE	2281 A_c	40 [illegible]	200	>550	115	115		[illegible]	
A-23	AMUKTA	52°30 N	171°16 W	BASIC ?	ACTIVE								>10 KM DEPTH ?	
A-24	CHAGULAN	52°38 N	170°01 W	BASIC ?	<10° ?								>10 KM DEPTH ?	
A-25	BUNIDSA	52°50 N	170°34 W	NO DATA BASIC ?	ACTIVE	121 A_c	33 [illegible]	40	>550	23	23			
A-26	HERBERT	52°45 N	170°07 W	BASIC ?	<10° ?								>10 KM DEPTH ?	
A-27	CARLISLE	52°54 N	170°04 W	BASIC ?	ACTIVE								>10 KM DEPTH ?	
A-28	CLEVELAND	52°49 N	169°56 W	BASIC ?	ACTIVE								>10 KM DEPTH ?	
A-29	ULAGA	52°50 N	169°51 W	BASIC ?	<10° ?								>10 KM DEPTH ?	
A-30	TANA	52°50 N	169°46 W	BASIC ?	NO DATA								>10 KM DEPTH ?	
A-31	MAGAMIL	52°58 N	169°49 W	BASIC ?	ACTIVE								>10 KM DEPTH ?	
A-32	VSEVIDOF	53°03 N	168°41 W	SILICIC	ACTIVE								NEED MORE DATA	
A-33	RECHESCHNOI	53°00 N	168°10 W	BASIC ?	<10°								NEED MORE DATA	
A-34	OKMOK	53°26 N	168°10 W	BASIC	ACTIVE 8000 Yr	62.4 A_c	35 [illegible]	250	>550	109	109			
A-35	TUMA	53°28 N	168°01 W	BASIC	NO DATA								>10 KM DEPTH	
A-36	[illegible]	53°30 N	167°55 W	BASIC	ACTIVE								>10 KM DEPTH	

Magnitudes and Heat Contents of Identified Volcanic Systems
(As taken from Smith and Shaw, 1975)

ALASKA

S-S No.	NAME OF AREA	LAT	LONG	COMPOSITION LAST ERUPTION	AGE DATA	CALDERA AREA km²	CALDERA VOLUME RANGE km³	CALDERA VOLUME V_c km³	SOLIDIFICATION STATE °	ΔQ TOTAL CALORIES ×10²⁸	ΔQ NOW CALORIES ×10²⁸	ΔQ LAST CALORIES ×10²⁸	REMARKS
A-34	MAKUSHIN	53°31'N	166°56'W	SILICIC ?	ACTIVE	36 A_c	9-36 V_c	>10	>850	6	6		
A-35	TABLE TOP	53°38'N	166°10'W	BASIC	NO DATA								>10 KM DEPTH
A-37	ANUTAN	54°08'N	166°00'W	BASIC ?	ACTIVE	35 A_c	9-36 V_c	>10	>850	6	6		
A-40	MT. GILBERT (ANUN)	54°16'N	165°35'W	BASIC ?	NO DATA								>10 KM DEPTH ?
A-41	POGROMNI	54°31'N	164°42'W	BASIC	ACTIVE								>10 KM DEPTH
A-42	WESTDAHL	54°31'N	164°39'W	NO DATA	ACTIVE								NEED MORE DATA
A-43	FISHER	54°39'N	164°23'W	BASIC	ACTIVE ? <2×10⁸ T_g	122 A_c	9-36 V_c	600	>850	345	345		
A-44	SHISHALDIN	54°45'N	163°58'W	BASIC	ACTIVE								>10 KM DEPTH
A-45	ISANOTSKI	54°45'N	163°44'W	BASIC ?	ACTIVE								>10 KM DEPTH ?
A-46	ROUNDTOP	54°48'N	163°36'W	NO DATA	ACTIVE ? <2×10⁸ ?								
A-47	AMAK	55°25'N	163°09'W	BASIC ?	NO DATA								>10 KM DEPTH ?
A-48	FROSTY	55°04'N	162°51'W	SILICIC ? BASIC ?	NO DATA								
A-49	WALRUS (MOREHEAD)	55°03'N	162°32'W	BASIC	NO DATA <10⁸ ?								>10 KM DEPTH
A-50	DUTTON	55°11'N	162°16'W	[illegible]	NO DATA								>10 KM DEPTH
A-51	EMMONS	55°20'N	162°01'W	BASIC	ACTIVE	1173 A_c	[illegible]	600	>850	345	345		
A-52	HAGUE	55°21'N	161°53'W	BASIC	ACTIVE								
A-53	DOUBLE CRATER	55°23'N	161°37'W	BASIC	ACTIVE ?								
A-54	PAVLOF	55°23'N	161°51'W	BASIC	ACTIVE								>10 KM DEPTH
A-55	PAVLOF SISTER	55°27'N	161°55'W	BASIC	ACTIVE								>10 KM DEPTH
A-56	DANA	55°37'N	161°12'W	SILICIC	NO DATA <10⁸ ?	16 A_c	9-36 V_c	>3		>3			NEED MORE DATA
A-57	KUPREANOF	56°01'N	159°48'W	NO DATA BASIC ?	ACTIVE								NEED MORE DATA
A-58	VENIAMINOF	56°10'N	159°23'W	BASIC	ACTIVE 33×10⁸ T_g	324 A_c	[illegible]	200	>850	115	115		
A-59	BLACK (PURPLE)	56°32'N	158°27'W	SILICIC	<10⁸ ?	69 A_c	[illegible]	>20	>850	12	12	6	NEED MORE DATA
A-60	AMAKNAK	56°33'N	158°10'W	SILICIC	ACTIVE 58×10⁸ T_g	358 A_c	[illegible]	225	>850	129	129		
A-61	CHIGINIGAK	57°08'N	157°00'W	BASIC ? SILICIC ?	ACTIVE								NEED MORE DATA
A-62	KUKLASHIN	57°12'N	156°42'W	NO DATA	[illegible]								NO DATA
A-63	PEULIK	57°45'N	156°21'W	BASIC ? SILICIC	ACTIVE ?	103 A_c	[illegible]	>30	>850	17	[illegible]		[illegible]
A-64	MARTIN	58°09'N	155°29'W	BASIC ?	ACTIVE								>10 KM DEPTH ?
A-65	MAGEIK	58°12'N	155°15'W	?	ACTIVE								SILICIC DOMES ? NEED MORE DATA
A-66	KUKAKHTA	58°17'N	155°08'W	SILICIC	ACTIVE	81 A_c	[illegible]	30	>850	29	29		
A-67	MT. GRIGGS (SNOW PEAK)	58°22'N	155°30'W	BASIC ?	ACTIVE								>10 KM DEPTH ?
A-68	TRIDENT	58°14'N	154°07'W	BASIC	ACTIVE								>10 KM DEPTH ?
A-69	KATMAI	58°16'N	154°58'W	BASIC	ACTIVE	31 A_c	23-83 V_c	>20	>850	12	12		
A-70	SNOWY	58°20'N	154°11'W	NO DATA	NO DATA								NO DATA
A-71	DENISON	58°25'N	154°21'W	NO DATA	NO DATA								NO DATA
A-72	STELLER	58°26'N	154°24'W	NO DATA	NO DATA								NO DATA

Magnitudes and Heat Contents of Identified Volcanic Systems (As taken from Smith and Shaw, 1975)

ALASKA

S-S No.	NAME OF AREA	LAT	LONG	COMPOSITION LAST ERUPTION	AGE DATA	CALDERA AREA Km²	CALDERA VOLUME RANGE	CALDERA VOLUME Km³	SOLID-IFICATION STATE	ΔQ TOTAL CALORIES	ΔQ NEW CALORIES	ΔQ OLD CALORIES	REMARKS
A-13	KUKAK	58°52.5'N	154°21'W	No Data	Active?								No data
A-14	DEVILS DESK	58°26'N	154°12'W	No Data	No Data								No data
A-15	KAGUYAK	58°31'N	154°25'W	Silicic	>10⁶ ?	41 A_c	40 V_c	>15	>250	5	2	3	Need age data
A-16	FOURPEAKED	59°01'N	153°45'W	No Data	>10⁶ ?								No data
A-17	DOUGLAS	59°52'N	155°29'W	No Data	Active?								No data
A-18	AUGUSTINE	59°22'N	153°21'W	Silicic	Active								Need geophysical data?
A-19	ILIAMNA	60°02'N	153°06'W	Basic	Active								>10 Km Depth
A-20	REDOUBT	60°28'N	152°45'W	Basic	Active								>10 Km Depth
A-21	DOUBLE	60°46'N	152°35'W	No Data	No Data								No data
A-22	BLACK	60°51'N	152°25'W	No Data	No Data								No data
A-23	SOUTH	61°18'N	150°13'W	Basic	Active								Caldera? Need more data
A-24	DRUM	62°01'N	144°38'W	Silicic	[illegible]	100 A_c	[illegible]	400	>850 ?	250	~200	>100	
A-25	SANFORD	62°13'N	144°07'W	No Data	>35x10⁶ ?								Need data on possible ash and on planar or domed [illegible]
A-26	WRANGELL	62°00'N	144°01'W	Basic?	Active or Pend?	15 A_c	[illegible]	30	>250	20	20		
A-27	WHITE RIVERS	61°27'N	140°48'W	Silicic	[illegible]		80 V_c	80	>250	40	15		
A-28	WRANGELL	61°01'N	139°46'W	Basic? Silicic	Active? [illegible]	10 A_c	[illegible]	250	>850	100	100	50	Basic on flanks

A direct magma tap to extract thermal energy from subsurface magma reservoirs is a new concept in the geothermal energy field. The Sandia Laboratories, Albuquerque, New Mexico, which is presently pioneering magma tap research, estimates that one cubic mile (4 km^3) of 1000°C magma contains enough energy to drive several 100 MW electrical plants for a hundred years. Vast quantities of thermal energy are dissipated by passive and active volcanoes throughout the world. Table 6 is a compilation of energy released in historic volcanic eruptions. The energy yields are impressive. The Krakatoa eruption of 1883 released about 10^{25} ergs of energy, which compares to the total power consumption in the U.S. in 1970. The 1952 eruption of Kilauea represents a value of $350 million if converted to commercial electrical power today! Volcanoes represent a very high-grade energy source if we could somehow tap them.

va lakes also dissipate large amounts of energy (Table , which represents but a fraction of the energy stored in the depths of the volcanoes.

Thermal Springs as Geothermal Resources

Origin of Thermal Spring Water: Just a few years ago, most of the steam and/or water that was erupted by thermal springs and/or fumaroles was thought to be primary or magmatic water. More recently, however, based on oxygen and hydrogen isotope studies and other evidence, we have learned that less than 5% of this water is of magmatic origin and about 95% is recirculated ground water (Figure 9).

Vapor-Dominated Versus Hot Water Systems: Geothermal systems, as discussed by White, Muffler and Truesdell (1971), have been subdivided into two types:

(1) Hot water systems

(2) Vapor-dominated (dry steam) systems

TABLE 6

Total Energy Released in Volcanic Eruptions

Volcano	Year	Energy Released	Volcano	Year	Energy Released
Tambora[1]	1815	8.4×10^{26}	Una-Una[1]	1898	1.8×10^{22}
Sukurajima[1]	1914	4.6×10^{25}	Mihara[1]	1954	$1.[illegible] \times 10^{22}$
Bezymianny[1]	1955-1966	2.2×10^{25}	Adatarasan[1]	1900	6.4×10^{21}
Krakatoa[1]	1883	ca. 1.0×10^{25}	Asama[1]	1938	4.0×10^{21}
Asama[1]	1783	8.8×10^{24}	Mihara[1]	1912	6.3×10^{20}
Fuji[1]	1707	7.1×10^{24}	Tokachidake[1]	1926	2.8×10^{20}
Sakurajima[1]	19[illegible]	2.1×10^{24}	Kusatsu-Shirane[1]	1932	1.6×10^{13}
Torishima[1]	1939	9.7×10^{23}	Showa Sin-San[1]	1944	1.4×10^{20}
Komagatake[1]	1929	5.6×10^{23}	Capelinhos[1]	1957	4.0×10^{24}
Miyakeshima[1]	1940	4.8×10^{23}	Arenal[1]	1968	1.0×10^{2}[illegible]
Bandaisan[1]	1888	ca. 1.0×10^{23}	Kilauea[2]	1952	1.8×10^{24}
Pematang Bata[1]	1933	4.5×10^{22}	Nyamlagira[3]	1938-1940	8.4×10^{25}

[1] After Yokayama (1957) with additions.
[2] After MacDonald (1972).
[3] After Verhoogen (1948).
After Verhoogen (1948).

(As prepared by Kienle, 1974)

TABLE 7

Heat Energy Released from Lava Lakes

Volcano	Year	Energy Released (ergs/sec)	Remarks
Halemaumau (Kilauea)	during 1909	9.6×10^{15}	As heat energy (R.A. Daly, 1911).
Nyiragongo	during 1959	9.3×10^{15}	As heat energy in the form of radiation and conduction away from the surface by convecting air (Bonnet, 1960).
Nyiragongo	during August 1959	3.6×10^{19}	Total heat output by radiation, transport outward by gases and conduction into surrounding rocks (Delsemme, 1960).

(As prepared by Kienle, 1974)

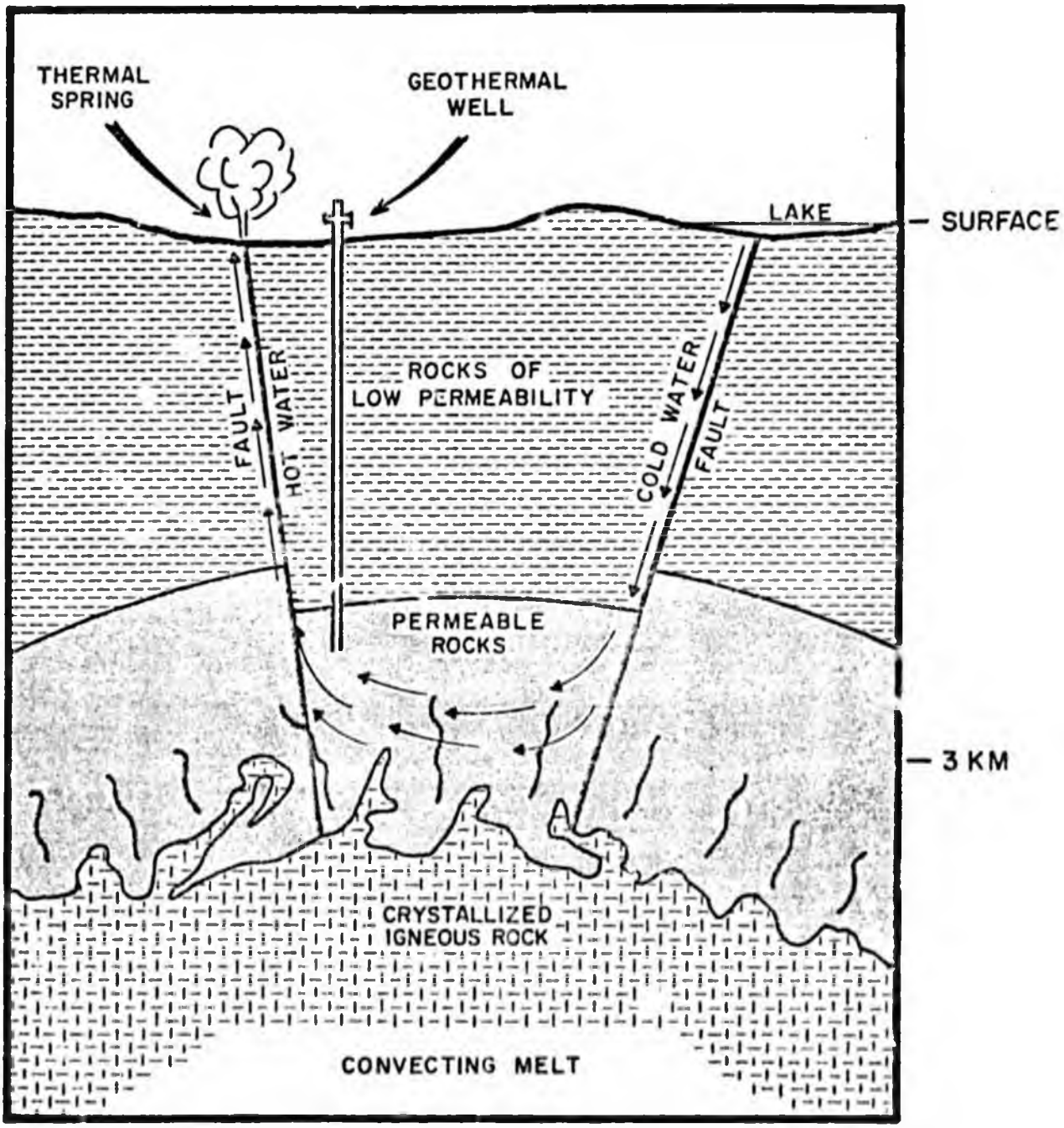


Figure 9: Diagram showing a hypothetical vapor-dominated, two-phase geothermal system as driven by convecting melt at depth. Meteoric (cold) water descends along fault line to hot permeable reservoir rock where it is heated by the cooling melt. Due to lowered density, the hot water ascends along another fault system to emerge at the surface as a thermal spring. A geothermal well has been driven into the reservoir rocks. In vapor-dominated systems, boiling will begin before the water reaches the surface.

Hot water systems appear to be about 20 times as common as the vapor dominated type (White, 1970).

In hot water systems, only a small part of the volume is steam, and the water and steam are separated mechanically before the steam is routed to the turbine system. If heat exchange systems utilizing low boiling point fluids such as freon or isobutane are proved feasible, this will increase the number of hot water systems which can be used for the generation of electricity. Producing geothermal fields of this type include the New Zealand fields and more recent discoveries in Mexico and the Salton Sea in California.

The vapor-dominated systems produce superheated steam with subordinate amounts of carbon dioxide (CO_2) and hydrogen sulfide (H_2S). Only three commercial vapor-dominated systems are in production today, including those at Lardello, Italy, (since 1904); the Geysers, California; and a field at Matsukawa, Japan.

Geothermometry: Subsurface reservoir temperatures of thermal systems can be estimated through the use of geochemical techniques. Various geothermometers have been developed based on analyzed concentrations and ratios of the dissolved mineral constituents. The more commonly used indicators are the silica (SiO_2) content (Figure 10), the Na-K ratios* (Figure 11), the Mg content and Mg-Ca ratio, and the Na-Ca and Cl-F ratios.

The assumptions involved in the use of geothermometers have been outlined by White (1970). These include (1) the availability of constituents from the reservoir rocks; (2) the equilibration of water-rock reactions at the reservoir temperature; (3) the rapid flow of water from the reservoir to the surface to eliminate reactions in transit at lower temperatures and to retain the composition of reservoir temperatures; and (4) a lack of mixing with other waters at intermediate levels.

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*Na=sodium; Mg=magnesium; K=potassium; Ca=calcium; F=flourine; Cl=chlorine.

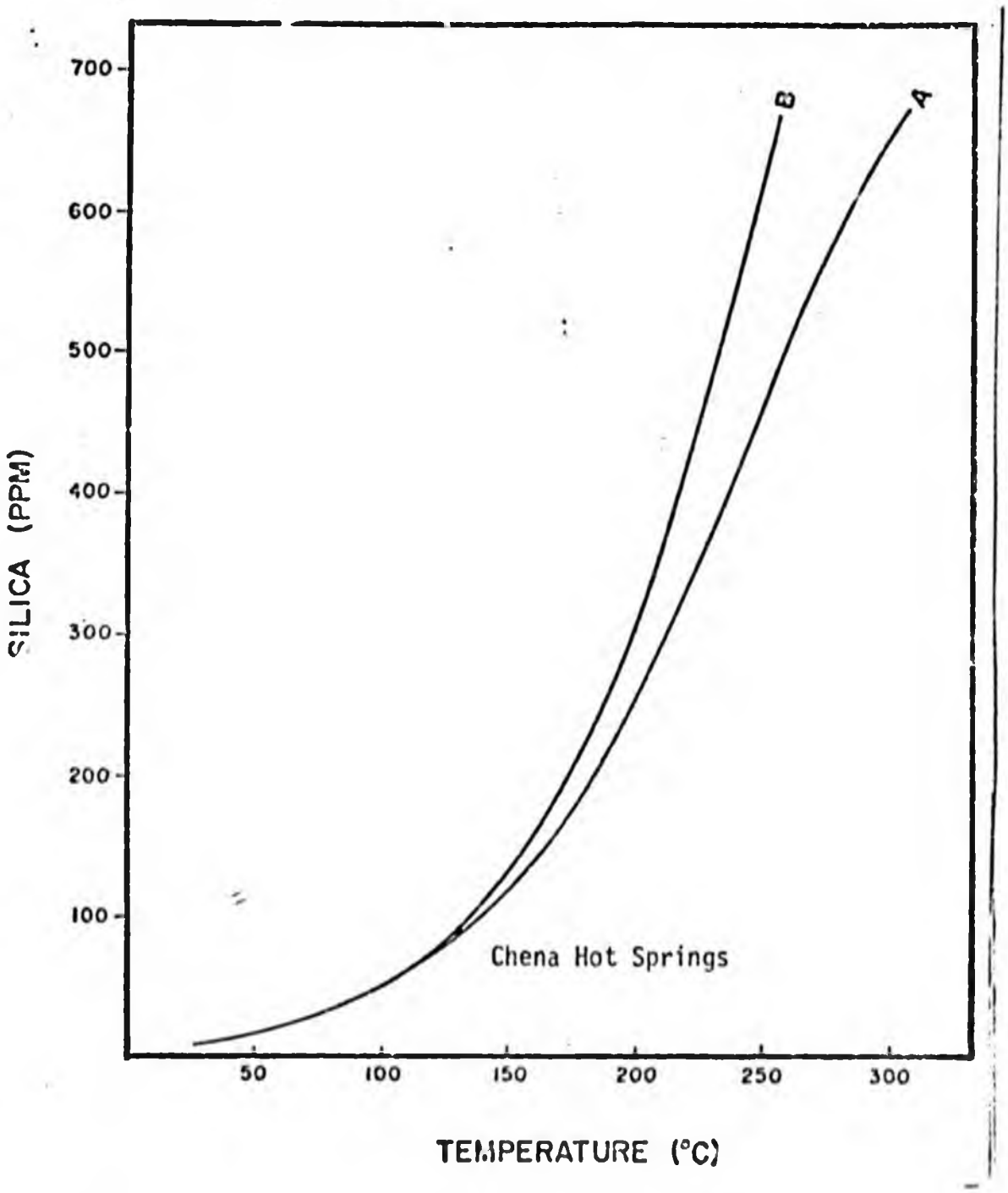


Figure 10: Silica concentration in geothermal water versus estimated temperature of last equilibration. Curve A applies to waters cooled entirely by heat conduction. Curve B applies to waters cooled entirely by adiabatic expansion at constant enthalpy. (From Fournier and Truesdell, 1970)

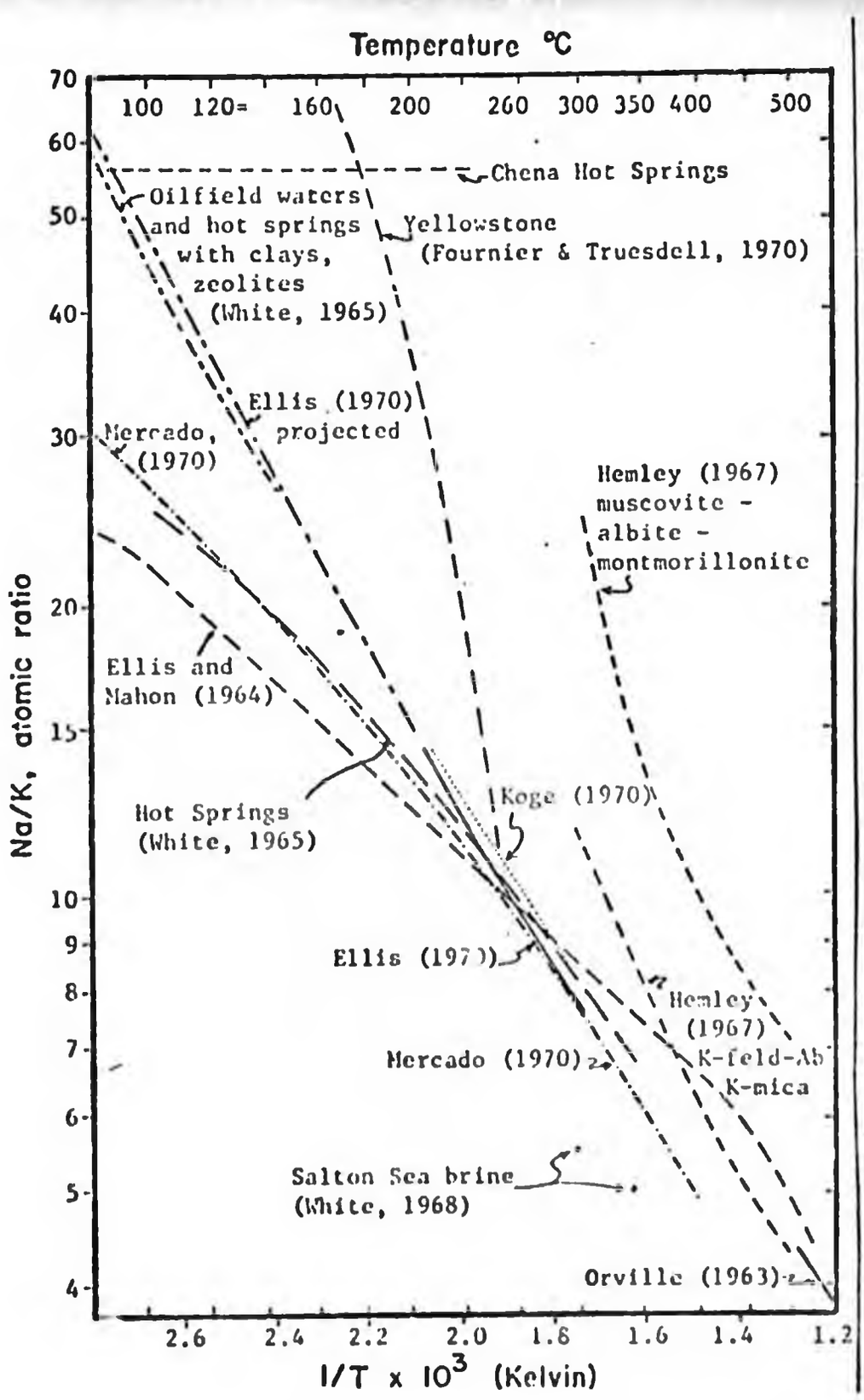


Figure 11: Atomic Na/K ratios versus temperature, showing experimental and empirical curves. (White, 1970)

If equilibrium has been obtained in the subsurface waters, the Na-Ca-K geothermometer should be in general agreement with estimated reservoir temperatures determined from dissolved SiO_2.

Thermal springs which have a high dissolved SiO_2 content, and/or those which deposit silicious sinter at the surface, are probably related to high temperature subsurface reservoirs. Geysers are also a favorable indication of high temperatures at depth.

The Na-Ca-K geothermometer is based on the temperature-dependent base exchange or partitioning of alkalies between solution and solid phases. Discussion of the sodium-potassium equilibria generally applied to systems with temperatures above 175°-200°C, as the alumino-silicate equilibria at lower temperatures, are uncertain (Ellis, 1970).

Factors limiting the possible use of this method are the dilution effects of the deeper water as it rises to the surface, the effect of different mineral suites as source rocks, the effect of continual base exchanges as the waters move toward the surface, and the formation of complex ions. These factors are discussed in greater detail by Fournier and Truesdell (1970).

Geologic Setting of Alaskan Thermal Springs: According to the compilation by Biggar (1973) and the later work of Miller, et al. (1973), there are about 95 recognized Alaskan thermal springs. The geographical distribution patterns indicate that the thermal springs occur in three tectonic settings or geologic associations:

(1) Adjacent to Quarternary volcanoes (i.e. Aleutian Archipelago, Alaska Peninsula, Wrangell Mountains);

(2) In a broad east-west trending zone in northcentral Alaska associated with late Cretaceous or Tertiary granitic plutons; and

(3) In southeastern Alaska, south of the Chatham Strait Fault, in a zone which may be involved in a transform fault system.

Quaternary Volcanic Belts

Some thermal springs in the Aleutian Islands exhibit relatively high surface temperatures (over 100°C), such as Geyser Bight (Table 8). The Aleutian arc also shows evidence of extensive mid-Tertiary intrusive activity (Cameron and Stone, 1970), and is believed to be a consuming plate margin between the Pacific and North American plates.

Many of the Aleutian Islands have not been mapped in detail, and it is probable that there are more thermal springs in the Aleutian Archipelago than those recognized to date.

Southeastern Alaska

Thermal springs on the south side of the Chatham Strait Fault appear to be located along a trend which can be projected underneath the continental block from the North Pacific Rise, where it appears to plunge under the Southeastern Alaskan Archipelago. Quaternary volcanic eruptive centers are also located along this same trend in the Canadian Coast Ranges.

In plate tectonic terms, this area appears to be essentially a transform fault system that connects the actively spreading Explorer and Juan de Fuca Ridges, and the Gorda Rise with the Aleutian Arc system.

Central Alaska

This belt of thermal springs forms a broad zone which extends from the Yukon-Tanana Uplands to the Seward Peninsula. These springs are located on or near the contacts between late Cretaceous or early Tertiary granitic plutons. Portions of this belt may also be underlain by zones of high heat flow.

TABLE 8

Identified hot-water convection systems with indicated subsurface temperatures above 150°C

(As taken from Renner, White and Williams, 1975)

Name	Location Latitude ° ' N	Location Longitude ° ' W	Temperatures °C Surface 1/	Geochemical SiO_2 2/	Geochemical Na-K-Ca 2/	Subsurface 3/	Reservoir Assumptions Subsurface area km^2 4/	Thickness km 5/	Volume km^3 6/	Heat content 10^{18} cal 7/	Comments
ALASKA											
Geyser Bight	53 13	168 28	100	210	236	210	4	2	8	.9	22 springs and geysers in 3 thermal areas i 2 km long zone, near Okmok Caldera; siliceo sinter deposit.
Hot Springs Cove	53 14	168 21	89	131	154	155	2	2	4	.3	Hot springs and geysers in area about 1 km^2 near Okmok caldera.
Shakes Springs	56 43	132 02	52	142	175	155	1.5	1.5	2.25	.2	Several springs discharging ~380 l/m; chemi data not reliable.
Hot Springs Bay	54 10	165 50	83	152	179	180	1.5	1.5	2.25	.2	Hot springs and fumaroles on active Akutan volcano.

1/ Maximum surface temperature reported from a spring or fumarole.
2/ Predicted using chemical geothermometers, assuming fast equilibration in the reservoir; assumes saturation of SiO2 with respect to quartz, and no loss of Ca from calcite deposition.
3/ Assumed average reservoir temperature based on data presently available.
4/ From surface manifestations, geophysical data, well records and geologic inference. Assumes 1.5 km^2 if no data presently available.
5/ Top assumed at depth of 1.5 km if no data available. Bottom assumed at 3 km depth for all convection systems.
6/ Calculated from assumed area and thickness.
7/ Calculated as product of assumed volume, volumetric specific heat of 0.6 cal/cm³ °C, and temperature in degrees C above 15°C.

Maximum Surface Water Temperatures: The hottest water temperatures discovered in Alaska have been measured in thermal springs or hot lakes or pools associated with volcanoes on the Alaska Peninsula or in the Aleutian Islands (e.g., 102°C, Hot Springs Cove, Umnak Island). Water temperatures up to 88°C have been measured in the waters of Bailey Bay Hot Springs, southeastern Alaska.

Estimated Reservoir Temperatures: To date, geochemical studies (Miller and Barnes, in press) indicate that there are only two springs (Geyser Springs Basin, Umnak Island; Chiginigiak Hot Springs, Alaska Peninsula) which are likely to have reservoir temperatures which are over the practical minimum of 180°C, which is needed to drive steam turbine generators, utilizing today's technology. Based on geochemical data reported by Waring (1917), Byers and Brannock (1949), Miller (1973a), the reservoir temperature estimates given by Miller, et al. (1975), and Renner, White and Williams (1975), thermal springs in western and central Alaska are associated with subsurface systems of the hot water types. Maximum estimated reservoir temperatures for 10 springs, as determined by the quartz and Na-Ca-K geothermometers, were 137°C and 167°C respectively.

Reservoir and Conduit Systems

Over 90% of the thermal springs in central Alaska are located near the contact of late Cretaceous and early Tertiary granitic plutons with surrounding country rock. In many cases, the country rocks are crystalline schists with relatively no interstitial porosity and very poor permeability other than that associated with fractures and faults (Figure 12a). In such settings, the probability of large reservoirs at depth is very low.

Considering the low estimated reservoir temperatures there, the prognosis is poor for the discovery of large vapor-dominated geothermal systems in such settings (Miller, et al., 1975). A few springs occur in west-central Alaska near the margins of plutons which have been emplaced in Jr-k sediments (Figure 12b). The probabilities of finding large hot-water reservoirs are higher in such terranes.

Flow Rates

Flow rates of Alaskan thermal springs have been observed which range from slow seepage to rates as high as an estimated 400 gpm at Clear Creek Hot Springs. In some cases, such as that at Pilgrim Springs, spring water flow rates are difficult to determine due to lateral flow, convective circulation and mixing with ground water. Potential electric and nonelectric applications of hot water systems are constrained by flow rates and whether or not such rates can be improved by subsurface drilling.

The potential application of drilling techniques to these systems is an unknown area, as the geometry and reservoir mechanics of the conduits and reservoirs are not understood.

Saline Springs: Four saline springs are known in central and western Alaska including Pilgrim, Serpentine, Kwiniuk and Tolovana (Miller, et al., 1975). These springs are characterized by high concentrations of Cl, Na, Ca, and K. Pilgrim and Serpentine Springs are the most saline (Pilgrim: Na=1450 ppm/Cl=3346 ppm. Serpentine: Na=800 ppm/ Cl=1450 ppm).

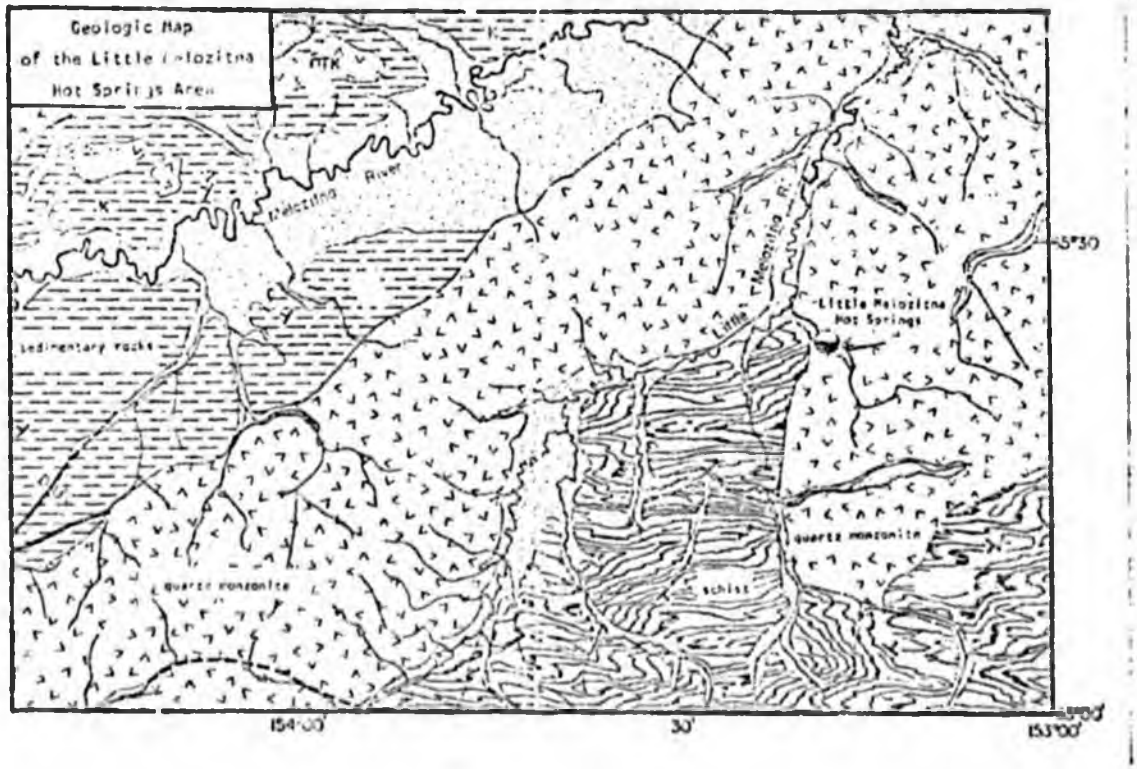


Figure 12a: Geologic map of the Little Melozitna Hot Springs area.

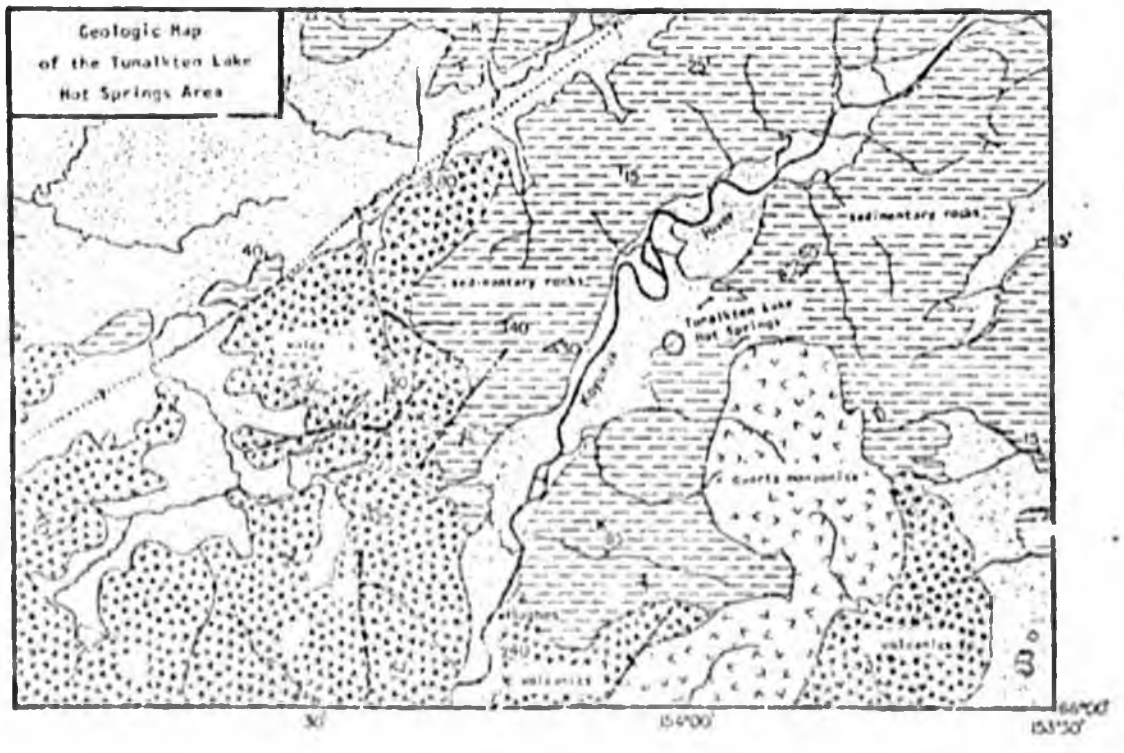


Figure 12b: Geologic map of the Tunalkten Lake Hot Springs area.

Both of these springs exceed the salinity threshold of acceptable potable water, and are potentially troublesome in terms of corrosion of casing, pipe and other hardware.

Utilization of Alaskan Thermal Springs

The thermal springs of Alaska were first utilized and developed by early stampeders and entrepreneurs. For example, Circle and Chena Hot Springs, in the Fairbanks District, were used by early prospectors for bathing and recreation; and subsequently, roadhouses and small settlements appeared. In these early cases, primitive engineering techniques were used, and the applications were limited to bathing pools, hot tap water, and space heating, using hot water convectors. At Manley Hot Springs, the utilization of thermal waters was more advanced, as spring water was used to heat greenhouses, animal barns, and a 60-room hotel, in addition to that used in the bathing pools and the hot water system. Agriculture also became an important part of the activity at Pilgrim Springs during the Nome gold rush in the early 1900's.

These early attempts to utilize the energy of thermal springs passed with the wave of gold seekers, but the energy remains. If properly utilized, such energy sources could play an important part in the economic and cultural life of many rural communities.

The ideal utilization of a geothermal resource in a rural Alaskan community would provide the following:

(1) Heat and electricity for the entire community, to reduce and perhaps eliminate the dependence on imported fossil fuels, and

(2) Energy for local industries which would aid the economy with minimum impact to village culture and lifestyle.

The following sections discuss the more promising applications of thermal spring resources to rural needs.

Electricity: There are many techniques for producing electric power from geothermal resources. Unfortunately, most of these are very complex and require vapor phase reservoirs or high temperature waters which can only be reached by deep drilling. Such techniques are not economically feasible, if very small amounts of power are needed, as in the case of a small Alaskan village.

Techniques must be found to produce relatively small amounts of electricity from geothermal resources with as little impact on the environment as possible. The most promising of these resources in Alaska are the thermal springs. The Geophysical Institute, University of Alaska, has been investigating a method that might be used to produce electricity directly from hot spring water, which utilizes the organic Rankine cycle and the temperature difference between the spring water and the ambient air. An experimental plant, utilizing this technique is now operating at Paratunka, Kamchatka, USSR, and uses water at a temperature of 81.5°C (Facca, 1970).

The Geophysical Institute, University of Alaska, has been working informally with Ormat Turbines Ltd. of Israel, to determine whether or not one of their organic Rankine cycle turbines could be coupled to thermal spring water as an energy source. Ormat has determined that one of their units could be so adapted and that useful, but small, amounts of power could be produced from waters with temperatures as low as 60°C, a temperature which is obtainable in many Alaskan hot springs. Shallow drilling to minimize dilution by ground water could increase the water temperature and enhance the efficiency of the Ormat turbine. Such drilling would not be cost prohibitive and could be easily accomplished by small rigs in remote locations.

Ormat engineers estimate overall efficiencies of approximately 5-1/2% which would require about 40 gpm of 60°C thermal spring water to produce 5 KW of continuous power. This efficiency would, of course, be increased if the temperature of the input water were greater. A schematic diagram illustrating the Ormat system as applied to a thermal spring source is shown in Figure 13.

The electrical system of the Ormat turbine produces a high frequency voltage at the generator which is rectified to DC, thus eliminating the need for costly speed control equipment. The DC output can then be inverted to AC, or it can be used to charge batteries. Such a system could be integrated with wind-generating equipment and circuitry. The combined use of alternate energy sources such as wind power and geothermal energy is especially attractive and should be evaluated in demonstration experiments.

While Rankine cycle power generation at small temperature differences is not very efficient, compared to conventional steam plants, the continuous free supply of the geothermal "fuel" makes it attractive. But in addition to fuel savings, the Ormat turbine has advantages which make it well adapted to use in remote regions:

1. The synthetic organic working fluid allows for low working pressures and temperatures. This results in the elimination of sophisticated pressure vessels and the need for elaborate safety equipment;
2. The entire vapor system is closed, eliminating the need for constant monitoring of the working fluid;
3. The only moving part is the common, turbine-generator shaft. Lubrication is provided by the working fluid which contains a lubrication agent;

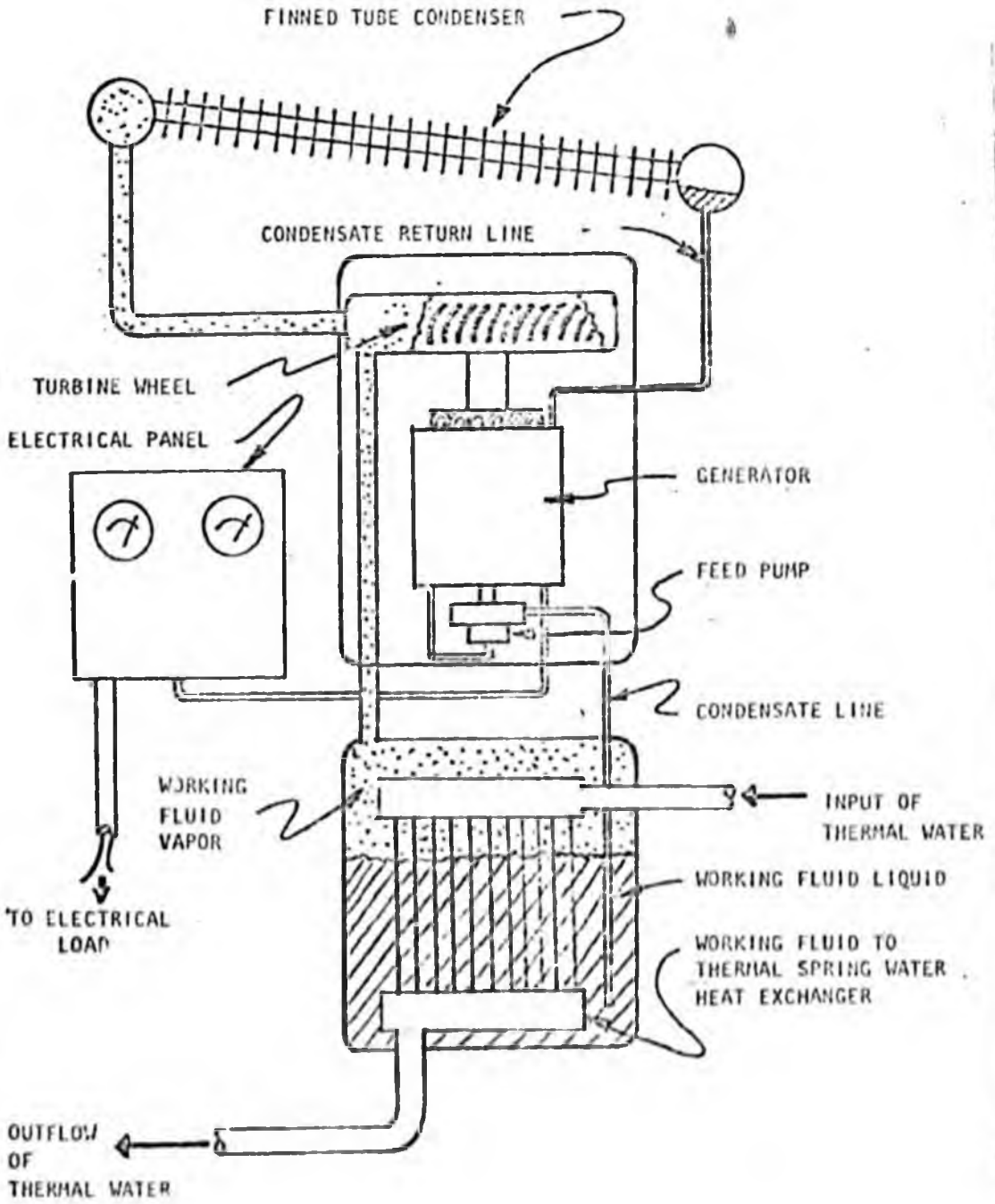


Figure 13: Diagram of Ormat system applied to thermal spring heat source.

4. The working fluid-air condenser is of the free convection type which makes cooling fans and similar devices unneccessary; and

5. The turbo-generating system is hermetically sealed and Ormat claims a 20-year operating life without maintenance.

All of these factors, as well as the previous experience of Ormat Turbines Ltd. in manufacturing organic Rankine cycle systems for the communications industry in other arctic and subarctic areas, make the Ormat system ideally suited for rural Alaska. If an optimum system for a rural Alaskan village could be found, it would be one in which:

1. A local fuel could provide the basic energy input.

2. No maintenance was necessary, and the system could operate unattended for extended periods.

3. The system would be simple enough to be operated by personnel with basic technical skills, and without extensive formal training.

4. The cost would be low.

An Ormat type system appears to meet most of these criteria, but the system has not been demonstrated in the field. If a successful demonstration is achieved, cost factors will fall with increased demand. To date, the largest Ormat unit of this type is a 15-KW unit. However, Ormat engineers are now working on a 100-KW system. Hopefully, the production of this size unit could coincide with the final phase of a successful small-scale feasibility demonstration of a geothermally-powered Ormat turbine.

Ormat Turbines Ltd. has agreed to work with the Geophysical Institute on a co-sponsored research and development investigation. Ormat has agreed to design and construct a 2500-W test unit with a hot water-to-working fluid heat exchanger suitable for the experiment.

Space Heating: The cost of home heating in Alaska is high. In many rural villages without local fuels such as wood or coal, imported fuel oil is the only source of heat. Presently, No. 1 stove oil costs are as high as $1 per gallon in some remote villages and recently have risen to over 50¢ per gallon in many Alaskan cities. At this rate, $900 would be an annual cost for home heating that many village residents can expect to pay this year. With the typical head of a household making less than $3,000 per year, the heating bill alone would constitute about 30% of the family's annual income. Under these conditions, the burden of heating costs alone can seriously depress the potential for economic growth of rural communities.

The heating of buildings with thermal spring waters is one of the oldest and most basic applications of geothermal energy. In areas where thermal springs exist, obvious benefits could be realized by the construction of a geothermally-powered municipal heating system. Figure 14a shows a simple system in which thermal waters from the spring would be directly circulated through convectors in homes. Since many thermal springs contain dissolved salts and other minerals which are corrosive to piping, binary systems as shown in Figure 14b could be constructed which would limit the corrosive effects to a heat exchanger which could be built of stainless steel, or other non-corrosive material.

Various methods could be employed to circulate the thermal spring water. Thermal siphons could help reduce the required pump work. This particular method was used at Pilgrim Hot Springs, Alaska, during the 1930's when the waters of the spring were used to heat buildings at the Catholic mission school.

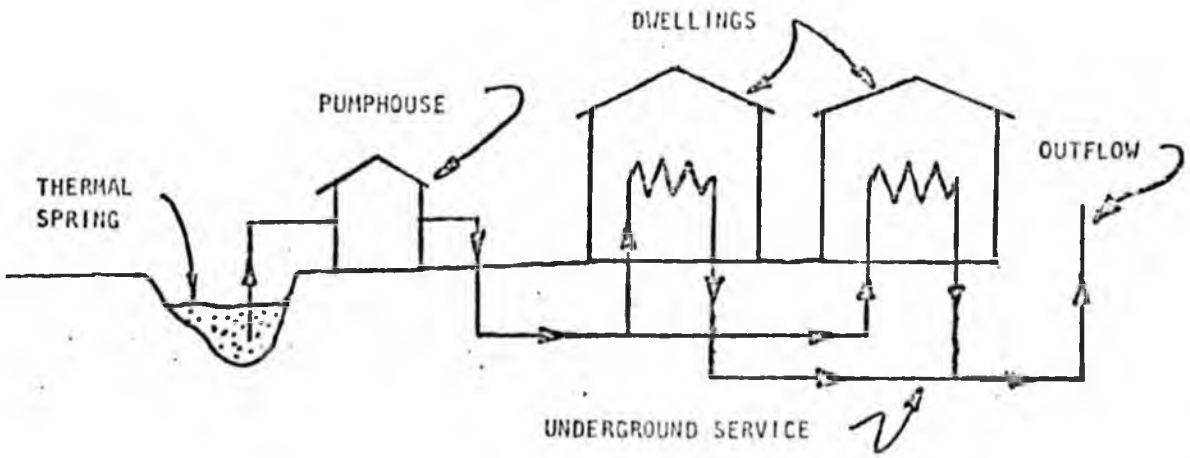


Figure 14a: Primary space heating system.

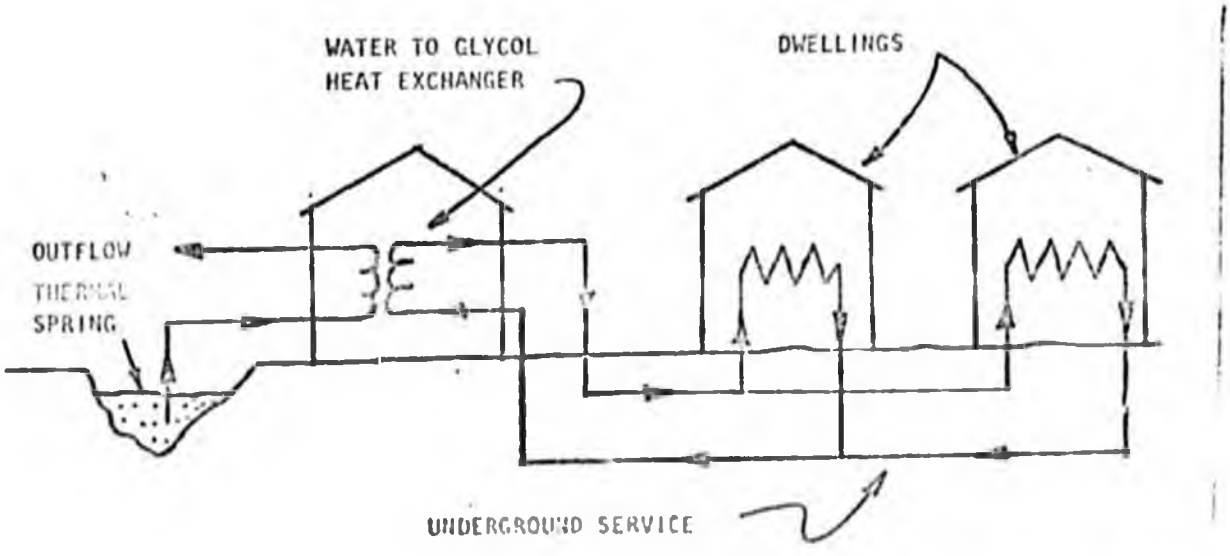


Figure 14b: Binary space heating system.

Space heating techniques are not new and probably do not require further experimental development. A careful literature and design investigation should be made, however, to gain full advantage of existing equipment which could be applied to Alaskan needs.

Refrigeration: Several villages such as Elim and Mary's Igloo on the Seward Peninsula, and Manley in Interior Alaska, could benefit greatly from low-cost refrigeration systems. Small coastal villages cannot presently take full advantage of commercial fishing opportunities due to the lack of cold storage facilities. The reindeer industry is another example of the need for cold storage or freezer facilities as such facilities could eliminate the need for immediate sale and shipment of meat after the reindeer are harvested.

Transmission of Geothermal Energy

Since geothermal resources often exist in areas which are some distance from the location where they could be best utilized, the transmission of this energy becomes an applications engineering problem. If electricity was the only concern, it could be transmitted from the generating site to the users by the usual transmission lines. But since we are also concerned with non-electric applications and the total utilization of the available energy, the problem is more complex.

High Temperature Pipelines: To date, no large reservoir geothermal systems have been discovered in Alaska; thus we are not immediately concerned with the transmission of large quantities of energy. If such a discovery should be made, however, pipeline transmission of hot water might present formidable problems. The Icelandic operations are the most valuable model that we currently have for hot water transmission

technology. The Alaskan climate is more extreme, however, and hot water pipelines will face the same environmental problems that confronted the trans-Alaska oil pipeline. High moisture content permafrost is a costly handicap, and non-stable soil problems can offer many challenges to pipeline engineers. This report does not contain a complete economic analysis of hot water pipelines in Alaska, but we believe that the cost would be highly prohibitive, unless a great number of people could be served, and there was a large magnitude energy potential.

Low Temperature Pipelines: Low temperature waters such as those emitted by many thermal springs, offer similar transmission problems to those which would be encountered by high temperature water pipelines, with the added hazard of lower outflow temperatures due to heat loss.

Pipeline transmission of low temperature thermal waters (60°C or lower) is not practical in permafrost terrane for distances over two or three miles. Where low temperature springs are to be utilized, it is more feasible to move the user to the source than to attempt pipeline transmission of the water.

SPACE HEATING AND INDUSTRIAL APPLICATIONS

Space Heating

Alaska should be an ideal place for the use of geothermal space heating because of the large number of days per year that heating is necessary; thus the "on line" factor would be high. Temperature extremes might require supplemental booster heating for a cost efficient system.

The use of existing hot springs is an ideal way to initiate this program, as the "front end" costs of exploration and drilling could be avoided. Small projects (a dozen to several hundred homes) should be proposed and implemented as soon as possible. A survey should be conducted at the earliest date to determine which communities are amenable to space heating by hot spring sources.

It does not seem practical to use wind power for space heating, unless heat pumps could be integrated into the system.

The Industrial Belt

The possible applications of geothermal or wind power in the industrial belt should be investigated in the near future. Fairbanks is potentially interesting since it is already known that 100°C temperatures exist at 10,000 feet in the subsurface, and that the present heating methods cause serious ice fog problems.

The New Capital Site

The working group felt that in spite of the possible adverse political effects, the possibility of heating the new capital with geothermal heat should be again pointed out to the Capital Site Committee. After a site

is picked, the possibility should again be studied. At least the town should be planned to be centrally heated so that such a heat source could be used later, if developed.

Industrial Applications

The following is a list of possible industrial applications:

1. The use of geothermal energy to make electricity for the aluminum or fertilizer industry using the apparently large resource along the Aleutian Chain. Wind energy might be a good candidate for this use also.
2. The use of geothermal steam in the southeast for pulp processing. This is being done in New Zealand with appreciable success.
3. The use of geothermal hot water to allow gold mining year-round, as is done in Siberia.
4. The use of geothermal hot water for other mining processing, for instance at Lost River.

Recommended Projects

Specifically, a few projects should be started as soon as possible:

1. A survey of all rural Alaska villages should be conducted to determine where wind and/or geothermal energy might be competitive with present energy sources.
2. Based on that survey, a number of projects should be initiated to demonstrate the practicability of such applications.
3. The needs of larger population centers should also be evaluated, in terms of municipal wind power and geothermal applications.

ENVIRONMENTAL HAZARDS AND PROTECTION

Environmental Hazards

Chemical Pollution: Steam brought up from subsurface reservoirs contains about 0.5-5% noncondensible gas which is principally carbon dioxide with varying amounts of hydrogen sulfide, methane and ammonia.

These gases are released directly from the condensate in cooling towers. Condensates usually contain trace amounts of boron, arsenic and other volatile elements which can be hazardous in excessive concentrations. Hydrogen sulfide is a dense gaseous pollutant which can be dangerous to human and animal life.

Most geothermal steam fields are the wet rather than the dry type (vapor dominated) and contain approximately 80% water at the wellhead. The water often contains higher concentrations of trace elements than the steam. The most common dissolved constituents include carbonate, silica and sodium chloride.

Some of the liquid-dominated systems are characterized by brines which contain very high concentrations of sodium, potassium, bromine and heavy metals. Such brines are extremely corrosive, and potentially hazardous to plant and animal life if released into the environment without treatment.

Noise Pollution: When superheated water flashes to steam, an intense ro-- is produced which is very offensive to workers, residents and nearby communities.

Thermal Pollution: Hot water which is wasted from geothermal power plants and other uses is potentially troublesome if it is allowed to

flow into streams, rivers, lakes or ground water tables. The chemical effect on the ecosystem may be far less in some cases than the thermal shock created by the inflow of hot water.

Anti-Pollution Measures

In the case of steam fields, water and condensates may be reinjected into another drill hole. Acoustic problems from flashing steam can be solved with silencers.

In the next few years, a technology will no doubt be developed for desalinization systems which will extract valuable salts and metals from brines, after steam has been extracted for the turbines, with a final outflow of potable water (Figure 15).

Environmental Vulnerability of Alaskan Thermal Springs

The utilization of thermal waters emitted from springs is not beset by some of the hazards associated with geothermal steam operations. Thermal waters which well up from the springs flow into streams which are part of the same ecosystem. The chemical composition of the spring waters should not be greatly changed by the planned demonstrations and experiments, as only the heat will be extracted....and concentrations of dissolved constituents are not high enough to cause accelerated precipitation during the cooling process. The water can be rechanneled into the same outflow streams with relatively little environmental impact.

If shallow drilling at Pilgrim Springs should indicate a possible geothermal steam reservoir, with more highly concentrated brines as the liquid phase, adequate protection measures will have to be taken before proceeding to demonstrations involving deeper drilling and the possible release of steam and condensates at the wellhead.

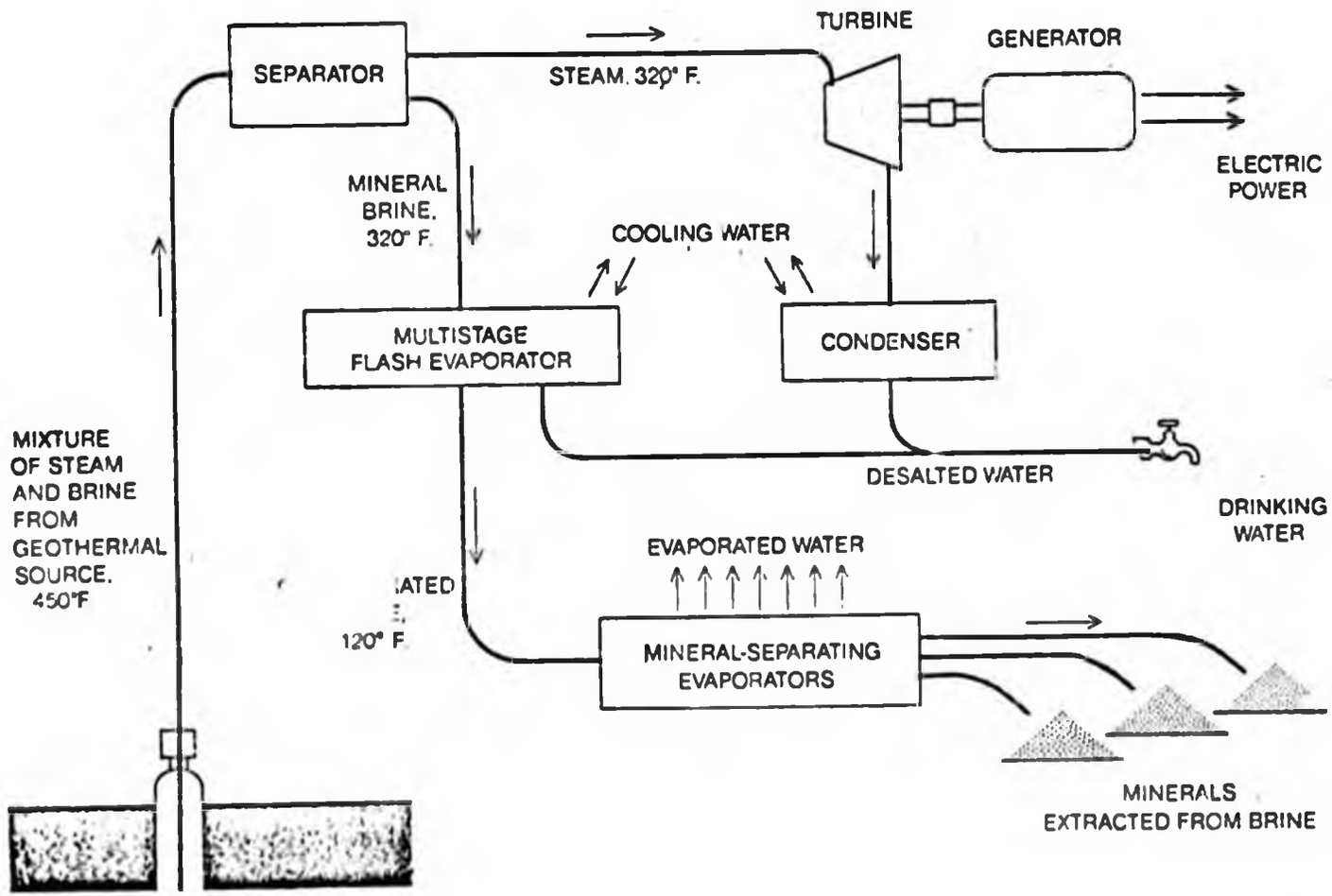


Figure 15: Multipurpose geothermal system, as designed by the UN and the Government of Chili. From "Geothermal Power" by Joseph Barnea. Copyright January, 1972, by Scientific American, Inc. All rights reserved.

Some concern has been voiced for thermal springs and the adjacent terrane as possible island ecosystems surrounded by a hostile arctic environment. It has been suggested, for example, that such ecosystems and the accompanying microenvironment (unless destroyed by man) may contain relict biological populations which have survived glacial episodes, dating back to Pliocene time. Although it remains to be proved, the reported presence of vigorous earthworms in the warm soil around Pilgrim Springs is of more than passing interest....even though the earthworms may have arrived via plants which were imported during the Nome gold rush.

Manley and Pilgrim Springs have been thoroughly overprinted by the works of man. Channelways, pools and seeps have been reworked and altered by several generations of residents. Indeed, it would be difficult, or perhaps impossible, to reconstruct the original setting. Nevertheless, each of these microenvironments should be carefully assessed and evaluated so that future developments can be accompanied by attempts to restore the former biological equilibrium, if possible.

Clear Creek Springs will be a more sensitive site, as it has not been obviously altered or disturbed by the white man. It would be prudent to conduct a thorough biological assessment of these springs and the surrounding terrane during the reconnaissance studies.

WIND POWER POTENTIAL OF ALASKA

Wind Power Potential Defined

Wind power potential can be defined in several ways, including the available wind energy (in a meteorological sense), and wind energy that can actually be converted to useful work at a given site. The meteorological wind power potential of Alaska is high. However, due to the high cost of installing windmills versus marketing the exported energy, the economic climate is poor in uninhabitated places like Amchitka and Cape Thompson where near-surface wind speeds are almost ideal for large wind-driven power plants. Alternately, Cold Bay, with its excellent harbor and wind resources, is a promising location for the utilization of wind-derived power.

In Alaska, the availability of wind-derived energy, and the attendant practical wind power potential, will be limited by economics for some time to come. The economics will be influenced greatly by the huge land area, much of it not settled, and the dispersed population outside of the few major cities. In the area of the two largest cities, Anchorage and Fairbanks, fossil fuels and hydro-electric power will be more than competitive with wind. However, an underlying concern in all wind power investigations is that what appears to be economic folly now may be an attractive proposition or even a necessity in the year 2000 (only 24 years away).

The wind energy of the entire atmosphere is really not of interest here. Rather, the central question seems to be what power (or power flux) is available for windmill purposes in the atmospheric layer ranging from the earth's surface to about 1100 meters. Sellers (1966) and

Flohn (1966) separately estimated that the dissipation of energy by the worldwide combination of winds, waves, tides and currents ranges from 250 to 2500×10^{12} watts. We estimate that 1130×10^{12} watts are generated and dissipated in the same layer. On an areal basis, 3.4×10^{12} watts are dissipated over Alaska. These power flux and power estimates are shown in Table 9. Kung (1966a, 1966b) has published extensively on the kinetic energy generation and dissipation of the atmosphere, based on data from about 120 weather stations throughout the entire United States and most of Alaska and Canada. Thus, computed values of the kinetic energy in various atmospheric layers are available for most of North America. Below 1100 meters these power fluxes are (Kung, 1966b) about 2.21 watts/m^2. (In his earlier paper, Kung (1966a) estimated 1.8 watts/m^2.) Additionally, Kung concludes that despite the difference in land and ocean surface roughness, the dissipation rates in the boundary layer are about the same over land masses and the oceans.

Thus, we can assume here that 2.21 watts/m^2 represent the mean worldwide annual power flux for dissipation and generation in the lower boundary layer (defined here as the first 1100 meters of the atmosphere). Our estimate for the world surface area (1.965×10^8 mi^2 or 5.10×10^{14} m^2) of the wind energy in the boundary layer is 1130×10^{12} watts.

We can also conclude that in the Alaskan boundary layer (area = 5.86×10^6, or 0.30% of the earth's total area), the available kinetic energy is 3.4×10^6 megawatts.

If we arbitrarily assume that 1/1000 of the kinetic energy in the first 1100 meters of air above Alaska could be extracted by windmills, then the practical annual mean wind power potential of Alaska is

TABLE 9

FRICTIONAL POWER FLUXES IN THE EARTH-ATMOSPHERE INTERFACE AND ESTIMATES OF POWER OF DISSIPATION POTENTIALLY AVAILABLE FOR WIND POWER.

Author (year, ref.)	Frictional Power flux watts/m^2	World-Wide[+] "Wind Power"* in 10^{12} watts
Flohn (1966, 12)	1-2	510-1020
Sellers (1966, 11)	0.49-4.9**	247-2470**
Hubbert (1972, 6)	various, averaged	370
Kung (1966, 7)	1.8	-
Kung (1966, 8)	2.21	-
von Arx (1974, 13)	-	1
Wentink (this work)	Used 2.21	1130 (3.4 for Alaska)

*In a near-surface boundary layer, about 1100 meters thick, originally wind-driven and eventually dissipated by energy sinks like waves, surface currents, and (in part) convection.

**Computed by Hubbert[9] from Seller's 1-10 langleys/day; 1 ly/day = 0.485 watts/m^2.

[+]Earth total surface area = 1.97×10^8 mi^2 = 5.10×10^{14} m^2.

about 3400 megawatts. This is six times the present electric power generation capability of all Alaskan utilities. Clearly, a renewable resource with a power generation potential of this magnitude warrants closer examination.

Wind Power Calculations

The discussion of wind power involves several wind speed (V, for velocity) quantities. It is important to differentiate these quantities as instantaneous wind speed (V), average or mean wind speed ($\bar{V}$), and rated wind speed (V_R). The latter is the wind speed necessary for maximum power output of a given windmill or wind energy conversion system (WECS). Thus, for example, a particular windmill may have V_R = 32 mph to develop a 6 KW power output. As described later, however, that particular machine will produce an average power ($\bar{P}$) output of only 0.8 KW to about 4 KW, for a range in $\bar{V}$ of 10 to 25 mph. The latter average is only attained in very unusual situations, such as that recorded on Amchitka in January.

Hence, the determination of the average wind velocity ($\bar{V}$) of a site is important. Also, generally, V increases with height, so increasing tower heights are important (recommended 40 to 60 feet for small windmills). In the ($\bar{V}$) tables presented in this report (Tables 10, 11), it is important to note that the height of wind measurement varied from about 13 to 100 feet above ground, and in all cases the station data were acquired for purposes other than the evaluations of wind power.

While the following discussion deals mostly with $\bar{V}$, frequency (duration) data are also important (i.e., the amount of time that various winds reach or exceed V at a given site). For our purposes in this paper the comparison of $\bar{V}$, as measured for Alaskan sites, is adequate.

Meaningful Variables: The average or arithmetic mean wind speed ($\bar{V}$), the variance of the wind speed (V), and the vertical profile of V are the most important variables in the evaluation of a site for wind power generation.

The instantaneous power in kilowatts (P) depends on the windmill disc area (A), and the cube of (V), with a constant (K) for the unit system and the air density. These relations have been treated extensively in most publications on wind power. Thus:

$$P(KW) = K \, A \, V^3 \tag{3}$$

K is about 3.1×10^{-6} for an ideal windmill, and in actual practice, is obtained by multiplying P by the actual efficiency, which usually ranges from 50 to 70%. The mean power $\bar{P}$ does not vary with $\bar{V}^3$ in the same way, but we will show the importance of using $\bar{V}$ to compute $\bar{P}$.

The vertical gradient of horizontal wind speeds is an important design and operating parameter. Data on the gradient are essential in determining optimum tower height in order to optimize energy productivity and to cope with the difference in forces on the turbine blades at the top and bottom of the swing of the rotating blades.

The relationship between the wind velocity (V) at a height above the ground (h) is given by:

$$V_u V_l = (h_u / h_l)^P \tag{4}$$

where u and l refer to the upper and lower heights. Here p can vary from 0 to 1. For estimation, p of 0.15 to 0.30 is useful.

We have examined the wind speed data from other sources such as the National Weather Service, from various heights, and for several stations

in an attempt to establish the vertical gradients of horizontal wind speed (see calculations for Cold Bay, Table 11 in Wentink, 1974). These attempts have failed, for various reasons. Our strong conviction is that further such attempts are not worthwhile, unless simultaneous measurements at various heights are made on the same tower. Long-term mean values of V do not serve the purpose. In the case of Cold Bay, subsequent and extensive simultaneous measurements did indeed reveal a well-defined vertical wind velocity profile.

Alaskan Wind Data

The collection of Alaskan wind data has been a formidable task, as the National Climatological Center (NCC) lists 90 Alaskan land stations for which some wind data are available. There are data from other stations which have not yet been reduced to usable form, such as those from the Arctic Distant Early Warning radar stations (DEW line). Reed (1975) has published wind data for 63 Alaskan sites taken from an NCC computer tape. There are several different climatological provinces in Alaska as defined and separated by extensive mountain ranges. This report emphasizes mainland coastal Alaska, including the Alaskan Peninsula, the Aleutian and other offshore Alaskan islands.

Wentink (1974) covers 10 sites in the Aleutian Islands (west of False Pass and Cold Bay); 4 sites on the Alaska Peninsula; and 3 sites on the northwest coastal mainland. In more detail, these sites are listed on the next page.

Aleutians	Alaska Peninsula	Northwest Coast
Shemya	Cold Bay	Kotzebue
Amchitka	Port Moller	Tin City
Adak	Port Heiden	Cape Lisburne
Atka	King Salmon	
Nikolski		
Fort Glenn (Cape AFB)		
Driftwood Bay		
Dutch Harbor		
Cape Sarichef		
St. Paul Island		

Data from additional locations are also included in this report, including:

"Panhandle" and Gulf of Alaska	West Coast	North Coast	Interior
Annette Island	Cape Newenham	Barrow	McGrath
Juneau	Cape Romanzof	Barter Island	Fairbanks
Yakutat	Bethel		
Cordova	Northeast Cape*		
Middleton Island	Nome		
Kodiak	Koyuk		
	Moses Pt.		
	Cape Thompson		
	Pt. Hope		

*St. Lawrence Island

Most of these locations have considerable potential for wind power installations of various sizes. It is important to remember that none of the wind data from these sites analyzed by us were taken at locations that had been previously selected as possible wind power installations; on the contrary, the anemometer positions had been selected, and often moved, to favor aviation observations. Thus, mean wind speeds given in Tables 10 and 11 probably represent conservative lower limits for estimation of wind energy.

In general, a $\bar{V}$ of 12 mph (10.4 knots) or more at expected propeller heights is desirable for satisfactory windmill performance.

TABLE 10

NEAR-SURFACE YEARLY MEAN WIND SPEEDS AT VARIOUS ALASKAN LOCATIONS

General Area	Station	Yearly Mean Speed* (knots)	Data Period	Anemometer Height (feet)**
Aleutian Islands	Shemya	16.2	1950-72	184-20
	Amchitka	18.3	1943-50	?
	Adak	13.1 (sh)	1942-65	75-15
	Atka	10.9 (sh)	1942-45	?
	Nikolski[a]	14.0	1959-69	30-13
	Ft. Glenn[a]	13.6	1942-48	?
	Driftwood Bay[b]	8.3 (sh)	1959-69	?
	Dutch Harbor[b]	9.6 (sh)	1946-54	33
	Cape Sarichef	13.7	1952-56	?
	St. Paul[c]	16.0	1962-71	42
Alaska Peninsula	Cold Bay	14.9	1956-72	88-21
	Port Moller	8.9 (sh)	1959-59	30-20
	Port Heiden	12.8	1942-67	29
	Ugashik	Under measurement by us		
	King Salmon	9.6	1956-72	38-20
Alaska "Panhandle" and Gulf of Alaska	Annette Island	9.5	1942-70	33-20
	Juneau	7.4 (sh)	1948-70	32-37
	Yakutat	7.0	1941-70	59-20
	Cordova	4.4 (sh)	1946-70	36-20
	Middleton Isl.	11.9	1945-63	30-20
	Kodiak	8.9 (sh)	1941-69	60-16

TABLE 10 (cont'd.)

General Area	Station	Yearly Mean Speed* (knots)	Data Period	Anemometer Height (feet)**
Kuskokwim and Yukon Rivers and Deltas	Cape Newenham	9.8	1953-70	30-13
	Cape Romanzof	11.7	1953-70	15-11
	Bethel	11.2	1958-72	69-20
	McGrath[d]	4.3	1949-73	26
Norton and Kotzebue Sounds, Seward Peninsula	Koyuk	9.5	1944-45	?
	Moses Point	10.6	1945-67	?
	Nome	9.5	1955-73	75-21
	Northeast Cape[e]	11.0	1952-69	30-13
	Tin City	14.9	1953-70	?
	Kotzebue	11.1	1945-70	31
Northwestern and Northern coasts	Cape Thompson	17.4	1960-61	?
	Pt. Hope	10.7	1945-48	?
	Cape Lisburne	10.5	1953-70	13
	Barrow	10.6	1945-68	39-31
	Kaktovik[f]	11.2	1945-70	27-20
Fairbanks (interior)	Fairbanks	4.3		

**Last value is usually the most recent height. Large horizontal shifts may also have occurred.

*(sh): pronounced topographic shielding effects may be involved.

a: Umnak Island
b: Unalaska Island
c: Pribilof Island
d: Interior location
e: St. Lawrence Island
f: Barter Island

Ranking of Wind Power Sites

In Table 11, 67 Alaskan sites have been ranked on the basis of measured mean yearly wind speeds and/or the yearly average potential wind power. These stations are representative of more than 100 Alaskan sites. The means are taken from data acquired during our literature survey, and the wind power figures are from the excellent compilation by Reed (1975). Readers who refer to this table should realize that:

1. None of the data involve optimization of wind instrument location for wind power surveys.
2. No attempt has been made to correct for the changes in anemometer location (vertically or horizontally) over extended observation periods.
3. Close agreement should not be expected when average powers derived from our $\bar{V}$ are compared to Reed's watts/m^2, because:
   a. In some cases the recording periods for the two sets of data are different; and
   b. Reed's power fluxes are means for long time periods derived by averaging monthly power fluxes (Reed, 1975).
4. The wind power fluxes are high in terms of what can be extracted by presently available windmills. The theoretical Betz (1966) extraction limit of 59.3% for unshrouded windmills is not included, and neither are the normal mechanical and electrical efficiencies taken into account. Also, the cut-in speed and the power limiting at higher velocities (25 knots or 12.9 m/s), as planned for present windmill design, are not included.

Nevertheless, simple conversions may be applied to Reed's results in order to estimate the actual power obtained from a particular windmill at a specific location. For example, the "Elektro WVG-50G" 6KW machine (disc area 19.9m^2) gives a factor f=0.59 (Betz limit x 10^{-3}KW/w x 19.9m^2 = 1.17 x 10^{-2}/w). An empirical factor K (0.39) seems to express the machine versus wind speed characteristics when coupled with the speed duration curves. It may be considered a composite "shape factor"; it includes variables such as cut-in speed, practical efficiencies, and calms. Then, for this particular windmill, fk = 4.5 x 10^3 KW-m^2/w. As shown in Table 12, fk, when multiplied by Reed's values, leads to useful estimates of the yearly mean power which compare well in most cases with our results, derived from computed power productivity curves.

TABLE 11

RANKING OF ALASKAN WIND POWER SITES

RANK	[1]Average yearly wind velocity ($\bar{V}$)	$\bar{V}$ yearly, meters/ sec.	Site	[2]Wind Power watts/m^2	Remarks
1	18.3	9.41	Amchitka Is.	1025	Uninhabited
2	17.4	8.95	Cape Thompson		Uninhabited
3	16.2	8.33	Shemya Is.	633	Restricted area
4	14.9	7.66	Cold Bay	574	Prime test site
5	14.9	7.66	Tin City	549	
6	16.0	8.23	St. Paul Is.	547	
7	13.7	7.05	Cape Sarichef (Unimak Is.)		
8	13.6	7.00	Cape AFB (Umnak Is.)	498	
9	14.0	7.20	Nikolski (Umnak Is.)	482	
10	12.8	6.58	Port Heiden	430	
11	13.1	6.74	Adak Is.	405	
12	11.7	6.02	Cape Romanzof	381	
13	11.9	6.12	Middleton Is.	377	
14	11.3	5.81	Attu Is.	369	Site probably shielded; V low should rank near #3.
15	11.2	5.76	Kaktovik (Barter Is.)	341	
16	11.0	5.66	Northeast Cape (St. Lawrence Is.)	329	
17	10.9	5.61	Atka Is.		$\bar{V}$ probably lower limit
18	10.7	5.50	Point Hope		

TABLE 11 (cont'd.)

RANK	[1]Average yearly wind velocity ($\bar{V}$)	$\bar{V}$ yearly, meters/sec.	Site	[2]Wind Power watts/m^2	Remarks
19	10.5	5.40	Cape Lisburne	315	
20	11.1	5.71	Kotzebue	292	
21	11.4	5.86	Unalakleet	265	
22	9.8	5.04	Cape Newenhar	242	
23	10.6	5.45	Mos.s Point	241	
24	NA*	-	Golovin	241	
25	9.6	4.9	Dutch Harbor (Unalaska Is.)	233	Shielded instrument site (?)
26	9.5	4.9	Nome	218	
27	8.1	4.2	Big Delta	216	
28	9.5	4.9	Koyuk		
29	9.5	4.9	Annette Is.	199	
30	10.6	5.45	Point Barrow	193	
31	9.6	4.9	King Salmon	191	
32	8.9	4.6	Kodiak	189	
33	8.9	4.6	Port Mollor	172	
34	11.2	5.7o	Bethel	172	
35	NA*	-	Flat	172	
36	7.9	4.1	Haines	147	
37	8.3	4.3	Driftwood Bay (Unalaska Is.)		
38	NA*	-	Craig	129	
39	7.4	3.8	Juneau	116	
40	7.0	3.6	Yakutat	115	

* = Not yet available.

TABLE 11 (cont'd.)

RANK	[1]Average yearly wind velocity ($\bar{V}$)	$\bar{V}$ yearly, meters/ sec.	Site	[2]Wind Power watts/m^2	Remarks
41	5.7	2.9	Gulkana	81	
42	NA*	-	Ruby	79	
43	6.0	3.1	Umiat	76	
44	6.6	3.4	Kenai	75	
45	5 6	2.9	Tanana	73	
46	5.4	2.8	Indian Mtn.	70	
47	5.6	2.9	Fort Yukon	65	
48	4.7	2.4	Sparrevohn	64	
49	NA*	-	Manley Ht. Spngs.	63	
50			Anchorage (Int. Apt.)	61	
51	6.4	3.3	Galena	59	
52	NA*	-	Ketchikan	58	
53	NA*	-	Kaltag	57	
54	6.6	3.4	Valdez	53	
55	5.8	3.0	Bettles	49	
56	5.6	2.9	Homer		
57	5.0	2.6	Nenana	42	
58	4.6	2.4	Anchorage (Merrill Field)	38	
59	4.4	2.3	Cordova (Mile 13 Apt.)	37	Shielded instrument site (?)
60	5.7	2.9	Anchorage (Elmendorf AFB)	36	

* = Not yet available.

TABLE 11 (cont'd.)

RANK	[1]Average yearly wind velocity ($\bar{V}$)	$\bar{V}$ yearly, meters/ sec.	Site	[2]Wind Power watts/m^2	Remarks
61	6.6	3.4	Sitka	33	
62	7.9	7.9	Petersburg	33	
63	4.3	2.2	Tatalina	31	
64	4.2	2.2	Northway	29	
65	4.3	2.2	McGrath	28	
66	4.3	2.2	Fairbanks (Int. Apt.)	27	
67	3.8	2.0	Wiseman	24	

Notes:

(1) Taken from Wentink (1976).

(2) As taken from Reed (1975); these values are the averages of the 12 mean monthly wind powers calculated from unsmoothed duration curves.

TABLE 12

YEARLY MEAN POWER* FOR SPECIFIC ALASKAN SITES AND WIND MACHINE "X"

Site	Annual average wind velocity (V) mph	Annual average wind velocity $(\bar{V})$, m/s	watts/m^2 (Reed)	Mean Power $(\bar{P})$ in KW Reed x fk (1)	Mean Power $(\bar{P})$ in KW Wentink (2)
Amchitka Island	21.1	9.43	1025	4.7	3.27
Cold Bay	17.4	7.78	574	2.64	2.70
St. Paul Island	17.1	7.64	548	2.52	2.59
Umnak Island	15.6	6.97	498	2.29	2.25
Middleton Island	13.7	6.12	377	1.73	1.79
Cape Romanzof	13.4	5.99	381	1.76	1.90
Kotzebue	13.2	5.90	292	1.34	1.63
Cape Lisburne	12.1	5.41	315	1.45	1.62

*Not optimum power, which also depends on site selection and machine height.

(1) $f = 1.17 \times 10^{-2}$ KW m^2/w; $k = 0.39$ (empirical).

(2) From machine power vs windpseed characteristics and actual mean yearly speed duration curve.

Present State of Technology

As of March 1976 the actual availability of "WECS" is in a state of flux. Foreign windmills that can be ordered "off the shelf" are rated at 2.5 to 6 KW, but delivery to the U.S. and Alaska is often delayed and erratic. U.S. production is almost nil, although many tens of thousands of 3 KW units were sold during the period 1930-1955. In the late 1976-early 1977 period, U.S. manufactured units in the 6 to 15 KW range are expected to appear on the market. Many small companies are developing prototypes, but development and production have been somewhat retarded by lack of an assured market. Paradoxically, however, the market is not developing rapidly due to the lack of field tested, cost acceptable windmills.

Table 13 lists some small windmills that are possibly available to the consumer, and which may be of specific interest to individuals or small, remote communities. Most of these have not been tested in Alaska.

Table 13 does not include the large (100 KW or greater) WECS that are under development by the Energy Research and Development Administration (ERDA) and the National Aeronautics and Space Administration (NASA). We believe that in Alaska a complex of several small units is preferable to one large machine (i.e., four 25 KW WECS instead of one 100 KW WECS). Windmill farms offer redundancy, reduced erection and maintenance problems due to lower tower heights and the technical advantage of proved WECS in the lower power output range.

TABLE 13

Some Small (0.2-15 KW) Windmills Currently or Potentially Available

Manufacturer	Model	Propeller Disc Diameter, ft. (Note 2)	P_{max}, KW (Note 3)	V_R, mph (Note 3)	Voltage Output (Note 4)	Approximate Cost, $(1976) (Note 5)	Remarks (Note 1)
Grumman Aerospace Corp.	Windstream 25	25 (3b, vp, dw, nt)	15	26	115	20,000 (?)	Available mid-1976 (?) Prototype in test.
Zephyer Wind Dynamo Co.	Zephyer	17 (3b, fp, dw, nt)	7.5 (to 15)	22 (30)	250	3,500	Prototype in test; limited production pending.
Elektro GmbH (Swiss)	Various; data for WVG-50G	16.5 (3b, vp, wt)	6.1	32	115	6,500	In production; long history.
Aerowatt (French)	Various; data for largest.	3[illegible]1 (2b, vp, wt)	4.1	17	220	23,000 (?)	Limited production; excels in low V regimes.
Jacobs Wind Electric Co.	Various (pre-1955)	14 (3b, vp, wt)	1.5 (to 3.0)	18	32 or 110	2,500 to 5,000	Prices for reconditioned machines; long history of excellent performance. (Note 6)
Quirks (Australian)	Various	13 (3b, vp, wt)	2.5 (3.0)	25 (30)	24 to 110	3,000 (?)	Rated at 2KW continuous Long history of proven performance. In production.
Sencenbaugh Wind Electric	750-14	12 (3b, fp, wt)	0.8	20	14	1,400 (kit, 1050)	In production.
Wincharger	1222H	6 (2b, fp, wt)	0.2	23	14	450	Long production history; cost includes stub tower.

Notes:

1. Inclusion in this list, or omission from it, does not imply any recommendation. A question mark means only our uncertainty of lack of current information. All information is to the best of our knowledge, mostly from vendor literature or private communications.

2. b = number of blades; vp = variable pitch; fp = fixed pitch; dw = downwind pusher type; nt = no tail boom; wt = with tail boom.

3. Power output P_{max} achieved at wind speed V_R; limiting by various means then occurs; at some larger V controlled shut-down usually occurs.

4. Nominal voltage or generator of alternator; larger voltages (within design limits) are often encountered.

5. f.o.b. manufacturer or dealer locations and without tower.

6. Jacobs may announce new models in 1976 or 1977; for reconditioned units inquire elsewhere.

The Use of Mean Wind Speeds

The instantaneous power output (P) of a given wind turbine (treated elsewhere) depends on the cube of the wind speed:

$$P(KW) = K A V^3$$

where with (V) in mph and the area (A) in ft^2, (P) is in KW. However, as pointed out previously, the cube of the average (mean) wind speed of a site is appreciably different from the mean of the cubes of various wind speeds, i.e.,

$$\bar{V} = \frac{i}{n} \sum_i V_i$$

where n is the number of V_i data and

$$\bar{V}^3 \neq \sum_i V_i^3 \text{ and } c\ \bar{V}^3 \approx \sum_i V_i^3$$

For instance, a Lockheed study (1975) shows that c of the last equality is about 1.73 (for a 3 km height above ground). Of course, this c factor will be different for near-surface winds, and 1.73 also is not directly applicable to the problem of wind turbines having a threshold cut-in speed above zero and probable power limiting at some specified velocity. In most any case $\bar{V}^3$ is an approximate and usually pessimistic lower limit in estimating the absolute power of a WECS in a given $\bar{V}$ regime. However, $\bar{V}$ is still a very useful parameter, (Wentink, 1976).

Evaluation of Available WECS Units

The output of a given windmill can be predicted for a given location, if one has the necessary wind data for that location, even though only average wind speeds are known. In the latter case, synthesized

(calculated, wind duration curves can be used instead of measured field wind duration curves (Wentink, 1976). This approach is useful, in that economic analyses and predictions can be made, including estimated costs of wind-derived electricity and resultant savings in fossil fuel consumption for various WECS and locations.

Grumman WS25 Prototype: We co led the manufacturer's preliminary power (P) versus wind speed duration cves, using synthetic V duration curves computed from our "Planck" distribution function (Wentink, 1976). These calculations gave curves of P versus time. The integral of each curve gives the energy produced during the period of wind measurement that yielded the duration curv .

The average energy $\overline{E}$ (and $\overline{P}$) are a linear function of $\overline{V}$ up to about 22 mph; above the 22 mph limit, the energy productivity starts to decline since the WS 25 limits quite abruptly at 26 mph (V_R). Where $\overline{V}$ is 12 or 17 mph, the $\overline{P}$ would be 2.3 or 5.8 KW, respectively, for 15 KW-rated WECS.

The Elektro WVG50: The evaluation included the same analytical procedures, with the application of measured V duration curves and two different models for synthetic (artificial) V duration curves. Also, preliminary results based on hand and desk computer calculations, used for the previous section (the WS25), were extended by IBM 360 machine computations.

As shown in Table 14 and Figure 16, it appears that very reasonable values for the average monthly and annual power from a given windmill, in this case the 6 KW Elektro, can be estimated from reliable knowledge of the $\bar{V}$ encountered at the hub of the windmill propeller. The agreement of the analytical data with the field data is remarkably good, lending support to our contention that a long-term measured $\bar{V}$ can be used to predict, for WECS, $\bar{P}$ in the absence of long-term V frequency (i.e., velocity duration) data.

The considerable time spent on the Elektro 6 KW windmill and calculations does not imply any endorsement of this machine or the manufacturer; it merely reflects the fact this machine was used in the Ugashik tests. (The Elektro 6 KW is the highest power rated windmill presently in production.) Other machines may be more desirable, especially for Alaskan use.

The Aerowatt 4.1 KW: We considered in a preliminary way the French Aerowatt Model 4100FP7, rated at 4.1 KW output at V = 16 mph. It has a claimed superiority at low wind speeds, mostly due to large (30.7 feet diameter) light blades. However, it is apparently very rugged, with a claimed survival wind speed of 115 knots (132 mph).

The power characteristic shown in Figure 17 was deduced from Aerowatt sales literature. An empirical $\bar{P}$ vs $\bar{V}$ curve from the fit to 46 field points, as described for the Elektro unit, is given in Figure 18.

The computed values are higher than Aerowatt claims, given as points on Figure 18, but they are still in good agreement. While the productivity at low $\bar{V}$ is indeed excellent (39% of maximum at $\bar{V}$ = 12 mph), the high cost ($23,000) is discouraging. The Elektro 6 KW seems to be as productive as the Aerowatt 4.1 KW at $\bar{V}$ = 21 mph, but of course few locales have a $\bar{V}$ of 21 mph. To date, we know of only one

TABLE 14

MEAN POWER FROM ELEKTRO WVC50 (6 KW rated) WINDMILL, USING MEASURED AND SYNTHETIC (F3) SPEED DURATION CURVES (Six Alaskan Locations)

$\overline{V}$,kts	$\overline{V}$,mph	Site, Month (Note 1)	$\overline{P}$,KW (q-meas) (Note 2)	$\overline{P}$,KW (calc) (Note 3)	Δ,% (Note 4).
22.9	26.4	A, Jan.	4.07	4.07	0
21.9	25.2	A, Dec.	3.98	3.92	1.5
21.1	24.3	A, Feb.	3.78	3.80	0.5
20.7	23.8	A, Mar.	3.84	3.73	3.4
19.4	22.3	A, Nov.	3.57	3.49	2.2
18.9	21.8	A, Oct.	3.46	3.41	1.4
18.7	21.5	A, Apr.	3.48	3.36	3.6
18.3	21.1	A, Annual	3.27	3.28	0.3
17.8	20.5	SP, Feb.	3.38	3.19	5.6
17.4	20.0	SP, Dec.	3.28	3.09	5.8
17.0	19.6	SP, Jan.	3.19	3.02	5.3
16.6	19.1	SP, Nov.	3.06	2.92	4.6
16.5	19.0	SP, Oct.	3.05	2.90	4.9
16.4	18.9	A, May	2.98	2.88	3.6
16.4	18.9	A, Sept.	2.85	2.88	1.1
16.3	18.8	SP, Mar.	2.96	2.86	3.4
15.1	17.4	CB, Annual (1a)	2.71	2.58	4.8
15.1	17.4	CB, Annual (1a)	2.70	2.58	4.4
15.1	17.4	SP, Apr.	2.65	2.58	2.6
15.0	17.3	M, Dec.	2.58	2.56	0.8
14.9	17.1	SP, Annual	2.59	2.51	3.1
14.8	17.0	M, Jan.	2.58	2.49	2.7
14.7	16.9	M, Nov.	2.49	2.47	0.8
14.6	16.8	A, Aug.	2.53	2.45	3.2
14.1	16.2	A, June	2.36	2.32	1.7
14.1	16.2	A, July	2.34	2.32	0.9
13.5	15.5	SP, Sept.	2.23	2.16	3.1
13.4	15.4	M, Oct.	2.15	2.13	0.9
13.4	15.4	SP, May	2.19	2.13	2.7
12.4	14.3	SP, Aug.	1.87	1.87	0

TABLE 14 (Cont'd.)

$\bar{V}$,kts	$\bar{V}$,mph	Site Month (Note 1)	$\bar{P}$, KW (q-meas) (Note 2)	$\bar{P}$, KW (calc) (Note 3)	Δ,% (Note 4)
11.9	13.7	M, Annual	1.79	1.72	3.9
11.8	13.6	B, Nov.	1.70	1.70	0
11.8	13.6	B, Oct.	1.69	1.70	0.6
11.5	13.2	K, Aug.	1.62	1.60	1.2
11.4	13.1	K, Oct.	1.62	1.57	3.1
11.4	13.1	SP, June	1.53	1.57	2.6
11.3	13.0	K, Sept.	1.57	1.55	1.3
11.1	12.8	K, July	1.49	1.50	0.7
10.7	12.3	SP, July	1.34	1.37	2.2
10.6	12.2	M, Sept.	1.38	1.34	2.9
10.5	12.1	B, May	1.26	1.31	4.0
10.4	12.0	K, June	1.32	1.29	2.3
10.0	11.5	B, Apr.	1.19	1.15	3.4
9.9	11.4	B, Dec.	1.22	1.13	7.4
9.3	10.7	K, May	1.10	0.93	15.5
7.7	8.9	M, July	0.68	0.40	41.1

Mean (all points) 3.7

Mean (omit last 2 points) 2.6

Notes:

1. A = Amchitka Isl., B = Barrow, CB = Cold Bay, K = Kotzebue, M = Middleton Isl., SP = St. Paul Isl.; 1a = separate 5-year periods at CB.

2. q. meas. or q.m. = quasi-measured; from measured wind data and manufacturer's power vs. wind speed curve.

3. From Weibull Function (k=2) and manufacturer's power curve.

4. $\Delta = 100\ (\bar{P}_{qm} - \bar{P}_{syn.})/\bar{P}_{qm.}$

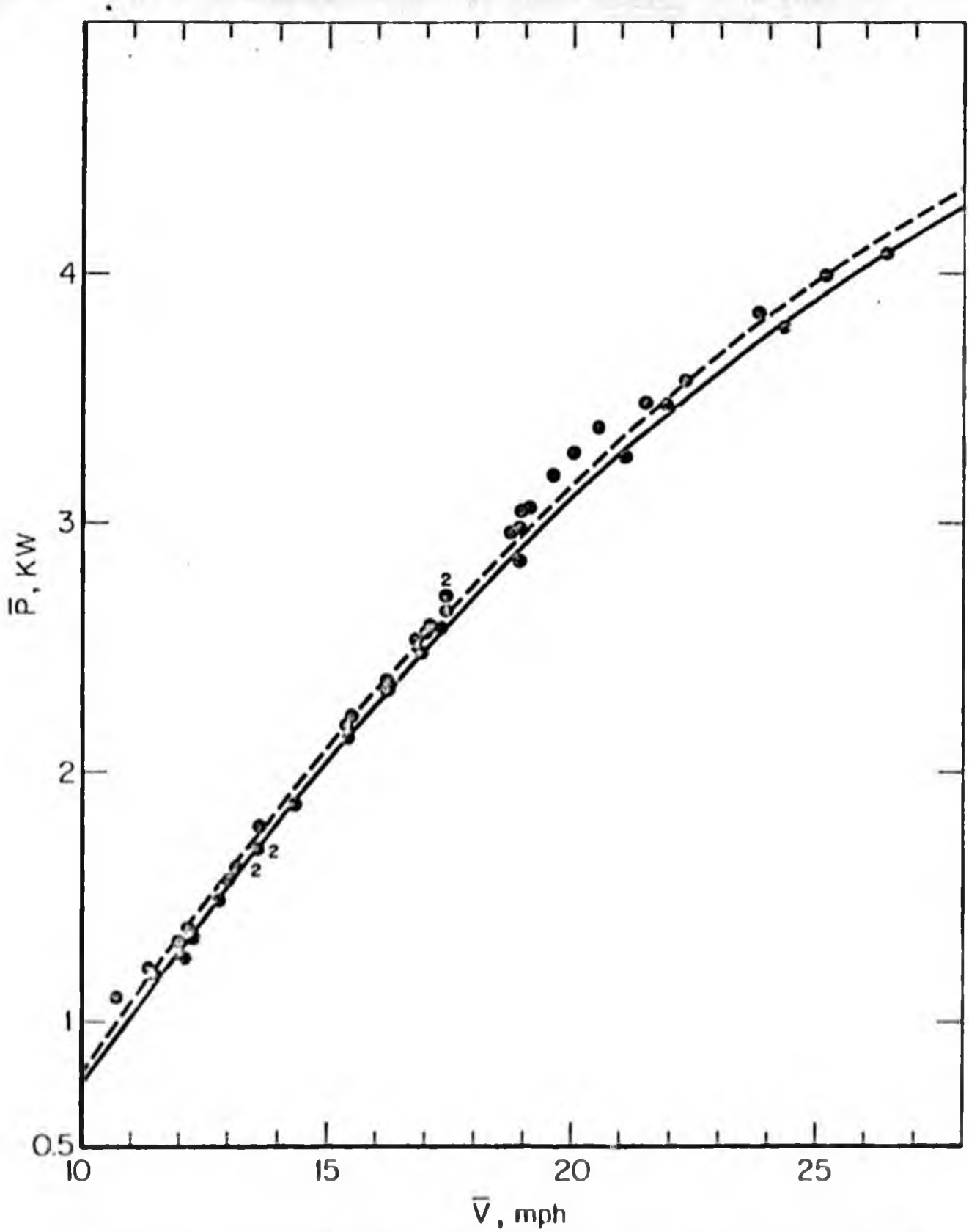


Figure 16: Mean power from an Electro WVG50 (6 KW at 33 mph) Windmill for measured and analytically-predicted duration curves. (Points from measured winds; dashed curve best fit to them. The 2 on graph means duplicate points. Solid curve is quadratic polynomial calculated from F3.)

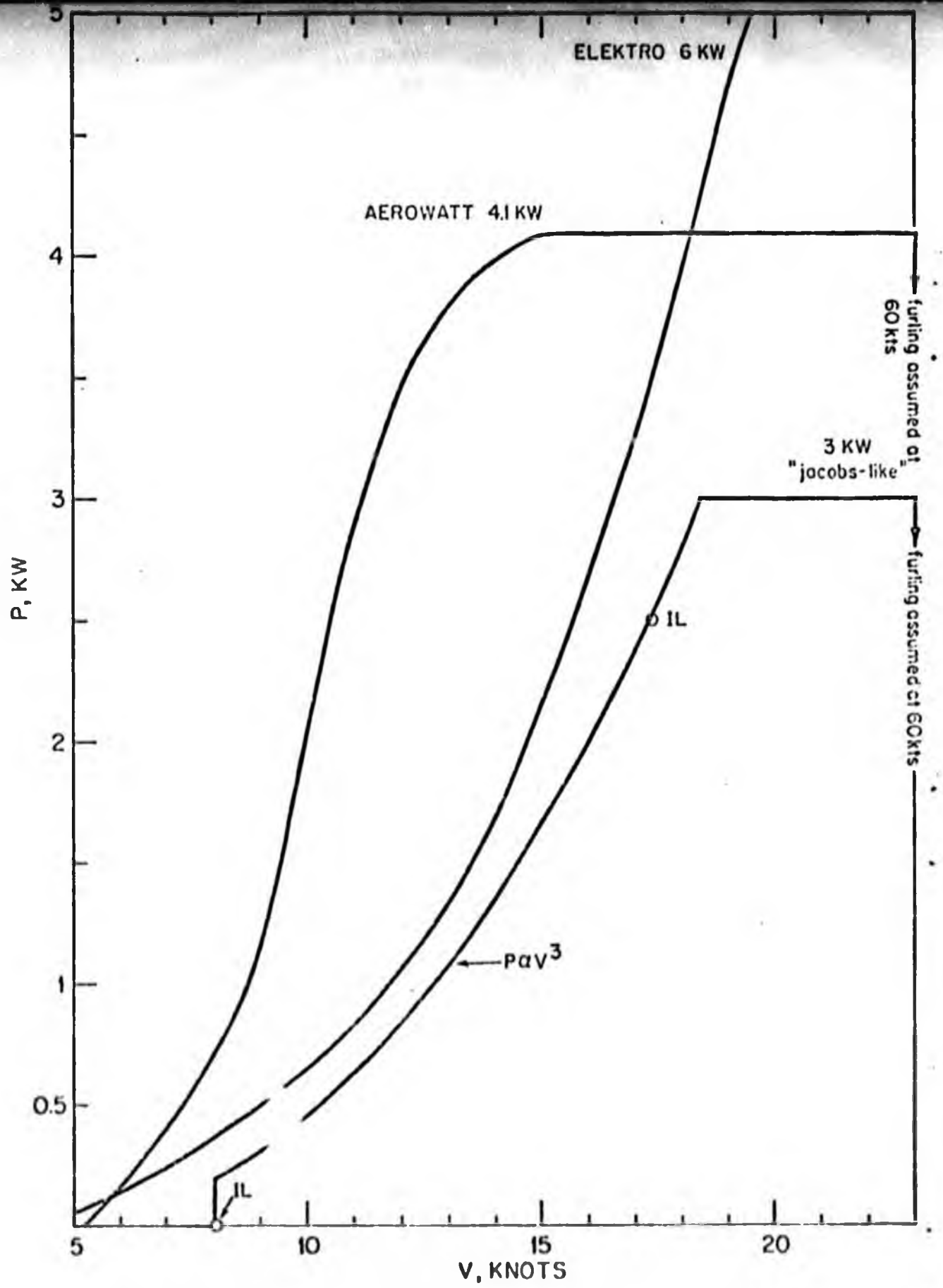


Figure 17: Power characteristics for Aerowatt 4.1 KW, Elektro 6 KW, and Jacobs-like 3 KW windmills.

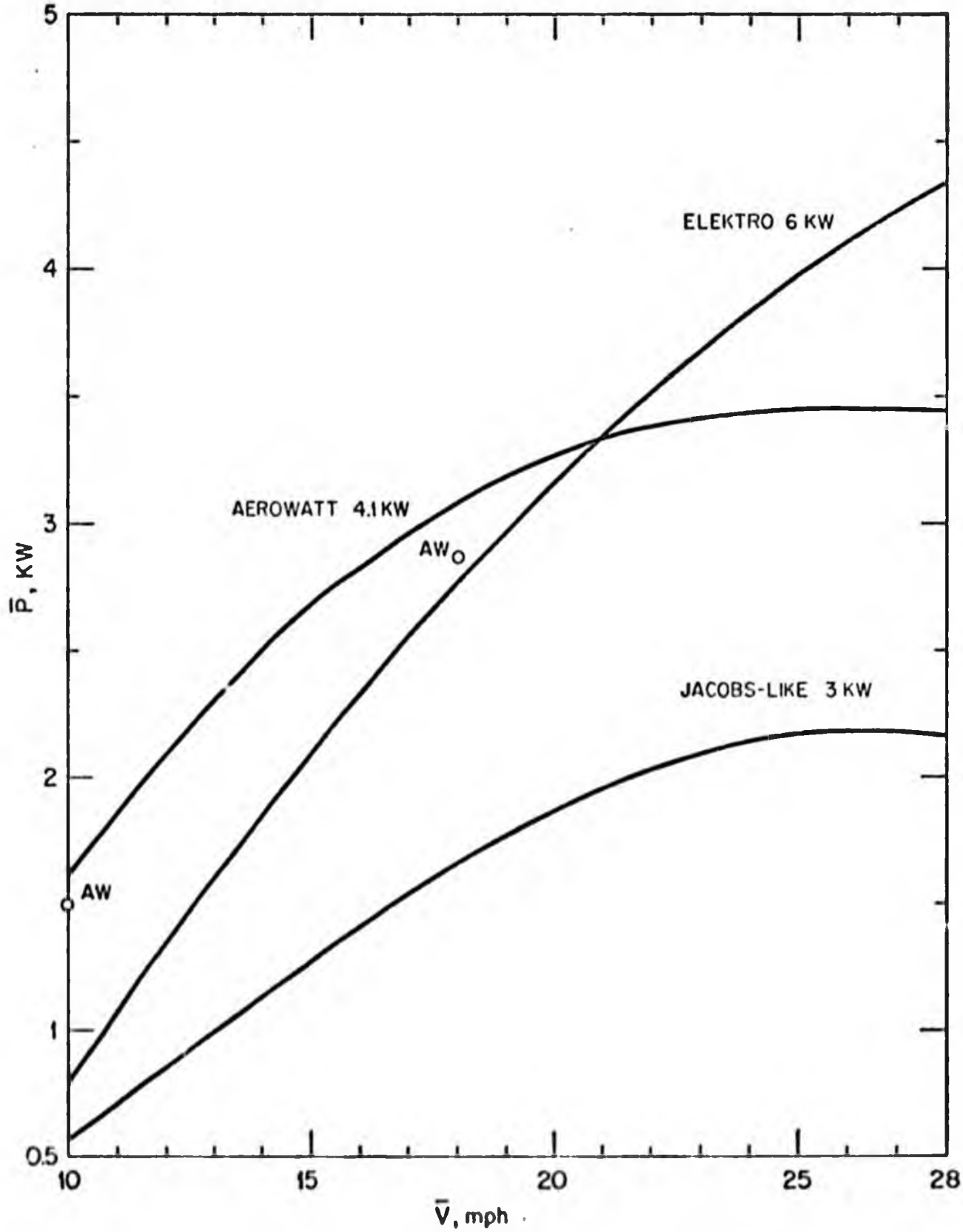


Figure 18: Average power vs. average wind speed for three small windmills in Alaskan wind regimes. (All from best fit to polynomials, each based on 46 long-term duration curves. Points marked AW from Aerowatt literature.)

Aerowatt 4.1 KW machine in use, in Norway; and we have no details.

A Jacobs-like 3 KW WECS. The Jacobs 1 to 10 KW machines (thousands of units) have a long history of very successful operation, with high reliability and energy yields. Our studies and Jacob's substantiated claims (1974) indicate that these machines are probably the most successful electricity-producing small windmills ever produced in quantity. It is regrettable that the 1930-1957 units are no longer manufactured, and are only available as rebuilt items. Jacobs may produce newer designs and hardware in late 1976 (6 to 10 KW?).

Jacobs, to the best of our knowledge, never published a formal power characteristic curve. We deduced such a curve from Frenkiel's (1964) Iliat data. We call our characteristic, shown in Figure 17, the Jacobs-like 3 KW; and of course M. Jacobs is not responsible for any of the conclusions drawn from our curves.

The $\bar{P}$ vs $\bar{V}$ curve for the Jacobs-like 3 KW plant is also given in Figure 18. This is based on 46 measured duration curves. This is not in good agreement with Frenkiel's result, for one or more unexplained reasons. However, his machine power characteristic may have been appreciably different than our necessary estimate, especially at low $\bar{V}$ (10-12 mph). He also intentionally limited the maximum power to 2.5 KW. Furthermore, he computed his expression from $\bar{V}$ data spanning only the 10 to 16 mph range.

The reader can draw his own conclusions. A major hindrance in comparisons, for example, between a Jacobs-like 3 KW and an Elektro 6 KW ($\bar{P}$ same at $\bar{V}$ = 15 to 20 mph), is the absence of present cost data for any vintage Jacobs units, or for comparable newly-produced windmills.

Energy Productivity and the Height Effect

Assume an Elektro 6 KW windmill installed at Ugashik on a 40 ft tower. Take $\bar{V}$ there as 12 knots (13.8 mph), from the better known long-term $\bar{V}$ values (and varying quite smoothly along the Alaska Peninsula) at King Salmon (9.9 knots), Port Heiden (12.9 knots) and Cold Bay (15.1 knots). The airline distances from Ugashik to those places are, respectively, 80, 60 and 263 statute miles.

We then estimated the energy power and energy productivity at 40 feet, the oil-savings equivalent, and also the effects of variation in tower height between 30 and 100 feet (see Table 15). A major assumption was that only one-half of the energy yield of the windmill was useable. This assumption is based on our knowledge of Alaskan bush energy habits and wind patterns, and the experience of other workers. For instance, the wind-derived voltage might often be less than the battery bank voltage, or the batteries might be fully charged, with no load to use the wind energy. Also, considerable energy might be lost due to windmill shut-down (for safety) during sustained gales.

There are other assumptions, which may be questionable for the long term, including such things as 1975 prices for typical towers and constant oil costs of 75¢/gal at Ugashik. Nevertheless, it appears that tower heights in the 40 to 60 feet are most cost-effective. In this range the yearly oil-equivalent of the useful energy is 20 to 24 drums (53 gal, not 42 gal drums), with an energy cost savings of $800 to $940/year. The improvement in average power, relative to that at 40 feet, is 18% at 60 feet and 26% at 70 feet. However, the accompanying savings in oil and costs at these heights are not great. Thus, the cost of tall towers appears to off-set the increased energy yield obtained, as others have noted. Hence, for the Ugashik area, we would question the worth of tower heights above 60 feet.

TABLE 15

ESTIMATED ENERGY PRODUCTIVITY (10 years) OF AN ELEKTRO 6 KW WINDMILL AT UGASHIK, ALASKA, FOR VARIOUS HEIGHTS WITH SOME RELATED COSTS

height/ft	$\bar{V}$,mph (N-1,4)	$\bar{P}$,KW (N-2)	10 year $\bar{E} \times 10^5$ kwh (N-2)	$\bar{E}/2$ = Drums of Oil (N-3)	10 year $\Delta\bar{E} \times 10^4$ kwh (N-4)	Oil Equiv. Savings in $ (N-5)	Tower Cost $ (N-6)	h increase Savings (or drums) (N-4)
30	1.29	1.58	1.384	176	-1.93	6996	990 (645)	-724 (-18d)
40	13.8	1.80	1.577	201	0	7990	1260 (800)	0
50	14.5	1.98	1.734	221	1.57	8785	1560 (1000)	495 (12d)
60	15.1	2.12	1.857	237	280	9421	1935 (1250)	756 (19d)
70	15.7	2.26	1.980	253	4.03	10057	2470 (1600)	857 (22d)
100	17.0	2.54	2.225	284	6.48	11289	?	-

Notes:

N1. For mean p = 0.23 in V vs h relation; equations (3).

N2. From Figure 16, before battery bank.

N3. Assumes 1/2 of windmill productivity is usable, and alternate energy source generator yields 7.4 kwh/gal; then 10^5 kwh =255 drums oil.

N4. With reference to h = 40 ft value.

N5. As for N-3, with constant 10 year cost of 75c/gal or $39.75/drum, delivered (questionable long term assumption).

N6. Delivered at Ugashik, including cost of footings, with no provisions for labor or interest; (price fob Seattle).

Engineering Design Factors

Power Coefficient and Efficiency: The power coefficient C_p, as we use it, is the ratio of the actual windmill power output to the power in the wind. The efficiency of an actual single disc windmill, as we define it, is the power output of the actual mill relative to an idealized windmill. The latter is limited, through the Betz (1966) formulation, to the extraction of 59.3% of the power of the wind.

Cut-in Speeds and Calms: The energy (power x time) productivity versus the costs determine the utility of a windmill system. Important factors include the starting or cut-in wind speed, the wind speed required to reach rated power, and of course, the mechanical integrity. The time of power generation is as important as the power rating. While our wind survey results reveal many desirable locations for windmills in Alaska, design innovations should be directed toward decreasing the wind speed necessary for attaining the rated power of the generator, compatible with mechanical integrity. In our opinion, emphasis should be placed on blade design, reliable speed controls, reduction of the generator power overrating, and the cost and weight of the generator. The French Aerowatt windmill (full rating reached at 17 mph for their 4 KW machine) and the NASA/Lewis-Plum Brook projected 100 KW windmill (full rating at 18 mph) show considerable promise in this respect.

Productivity Curves: Productivity is best estimated by combining the machine power versus wind speed curve with the wind velocity duration curve. In this way, one can generate productivity curves like those in Figures 18 and 19.

One aspect of curves such as those shown in Figure 19 is that wind machine output characteristic curves are almost always given

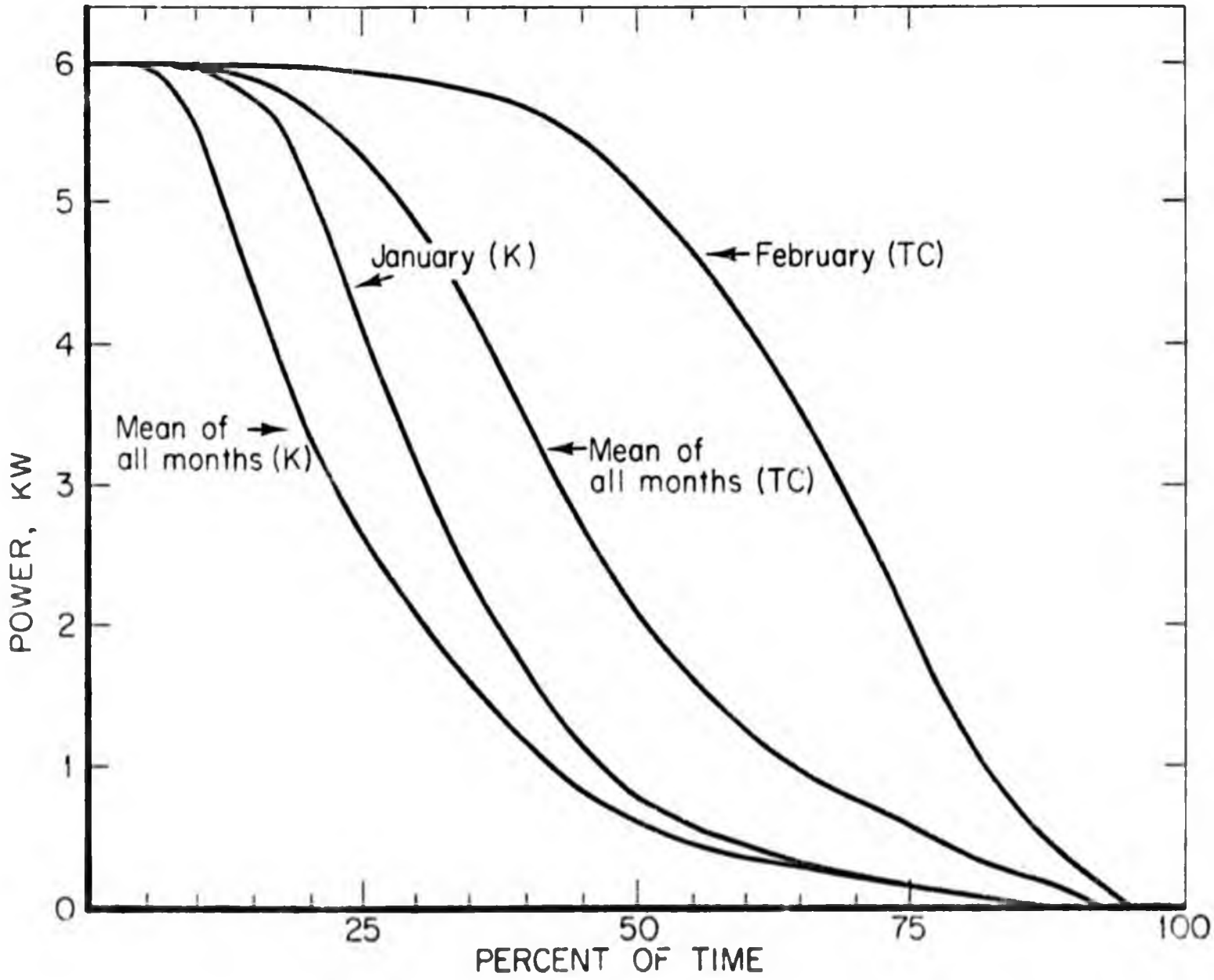


Figure 19: Monthly Power Productivity at Kotzebue (K) and Tin City (TC), Alaska, from a 6 KW Rated Windmill (areas under the curves give the energy produced each month or year).

in terms of power, not voltage, output. In the absence of such published voltage versus wind speed curves, it can be concluded that for resistive loads the voltage quickly drops below acceptable levels for lighting and other loads requiring voltage regulation, as wind speed drops. Furthermore, as in the case of wind-charged battery banks, the generator output is insufficient for battery charging, unless elaborate switching is used. In such cases, a considerable part of the total energy is available only if diverted to low-level energy reservoirs, such as hot water tanks.

Icing Problems and Blade Coating: The icing problem relates to tower integrity, blade strength (survival), and possible mechanical damage to the generator assembly through vibration. Putnam's (1948) experience with the large wind machine on Grandpa's Knob (Vermont) seemed to indicate that the best de-icing technique was to run (cautiously) the windmill during icing conditions, as blade flexure usually shed the ice. Putnam said:

> "Although ice several inches thick was observed on the stationary structure several times, the maximum thickness observed on the rotating stainless-steel turbine blades was about 1/2 inch thick on the leading edge. As this skin of ice began to peel off, the unit would begin to run rough and was usually shut down for this reason."

Experience suggests that major icing problems are also caused by the unequal thawing of blades that accumulated ice during shut-down periods. A start-up under these conditions results in excessive vibration which can destroy the main bearings very quickly.

Some information has been gained from interviews with users or observers of windmills in Alaska. At Barrow, for example, icing problems

were not encountered, and the most serious operational problem was charge limiting, and destructive overcharging of the batteries. In the Alaskan interior (Livengood), packed snow behind the blades acted as a brake, but blade icing was negligible.

Location, of course, is important. Australian mills were said to have iced up in tests in Australian mountains, but they encountered little trouble in Antarctica. It is said that Swiss mills used in the Alps do not ice up.

Usually blade protection from normal weather is obtained from paints, such as urethane. The French Aerowatt Company offers fluorocarbon coatings as a protection against heavy icing. We had also advocated this approach to the problem, but later indicated that teflon coatings are most probably not worthwhile (Wentink, 1976).

DC Versus AC Rural Systems and Inverters

We recognize that modern windmill systems are often engineered to yield controlled frequency AC over large power and wind speed ranges. However, in view of our experience in rural Alaska, it appears that DC outputs may still have a considerable role, especially where the wind-derived power is generated close to the user. DC is advantageous because:

(a) DC-AC inverters are expensive, and increase the capital investment in wind-powered systems by 30 to 70%.

(b) Incardescent lights, motors, heaters (for water, fish smoking, etc.) work well on DC.

(c) DC motors offer some advantages over AC motors, such as increased tolerance to changing line voltage, in variable

speed control, and in starting characteristics. Also, there are numerous inexpensive DC motors on the surplus market, especially in the 28 volt DC range.

(d) Batteries, when used in an energy reservoir, can supply large short-term loads, which are usually well beyond the safe surge capability time of many inverters.

Inverters used with battery bank storage in small WECS should include refinements, such as those available in the Soleq and modified Topaz units. The efficiency is often good (80 to 90%) at higher loads, but poor under light loads or on idle. For instance, 3-KW rated inverters often have a no-applied-load power consumption of about 200 watts (5 KWh/day). This can be significant during long calms. However, a load sensor, such as that in the Soleq unit, switches off the main inverter circuit on the DC side when there is no AC load; and power drain of the load sensor is negligible. Voltage controls to protect the battery bank and the inverter at low and high DC levels are also available and should be installed.

WECS Foundation Requirements

The foundation footings for towers need special attention in Alaska, due to break-up (thawing) and solifluction conditions. Tower vibration can also be a problem, in addition to high mechanical loads experienced during icing conditions or gales.

Environmental Impact

Currently, we do not foresee any major environmental problems associated with the use of wind power plants. However, there are two

potential problem areas that should be checked, involving the movements of migratory birds and possible disturbances in navigational radio aids.

Possible Bird Kills: The possibility of large bird kills by windmills during annual migrations should be further evaluated. However, shutdowns during these rather brief and predictable migration periods could be utilized for maintenance and repair, and this possibility does not appear to be a serious problem, with proper checks and planning.

Communications Interference: The reflection and diversion of radio waves from navigational aids by windmills could be troublesome near airports, runway approaches and repeater stations. All-metal blades, such as those on the Grumman Windstream 25 propeller (25 ft or 7.6 m disc diameter, 2 ft or 61 cm blade chord), could be potent reflectors and modulators and/or erroneous redirectors of navigational signals in critical locations. Even the wooden blades of the Elektro 6 KW (16.5 ft or 5 m disc, 6 in or 15 cm chord), if coated with metallic paint could be sources of reradiation. This effect would be accentuated by oscillations of the windmill in response to variation in wind direction.

Generator noise could also be a problem. All of these effects need further evaluation.

Weather Modification: Although the question of detrimental weather modification by large windmill farms has been raised repeatedly, the effects do not seem to be of serious concern.

Even though we were to install five 1 megawatt-rated mills per square mile at Cold Bay, where wind conditions limit the power extraction to about 3 megawatts/mile^2, both atmospheric horizontal mixing and

energy replenishment from the upper layers should quickly smooth out any energy unbalance. Also, of course, there is no particular need to crowd the machines in most areas that are candidates for windmill farms.

Mechanical Risk and Liability: A propeller fragment in free flight could cause serious damage. The Smith-Putnam windmill threw a 65-foot, 8-ton metal blade 750 feet, which landed in one piece on its tip (Putnam, 1948). When our Ugashik windmill was destroyed in 1975, the 8-foot wood blades were completely fragmented before they struck the ground. There was no wooden debris at the tower base, and fragments were found over a radius of 1/4 mile. No property or personal damage occurred in these cases, but the implications are obvious.

Wind Versus Fossil Fuel-Generated Power

Wentink (1976) has recently published a cost analysis of a small windpower installation at Ugashik, Alaska, including a 6 KW maximum rated windmill with controls, tower, small battery bank (25 KWh capacity at 50% discharge limit), and a 4 KW DC-AC inverter yielding 60 cycle/115V AC. Today, this plant could be delivered to Ugashik at a cost of approximately $10,000. Assuming free labor, and no interest payments, the installation cost would be about $1,670/KW.

These costs may seem excessive when first compared with the $450/KW installed capacity of large fossil or nuclear utility plants, and the target of $500/installed KW for projected new and larger windmills. If these costs are compared to those of diesel fuel-generated kilowatts in rural Alaska, however, wind power-generated electricity may be competitive over longer production periods.

Economic viability of a WECS is based on the energy cost in $/KWh, not the installed power cost in $/KW. If we apply the AVEC system-wide factor of 7.4 KWh/gal of fuel to Ugashik (where there is no central utility), and consider the present cost of fuel delivered to Ugashik (70¢/gal), the fuel production cost of electricity would be 9.5¢/KWh. The actual sale price by AVEC (elsewhere) is currently 22¢ to 12¢/KWh (Table 16).

If we derate the windmill system further because of wind conditions, so that the average system productivity is only 2 KW, power output would be 1460 KWh/month or 17520 KWh/year. Corresponding costs for electricity

TABLE 16

(Spring 1975)

RECENT RATES FOR ELECTRICAL ENERGY IN ALASKA

Location	Monthly use KWh range	Residential cost, ¢/KWh	
Boston Area (September '74)	First 15	12.9	$1.94 monthly min.
	Next 35	5.6	
	Next 50	3.5	
	Next 150	3.2	
	Next 200	2.9	
	Next 500	1.5	
Fairbanks (GVEA, 1975)[a]	First 150	8.0	$10 monthly min.
	Next 550	3.9	(Rates out of city
	Next 800	2.2	slightly higher)
	Over 1500	1.9	
Nome (1974)	Flat Rate	15.	
Kotzebue (1974)	First 50	21.5	
	Next 50	12.5	
	Next 400	11.0	
	Over 500	10.5	
AVEC[b] (same for all 47 villages 1974)	First 75	20.[c]	$15 monthly min.
	Next 225	15.	
	Next 700	12.	
	Over 1000	9.	
Bethel (1975)	First 50	12.	$5 monthly min.
	Next 200	10.	
	Over 250	7.5	
Cold Bay (1975)	First 50	11.5	$10 monthly min.
	Next 650	9.5	
	Over 700	7.5	

a: Golden Valley Electric Association

b: Alaska Village Electric Cooperative

c: For 1975 a 2 to 3¢ /KWh fuel surcharge is in effect. Surcharges are also present in most of the other rates.

derived from oil would be $139/month or $1664/year (at 9.5¢/KWh). Using actual AVEC customer prices to purchase 1460 KWh/month, we estimate consumer costs of $204/month and $2449/year.

So, for users presently using electricity at only 9.5¢/KWh, the small windmill system would establish a ratio of $9864/$1664/year, which would require 5.9 years to pay off through fuel oil savings. However, a typical "AVEC customer" could anticipate an earlier payoff in only 4.0 years.

We cannot assume that the cost of fuel oil in rural Alaska will remain at 70¢/gal (recall our earlier comments on current village fuel costs up to $2.15/gal). The control of domestic crude oil prices will make wind power even more attractive. The actual savings from the use of wind power will depend on variations in wind conditions and logistics. Although the initial cost of wind power plants will remain higher than those for diesel power plants for the foreseeable future, the soaring costs of fuel oil will permit rapid (4 to 6 years) payback of capital costs of wind plants through savings on fossil fuel costs alone.

Industrial Applications

One possible use of large scale wind power could be the production of electricity for processing other chemically-reactive materials or the production of reactive materials (e.g., compressors or hydrogen, respectively). Thus, wind could either drive pumps to transport hydrogen, or release hydrogen from water.

Ammonia Production: Consider one of the present methods for ammonia (NH_3) production. Purified natural gas (CH_4) is reacted with steam in

a catalytic reformer to eventually yield carbon monoxide (CO) and H_2. The overall reaction (some steps omitted) is:

$$CH_4 + H_2O \rightarrow CO + 3H_2.$$

Further processing, requiring compressors and other energy using steps, produces the reaction:

$$3H_2 + N_2 \rightarrow 2NH_3.$$

For WECS applications we would propose using H_2 from water and N_2 from the air.

The economics of scale dictate that modern NH_3 plants must operate at output levels above 600 tons NH_3/day; many plants actually produce above 1000 tons/day. We think that the case for smaller fertilizer plants (100 tons/day or less) should be re-examined, when the user is nearby and when wind and water are used rat er than natural gas.

A 1 MW rated (installed capacity) WECS in a suitable wind regime (50% power productivity) could generate enough hydrogen to produce 1.7 tons of NH_3/day. Thus, an ammonia plant of 100 tons/day capability (admittedly a small plant) would require a windmill complex of at least 59 MW for the necessary H_2 production. The capital cost (without interest, etc.) at $500/installed KW would be about $30,000,000, which is the same order of magnitude as the cost of a large modern transport aircraft.

At $100/ton or NH_3 and 300 days/year of plant operation, more than 10 years of production would be required to return the capital investment of the WECS. At present, this is economically unattractive. However, there are several other factors that need to be considered:

(1) the plant lifetime, (2) the need for fertilizer, (3) the price the market will bear in 1980-90, (4) the availability of natural gas and (5) the cost of gas if available. Also, the cost of the reformer in present NH_3 plants which use natural gas is large, and these troublesome units are often plagued with excessive down time. These reformers break down the natural gas (CH_4) to yield CO and H_2 and also consume significant gas to heat the reformer chambers and to produce steam. We have no firm information on the initial and maintenance costs for reformers, but we estimate that reformers may account for nearly 30% of total plant costs.

The long-term cost of natural gas is not clear. For estimating purposes, we note that the cost of CH_4 for a 100 ton/day NH_3 plant at $1/Mcf would be near $3,200/day (at ideal conversion), or $948,000 for a 300-day op rating year. Hence, replacing natural gas with water as a raw material would amount to a savings of about a million dollars each year which could be applied to the amortization of WECS costs.

Urea and Methanol Production: The production of urea and methanol require a carbon source, such as coal. Consider the Alaska Peninsula region, where coal and wind power are available, and where ice-free harbors exist. This coal could be combined locally with electrolytic hydrogen and then ammonia to yield urea (H_2NCONH_2) or methanol (CH_3OH), which are readily shippable chemicals.

In the case of methanol, there are two possible routes that deserve consideration. The first route would be to power the plant machinery with windmills, to produce so-called process gas ($CO+H_2$) from the reaction:

$$C + H_2O \rightarrow CO + H_2.$$

In further reaction, to produce:

$$2\ CO + 2\ H_2 \rightarrow CH_3OH + CO.$$

In this case there would be excess CO which could be burned later (perhaps yielding undesirable side products other than methanol). An alternate route would be to react the process gas with a stoichiometric amount of H_2 from wind-powered electrolysis units, as in the properly-catalyzed reaction:

$$CO + H_2 \rightarrow CH_3OH$$

Mining: The Alaskan mining industry is expected to grow during the next decade. The Lost River (Seward Peninsula) fluorite-tungsten-tin mine shows promise for future development, and the Seward Peninsula may also contain economically-important copper deposits. Tin City is already known for its wind potential. (The long-term yearly average wind speed at Tin City is 17.1 mph.)

Wind power could be exploited by the mining industry in several ways, including power (lighting, machine power, the generation of compressed air -- an attractive energy storage device), possible ore reduction with electrolytic hydrogen, and metal refining by electroplating. Windmills delivered to remote sites by helicopter might be economic at interior localities in the early phases of exploration development.

Agriculture

Alaska has relatively little agriculture due to high costs, late planting dates, low soil temperatures, and early frost, even though much of Alaska is blessed with long days during the summer growing season.

We do not think wind-derived electricity is best used for soil warming on a large scale. However, there seems to be real merit in

combining thermal spring water with wind-generated electricity for greenhouse operations. For example, greenhouses above the Arctic Circle near Nome could supply year-round green vegetables to Seward Peninsula consumers, and export products to other Alaskan communities.

Refrigeration

Another important Alaskan windmill application could be wind-powered refrigeration units. The preservation of meat and other foods is a major problem in many communities where harvesting occurs during warm weather. The Alaskan summers are long and warm, and sometimes hot, even above the Arctic Circle. Adequately-insulated wind-powered refrigerators would not require much, if any, electrical energy storage if frozen brine cold storage techniques were used.

Logistics

The primary energy source for modern agricultural food production remains the sun; however, man has learned that he can increase productivity of his food crops by modifying the plants' environment for maximum capture of sunlight. This environment modification is largely dependent upon the use of fossil fuels to supply the required technological materials such as machinery, plastics, pesticides and petroleum for heating, farming, drying, processing and transportation.

Work specialization, decrease of the agrarian society, better balanced nutrition, movement to northern climates and an increased consumption of products contributing to a quality of living all play a significant role in an increasing energy intensive food and fibre production, processing and distribution system.

Alaska, one-fifth the size of the 48 conterminous states, produces a relatively small amount of the agricultural products consumed by its own population. Alaska has large acreages of land suitable for potential agricultural production (cropland, rangeland and forest) (A.P.C., 1974). Many plants are well-adapted to Alaska's climates. During the Alaskan growing season, there are more hours of sunshine than during a comparable calendar period in the more southern latitudes (Dinkel, et al., 1976). The long summer days contribute to larger, tastier and more tender vegetables. Grains are often higher in protein content. In some cases, yields are even greater than in the best agricultural areas of the United States.

Increasing Alaskan and world population will inevitably require utilization of northern areas and development of new methods for food production in these northern areas. Development of various natural resources (particularly in the petroleum industry) indicate future social and economic development of Alaska. ANCSA, the Native Land Claims Settlement, the Rural Development Act of 1972, and the continuing industrialization of Alaska's cities will stimulate development of the State. The world situation that puts agricultural products on the world market will certainly create expanding demand for United States agricultural products and inhibit the development of a United States surplus.

Alaska is at the end of the nation's food system and would suffer the most direct and immediate impact from natural disasters such as prolonged droughts, floods, virulent disease among plants and animals, extreme climatic change and unpredictable weather in the continental United States.

Fuel price increases will undoubtedly have a great effect on the cost of foods shipped to Alaska and on the cost of producing these foods in the more southern latitudes. It is not a wise use of the nation's Alaska produced petroleum to ship it to southern latitudes to produce foods that will later be shipped back to Alaska if we can produce the foods here for a nearly similar energy use on the farm. Alaskan food production will save the 9-15% energy consumption required to transport the oil to the southern agricultural areas and also save the energy now required to ship the foods to Alaska.

Much of the energy required to produce the intensively cultured crops in Alaska is in the form of heat requirements. This energy is

used to heat greenhouses and animal shelters, to warm soils, and to dry livestock feed. The wise use of Alaska's wind, geothermal, hydroelectric and waste heat energy sources for agricultural production in Alaska will reduce the nation's use of fossil fuels. This Alaska production will also increase the nation's agricultural land base which is rapidly dwindling in the southern states.

Controlled Environment Systems

Although vegetables are grown during the relatively short summer growing season in many rural areas and communities, only a very small portion of the summer crop can be preserved for consumption during the other months of the year. The high cost of fuel and electricity has prohibited large-scale greenhouse operations, and hydroponic gardening has not yet been attempted in the rural areas for the same reasons.

Controlled environment experiments at the University of Arizona's Environmental Research Laboratory, and the Phyto-Engineering Laboratory of the Agricultural Research Service at Beltsville, Maryland, have demonstrated that certain plants are capable of growing up to 10 to 50 times faster under controlled environments than by conventional growing means, and that the yields in tons per acre can be greatly increased.

Accelerated growth rates and vastly increased yields per unit acre are being developed through the use of higher CO_2 levels, controlled humidity and temperature, artificial lighting and the supply of the proper nutrients through automatic systems.

Hydroponically-grown and sub-irrigation grown lettuce, tomatoes and cucumbers already bring premium prices because of their quality and

year-round availability. The yields of such premium produce would be greater under ideal controlled environment conditions. Premium hydroponically-grown tomatoes are now being grown and marketed in Anchorage, with considerable success, by Mosesian Farms.

Recent experiments conducted by Donald H. Dinkel of the Institute of Agricultural Science, University of Alaska, on the Fairbanks campus, have shown that controlled environment facilities have excellent potential for producing year-round salad vegetable crops in northern Alaska (Dinkel, 1974).

Thermal springs are uniquely valuable energy sources for controlled environment experiments, as they can provide hot water, warm and permafrost-free ground, and small amounts of electricity from a common energy source, at very little expense.

Open Plot and Controlled Environment Gardening on Geothermally-Heated Ground

Some Alaskan thermal springs are surrounded by rather large areas of warm ground, which remain frost-free throughout the year. Perennially warm ground around Manley, Chena and Pilgrim Springs has been used for vegetable crop gardening since the arrival of the first white settlers. The Pilgrim garden plots produced vegetables in commercial quantities for miners during the Nome gold rush period; and the Manley Hot Springs commercial vegetable crops have continued from the early 1900's to the present day ... as exemplified by Mr. Charles Dart's presently successful greenhouse operation (to be described in more detail in the next section).

Warm frost-free soil is of great potential value in the arctic environment and should be utilized in a total energy applications system. A soil temperature survey, similar to that conducted by N. Biggar (1973) at Chena Hot Springs (Figure 20), can determine those areas which are optimum for vegetable crops.

Controlled environment enclosures could be located on selected plots of hot ground, adjacent to thermal springs, and require no other source of heat to maintain adequate soil and ambient air temperatures.

Growing seasons could be lengthened and plant maturation time could be accelerated through the use of garden plots which are heated by hot springs water circulated through networks of plastic pipe, buried at shallow depths in the soil.

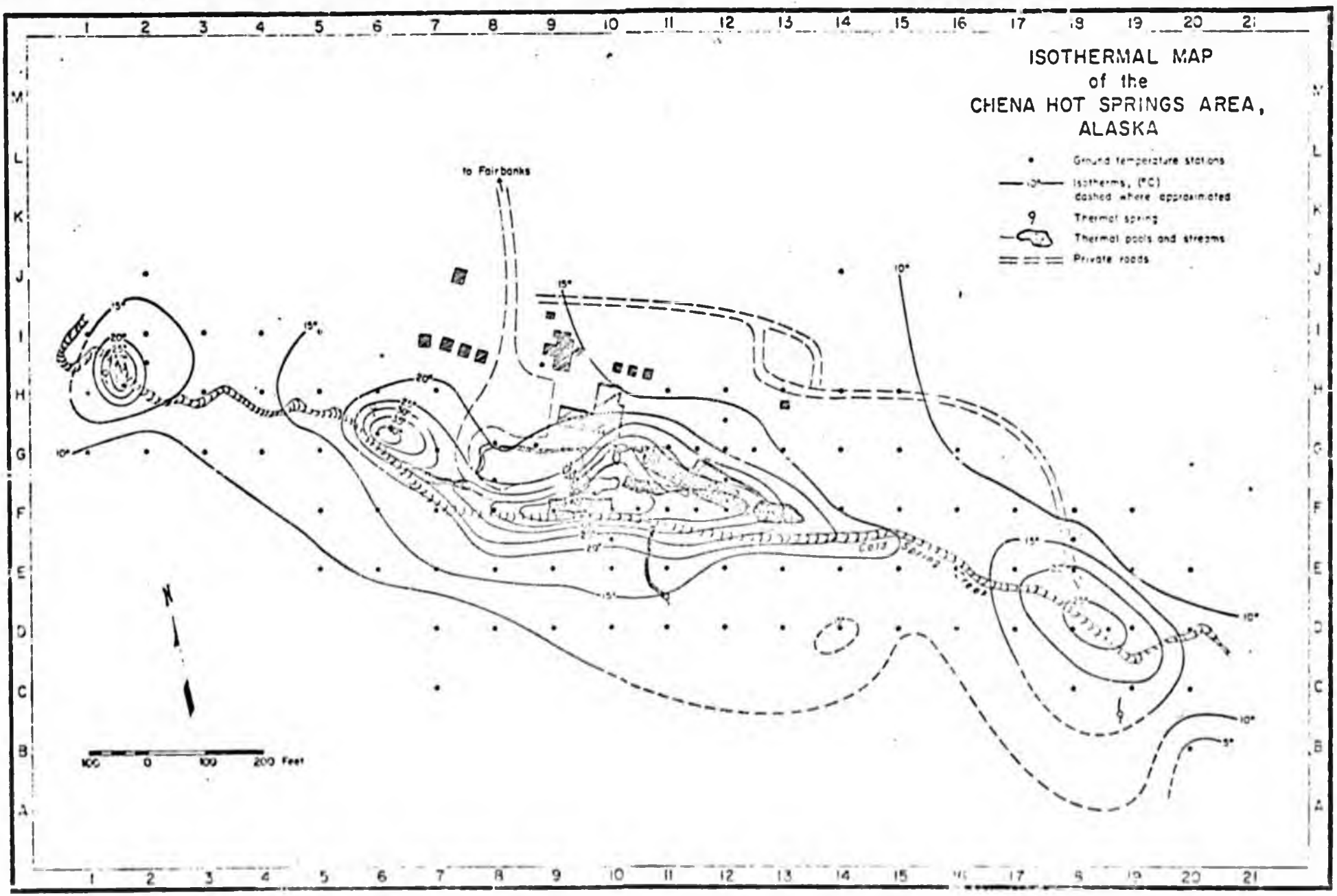


Figure 20: Isothermal map of s tl temperatures in the Chena Hot Springs area (Biggar, 1973).

Opportunities for Aquaculture

Salmonid fishes offer the greatest promise for tangible benefits from aquaculture in Alaska when biological, technological, economic, and institutional problems are taken into account. The list of salmonids suited for aquaculture includes salmon, trout, char and grayling. However, ocean ranching of Pacific salmon will most likely afford the greatest potential for an economically-viable aquaculture industry.

Catch records reveal that Pacific salmon have declined precipitously in Alaska. For many years Alaska contributed about two-thirds of the total harvest of North American salmon, but Alaska's contribution is now less than one-half of the total (Figure 21). Catches in the Pacific Northwest and Canada have not declined even though environmental changes wrought by man have had adverse effects on natural stocks. These adverse effects have been compensated to a large extent by hatcheries, spawning channels and other aquaculture systems which today produce 450 million or more juvenile salmon for release into marine nursery waters.

Salmon Ocean Ranching

The potential gain in efficiency of ocean ranching over natural reproduction can be illustrated by a hypothetical example where chum salmon are released into the ocean as unfed fry. The probable fates of progeny from a pair of chum adults spawning naturally and spawned artificially in a hatchery are compared below:

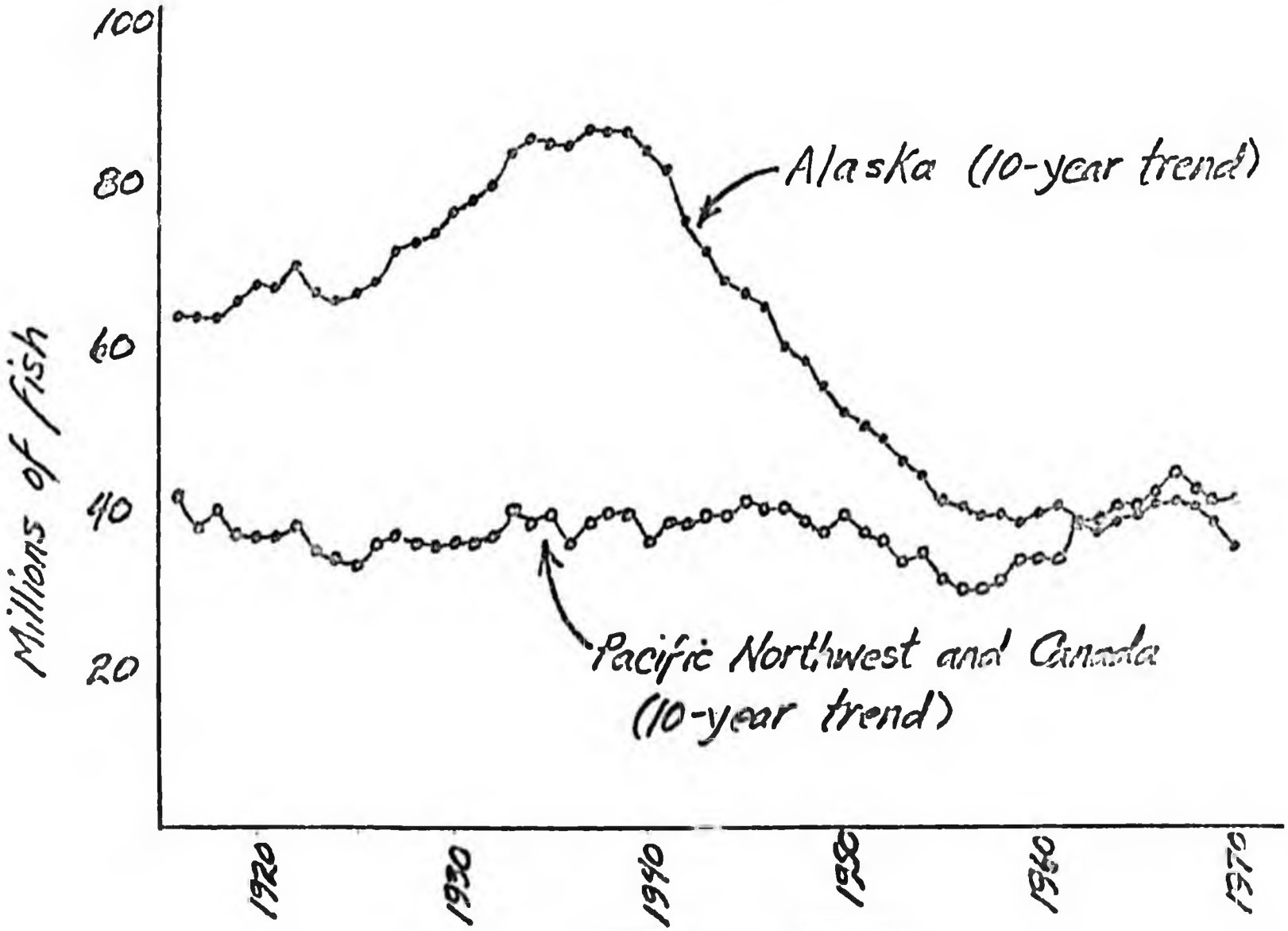


Figure 21: Trends of harvest of Pacific salmon on the Pacific Coast of North America.

Natural spawning	Hatchery
2 spawners	2 spawners
↓	↓
3,000 eggs	3,000 eggs
↓	↓
(10% survival)	(80% survival)
↓	↓
300 fry	2,400 fry
↓	↓
(2% survival)	(2% survival)
↓	↓
6 adults	48 adults
(2 spawners)	(2 spawners)
(4 harvested)	(46 harvested)

Recent experience with ocean ranching confirms that artificial propagation greatly increases the efficiency of production of salmon. The increase is not always 11-fold, as the example suggests, but it is substantial.

Perhaps the most successful ocean ranching program today is with chum salmon in Japan, where more than 500 million juvenile salmon are released annually and contribute about 10 million adult salmon to the harvest. Efforts are being made in Japan to double this production on Hokkaido Island, and the annual harvest of hatchery chum on Hokkaido has surpassed the harvest of wild chum in Alaska (Figure 22). Ocean ranching of chum and other salmon species is also undergoing rapid growth in the USSR and Canada.

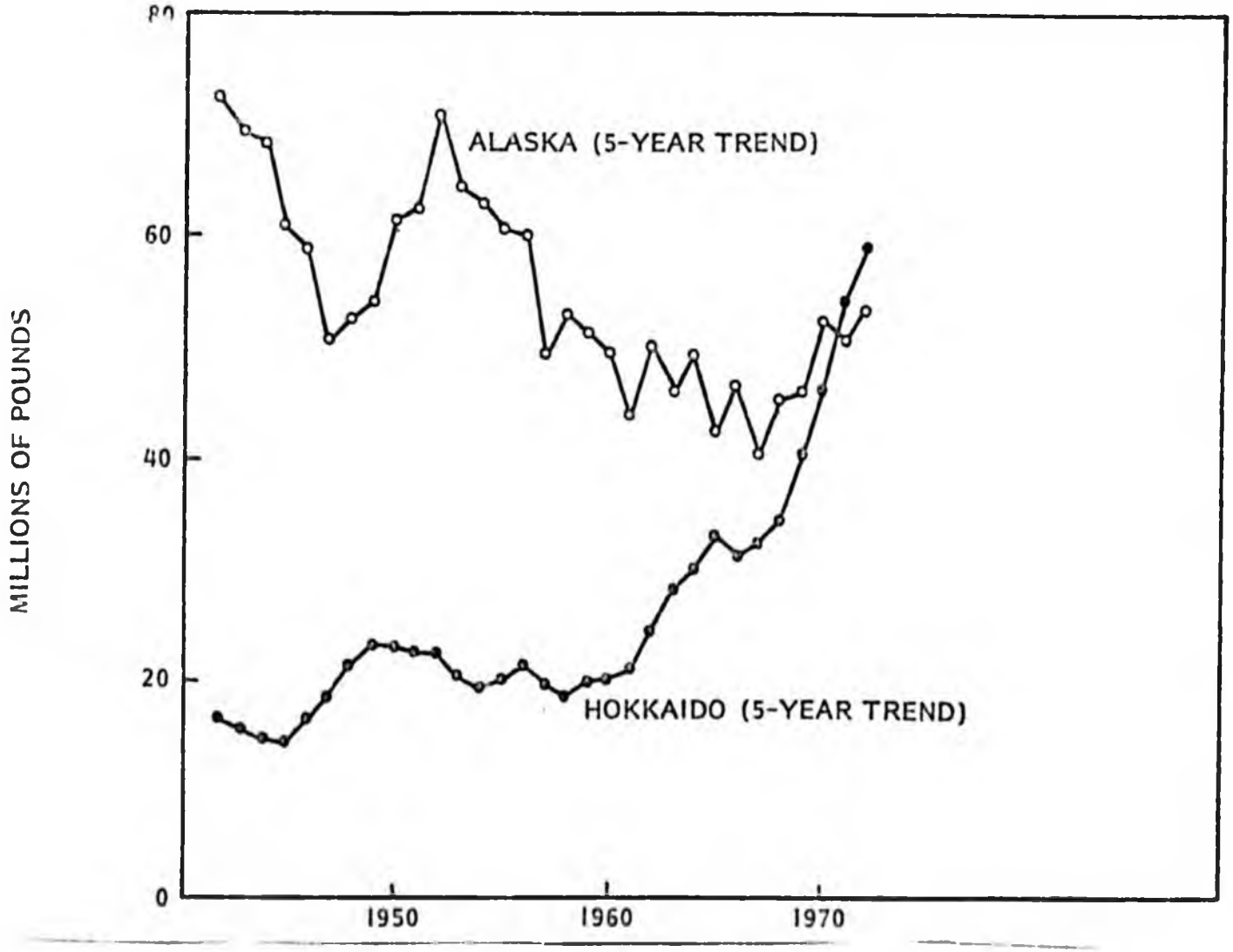


Figure 22: Trend of production of hatchery chum salmon on Hokkaido Island and wild chum salmon in Alaska.

Uses of Warm Water in Ocean Ranching

The operation of facilities in Alaska for salmon ocean ranching is complicated in many cases by severe freezing conditions in winter. Salmon spawn in summer and autumn and the fry emerge in spring when seasonal increases in natural food production occur in nursery waters. Avoidance of freezing requires that water used for incubation systems either must contain adequate heat or heat must be added. The artificial addition of heat requires expensive equipment and facilities, and places a heavy demand on fossil fuels. This can be avoided by using sources of fresh water where temperatures remain naturally above freezing during winter.

Lakes and geothermal springs are attractive sources for hatchery water supplies in Alaska since they are natural reservoirs for warm water in winter. Several hatchery projects now in operation or in planning in Alaska rely on lakes for water in winter. The use of geothermal water sources should also be evaluated.

Use of warm water for salmon ocean ranching can produce these effects:

1. Accelerated early development will contribute to early fry emergence.
2. Early fry emergence may require short-term rearing on artificial diets to insure that the time of release of juvenile salmon coincides with seasonal availability of natural food. (The Japanese follow this practice.)
3. Where juvenile salmon are raised to smolt size before release, early fry emergence should shorten the period of rearing, resulting in the release of smolts at age I (possibly at age 0) rather than at age II or III, which is common for wild fish.

Proposed Program

Two things must be done before potential benefits of geothermal water in salmon ocean ranching can be evaluated in Alaska:

1. Sources of low-grade geothermal water which are suitable for salmon aquaculture need to be inventoried.
2. Feasibility of using geothermal water in ocean ranching needs to be evaluated with five species of Pacific salmon.

Inventory of Geothermal Waters: Promising sources of geothermal water should be identified and cataloged on a state-wide basis. Quantity and quality (temperature, dissolved solids, gas content, etc.) need to be determined. Relatively cold (55°F and lower) geothermal waters of suitable quality might be used directly as a medium for raising salmon. Relatively warm (above 55°F) geothermal water of suitable quality would probably be diluted with colder water, and the availability of cold water would need to be considered. Where relatively warm geothermal water contains dissolved substances which are toxic to salmon, the use of heat exchange systems to warm cold water should be considered. The total volume of water available from a given source for raising salmon should probably be at least 5 cfs (2,250 gpm) for commercial-scale aquaculture.

Feasibility of Using Thermal Waters: The use of geothermal water in salmon ocean ranching should be studied at one or more locations in Alaska with several species of salmon. Two locations are discussed here and should be considered for possible feasibility studies. They are Gulkana springs (near Paxson) in the Copper River drainage and springs in the Fort Glenn area of Umnak Island (in the Aleutian Islands).

Umnak Island is remote and is served once a week by Reeve Aleutian Airlines. The Fort Glenn area possesses a complex of roads and airfields which were constructed in World War II and are still useable. A cattle ranch, with a functional cold storage plant, now operates on the former military reservation. A network of spring-fed streams which individually deliver more than 5 cfs of waterflow, arise from lava beds. The topography of the area lends itself to the construction of low-cost hatchery facilities.

An important feature of Umnak Island is its location near the geographic center of the North Pacific Ocean-Bering Sea nursery ground of salmon from North American and Asian streams and lakes. Pink and chum salmon would be the primary target species on Umnak Island. Sockeye and coho salmon would be secondary target species.

Hatcheries at Gulkana and Umnak springs can be developed with gravity feed water delivery systems. Demand for energy from fossil fuels would be limited to illumination and heating of modest support facilities. Supplementary power for a demonstration hatchery on Umnak could potentially be obtained from wind-driven generators. Hatcheries at both locations could be designed to operate without a full-time attendant.

Total cost of a feasibility study at Gulkana and Umnak springs is estimated to be about $500,000 for each location. This amount would include construction of facilities and operations for 5 years. The estimated costs are based on:

- Planning and site evaluation	$ 50,000
- Construction (10 million egg hatchery)	200,000
- Operation (5 years @ $50,000/yr.)	250,000
Total	$500,000

A hatchery facility at Gulkana springs would produce mostly sockeye fry to supplement recruitment of wild fry into Summit and Paxson Lakes. The present levels of fry recruitment to these lake nursery areas should first be evaluated to determine if such a project might be warranted.

A demonstration hatchery facility at Gulkana springs might also be used to raise chinook and coho fingerling from Copper River stocks to boost recruitment of these species at selected locations within the Copper River drainage.

A hatchery facility on Umnak Island would produce primarily pink and chum fry for release into the ocean. Some sockeye and/or coho fry might be produced for stocking lakes. A successful demonstration project at one site would most likely lead to larger projects on Umnak, other Aleutian Islands, and the outer Alaska Peninsula by the Aleut Corporation and possibly other fishery interests. The salmon fisheries of the Aleutian area are very depressed (Figure 23), and the emergence of a hatchery program capable of producing 500 million pink and chum fry has the potential of contributing at least $10 million annually to the economy of this region.

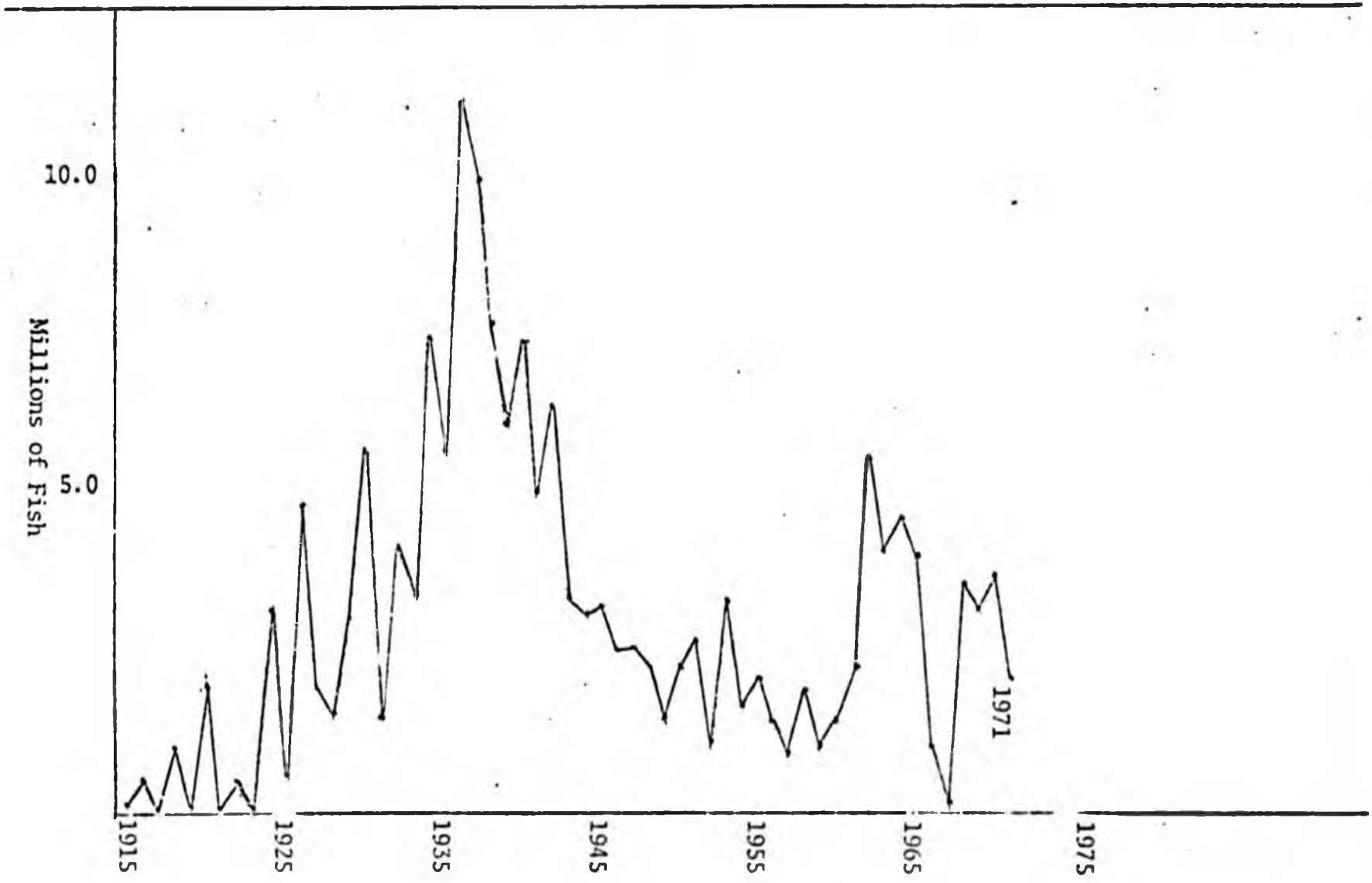


Figure 23: Annual catch of pink salmon in the Alaska Peninsula and Aleutian Island area.

CONCLUSIONS AND RECOMMENDATIONS

Geothermal Potential and Applications

Classification of Geothermal Resources: Although the assessment of Alaska's geothermal resources is in its infancy, the presence of over 40 active volcanoes and many thermal springs suggests that Alaska has geothermal energy resources similar to those which occur in other regions of the world, including:

1. subsurface steam reservoirs
2. subsurface hot water reservoirs (including geopressured reservoirs)
3. thermal springs (surface hot water)
4. subsurface geothermal anomalies (hot-dry rock)
5. volcano-related systems, including hot-dry rock and potential "magma tap" applications
6. deep drill hole applications in areas underlain by a normal geothermal gradient (30°C/kilometer).

Geothermal Resources Applied to Alaskan Needs: Although the generation of electricity has received more public attention than other uses of geothermal energy, there are many non-electrical applications of geothermal resources which may also be important to Alaska, including:

1. space heating and waste disposal
2. aquaculture (including fish hatchery and farming operations)
3. gardening, farming and greenhouse applications
4. melting of snow on roads and airfields
5. manufacturing
6. extraction of valuable heavy metals and salts from brines
7. potable water

Convective Systems: Currently, our optimism toward the geothermal potential of Alaska is based on the Alaskan segment of the circum-Pacific volcanic belt, and the possibilities offered by thermal spring waters in several districts. To date, however, geothermometry studies on thermal spring waters by the U. S. Geological Survey have not yet detected any vapor-dominated reservoir temperatures -- and only two thermal spring systems appear to have reservoir temperatures greater than 180°C -- which is the currently accepted temperature minimum for steam turbine systems utilizing the present technology (see page 47).

Volcano-related Systems: U. S. Geological Survey investigations (Miller and Barnes, in press; Smith and Shaw, 1975) indicate that several silicic volcanic fields, including the Wrangell Mountains, deserve further exploration as potential geothermal targets (see Figure 6 and Table 5). To date, however, no test holes have been drilled in any of these fields, and no heat flow or thermal gradient measurements have been made.

The energy potential of volcanoes is tremendous (Table 6). The amount of energy that is dissipated by uncontrolled and unuseable, worldwide volcanic eruptions each year is of mind-boggling order in terms of today's energy crunch. For example, the 1883 eruption of Krakatoa Volcano released about 10^{25} ergs of energy -- roughly equivalent to the total power consumption in the United States in the year 1970. The energy expended in the 1952 eruption of Kilauea Volcano would have been worth $350 million if it could have been converted to electricity.

To date, significant geothermal power production has been from the so-called vapor-dominated geothermal reservoirs. If a technology could be developed to extract electricity from magma reservoirs

or from induced steam systems in volcanic piles, huge and previously unobtainable energy resources would become available.

Heat Flow and Thermal Gradient Measurements: High heat flow and/or geothermal gradients are th characteristic signatures of economically-significant geothermal anomalies. Although high heat flow values can be obtained on many active Alaskan volcanoes, published Alaskan heat flow determinations taken from drill holes have not yet exceeded 2.6 hfu (hfu = heat flow units). Based on the worldwide average of 1.5 hfu, and the association of heat flow values of 4 hfu and above with meaningful geothermal anomalies, we have not yet located any geothermal targets in Alaska by means of high heat flow, other than volcanic vents.

This does not mean that there are no zones of high heat flow in Alaska, as no more than 20 reliable heat flow determinations have been extracted from Alaskan drill holes; and considering the vast area of Alaska, little can be concluded from these initial determinations other than the need for more data.

To date there have been no known exploratory geothermal holes drilled in Alaska, other than a shallow (86 ft.) hole drilled in the lava dome (destroyed during the eruption of January 1976) near the summit of Augustine Volcano by the Geophysical Institute, University of Alaska (J. Kienle, et al., unpublished research).

Total Energy Utilization of Thermal Springs: Alaska has a large number of thermal springs which constitute potential energy sources other than geothermal subsurface steam reservoirs. The recent development of hot-water generating systems offers promise for the production of

electricity from thermal spring water (60°C) with outflow water temperatures which are high enough for second-stage energy extraction for space heating and agricultural application.

The exploitation of an energy source which could generate heat and power at less cost and develop the on-site production of vegetables through hydroponic farming and greenhouse operations would increase the economic stability and standard of living of remote resident populations.

The Geophysical Institute is now studying the total energy potential of three thermal springs in northern Alaska as possible sites for energy conversion experiments and pilot plant studies. Priority targets include Manley Hot Springs in the Tolovana District, and Clear Creek, Pilgrim and Serpentine Hot Springs on the Seward Peninsula (see Appendix E).

Rural Geothermal Priorities and the Total Energy Concept

High priority should be given to the development of geothermal resources in rural Alaska, rather than the cities. In addition to the previously-mentioned economic constraints, none of the presently recognized geothermal targets are located in the immediate vicinity of the cities. There are, however, potential geothermal resources which are located in or closely adjacent to villages in the outlying areas. The need is also most acute in the rural areas, and the development of any resource which can reduce the dependence on expensive fossil fuels and/or help establish local industry on any scale would be high desirable.

Electric Versus Non-Electric Applications

In our discussion of Alaskan economics, we pointed out the difference between Alaskan needs and priorities and those of the other 49 states.

It follows that the utilization and economic potential of geothermal energy resources will be based on special criteria related to Alaskan problems and needs. Although non-electric applications of Alaskan geothermal resources deserve highest priority, it may also be advisable to generate small amounts of electricity in some rural settings. In many areas of rural Alaska, electricity is not continuously available in any form at the present time, and it would not be sensible to develop a geothermal resource exclusively for non-electric applications under such conditions. Secondly, the amount of electricity under consideration ranges from 2 to 250 KW -- quantities which are substantially below the levels considered feasible for large-scale developments in other parts of the nation. Since economic competition with other forms of power generation does not exist in many parts of rural Alaska, it makes good sense to consider generating small quantities of electricity by geothermal means wherever possible.

Sources of State Funding

We have reached a point in time when many rural areas could benefit greatly from geothermal resources, if we begin now to develop a technology which is compatible with environmental considerations and the cultural needs of the people. Capital to invest in such an enterprise may be available from two resources. The Alaska Native Claims Act of 1971 has given the native people the economic leverage to undertake development of geothermal energy. However, these monies are restricted by act of Congress to profit-making ventures by the regional and village corporations; and research and development expenditures on geothermal resources are not permissible. The State of Alaska has oil and gas revenues which could be used to develop geothermal resources in rural areas.

Research and pilot plant experiments must be initiated as soon as possible to insure that the technology is ready when the funds become available.

Present State of Geothermal Research and Development

Development: Currently, geothermal development by the private sector in Alaska has been restricted to hot spring resort activities and one large greenhouse operation at Manley Hot Springs.

Several Alaskan native regional and village corporations have received exploration proposals from private consultants and corporations during the last year, but to our knowledge none of these proposals and/or programs has progressed to the field stage.

Research: To date, most of the research on Alaskan geothermal resources has been done by the U. S. Geological Survey and the Geophysical Institute, University of Alaska. The U. S. Geological Survey's contributions date back to the pioneering work of Waring (1917) on Alaskan thermal springs. More recently (since 1971), the U. S. Geological Survey has been conducting a helicopter-supported assessment of Alaskan geothermal resources, with special attention devoted to the Alaskan volcanoes and thermal springs. Under the direction of T. Miller, this program has concentrated on the geothermometry, chemistry and geologic setting of the mal springs, and the age, petrology and setting of young (Tertiary and Quaternary) volcanic fields. With the exception of a gravity study conducted in the Wrangells, this program has not involved geophysical surveys.

The work done by T. Miller, I. Barnes and R. Smith was essential to the data presented on the energy potential of Alaskan geothermal resources, as recently published in U.S. Geological Survey Circular No. 726, "Assessment of Geothermal Resources of the United States - 1975."

The Regional Geophysics Branch of the U.S. Geological Survey (A. Lachenbruch and J. Sass) has been conducting a "target of opportunity" heat flow program in Alaska by capitalizing on available drill holes, when possible, which were drilled for other purposes. Funding for this program has been minimal, however, and no geothermal holes have been drilled by the U. S. Geological Survey in Alaska.

The Geophysical Institute, University of Alaska, initiated its geothermal program in 1971, with a revision of Waring's map of Alaskan thermal springs (Biggar, 1971). Biggar (1973) conducted a geophysical and geological study of Chena Hot Springs, and Forbes, et al. (1975) located a possible geothermal reservoir beneath Pilgrim Hot Springs with geophysical methods in 1974.

Forbes, et al. (1975) recently completed a feasibility and planning study on the utilization of geothermal energy resources in rural Alaskan communities under the provisions of a contract with the Atomic Energy Commission (AEC); and at present, Forbes, et al. are doing research on fossil versus present thermal gradients in deep drill holes, with the assistance of a research grant from ERDA.

J. Kienle, et al. (Geophysical Institute) are presently conducting an investigation of the magma tap potential of Augustine Volcano, with the aid of an ERDA research grant.

A Proposed Geothermal Research and Development Program

We believe that there is an urgent need for an integrated state, federal and private sector geothermal research and development program in Alaska.

Optimally, this program should be composed of cooperative projects involving the U. S. Geological Survey, the Energy Research and Development Administration, the State of Alaska and the private sector.

In our opinion, the program should reflect the following guidelines:

1. Heat is a precious commodity in the Alaska subarctic and arctic. Although geothermally-generated electricity may not be competitive with that generated by mine-mouth, hydroelectric and natural gas power plants for transmission to major population centers, hot water and vapor-dominated geothermal systems, where available, could improve the standard of living and economic viability of village populations.

2. Thermal springs have great promise as total energy systems in remote Alaskan villages. Applications engineering studies and pilot plants should explore this potential.

3. Volcanoes are confirmed targets. High priority should be given to the development of a technology which will extract useful energy from Alaskan volcanoes.

4. A systematic heat flow and thermal gradient measuring program should be initiated, involving the required cooperation of industry, and a federally-funded cooperative drilling program in Alaska.

5. Vast areas of Alaska are mantled by vegetation, alluvium and permafrost. Remote sensing techniques, including ground conductivity, infrared, gas detection and other methods should be investigated as possible geothermal exploration tools.

Three proposed geothermal research projects, concentrating on total energy utilization of selected Alaskan thermal springs are contained in Appendices E-3, E-4 and E-5.

Wind Power Potential and Applications

Potential: There are large areas of Alaska that appear to be uniquely favorable for wind power applications. The most promising areas are located on the coastal plains in the arctic, northwest (including Seward Peninsula), and southwest (Yukon-Kuskokwim Delta and Bristol Bay areas) regions. These areas experience strong, persistent winds which have their highest potential in winter, when energy requirements are the largest. Wind extremes are probably less in these areas than in coastal areas in Southeast Alaska, the Gulf of Alaska and the Aleutians. These "favorable" areas include many villages and a few small cities which are now totally dependent on fossil fuels.

Generally, interior Alaskan villages are less favorable sites for wind power applications due to a lack of suitable winds in the winter months.

State of Technology: Commercially-available wind power units up to 2 or 3 KW, including conventional storage batteries, are well proved. Initial costs and performance characteristics are fairly well known, but there are differences in opinion on long-term costs, including maintenance and repair.

Large wind power units are not yet readily available, and energy storage problems will become more serious when the larger units become available.

Present federal and industrial research and development programs include the construction of prototype windmills up to 100 KW capacity, and it seems likely that wind power units in this size range may be available within a few years. Longer-term research and development goals envision even larger machines, and it is possible that a 1000 MW prototype may be constructed within a few years. Windmill technology will probably progress more rapidly than energy storage technology for the next several years.

Applications: The wind power potential of Alaska is high. The annual power potential averaged for Alaska is of the order of 3400 MW, assuming that 1/1000 of the available kinetic energy in the first 1100 meters (3600 ft.) of the atmosphere could be extracted. The wind power potential of most coastal areas is assured; in the interior, however, the potential is low and variable with location.

The best and most immediate application of windmills would be in the electrification of many small communities, especially in coastal Alaska. Fuel oil conservation and an improvement in the quality of life are implicit to this application. Windmills (individual or clustered) in the 10 to 50 KW range would have considerable impact in the villages. A major problem in windmill utilization in rural Alaska is that those who could profit most, in a social sense, can least afford the capital investment. Demonstration projects are clearly needed; state and federal agencies should support and initiate early tests and demonstrations to educate potential users.

Longer-term applications will depend on the availability of large wind machines, producing 100 KW-rated (or above) output. The first Alaskan users would probably be privately-owned central utilities

in intermediate-size communities (1000 or so population), and the seafood canning industry. The industrial production of methanol, ammonia and urea with windmill-produced power is feasible, but at present it is uneconomical. The economics of mass-produced large wind machines will be better understood in the near future.

While windmills rated at 100 KW or above offer the economy of scale, more emphasis should be placed on the development of reliable units rated in the 10- to 30-KW range, especially for rural applications. Logistics considerations, installation problems, and the need for redundancy indicate that the "windmill farm" (WECS complex) concept is superior to that based on one large unit, at least in Alaska.

We expect engineering improvements in wind-generating units to be ahead of those in energy storage systems, for many years. Therefore, we recommend the early study and field demonstration of hybrid (wind-oil) energy systems, using existing small and medium (up to few hundred KW) diesel-fueled generators that are fairly common in Alaskan communities. Emphasis in these hybrid systems must be on automatic and reliable switching.

Our wind surveys are necessarily incomplete, and none of the locations considered from existing data have been surveyed at specific sites selected for wind power purposes. Yearly mean wind speeds range from about 18.3 to 7.0 knots (excepting several interior Alaska locations known for lack of wind). Topographic shielding is often present where the lower means prevail.

A useful numerical factor arising from our analysis of Alaskan wind data is the power factor (pf) which describes the potential use of the maximum installed power capability. While our surveys confirm the

generally-held view that Alaska locations can be very windy, the power factors of available windmills dictate careful site selection and the use of tall towers (cost permitting). Only machines like the very expensive Aerowatt seem to have merit at average wind speeds near 10 mph (pf=0.39); others have pf of 0.13 to 0.19 at that $\bar{V}$. At $\bar{V}$ = 20 mph the computed pf of the Aerowatt, Elektro and Jacobs-like windmills treated in this report are 0.80, 0.53 and 0.62, respectively.

An Alaskan test center should be established to run various WECS in the same weather regime, to confirm these calculations and determine mechanical integrity under subarctic and arctic conditions. We recommend Cold Bay or Ft. Greely for this purpose.

Many small cities and villages are promising candidates for windmills, in terms of winds and need. For initial large-scale test installations, we recommend Nelson Lagoon, Cold Bay and Kotzebue. These were selected because of wind conditions, diversity of climate, relative ease of access for freight and personnel, and the degree of local interest.

A major windmill design effort should be made to minimize the wind speed necessary for achievement of the generator-rated output, and on the reduction of the weight and size of the generator (to avoid overrating). Heavy emphasis also should be placed on automatic controls for this purpose. Designers should specify the voltage output of their wind systems versus wind speed, as well as power output, and decisions on energy storage devices (active loads, batteries, heat sinks, etc.).

Gusting may cause windmill blade problems that are more severe in Alaska than in lower latitude locations. Generator braking due

to ice build-up behind the blades may actually be greater problem than blade-icing. Slow speed operation during icing, or careful thawing of iced blades before start-up, are important procedures. However, much more study in different parts of Alaska needs to be done to better define these problems.

The cycle of Alaskan winds is usually in phase with the cyclic power requirements of Alaskan communities. Thus, the strongest winds occur during the colder and darker months. This is the reverse of the situation encountered with northern hydroelectric power sources. In that case, water flow is often minimal in the winter and early spring, before snow melting and river thawing.

For many Alaskan coastal sites the average decrease in the mean wind speed from the maximum monthly mean to the minimum monthly mean is about 30%. Because of the exponential velocity dependence of the power output of a windmill, this 30% amounts to a factor of 2 to 3 decrease in the average monthly power output of an idealized windmill. Factors of this order must be considered in setting the maximum power rating of a windmill (for winter use) or in estimating the summer (in coastal Alaska) yield of a windmill and storage system designed for winter loads. Cold Bay is a favorable exception to the large swing (16% versus 30% above).

Electricity: There are several possible levels of wind power application in Alaska which depend largely on the level of technology and the relative costs of the wind generators.

1. Presently available small capacity wind generators are suitable for some remote area applications when energy and power requirements are small. This might include single windmill units for very small loads or groups of units, where requirements are on the order of 10 to 20 KW.

2. The prospect that windmills up to about 100 KW in size may be available soon is of particular interest for many remote areas in Alaska which have power requirements in the 50 to several hundred KW range. It is not difficult to visualize a ready market for several hundred wind generators in the 50 to 100 KW range -- when proved machines become available at reasonable cost.

3. The application of wind power to the larger power systems will not be significant until generators in the 1000 KW size range and larger become available.

4. The State's electric utility systems offer some unusual opportunities for testing the wind power applications. Integration of windmills with other types of power generators in an electric system could avoid all energy storage problems during no-wind periods; any energy produced from windmills in such a system would provide a direct fuel savings. The very high fuel cost for remote cities and villages in Alaska suggests potential benefits from wind power applications would be very large.

Wind Power Demonstration Projects

Preliminary proposals for wind power demonstrations at selected Alaskan sites (Umnak Island, Cold Bay, Kotzebue and Nelson Lagoon) are contained in Appendix F.

Institutional Considerations

The Alaska State Energy Office and Statewide Coordination of Geothermal Activities: In coordination with the federal and private efforts in the geothermal and wind power field, the Alaska State Energy Office hopes to aggressively pursue worthwhile energy research, development and demonstration projects in areas of concern to Alaska. The wind power and geothermal research and development requirements and applications addressed in this report will receive very high priority. There has not been a traditional coordinating point in the State of Alaska for geothermal and wind power affairs and activities. The Alaska Energy Office is a logical vehicle for the state-wide administrative coordination of geothermal and wind affairs. This office could also improve liaison between state and federal agencies. The Alaska Energy Office should also serve as the state center for the dissemination of geothermal and wind power information.

State of Alaska Geological and Geophysical Survey: The State of Alaska Geological and Geophysical Survey should become increasingly involved in state geothermal affairs and be assigned an active role in state geothermal research and development activities.

State Versus Federal Funding: To date, the State of Alaska's investment in geothermal and wind power resources has been confined to work by the Geophysical Institute; participation of the Alaska Energy Office in the

recent Geothermal and Wind Resources Planning Conference; and the assignment of cognizance for geothermal affairs to the State Geological and Geophysical Survey. As of March 1976, federal agencies have contributed more that $500,000 to geothermal and wind power research in Alaska; and to date, no State of Alaska funds have been appropriated for research and development in either of these areas.

Considering socio-economic needs and the importance of alternate energy sources in Alaska, the State of Alaska should initiate a funded geothermal and wind power program as soon as possible and develop incentives to attract the private sector.

Possible ERDA-State of Alaska Memorandum of Understanding: The Energy Research and Development Administration has been empowered to negotiate and finalize "Memoranda of Understanding" with state governments for cooperative energy programs. We recommend that the State of Alaska negotiate and sign such a memorandum of understanding with ERDA in the fields of geothermal and wind power research and development, involving a possible matching fund agreement.

REFERENCES

Agricultural Potentials Committee, 1974, Alaska Rural Development Council, Alaska's Agricultural Potential, ARDC Publ. No. 1.

Barnea, Joseph, 1972, Geothermal Power: Scientific American, V. 226, No. 1 (January).

Be z, A., 1966, Introduction to the Theory of Flow Machines, Pergamon Press, Inc., Elmsford, New York.

Biggar, N. E., 1973, A geological and geophysical study of Chena Hot Springs, Alaska: Geophysical Inst. (unpublished M. S. dissertation), Univ. of Alaska, Fairbanks, Alaska.

Brew, D. A., Muffler, L.J.P., and Loney, R. A., 1969, Reconnaissance geology of the Mount Edgecumbe volcanic field, Kruzof Island, southeastern Alaska; In Geological Survey Research 1969: U. S. Geol. Survey Prof. Paper 650-D, p. D1-D18.

Byers, F. M., Jr., and Brannock, W. W., 1949, Volcanic activity on Umnak and Great Sitkin Islands, 1946-1949: Amer. Geophys. Union Trans., V. 30, pp. 719-734.

Cameron, C. P. and Stone, D. B., 1970, Outline geology of the Aleutian Islands with paleomagnetic data from Shemya and Adak Islands: Geophysical Inst. Report No. UAG R-213, Univ. of Alaska, Fairbanks, Alaska.

Cox, Allan, Hopkins, D. M., and Dalrymple, G. B., 1966, Geomagnetic polarity epochs - Pribilof Islands, Alaska: Geol. Soc. America Bull., V. 77, No. 9, p. 883-909.

Dinkel, D. H., 1974, Research on Controlled Environment Plant Systems for Alaska: Rep. of Alaska State Department of Economic Development.

Dinkel, D. H. and Lura M. Ginzton, 1976, Vegetable Variety Trials: Research for the Commercial Grower, Vegetable Processor or Home Gardener: Agroborealis, V. 8, No. 1.

Eaton, G. P., Christiansen, R. L., Iyer, H. M., Pitt, A. M., Mabey, D. R., Blank, H. R., Zietz, I., and Gettings, M. E., 1975, Magma Beneath Yellowstone National Park: Science, V. 188, pp. 787-796.

Ellis, A. J., 1970, Quantitative interpretation of chemical characteristics of hydrothermal systems: Proc. of the U. N. Symp. on Develop. and Utiliz. of Geothermal Resources, Pisa, Italy; Geothermics, V. 2, Part 2, pp. 516-529.

Facca, G., 1970, General report of the status of world geothermal development (Rapporteur's Report): U. N. Symp. on Develop. and Utiliz. of Geothermal Resources, Pisa, Italy.

Flohn, H., 1966, Energy Budget of the Earth's Surface in the Encyclopedia of Oceanography, Reinhold Publishing Co., New York, N. Y., p. 256.

Forbes, R. B., Gedney, L., VanWormer, D., and Hook, J., 1975, A geophysical reconnaissance of Pilgrim Springs, Alaska: Geophysical Inst. Report No. UAG R-231, Univ. of Alaska, Fairbanks, Alaska.

Forbes, R. B., Leonard, L., and Dinkel, D. H., 1975, Utilization of Geothermal Energy Resources in Rural Alaskan Communities: Geophysical Inst. Report No. UAG R-232, Univ. of Alaska, Fairbanks, Alaska.

Fournier, R. O. and Truesdell, A. H., 1970, Chemical indicators of subsurface temperature applied to hot spring waters of Yellowstone National Park, Wyoming, U.S.A.: U. N. Symp. on Develop. and Utiliz. of Geothermal Resources, Pisa, Italy; Geothermics, V. 2, Part 2, pp. 529-536.

French, Stewart, 1972, The Alaska Native Claims Settlement Act: The Arctic Institute of N. America.

Frenkiel, J., 1964, Wind Power in Eilat, paper in Proc. of Conference on New Sources of Energy (p. 396, V. 7 on Wind Power), Rome, August 21-31, 1961; UN published.

Godwin, L. H., et al., 1971, Classification of public lands valuable for geothermal steam and associated geothermal resources: U. S. Geol. Survey Circular 647.

Hoare, J. M., Condon, W. H., Cox, Allan, and Dalrymple, G. B., 1968, Geology, paleomagnetism and potassium-argon ages of basalts from Nunivak Island, Alaska: in Coats, R. R., Hay, R. L., and Anderson, C. A., eds.; Studies in volcanology: Geol. Soc. Am. Mem. 116, p. 377-414.

Hopkins, D. M., 1963, Geology of the Imuruk Lake area, Seward Peninsula, Alaska: U. S. Geol. Survey Bull. 1141-C, 101 p.

Jacobs, M., Congressional Record of 7 August 1974, pp. S11451-14455; also private communications.

Kienle, J., 1974, Alaskan volcano studies with special reference to Augustine Volcano, Utilization of Volcano Energy, proceedings, U. S. - Japan Cooperative Science Seminar, Hilo, Hawaii, February 4-8, 1974; Ed. J. L. Colp and A. F. Furumoto, p. 205-224.

Kung, E. C., 1966a, Monthly Weather Review, 94, 57.

Kung, E. C., 1966b, Monthly Weather Review, 94, 627.

Lachenbruch, A. H. and Marshall, B. V., 1969, Heat flow in the Arctic: Arctic, V. 22, pp. 300-311.

Lockheed California Co. Report LR27368-15, 1975, Wind Energy Mission Analysis, Task Element 15, p. 15-2 (draft of Lockheed Report), ERDA Contract AT(04-3)-1075, December.

Marlow, M. S., Scholl, D. W., Buffington, E. C., Boyce, R. E., Alpha, T. R., Smith, P. J. and Shipek, C. J., 1970, Buldir Depression, a late Tertiary graben on the Aleutian Ridge, Alaska: Marine Geology, V. 8, No. 1, p. 85-108.

McKenzie, G. D., 1970, Some properties and age of volcanic ash in Glacier Bay National Monument: Arctic, V. 23, No. 1, p. 46-49.

Miller, Thomas P., 1973, Distribution and chemical analyses of thermal springs in Alaska: U. S. Geol. Survey Open File Map.

Miller, Thomas P., Barnes, Ivan and Patton, William W., Jr., 1973, Geologic setting and chemical characteristics of hot springs in central and western Alaska: U. S. Geol. Survey Open File Report.

Miller, Thomas P., Barnes, Ivan and Patton, William W., Jr., 1975, Geologic setting and chemical characteristics of hot springs in west-central Alaska: Jour. Research, U. S. Geol. Survey, V. 3, No. 2, March-April.

Miller, Thomas P. and Barnes, Ivan, 1976 (in press), Potential for geothermal energy development in Alaska: Amer. Assn. Petrol. Geologists, Memoir No. 25.

Muffler, L.J.P. and White, D. E., 1972, Geothermal energy: The Science Teacher, V. 39, No. 3.

Powers, H. A., 1958, Alaska Peninsula-Aleutian Islands, p. 61-75: in Howel, Williams, ed., Landscapes of Alaska, Univ. of Calif. Press, Berkeley and Los Angeles, 148 p.

Putnam, P. C., 1948, Power from the Wind, D. Van Nostrand Co., Inc., New York, N. Y.

Reed, J. W., 1975, Wind Power Climatology of the United States, Sandia Laboratories Report SAND 74-0348, Albuquerque, N. M., (available from NTIS).

Renner, J. L., White, D. E. and Williams, D. L., 1975, Hydrothermal convection systems; as contained in "Assessment of Geothermal Resources of the United States - 1975": U. S. Geol. Survey Circular No. 726, p. 5-57 incl.

Sass, J. H. and Munroe, R. J., 1970, Heat flow from deep boreholes on two island arcs: Journ. Geophys. Res., V. 75, No. 23, p. 4387-4395, illus., incl. sketch maps, tables.

Sellers, W. D., 1966, Physical Climatology, University of Chicago Press, Chicago, Illinois, p. 102.

Smith, R. L. and Shaw, H. R., 1973, Volcanic rocks as geologic guides to geothermal exploration and evaluation: Trans. Am. Geophys. Union, V. 54, No. 11, p. 1213 (abs.).

_____, 1975, Igneous-related geothermal systems; as contained in 'Assessment of Geothermal Resources of the United States - 1975": U. S. Geol. Survey Circular No. 726, P. 58-83 incl.

Tussing, Arlon R. and Thomas, Monica E., 1974, Consumer prices, personal income and earnings in Alaska: The Review of Business and Economic Conditions, V. 11, No. 3, Inst. of Social, Economic and Government Research, Univ. of Alaska, Fairbanks, Alaska.

Waring, G. A., 1917, Mineral springs of Alaska: U. S. Geol. Survey Water Supply Paper 492.

Wentink, T., Jr., 1974, Wind Power Potential of Alaska: Part I, Surface Wind Data from Specific Coastal Sites, Geophysical Institute, University of Alaska, Scientific Report UAG R-225 under NSF Grant GI-43098, Fairbanks, Alaska (NTIS PB 238-507), August.

_____, 1976, Study of Alaskan Wind Power and Its Possible Applications, Geophysical Institute, University of Alaska, Final Report under NSF Grant AER74-00239A01, Fairbanks, Alaska.

White, D. E., 1970, Geochemistry applied to the discovery, evaluation and exploitation of geothermal energy resources (Rapporteur's Report): Proc. of the U. N. Symp. on Develop. and Utiliz. of Geothermal Resources, Pisa, Italy.

White, D. E., 1973, Characteristics of geothermal resources and problems of utilization, in Kruger, Paul and Otte, Carel, eds., Geothermal energy-resources, production, stimulation: Stanford, Ca., Stanford Univ. Press, p. 69-94.

White, D. E., Muffler, L.J.P., and Truesdell, A. H., 1971, Vapor-dominated hydrothermal systems compared with hot water systems: Econ. Geol., V. 66, pp. 75-97.

White, D. E. and Williams, D. L., 1975, Assessment of Geothermal Resources of the United States - 1975" (Eds.): U. S. Geol. Survey Circular No. 726.

APPENDIX A

Program for the

Alaska Geothermal and Wind Resources Planning Conference

ALASKA GEOTHERMAL AND WIND RESOURCES PLANNING CONFERENCE

Anchorage Westward Hotel
July 8 & 9, 1975

Program Chairman: Dr. Robert B. Forbes Convenor: Dr. William Ogle

Tuesday - July 8, 1975

MORNING SESSION

8:30 - 8:35	Welcome & Opening Remarks	Dr. William Ogle Anchorage, Alaska
8:35 - 8:40	Introduction of Lieutenant Governor Lowell Thomas, Jr.	Mr. William C. McConkey Director Alaska State Energy Office
8:40 - 9:00	Greetings from State of Alaska	Honorable Lowell Thomas, Jr. Lieutenant Governor State of Alaska
9:00 - 9:40	Alaskan Energy Economics (5-minute discussion period)	Dr. Arlon R. Tussing Chief Economist United State Senate Committee on the Interior and Insular Affairs
9:45 - 10:25	Geothermal Resources of Alaska --- A Status Report	Dr. Thomas Miller Geologist Branch of Alaskan Geology U.S. Geological Survey
10:30 - 10:45	Coffee Break	
10:45 - 11:25	Wind Resources of Alaska --- A Status Report (5-minute discussion period)	Dr. Tunis Wentink Professor of Physics Geophysical Institute University of Alaska
11:30 - 12:00	Geothermal & Wind Resources as Applied to Alaskan Needs	Dr. William Ogle Anchorage, Alaska
12:00 - 1:30	Lunch	

AFTERNOON SESSION

1:30 - 2:10	The U.S. Geological Survey Geothermal Program (5-minute discussion period)	Dr. L.J. Patrick Muffler Coordinator Geothermal Research Program U.S. Geological Survey

AFTERNOON SESSION (Cont'd.)

2:15 - 2:55	Agricultural Applications of Geothermal Resources	Dr. Don Dinkel Professor of Agronomy Institute of Agricultural Science, University of Alaska
3:00 - 3:15	Coffee Break	
3:15 - 3:45	Possible Utilization of Thermal Waters in Salmon Rearing Operations	Part 1: Dr. William McNeil Auke Bay Fisheries Laboratory National Marine Fisheries Service
3:45 - 4:15		Part 2: Mr. Joe Wallis Hatchery Superintendent Firelake Hatchery Service Department of Fish & Game State of Alaska
	(5-minute discussion period)	
4:20 - 5:00	Space Heating & Industrial Applications of Geothermal Energy Resources	Dr. Jay F. Kunze Manager Geothermal Projects Aerojet Nuclear Company
	(discussion)	
5:30 - 6:30	Post Session No-Host Cocktails	

Wednesday - July 9, 1975

MORNING SESSION — Convenor: Mr. William C. McConkey, Director, Alaska Energy Office

8:30 - 9:10	The Hickel Report --- Two Years After	Honorable Walter J. Hickel Former U.S. Secretary of the Interior & Governor of the State of Alaska
9:15 - 9:55	The U.S. Geothermal & Wind Resource Research & Development Program & Possible Alaskan Assistance	Dr. Louis Werner Assistant Director for Research Utilization Division of Geothermal Energy Energy Research & Development Administration
10:00 - 10:40	National Science Foundation Geothermal & Wind Resource Program	Mr. Ritchie B. Coryell Geothermal Program Manager Advanced Energy Research & Technology Division National Science Foundation
	(discussion)	

MORNING SESSION (Cont'd.)

10:40 - 12:00	Working Groups Convened by Chairmen
12:00 - 1:30	Lunch

AFTERNOON SESSION

1:30 - 5:00	Working Groups Convene in Assigned Rooms
5:00 - 7:30	Dinner

EVENING SESSION

7:30	Working Groups Convene in Assigned Rooms

WORKING GROUPS

Agriculture	Dr. Don Dinkel Professor of Agronomy Institute of Agricultural Science University of Alaska	Chairman
Electrical Power	Mr. Robert Cross Chief Project Development Division Alaska Power Administration	Chairman
Fisheries & Aquaculture	Dr. William McNeil Auke Bay Fisheries Laboratory National Marine Fisheries Service	Chairman
Geothermal Resource Research & Development	Dr. Robert B. Forbes Professor of Geology Geophysical Institute University of Alaska	Chairman
Space Heating & Industrial Applications	Dr. William Ogle Energy Consultant Anchorage, Alaska	Chairman
Wind Power Development & Applications	Dr. Tunis Wentink Professor of Physics Geophysical Institute University of Alaska	Chairman

APPENDIX B

Attendance List for the

Alaska Geothermal and Wind Resources Planning Conference

ALASKA GEOTHERMAL AND WIND RESOURCES PLANNING CONFERENCE

Anchorage Westward Hotel
July 8 & 9, 1975

Attendance List

Atuk, Richard K.	Bering Straits Native Assn., Nome, AK 99762
Barnes, William	Windlite - Alaska, 4303 Forest, Anchorage, AK
Bewley, Georgia	Geological Asst., Alaska Geological & Geophysical Surveys 3001 Porcupine Drive, Anchorage, AK 99501
Bodnar, Andrew J.	Electrical Engineer, Engineering Div., Directorate of Engineering & Construction, HQ AAC/DEEE, Elmendorf AFB, AK 99506
Boston, Clark D.	Director, Div. of Rural Development Assistance, Pouch B, Juneau, AK 99801
Boucher, H.A. "Red"	H.A. "Red" Boucher & Assoc., 805 W. Third, Anchorage, AK 99501
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Braasch, Richard, Dr.	Sandia Laboratories, P.O. Box 5800, Albuquerque, NM 87115
Brink, Irvin	Mayor, Village of Akolmiut, Nunapitchuk, AK 99641
Bruce, Jim	Architect, James B. Bruce, A.I.A. Architect, P.O. Box 2376, Anchorage, AK 99510
Brueckner, Hannes	Associate Professor, Queens College of New York and Lamont-Doherty, Geological Observatory, New York, NY 11375
Buness, Everett W.	Director, U.W. Dept. of Commerce, 632 Sixth, Anchorage, AK 99501
Burton, Wayne E., Dr.	Assoc. Prof. of Agricultural Economics, University of Institute of Agricultural Sciences, P.O. Box AE, Palmer, AK 99645
Cameron, Robert B.	Command Environmental Engineer, Directorate of Engineering & Construction, HQ AAC/DEEV, Elmendort AFB, AK 99506
Carpenter, John	The Aleut Corporation, 833 Gambell Street, Anchorage, AK 99501
Chernikoff, Fred	Alaska Federation of Natives, 670 West Fireweed, Anchorage, AK.

Chiei, Jr., Fred	Deputy Regional Administrator, FEA, Federal Building, Anchorage, AK 99501
Claus, Harold	Asst. Operations Mgr., E.G. & G., Inc., P.O. Box 1912, Las Vegas, NV 98102
Cline, Dave	Wildlife Biologist, U.S. Fish & Wildlife Service, 8th and A, Anchorage, AK 99501
Comiskey, Albert L.	National Weather Service, NOAA, 632 Sixth, Anchorage, AK 99501
Coryell, Ritchie B.	Geothermal Program Mgr., Advanced Energy Research and Technical Division, National Science Foundation, Washington, D.C. 20550
Cross, Robert J.	Chief, Project Development Div., Alaska Power Admin., P.O. Box 50, Juneau, AK 99802
Curtis, Edgar J., P.E.	U.S. Army Corps of Engineers, Elmendorf AFB, Anchorage, AK
Dart, Charles W.	Owner, Manley Hot Springs Greenhouse, Manley Hot Springs, AK 99776
Davis, T. Neil, Dr.	Deputy Director, Geophysical Institute, University of Alaska, Fairbanks, AK 99701
Denslow, Dan	Ambler Air Service, Ambler, AK 99786
DeWitt, Michael, Capt.	AFWL-DE 2, Kirtland Air Force Base, NM 87117
Diershaw, A.	Engineer, Wincom, 4134 Ingra, Anchorage, AK 99510
Dinkel, Donald, Dr.	Professor of Agronomy, Institute of Agricultural Science, University of Alaska, Fairbanks, AK 99701
Doak, Barney R.	Area Mechanical Engineer, Alaska Area Native Health Service, Box 7-741, Anchorage, AK 99503
Dobey, Patrick	Chief Petroleum Geologist, Alaska State Geological and Geophysical Surveys, 3001 Porcupine Drive, Anchorage, AK
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Forrest, Lesh C.	Vice Pres., - Operations, Alaska Geological Consultants, Inc., 702 W. 32nd Ave., Anchorage, AK 99502
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Tilbury, Elane,	Secretary-Treasurer, Bethel Utilities Corp., P.O. Box 729, Eagle River, AK 99577
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Tussing, Arlon R., Dr.	Chief Economist, U.S. Senate Committee on Interior and Insular Affairs, Senate Office Bldg., Washington, D. C. 20510

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APPENDIX C

Working Groups for the

Alaska Geothermal and Wind Resources Planning Conference

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APPENDIX D

CHEVAK'S CURRENT ENERGY PICTURE:
(Fall, 1975)

A STUDY OF A SOUTHWESTERN ALASKAN ESKIMO VILLAGE
(61°30'N, 165°W)

This especially lucid presentation of the problems of a small Eskimo village near the coastline on the Bering Sea is typical of the situation facing many of Alaska's native peoples. It was written by an unidentified Chevak resident.

CHEVAK'S CURRENT ENERGY PICTURE:

A Study of a Southwestern Alaskan Ekimo Village

When time became a consideration in the changing lifestyle of the subsistence hunters in Southwestern Alaska, energy became a problem. Unlike the days of past, where dog teams consumed renewable resources for their fuel, and the people harvested natural fuels for their energy needs as they migrated to seasonal locations, the present Eskimo villages are normally located in places where both subsistence foods and natural fuels are dwindling, or are extinct. The reasons for the location of permanent settlements in areas devoid of natural support systems is due to time conditions.

When the government gave gifts, it established its schools and services in central locations, and demanded that the villagers cease their seasonal movements. Instead of subterranean houses, the government established framed, above ground dwellings as its standard of housing, and discouraged native efforts to maintain their former ways. The the limited amounts of wood that washed ashore during the summer near the permanent location, limited winter storage. Competition among households for the available fuels occured, and many families were without fuel for space heating or cooking. Whereas the house buried in the hillside and covered with sod was warm enough without added heat to prevent water from freezing, the above ground houses were exposed to the wind, and freezing conditions. Fuel oil was cheap at that time, and when money became available in the village, the people converted to oil.

The seasonal migration to locations of abundant food was also terminated through permanent settlements. Hunters had to go farther away

from their villages to harvest their foods, more often than in the past, but hunters also had to make money to pay for the imported lumber and heating fuel. The summer was the only period of the year when seasonal work was available, which is also the most important time of the year for the harvest of subsistence foods. The compromise that was struck with technology was the advent of the outboard motor and the framed boat for the summer that allowed quick, and at that time, inexpensive access to food sources and to continuation of summer employment in the village. In that less time was being spent in the harvest of fish, feeding the dog teams during the winter became a burden, and the dogs gave way to the snowmachine that did not require the constant, and year round attention dog teams demand.

From a community self-sufficient on natural fuels and transportation, the coastal Eskimo village became dependent on imports; transportation developed as a limiting factor to the way of life, and energy became the largest single type of imported goods in the village. Although the harvest of foods has possibly diminished in terms of per capita consumption, the average household still depends on 80% of its gross nutrition, and 95% of its protein on local species. It is in the field of energy however where a permanent change has occurred.

The village of Chevak sits 120 airmiles west of Bethel, the regional transportation center of that part of Southwestern Alaska drained by the Yukon and Kuskokwim rivers. It receives its goods from the Bureau of Indian Affair's (BIA) annual "Northstar III" ship out of Seattle, and by Wien Air Alaska, and two barge companies out of Bethel.

Energy in the village is produced totally by imported fuels. The Alaska Village Electrical Cooperative (AVEC) has homogenized electrical

delivery, operating a plant capable of 300 KW prime production. Current consumption in the village is 45-60 KW prime during the summer when the school is closed, and 100-110 KW prime during the winter. The new school, being built by BIA to replace a school that burned in 1972, will demand a 85 KW prime, with a peak of 115 KW when the shop is operational. The BIA subsidizes AVEC, $700,000 from the BIA's agency Plant Maintenance budget, which allows AVEC to charge its residential users a minimum of $21/month at 17.1¢/KW average. Bulk users, the school, pay 9.5¢/KW. AVEC currently consumes 45-52,000 gallons of diesel Its bulk storage capacity has recently been upgraded to 110,000 gallons, in preparation for the opening of the school, which will increase its consumption to 85,000 gallons of diesel. The BIA maintains auxiliary diesel for electrical emergency, but does not have bulk tanks for its diesel supply.

Both the BIA and the village owned store have bulk storage for fuel oil. Space heating the current BIA school requires 35,000 gallons of fuel. The BIA has a 130,000 gallon capacity and presently tops its tanks each year. The new school will demand up to 122,000 gallons of #1 and #2 mixed fuel oil when completed, leaving a surplus of only 8,000 gallons, if the tanks are topped. No new bulk storage tanks are being purchased for the school.

The fixed nature of federal contracting normally guarantees the supply of diesel and fuel oil by the local barge companies and the North Star. It is the problem of the village's growing need for fuels, and the doubt that villages can pay that makes the yearly delivery of enough fuel and gasoline to the village a gamble. The village of Chevak has 45,000 gallons bulk storage capacity for fuel, and 15,000 gallon

capacity for gasoline. Unlike other villages on the coastline, Chevak is well prepared for its needs. But for three years in a row, Chevak ran out of fuel oil because its summer re-supply never arrived or was not enough. In 1973, Black Navigation of St. Michaels sold 20,000 gallons of Chevak's fuel on the Yukon before coming to the village. The village ran out late in February. In 1974, the same situation duplicated itself. Turning toward Bethel's distributors, Chevak fuel was ice locked on the the Yukon in 1975 when the tug pulling the barge burned in late July, and no replacement barge could be located before freeze-up. When the village runs out, the Council borrows fuel from the BIA, which has had, to this time, a surplus. In 1975-76, Chevak's tanks are full, and the BIA will have a surplus, but in 1976, when the re-supply of the village will again remain to chance, and the BIA will require all its fuel, a problem may develop. In villages that have had to fly their fuel in, the amount per drum rises from an average of $48/55 gallon drum to $65-75/drum.

Gasoline storage in Chevak is favorable, and the village normally supplies its neighboring villages which do not have bulk gasoline storage. The average cost of a drum is $5(. Gasoline consumption has risen from 12,000 gallons in 1970 to 39,000 gallons in 1975, and the rate of consumption is expected to continue to rise until supply is exhausted within the next two years, the village store's manager declared.

Per capita income in the village of Chevak, located in Wade-Hampton census district, was $1,300 in 1970. The listing of 24 families in Chevak made in 1975 reveals that 20-40% of the cash income of these families is consumed by imported fuels, well out of line with the natural average.

The statistics of energy in the village do not reveal the entire story, however, for growth in the public sector principally influences the village's way of life, and growth in the public sector is undisciplined, and not coordinated with the village.

Bethel's tug industry is concentrated on oil; freight is secondary. The growth in public facilities dependent upon fuels for energy has outgrown the barge companies' ability to delivery. While public facilities are normally re supplied, the villages become the supply casualities; 1972, 14 villages ran out of oil; in 1973, 24 villages; in 1974, 36 villages; and in 1975, 39 of Bethel region's 57 villages had fuel oil shortages.

Total energy planning for the community is non-existent and the failure to plan causes an undisciplined demand for more oil, which is duplicated in all other villages. Alternate energy systems do not exist, nor do total energy systems employing waste heat recovery. Federal and State of Alaska agencies to this date have not initiated studies on the utility of these alternate forms of energy involving hydro-electric, geothermal, and aerogenerators in the plan and design of new facilities, or the consolidation of existing energy demand by public facilities.

The BIA's new plant will sit 70 feet from the existing AVEC plant. AVEC's engineers have initiated studies that determined that the majority of the space heating demand of the new facility could be produced by AVEC using water jackets, and a utilidor to convey the waste heat to the school for distribution. The BIA has not accepted this idea to date. Because BIA subsidizes AVEC, AVEC is committed to selling all of its waste heat to BIA. Even though BIA does not want the waste heat,

AVEC cannot release the heat to other customers. At this time, AVEC believes that 650,000 BTU will be wasted each hour when the plant is operating at full capacity in 1976.

The Chevak store wishes to buy the waste heat. Concerned with fire from its domestic boiler, and consuming 6,000 gallons of fuel in its store/hall, the village determined that it could save money, while reducing the village's total demand for fuel, by converting to waste heat. AVEC will not sell the village the heat until the BIA makes up its mind. The village built a community hall this summer, and wished to place the hall near the store and close to the heat recovery system. BIA personnel informed the village that building the hall on the selected location would present a fire hazard to the new school, and with the waste heat recovery system idling, the village moved the hall across the village, requiring an additional 1,500-2,000 gallons of fuel depending on use, and the necessity of burrowing a new path through the village to roll the drums to the hall.

New housing in the village, sponsored by the Alaska State Housing Authority and the Bureau of Indian Affairs, is well designed, and properly insulated. The houses sit in rows that would make utility hookups convenient, and a centralized heating plant economically feasible. However, the houses are located across the village from the AVEC plant, almost 3/8 mile, making waste heat recovery impossible. Villagers now have to roll their drums that distance from the village store, or use gasoline in their snowmachines to accomplish the task.

The village also runs a modified village safe water act facility that drains the local economy. Built in 1974 by the villagers, the

State of Alaska Department of Environmental Conservation awarded the village $60,000 to finish off the system. Containing a water pump, showers, flush toilets, and a laundromat, the facility would have consumed $26 to $34,000 worth of energy along if operated like other VSFW facilities in the State. The annual operating cost for the Emmonak EPA and the State Alukanuk facilities is $100,000 in which energy accounts for almost $42,000 of the costs. The villages raise approximately 15% of the annual costs through user fees, with the remainder being subsidized by the State and Federal governments. Realizing the financial burden, The State "educated" Chevak to the energy costs it would face, and informed the village that no budget subsidy could be expected. The village opened the facility only 3 hours a day during the winter of 1975, all day Saturday and Sunday, and kept its electrical and oil costs to $12,500 gallons of oil, and added a further burden to the village's capacity to remain within its bulk capacity. The new facility is located 1/4 mile from the AVEC facility.

Wind blows constantly in Chevak. The Cape Romanzoff Early Warning Station 26 miles northwest of the village records ambient wind velocities above 15 mph at 70 feet the majority of the year. One individual aware of the Romanzoff readings declared that in his stay at the EW site, only 12 days had less than 15 mph for their average.

The village of Chevak is interested in breaking loose of the oil burden. Aware that shipping costs, supply, and storage are outstripping the village's ability to pay, the Council and the Corporation are seeking technical information on aerogenerators. The Alaska Native Claims Settlement Act deposits yearly funds into the Chevak Corporation, and the Corporation is re-cycling its funds to support the village's fuel

economy, and recognizes the dead end this yearly re-investment means for its only capital, but State and Federal responses to date have been negative.

(1) HOUSEHOLD	INCOME (2) FAMILY INCOME	DRUMS(3) OIL USED	DRUMS GAS USED	TOTAL(4) FUEL COSTS	% OF INCOME
1.	$2,450	18	4	1,052	42.9%
2.	$3,000	20	6	1,296	43.2%
3.	$3,650	19	4	1,136	31.1%
4.	$2.560	16	4	992	38.8%
5.	$4,060	15	5	1,000	24.6%
6.	$2,760	16	4	990	35.9%
7.	$2,800	14	5	952	34.0%
8.	$3,340	20	5	1,240	37.1%
9.	$2,800	14	4	896	32.0%
10.	$2,360	11	2	640	27.1%
11.	$4,000	19	6	1,248	31.2%
12.	$3,560	17	4	1,040	29.2%
13.	$3,110	10	3	648	20.8%
14.	$2,760	12	4	800	31.9%
15.	$3,340	16	5	1,048	31.4%
16.	$2,380	14	5	952	40.0%
17.	$2,900	15	6	1,056	36.4%
18.	$2,460	14	4	912	37.1%
19.	$3,500	18	5	1,144	32.7%
20.	$2,670	18	6	1,200	44.9%
21.	$5,500	21	7	1,400	25.5%
22.	$3,070	17	5	1,096	35.7%
23.	$3,600	16	6	1,004	27.9%
24.	$4,590	20	7	1,352	27.6%

1) Chevak has 67 heads of the households; some families have substantial cash incomes.

2) Transfer payments and cash income combined.

3) Estimate in terms of 55 gallon drums

4) Based on summer, 1975 price of fuel in Chevak: $48/drum #1 heating oil; $56/drum gasoline.

APPENDIX E-1

PROPOSED USE OF GEOTHERMAL WATER FOR SALMON AQUACULTURE ON UMNAK ISLAND, ALASKA

by

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PROPOSED USE OF GEOTHERMAL WATER FOR SALMON AQUACULTURE ON UMNAK ISLAND, ALASKA

Introduction

Several streams on Umnak Island in the Aleutian Islands have been identified as possessing significant potential as hatchery water sources for ocean ranching of salmon (McNeil, 1974). The streams in question drain fairly recent volcanic formations and are believed to have sufficient warmth to remain ice free throughout the winter, although water temperature regimes remain to be determined. If temperature and chemical quality of these streams should prove to be favorable for anadromous salmonid fishes, a successful salmon ocean ranching industry is a distinct possibility for the Aleutians, as well as other areas of Alaska, where geothermal sources of water might be developed for aquaculture at relatively low cost.

This proposal is for an ocean ranching demonstration project, primarily with pink salmon. A successful demonstration of ocean ranching in the Aleutians could lead to a large-scale hatchery program which might ultimately produce several million pounds of salmon annually for harvest.

First year of the program would be devoted to hydrological and biological surveys of several spring-fed streams on Umnak Island to determine their suitability for salmon aquaculture. Should water quality prove to be suitable, the surveys would be followed by construction of a demonstration hatchery capable of producing 8 million juvenile pink salmon annually for release into the ocean as unfed fry. The hatchery would be operated 4 years to demonstrate economic feasibility of ocean ranching using geothermal water on Umnak Island.

Total cost of the 5-year project is estimated to be about $485,000 plus overhead. Application of the technology for large-scale ocean ranching on Umnak Island would have the potential annually of contributing millions of pounds of high quality animal protein with virtually no expenditure of energy. The major economic benefits would accrue directly to the Aleut Indians who are about to acquire from the Federal Government ownership of land on Umnak Island where the geothermal water sources are located.

Study Area

The study streams are located within the boundaries of the former Fort Glenn military reservation on the east end of Umnak Island (Figure 1). Tulik Volcano (4,100 feet elevation) is the dominant feature of the lava formations where the study streams originate. Several of the streams flow in an easterly direction into the Bering Sea and into Umnak Pass which connects the Bering Sea and the North Pacific Ocean.

Intense upwelling of marine waters along the Aleutian Islands creates conditions which are highly favorable for plankton. As a consequence, salmon from many regions around the rim of the North Pacific Ocean and Bering Sea feed in the area. Thus, marine waters surrounding Umnak Island should be well suited as nursery waters for hatchery-produced fish.

Hydrological Surveys

Temperature recorders would be installed on at least 5 streams and operated one season (August or September - April or May) to evaluate temperature regimes of the study streams. The Aleut Corp. own 5 automatic recording thermographs which might be rented for this work.

There is also a need to acquire qualitative information on stream discharge patterns and quantitative information on chemical water quality. Workers at an existing cattle ranch on Umnak Island might be trained and employed part time to make periodic observations on streamflow and to collect water samples for laboratory analysis.

Biological Surveys

These surveys will be required to catalog the existing fish fauna in the study streams and to estimate the size and species composition of existing stocks of salmon which might be used to supply eggs for hatcheries. Surveys of streams would be required during the August-September spawning period. The existing road system is extensive and crosses most, if not all, of the study streams. A motorized land vehicle could therefore be used for transportation.

Hatchery Design

Construction of a demonstration hatchery would proceed only if it is evident that water quality is suitable. It would be preferable to obtain eggs from a stock of salmon which is native to the hatchery stream, but eggs could be transplanted from nearby Unalaska Island which is known to have pink and chum salmon. Umnak, unfortunately, has never been surveyed at the proper time of year to establish the size of salmon stocks.

A demonstration hatchery would be a simple, inexpensive design which is used primarily by private hatcheries on coastal streams in Oregon and Washington. The design is sometimes called a "shallow-matrix gravel incubator" or "Netarts gravel incubator" after Netarts Bay, Oregon, where the system was first employed in 1968. Hatchery

tanks can be constructed onsite from plywood or prefabricated and shipped to the site. About 500 square feet of level ground is required for each million eggs of installed tank capacity. Water can be delivered to the hatchery site through open canals and distributed from canals to tanks through plastic pipe. Figure 2 shows a schematic diagram of a hatchery layout. The hatchery is not housed, but lids are placed on tanks to shield eggs and alevins (larval salmon) from light, weather, predators, etc.

The Umnak Island study streams have modest gradients and pass through small valleys which are covered by a mantle of top soil. Canals and other excavations can be done with farm machinery.

Pink and chum salmon are easy to trap and spawn artificially. Fish are almost fully mature when they leave salt water, and it is seldom necessary to hold adults in captivity for more than one week while they ripen. A weir diverts spawners from the stream into a hatchery discharge canal (Figure 2), and they are sorted and spawned at the site where hatchery tanks are located.

Eggs and alevins require little or no care after the fertilized eggs are placed in tanks. Eggs are placed on screen trays suspended in the water column in tanks during September. Hatching occurs in December, and the alevins drop through the trays to the bottom of a tank which has a shallow layer of gravel or artificial plastic turf for support. The unfed fry emigrate from tanks in the spring and follow the discharge canal to the stream which carries them into the ocean. Pink salmon mature at 2 years of age. Chum salmon mature after 3, 4 or 5 years.

Work Schedule

The work schedule is conceived as follows:

Year 1 - (a) Complete hydrological and biological surveys.

(b) Select hatchery site and donor stock.

(c) Design hatchery.

Year 2 - (a) Construct water delivery system for 900 gallons per minute.

(b) Excavate site for hatchery tanks and fish spawning.

(c) Install hatchery tanks.

(d) Construct adult trapping facilities.

(e) Stock hatchery with eggs from donor stock.

Year 3 - Stock hatchery with eggs from donor stock.

Year 4 - Stock hatchery with eggs from returning hatchery fish (pink salmon only).

Year 5 - (a) Stock hatchery with eggs from returning hatchery fish.

(b) Formulate an expanded program, depending on results of demonstration project.

Economic Considerations

Pink salmon have the shortest life cycle (2 years) of all salmon species and are recommended for evaluating the feasibility of ocean ranching on Umnak Island. Chum salmon have a 3- to 5-year life cycle. Sockeye and coho salmon also spawn in the Aleutian area, but these species require a year or longer of freshwater rearing before they go to sea.

Pink salmon have been released from three pilot incubator hatcheries in Alaska since 1972, and six experiments involving up to 1 million

fry per experiment have been evaluated. The number of adults returning to hatcheries has varied between 0.7 and 3.0 percent of the number of fry released, with an average of about 1.5 percent.

A hypothetical projection of production of pink salmon from gravel incubator hatcheries on Umnak Island is given in Table 1. The assumptions are:

1. Egg-to-fry survival = 80 percent.
2. Fry-to-adult survival = 1 percent.
3. Fecundity = 1,600 eggs per female.
4. Amount of water available for hatcheries = 50 c.f.s. on the expectation that several spring-fed streams can be developed for hatchery use.

At this point we can only speculate about our ability to generate returning runs of 2 million adult pink salmon to Umnak Island. This is probably a much higher level of production than Umnak streams have achieved with natural spawning because spawning area is limited.

It is not inconceivable, however, that such a potential exists with hatcheries, since streams entering Makushin Bay, Unalaska Island (50 miles east of Umnak Island), are known to have produced several hundred thousand adult pink salmon.

If a demonstration project should be successful, the ultimate potential for Umnak Island for salmon ocean ranching would probably be determined by the availability of fresh water for artificial recruitment of pink and chum salmon fry. It is assumed that the capacity of marine nursery waters to grow salmon to maturity is not limiting.

Each adult pink salmon returning to a hatchery would generate about $2.50 of wholesale value as a canned product (1974 prices). There would also be a substantial added value (more than $1 per female), for surplus roe. Thus, wholesale value of a processed pink salmon should average at least $3 per fish. Value of chum salmon would be almost three times higher per fish, reflecting their larger size at maturity.

Cost of Project

The project would include two phases. Phase I would take place in the first year and would include hydrological and biological survey work to evaluate the desirability of a demonstration hatchery. Phase II would take place in the 2nd through 5th years to evaluate economic feasibility of an ocean ranching industry on Umnak Island and to establish pink salmon brood stock for expanding the project into a large-scale commercial venture. Expansion into a commercial venture should be the responsibility of the Aleut people working through their regional and village corporations.

The total cost of a 5-year project would be about $500,000 to $600,000. This cost may seem low to some reviewers, but keep in mind that this project is not intended for the construction of a permanent edifice. The hatchery would be simple and temporary and would be operated as inexpensively as possible for the purpose of determining feasibility of salmon ocean ranching in the Aleutians with geothermal water.

Reference

McNeil, W. J., 1974, Preliminary analysis of aquaculture potential in the Aleutian Islands, Alaska. U.S. Dept. of Commerce Economic Development Admin. Tech. Assistance Project, Sept. 1974:13p.

APPENDIX E-2

A PROPOSAL FOR ALASKA MUNICIPAL GEOTHERMAL HEATING

by

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A PROPOSAL FOR ALASKA MUNICIPAL GEOTHERMAL HEATING

The use of warm geothermal waters from drilled holes or springs for space heating has proven economic in many regions of the world. The costs vary with the ease of obtaining the hot water, its purity, the distance that it must be piped, and the duty cycle determined by the climate. Following are some examples:

Reykjavik, Iceland: Homes for approximately 100,000 people are heated for about $4.00/gigacalorie, equivalent to oil for about $5.60 per barrel. The duty cycle is almost 100%. Wells very in depth from 2100 feet to 6000 feet and the water is piped from 1/2 mile up to eleven miles. Total system capacity is about 190 gigacalories per hour, equivalent to 135 barrels of oil per hour. Water flow is about 2700 cubic meters per hour (equals about 800,000 gallons/hour).

Husavik, Iceland: Some 2500 people reap the benefits of hot water piped from natural springs 11 miles away. The household is charted about the same as in Reykjavik. Total capacity is about 6 gigacalories per hour with a flow rate of 125 M^3/hr. The electrical heating equivalent of this is about 7000 kilowatts.

Hungary: Some 4000 apartments and large areas of greenhouses are heated by geothermal wells. The cost is $3.00 per gigacalorie. Coal heat in the same region is $11.00 per gigacalorie.

Klamath Falls, Oregon: Some 450 homes are heated by individual wells 200 to 450 feet deep. The costs are competitive with other sources even though the systems are quite inefficient due to the householders desire to independance. The normal well would supply five to ten houses if its entire capacity were used.

Oregon Technical Institute: This institute is entirely heated from its own well drilled to 1715 feet. At 30 cubic meters of water per hour the cost is $18,000.00 per year, or $.70 per gigacalorie, corresponding to oil for about $1.00 per barrel.

Menlun, France: There is an apartment complex of 3500 apartments for which all of the utility heat and part of the space heating is provided at costs competive with $6.00/barrel oil. The well is 5900 feet deep and supplies 13 to 100 cubic meters per hour of water at 163°F. This is in a region with no geothermal anomaly.

There are many other examples in Japan, Italy and Russia. Depending on the local conditions, the cost of heat runs from a price equal to that which would be obtained if oil were being used, to a factor of ten less, or better.

The Melun experience is of special interest for application in Alaska. A system that is competive with oil in France should be very attractive in the remoter regions of Alaska where oil costs are very high because of transportation costs. In principle, one should be able to drill almost anywhere in Alaska and reach usable temperatures at depths of 6000 to 7000 feet. While it is in principle feasible to extract that heat even if there is no water present, the techniques for so doing have not yet been developed. Thus one must, at the moment, depend on hitting water at depth. No good data on the prevalency of water at depth are available for Alaska; however, informed geologic guesses would put it above 50%. What little data that are available would also imply that the geothermal temperature gradient in Alaska is a bit above normal, implying that on the average, one would not have to go as deep to obtain usable temperatures.

Thus it appears that over perhaps half or more of the area of Alaska, the question becomes, not whether it is feasible to heat using geothermal waters, but what are the economics involved? In principle, one can drill anywhere and have a roughly 50% chance of obtaining usable hot water. The question of economics will depend upon local conditions.

Obviously appropriate geological studies will improve the likelihood of picking a favorable site. However, the record of geology and geophysics is not good in this field, and one must be careful of being either encouraged or discouraged by judgments from these disciplines. Certainly, where anomalies are being sought, the techniques are more reliable.

The high cost of labor in Alaska would probably run the costs up over those mentioned above, for similar installations. However, one should still be able to produce heat for the equivalent of $10.00/barrel of oil or less. This price is much less than the cost of oil in many regions of the state now. The disparity will probably become greater in the future.

While the economic geothermal space heating systems can be of almost any size, there is an effective minimum if one is to not depend on local geothermal anomalies. With present drilling and casing techniques a production hole at 8 1/2" diameter will cost approximately what is given in the following table:*

depth (ft)	cost per foot	cost to depth
2000	$34.50	$69,000.00
4000	$50.00	$200,000.00
6000	$61.00	$366,000.00
8000	$73.00	$584,000.00
10000	$83.00	$830,000.00

* Tavi Meidav - Communication

These costs will, of course, vary with location and geology. They are estimated assuming reasonable transportation to within 50 miles of the drill site. Thus, if one assumes at 6000' hole, which is reasonable on the average, the hole alone will cost $366,000.00. If reinjection is necessary, this cost doubles. Obviously, exploratory hole costs are much less. The expected load must therefore be such as to amortize such costs.

To illustrate this point better, let us assume a Melun type system producing 100 cubic meters of water per hour at 80°C (176°F) and assume the dump temperature as 50°C (122°F), thus producing 3 gigacalories of usable heat per hour. We further assume $2.50/hour running costs (one man). The following table then obtains:

Cost of Installation	cost of money	necessary sale price of heat*	equivalent oil cost
$2,000,000.	15%	$12.33/Gcal	$17.39/bb
$2,000,000.	6%	$6.23/Gcal	$ 8.78/bb
$ 500,000.	15%	$3.66/Gcal	$ 5.16/bb
$ 500,000.	6%	$2.13/Gcal	$ 3.00/bb

*assuming 30 year amortization.

Obviously costs can become even less if the resource is closer to the surface, hence reducing hole costs, or if the water temperature is higher.

The above table illustrates why such installations may be more feasible in Alaska than in the lower 48. There are many places in Alaska where heat, at even the higher prices shown, would be cheaper than the sources now used, with the lower costs much cheaper still.

In the Lower 48, however, the lower costs would surely have to be offered before much enthusiasm would be engendered.

However, a single well such as the one discussed above would supply from 1000 to 3000 people, depending on the exact conditions, and requires that kind of load to be economic. Installations for smaller groups of people would only be economic if the source costs were small, as might be obtained if springs or shallow wells could be used. Obviously, the proposed use of hot water for purposes other than household space heating could reduce the population base required to support a geothermal well. Greenhouse heating and municipal building heating are examples.

Proposal: A three step program is thus envisaged to demonstrate the economic use of geothermal hot water for space heating in Alaska.

The first step, using presently available data where feasible, would be to survey the towns of Alaska with populations in the region of a few thousand people to determine the heating energy demand, geology, present fuel costs, and local emotion concerning energy. On the basis of this survey, some half dozen towns would be picked for further work. The basis for picking the towns would be the leverage apparently available with respect to fuel costs, general geology, etc.

The second step would be to choose drilling sites in or near the towns, after preliminary geology and geophysics studies, on the basis of property ownership, engineering feasibility, town planning, etc. Some six exploratory holes would then be drilled to depth to determine the geothermal characteristics.

The third step would be to then choose the town offering the best economic and social advantage, and install a municipal heating system,

which would then be operated for several years to determine economic and engineering data.

Hopefully, the latter installation would prove sufficiently economic that other municipalities would then move in this direction on their own.

More detailed work would have to be done during step one to estimate the funding required for steps two and three. However, it would appear that step one could be accomplished for about $150,000. Present estimates are $3,000,000 to $4,000,000 for step two and $2,000,000 to $4,000,000 for step three. These numbers include engineering and planning costs, in addition to the construction costs. It is assumed that step one would be jointly supported by the state and ERDA, but that steps two and three might also attract municipal funding.

Step one could be accomplished within six months after approval. Step two could be accomplished during calendar year 1977. Step three would probably take two years.

It is envisaged that the state energy office would be the sponsor of this project, and that the work would be done by contract to the University of Alaska and private contractors.

APPENDICES E-3 to E-5 (INCL.)

PROPOSED TOTAL ENERGY STUDIES OF SELECTED ALASKAN THERMAL SPRINGS

by

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ABSTRACT

There are 95 or more thermal springs in Alaska. Based on geologic and geochemical data, we do not know of any Alaskan thermal springs that are related to vapor-dominated or large hot water reservoirs which have the potential for generating large amounts of electricity.

Heat is a precious commodity in the arctic and subarctic, and thermal springs are promising energy sources for rural Alaskan communities. Although small amounts of electricity could be generated from springs with higher flow rates and temperatures, utilizing Rankine Cycle-organic working fluid systems, non-electric applications show the greatest promise.

An optimum total energy system designed for a small, isolated Alaskan village would generate a small amount of electricity (40-60 kw) with the subsequent extraction of energy for space heating, controlled environment agriculture, fish farming and hatchery operations, and sewage processing and disposal.

Phased experiments and pilot studies are recommended for Manley, Clear Creek, and Pilgrim Springs in 1975-77 to test the engineering feasibility of this concept.

Selection of Demonstration and Study Sites

Proposed Sites: Three sites have been selected for proposed geothermal demonstrations and experiments to evaluate the feasibility of the total energy extraction concept, as applied to thermal springs in the rural Alaskan environment. The recommended sites (shown on the following page) are:

(1) Manley Hot Springs (90 miles northwest of Fairbanks)

(2) Pilgrim Springs (40 miles north of Nome)

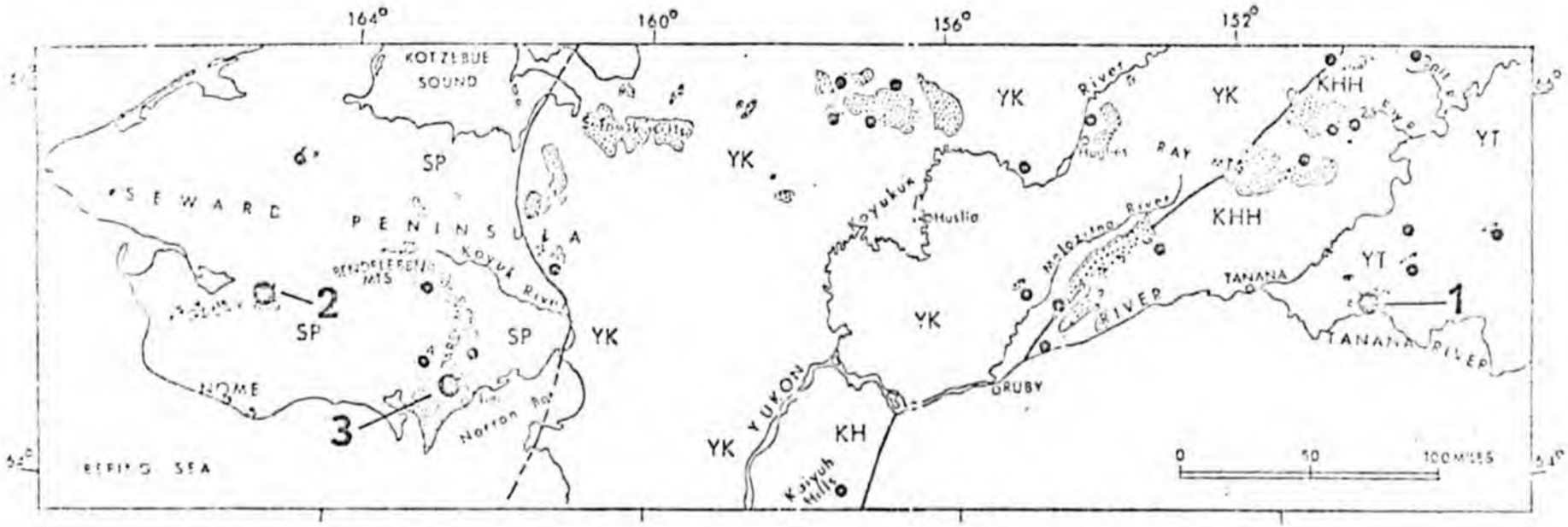
(3) Clear Creek Springs (15 miles north of Elim, on the south-eastern coast of the Seward Peninsula)

Manley Hot Springs: The thermal springs at Manley are privately owned and operated by Mr. Charles Dart. There are three major springs at the Manley site: One has a temperature of 64°C and an estimated flow rate of 20-25 gal/min; the second spring has a temperature of 51°C and an estimated flow rate of 200 plus gal/min; and the third has a temperature of 55°C and an estimated flow rate of 30 gal/min.

Manley is accessible from Fairbanks, via an all-weather road and by commercial air transportation. The Manley Springs are presently utilized for greenhouse operations, space heating and bathing. Mr. Dart has offered his facilities and support for the proposed project.

Pilgrim Springs: Pilgrim Springs are owned by the Catholic church, and under lease to Mr. C. J. Phillips of Nome. Based on temperature measurements by earlier workers, maximum spring water temperatures were thought to be about 68°C. Shallow subsurface thermal probes (8 ft.) recorded temperatures up to 80°C during field work conducted in summer 1974.

Although the site was formerly occupied by a Catholic Mission school until 1942, it is now abandoned. A small airstrip is accessible to light aircraft, via a short flight from Nome.



EXPLANATION

Hot spring

Granitic pluton

Contact between geologic provinces



GEOLOGIC PROVINCE

- SP Seward Peninsula
- YK Yukon-Koyukuk
- KH Kaiyuh Hills
- KHH Kokrines-Hodzana Highlands
- YT Yukon-Tanana

Geologic sketch map showing location and geological setting of thermal springs in central and westcentral Alaska (taken from Miller et al., 1973). Manley, Pilgrim, and Clear Creek Springs are shown as locality numbers 1, 2, and 3, respectively.

Mr. Phillips enthusiastically endorses the proposed program, and has given his permission for on-site demonstrations and experiments.

Clear Creek Hot Springs: The Clear Creek Thermal Springs are about 15 miles north of the village of Elim, on the southeastern coast of the Seward Peninsula. There are three springs, and one of these flows at an estimated rate of 450 gal/minute at a temperature of 68°C -- one of the largest estimated flow rates of known Alaskan thermal springs.

Although there are no residents near the Clear Creek Springs, the village of Elim is located on the coastline about 15 miles due south of the springs. Moses Point, another community, is located about 5 miles east of Elim.

Elim is a native village with an estimated population of 150-200 residents. Local industries include fishing, hunting, reindeer herding, and a potential lumber industry. Elim is currently served by an AVEC 100 kw diesel power system. Diesel oil must be lightered ashore from offshore anchorages. The peak power consumption during winter 1972-73 was 63 kw.

Plan of Research

Scope of Research

We propose a three-year investigative program including a one-year engineering evaluation of a Rankine-cycle generating system; a three-year agricultural application-space heating study; and a geochemical program to monitor the temperatures and chemistry of the thermal spring waters and ground temperature variation during the experiments.

Rankine-Cycle Turbine Evaluation

(L. Leonard)

Ormat Turbines Ltd. has agreed to collaborate with the University of Alaska in a project to evaluate the feasibility of producing electric power at Manley, using thermal spring water as an energy source. Ormat has agreed to supply a 2.5 kw organic Rankine-cycle turbine for field tests at Manley. This unit is to be equipped with a newly designed spring water-working fluid heat exchanger to extract heat from the thermal spring water. University of Alaska personnel would prepare the site, install the unit, and monitor the performance and output efficiency after installation.

The lead time prior to delivery and installation is estimated to be from 6 to 9 months. During the site construction phase, several shallow holes will be drilled to evaluate the possibility of obtaining hotter water in the shallow subsurface. If hotter water cannot be obtained, however, water from the hottest spring (64°C) will be used. If this temperature proves too low, the input water temperature can be raised by supplemental heating to the minimum temperature which is required by the system, and the value of the demonstration can be maintained. A one-year evaluation period is planned to monitor sustained performance characteristics and the effect of possible variations in water temperature and flow rate.

Present estimates indicate that a 20 gpm flow rate would be required for the evaluation. Outflow temperatures from the generator would be approximately 47°C. The outflow water will be returned to the agricultural and space heating systems for the extraction of additional energy.

The electricity produced by the experiment will be consumed by other Manley experiments, including lighting for the instrument hut and water pumps required by the gardening experiments. These applications will also

aid in evaluating the generator performance under varying loads.

If this small scale power demonstration proves successful, Ormat Turbines Ltd. will collaborate with the University of Alaska in the construction and installation of a larger pilot plant at another thermal spring (Clear Creek Springs).

Space Heating Studies

(L. Leonard)

Space heating experiments will constitute a significant part of the Manley engineering studies. Two structures are to be built at the site. A laboratory hut with accommodations for two investigators, which will also serve as a test enclosure for space heating experiments. The agricultural experiments will also require a building which will include a greenhouse and a controlled environment module which will need continuous heat.

Water delivery, regulation, and convector systems will be designed and tested. Whenever possible, commercially available equipment will be used. This work will concentrate on the optimization of existing equipment and systems, rather than attempts to develop new and radical techniques. Applications engineering studies will document the effects of fluctuations in flow rate and temperature of input water on heating systems.

Agricultural Applications and Experiments

(D. Dinkel)

Building on the past and present Manley agricultural successes, we propose a series of experiments and engineering application studies to determine the optimum methodology and economic feasibility of utilizing energy from thermal springs for the production of large-scale vegetable crops in controlled environment modules, greenhouses, and heated garden plots.

Controlled Environment Experiments

(D. Dinkel)

The major objective in this study is to determine economically optimum environmental controls and methods which could lead to large-scale vegetable farming at Alaskan hot springs. These experiments will require a specially designed and constructed agricultural laboratory. This structure would be composed of three modules, including a greenhouse unit, a hydroponic section, and a controlled total environment module.

The greenhouse would be operated during extended summer growing seasons and heated by thermal spring water and radiant heat from the warm ground. The intermediate section will function as a greenhouse or hydroponic unit, as controlled by detachable insulated panels which would overlie the basic glass frame enclosure.

The controlled total environment unit is to be a completely enclosed insulated module, heated by radiant heat from the warm ground, thermal spring water, and radiant heat from solar lamps powered by electricity generated by the 2.5 kw Ormat energy converter. Environmental controls will include solar radiation, ambient air and substrate temperature, CO_2 content (in air), and nutrient supply and chemistry.

Heated Garden Plot Experiments

(D. Dinkel)

There are extensive areas of warm ground adjacent to Manley Hot Springs. The average root depth soil temperatures in Interior Alaska are about 13°C during most of the growing season. In June 1974, soil temperatures up to 45°C were measured at root depths near the hottest of the Manley Springs as compared to soil temperatures of 11°C, 300 meters distant. Soil temperatures averaged 25°C within the thermally disturbed zone, which included a surface area of about 6.7 acres. Based on recent studies by Dinkel (1976) and others, the potential yield of such acreage, when farmed with the new techniques, is such

greater than that of arable land with the usual Interior Alaskan soil temperatures.

Planned experiments include preliminary soil temperature grid surveys and the compilation of detailed isothermal contour maps. Garden plots would then be located in planned temperature zones, and crops would be planted according to optimum root temperature requirements. Additional garden plots would be heated by networks of subsurface pipe (PVC, copper, steel) carrying thermal spring water, and surface irrigation with warm spring water would also be evaluated. Early planting and transplant techniques are to be explored, including the use of temporary plastic shelters. The yields per unit area, growth time, and quality versus cost would be compared to those of control garden plots farmed with standard agricultural methods.

Geochemical and Geophysical Studies

(R. B. Forbes)

Very little is known about the annual and/or seasonal variation in chemistry, temperature, and flow rate of thermal springs in general, and Alaskan springs in particular. Such variations, if large, could be very troublesome. A drop of a few degrees in water temperature could seriously reduce the performance and efficiency of binary type generating systems, and changes in flow rate would pose additional regulation problems. Variation in water chemistry, including relative increases in the concentration of alkalies, silica, calcium, and fluorine could be hazardous to agriculture, if the spring water is used for irrigation and/or for nutrient solutions.

As mentioned in an earlier section, it is now known that thermal spring waters are composed of at least 95% recirculated meteoric water. We do not know, however, what the turn-around time is in such systems;

and the problem is complicated by mixing with water from the local water tables, before emergence. Continuing geochemical data should be acquired during the program, to be applied to several problems and studies including:

(1) Short and long-term variation in the chemistry, temperature, and flow rate of spring water.

(2) Correlation of the above variations with local precipitation, break-up chronology, water table level, and barometric pressure.

(3) Turn-around time (surface-reservoir-surface) of water in the thermal spring system, with the aid of tritium and oxygen isotope analyses.

(4) Identification of the factors which control the mixing of ground and spring water in the subsurface, and the affect on the chemistry of the spring water.

The chemical monitoring system would be centralized in the laboratory module to be constructed on the site. Continuous temperature and flow rate data would be registered on recorders in the laboratory, and daily water samples would be analyzed with the aid of flame photometric and atomic absorption analytical equipment in the same laboratory.

Tritium and oxygen isotope analyses of spring water will be done at outside laboratores by separate contract, on weekly samples.

Appendix E-3

MANLEY HOT SPRINGS PROJECT

MANLEY HOT SPRINGS

Scheduled Work

Objectives:

The Manley experiments are designed to -

A. Determine the soil heating potential of hot spring water using several distribution methods.

B. Determine the yields and quality of high income type crops when grown with extended seasons and optimum soil temperature.

C. Test the efficiency of geothermal water to heat greenhouses and produce electricity for lighting and year-round crop production.

D. Gather data that will be useful in designing systems for the use of waste thermal energy that results from the conversion of fuel sources to electrical energy, thus promoting energy conservation and reducing thermal pollution from these waste energy sources.

E. Determine costs of production using these geothermal energy sources.

Agricultural Studies: (D. Dinkel)

Outdoor Studies: Crops will be grown in areas adjacent to Manley Hot Springs in soils that vary in soil temperature and length of cropping season.

Variables: A factorial design is planned using three or four replicates.

A. Soil Heating Treatments (3)

1) Unheated normal cultivated soil (the soil temperatures in Interior Alaska average about 13°C at the 5cm soil depth).

2) Geothermally disturbed soil selected to be as near 20-24°C as possible.

3) Soil heated to 24°C using geothermal water run through pipes placed beneath the soil surface.

B. Plastic mulch treatments (3)

1) No plastic mulch

2) Black plastic mulch soil covering

3) Clear plastic mulch soil covering

C. Plastic row coverings or cloches (2)

1) No row covering

2) Clear polyethylene row covering

D. Crops (8)

Warm season

1) Cucumbers

2) Sweetcorn

3) Snapbeans

4) Tomatoes or Peppers

Cool season

5) Peas

6) Broccoli

7) Carrots

8) Lettuce

Data will be gathered as follows:

A. Soil temperature at 4, 8 and 12cm on all plots on a daily basis using thermocouples.

B. Air temperature at 1, 5, 10 and 20cm above the plots on a daily basis.

C. Soil reaction (pH) on a weekly basis.

D. Soil nutritional status on a weekly basis.

1) Nitrogen

2) Phosphorous

3) Potassium

E. Crop data

1) Number of days to emergency

2) Number of days to crop maturity (measured by market quality)

3) Quality evaluations

4) Yields (total and marketable)

5) Significant morphological data for a specific crop (example - number of days to anthesis for peppers)

Greenhouse:

In addition to the use of the greenhouse to start plants for the field studies, there will be studies conducted with the objective of determining varieties and techniques for the continuous year-round production of high value crops. These studies are designed to determine the proper crops, varieties, scheduling for plantings and techniques for culture using the supplementary lighted greenhouse and the total controlled environment system for production.

Variables:

A. Crops (6)

1) Cucumbers

2) Tomatoes

3) Lettuce

a) leaf

b) head (crisp)

4) Radishes

5) Green onions

6) Turnips

B. Lighting (2)

1) Supplemental light with HID lamps to 300 micro-einsteins (PAR)

2) No supplemental lighting

C. Seasonal scheduling (in order to determine if proper scheduling will allow a grower to schedule the main vegetative growth prior to the dark part of the year and thereby improve year-round production even without supplemental lighting)

1) Summer season growth initiation

2) Fall season growth initiation

3) Spring season growth initiation

Data will be gathered as follows:

A. Crop data

1) Number of days to emergence

2) Number of days to crop maturity

3) Quality evaluations

4) Yields (total and marketable)

5) Significant morphological data for a specific crop (example - number of days to anthesis for tomatoes)

B. Temperatures

1) Air, daily and nightly

2) Soil, daily and nightly

C. CO_2 (daily)

D. Light measurements (micro-einsteins PAR)

In addition to the other more elaborate statistically designed studies, preliminary research will be accomplished to determine if irrigation with hot water will be practicable. Small areas will be watered with hot water using (1) trickle irrigation, (2) sprinkler irrigation, and (3) fog irrigation. Data will be gathered on soil and air temperature and on soil moisture content.

Studies will be conducted for three years in order to achieve adequate replication.

Appendix E-4

PILGRIM HOT SPRINGS PROJECT

Pilgrim Hot Springs Project

(R. B. Forbes)

Background: Pilgrim Springs is located approximately 40 miles north of Nome, in the southwest corner of the Bendeleben (A-6) Quadrangle.

Before the arrival of the white man, the Eskimo name for Pilgrim Springs was Kruzgamepa. During the height of early gold mining activity, the Springs served as a resort for residents of Nome, Solomon, Council, and other mining communities, and vegetables were also raised at the springs for local markets.

Subsequently, the Catholic Church established a mission school for native children at Pilgrim Springs which was closed in 1942. At present, the springs are leased from the Catholic Church by C.J. Phillips of Nome.

Geologic and Geochemical Setting: The Pilgrim River Valley is mantled by alluvial fill. Precambrian gneisses and biotite schists are exposed on Ben and Chickens Mountain, four miles north of the springs, and Cretaceous granitic intrusives cut Precambrian gneisses and schists in the hills to the south and east (Sainsbury, 1974). Miller et al. (1972) have suggested that an extension of the Bendeleben Range front fault may underlie the alluvium of the Pilgrim River Valley, and that Pilgrim Springs may be related to this fault system.

Serpentine Hot Springs is located approximately 50 miles north of Pilgrim Springs waters, and is characterized by high salinity of the NaCl type (see table on next page). The saline character of the Pilgrim Spring water has aroused speculation on a possible marine origin.

To the northeast, a large lowland area centered on Imuruk Lake is covered by a very young basaltic volcanic field which ranges in age from

Chemical Analyses of Pilgrim and Serpentine Spring Water (taken from Miller et al., 1973)

Component	Pilgrim	Serpentine	
SiO_2	100.0	100.0	*ppm
Al	0.044	0.083	
Fe	----	----	
Ca	530.0	47.0	
Mg	1.4	0.48	
Na	1450.0	730.0	
K	61.0	40.0	
Li	4.0	4.7	
NH_3	----	----	
HCO_3	30.1	64.5	
CO_3	----	----	
SO_3	24.0	29.0	
Cl	3346.0	1480.0	
F	4.7	6.4	
Br	----	----	
pH	6.75	7.91	

* parts per million

3.5 million year old basal volcanics to very young flows which may have been erupted as recently as a few hundred years ago (D.M. Hopkins, unpublished data).

The larger springs and associated seeps emerge from channel sands and silts in an abandoned meander loop of the Pilgrim River. However, other seeps and patches of warm ground occur in the adjacent area as shown by snow-free ground and bright green vegetation in winter versus summer aerial photographs (see "A Geophysical Reconnaissance of Pilgrim Springs").

Based on the apparent lack of subsidence and tilting of the mission buildings (with the exception of damage of uncertain origin to the greenhouse) and the absence of thermokarst pits in the cleared fields, the Pilgrim Springs area appears to be free of permafrost. The three dimensional geometry and areal extent of the thawed zone are not known.

Pilgrim Springs as a Potential Geothermal Resource

Although Pilgrim Springs has a previous agricultural and resort history, it has excited more recent interest as an indicator of a possible subsurface geothermal stream or hot-water reservoir.

Based on the silica, potassium-sodium and sodium-potassium-calcium thermometers (White, 1970), (Fournier and Truesdell, 1970), (Fournier and Truesdell, 1973), estimates of the sub-subsurface reservoir temperature of Pilgrim Springs have ranged from 120° to 137°C (Miller et al., 1973). Previous estimates of spring water flow rates have ranged from 6 to 20 gal/min. However, data reported in this study show that earlier temperature and flow measurements must be treated with caution due to the high permeability of the surrounding channel sands, and the mixing of spring and ground water.

Geophysical Survey

In an attempt to refine previous estimates of the geothermal potential of Pilgrim Springs, we applied several geophysical survey techniques including:

(1) Seismic refraction profiling

(2) Geomagnetic profiling

(3) Microseismic background recordings

(4) Surface and subsurface water temperature measurements in springs and seeps

The results of the survey and recommendations for further work are summarized below.

(1) Shallow subsurface water temperatures in zones of maximum upwelling reach 80°C a few inches below the bottom sediment.

(2) Pilgrim Springs waters are diluted by mixing and convection with local ground water, and water temperatures and salinities will increase in the subsurface.

(3) A 9060/5540 ft/sec discontinuity is located approximately 208 feet below the springs, which is believed to be Tertiary sediments or hydrothermally-cemented glacio-fluvial gravels. The sedimentary section, if present, may be up to 400 feet thick.

(4) Tertiary sediments, such as those which occur to the northeast, contain permeable rock units which could make good geothermal reservoirs; and a hydrothermally-cemented conglomerate cap would offer an interesting target, if it does indeed exist.

(5) The negative magnetic anomaly over the springs is most satisfactorily explained by a zone of hydrothermal leaching along the conduit system, which has a lower magnetic susceptibility.

(6) Subsurface spring waters will be more saline at depth, and with increasing temperature will constitute a serious corrosion problem in respect to drilling and application engineering.

(7) Although the observation period was dangerously short, the absence of microseismic activity during the two recording periods minimizes the probability of vapor phase reservoirs.

Plan of Research:

(1) An extended seismic refraction profile should be completed which includes deeper penetration and north-south step-outs. Objectives include the definition of Tertiary rocks versus hydrothermally-cemented gravels, and the Nome Group basement discontinuity.

(2) Based on a refined seismic profile, a shallow drilling program should be initiated which will accomplish the following objectives:

(a) A drill hole which penetrates the 208-foot discontinuity under Pilgrim Springs. The upper part of the hole will be in water-saturated sand, and effective drilling techniques will require driving casing ahead of the bit, and up-hole circulation to remove the unconsolidated and water-saturated sediment.

(b) The drilling program should include several halts in drilling activity to allow the development of a reasonably good thermocline in the water column in the cased hole, to allow meaningful gradient measurements.

(c) The casing should contain a corrosion resistant plastic liner.

(d) If shallow (100 feet) subsurface temperatures approach 100°C, drilling should be suspended until blow-out prevention equipment is installed at the well head.

(e) Draw-down and pumping tests should be conducted after each cycle of down-hole temperature measurements. This is the only method which will supply meaningful flow rate and capacity data in terms of large-scale geothermal applications.

(3) An agricultural experimental program should be activated at Pilgrim Springs which would evaluate the feasibility of the following:

(a) Shallow subsurface heating of agricultural plots by thermal spring water circulated through networks of plastic pipe.

(b) Heating of hydroponic and greenhouse facility by thermal waters from Pilgrim Springs.

(c) Heating of local residences by thermal spring waters.

(d) Desalinization of spring waters to provide potable water.

PILGRIM SPRINGS PROJECT

Scheduled Work

Summer 1976:

(1) Seismic refraction and surface geomagnetic survey of area (Stone, Gedney, Forbes)

(2) Aeromagnetic survey of area (subcontract)

(3) Shallow holes (100 ft.) drilling and thermal gradient measurements (subcontract)

(4) Exploratory drilling of seismic target, with downhole temperature, flow rate and related measurements (subcontract)

(5) Data evaluation and analysis (Forbes, Stone, Gedney)

Appendix E-5

CLEAR CREEK SPRINGS PROJECT

Clear Creek Springs Project

(R. B. Forbes)

Socio-Economic Framework of Elim

Background: The village of Elim, which is located about 15 miles from Clear Creek Springs, had a population of 170 people in 1970 when it became a fourth-class city. The population is Eskimo, with the exception of resident Bureau of Indian Affairs school teachers.

Elim was apparently an ancestral Eskimo village prior to the coming of the white man. A Covenant Church Mission was established in the village in 1914 by L.E. Ost. Elim received a post office in 1943.

Apparently the Elim people and adjacent villages paid little attention to Clear Creek Spring, although remnants of hunting camps can be found in the area.

There is no major industry in the village of Elim at present. The residents make their living from subsistence hunting and fishing, commercial fishing, trapping, reindeer herding, and a locally-owned cooperative store. Other sources of employment are mainly government related.

In recent years, the State Rural Development Agency has awarded several small grants to the village to perform public works projects, which have totaled about $2000 per year in resident wages.

The 1970 census showed the average individual income in Elim to be between $500 and $1000 per annum. At that time, skills possessed by unemployed villagers included:

a) grocery clerks
b) diesel mechanics
c) carpenters
d) dredge winchmen
e) heavy equipment oilers
f) truck and jitney drivers
g) reindeer herders
h) dozer operators
i) fishermen

Elim has a council which governs village affairs including law enforcement. There are two health aids in the village, but there is no sanitation aid, and no mechanized fire department.

Elim residences are mostly old log structures of one or two rooms. There are a few frame houses. Generally, the condition of the houses is poor, and most are in need of repair.

The only utility system in Elim is the Alaska Village Electric Cooperative power system. This system consists of two 50 kw diesel generators. The peak load in the winter of 1972-73 was 25 kw with an expected peak for 1974-75 estimated at 44 kw. There are no sewer or water systems.

Organized activities in Elim consist of:

a) Boy Scouts

b) 4-H Club

c) weekly movies

d) Sewing Circle

e) Covenant Church activities

f) Dog Race Committee

There are no community indoor or outdoor recreation facilities.

The geothermal potential of Clear Creek Springs offers interesting opportunities for the village of Elim. However, careful planning is necessary to insure that proposed developments and applications are compatible with the wishes and lifestyle of the Elim people. Preliminary discussions should be held with the villagers to determine what electric and/or non-electric applications are best suited to the needs and desires of the community.

Geologic and Geochemical Setting: The geologic setting of Clear Creek Springs has been described by Mil et al. as follows:

> "Hot springs on either side of east-flowing tributary of Clear Creek. Spring south of tributary has large flow estimated at several hundred gal/m and is about 400 ft above Clear Creek valley floor. A temperature of 63°C. was measured in 1970. Two hot spring areas occur north of tributary. The upper spring is inaccessible by helicopter; the lower one has a smaller flow than the spring to the south and a temperature of 67°C. . Chemical analysis available.
>
> "Springs are in quartz monzonite of Darby pluton less than 1/4 mi from contact with Devonian limestone. Pluton-limestone contact is inferred to be major fault (Miller and others, 1972) trending N.18°E."

A partial chemical analysis of water from Clear Creek Hot Springs has been reported by Miller et al. (1973) (see table on next page).

According to the Na-K-Ca geothermometer, the reservoir temperature for this spring water is estimated to be 111°C. The springs emerge from fractures in quartz monzonite, and this setting, along with the probable low reservoir temperature, argues against the presence of large subsurface geothermal steam reservoirs. However, Clear Creek Springs have excellent resource potential due to the large (400 gal/min or greater) flow rate of one of the springs, and a location which is 400 vertical feet above the valley floor.

Plan of Research: The high cost of food, heat and power in Elim, and the proximity of the village to Clear Creek Springs, constitute an optimum setting for a village demonstration project, involving the total energy concept as applied to the most acute energy needs of an isolated arctic community.

Socio-Economic Assessment

At the outset, the needs and wishes of the Elim people must be det ined, and a program should be developed which has a reasonable

Partial Chemical Analysis of Water from
Clear Creek Hot Springs (Miller et al., 1973)

SiO_2	--
Al	--
Fe	--
Ca	5.6
Mg	0.06
Na	54.
K	1.4
Li	--
NH_3	--
HCO_3	34.
CO_3	34.
SO_4	25.
Cl	4.9
F	--
Br	--
B	.02

pH = 9.43
T = 67°C

probability of answering these needs without disrupting village life, as idealized and desired by the residents.

We suggest that a small group of villagers, selected by the Village Council, be brought to Manley in the early stages of the project, to observe the pilot studies and experiments, and that the details of the Elim-Clear Creek program be finalized at an Elim-University of Alaska workshop, following the Manley visit.

Clear Creek Experiment

Calculations show that a 50 kw binary generating system could be driven by the 400 plus gal/min inflow of Clear Creek Springs water. The outflow temperature would be about 55°C. Considering the flow rate, the residual energy potential of the water is impressive. A 400-foot fall to the valley floor offers an additional hydroelectric inducement.

The Clear Creek experiment, subject to conferal with the Elim Council, would include the following:

(1) Installation of a 50 kw binary generating system.

(2) Construction of an electric transmission line to Elim.

(3) Possible development of a new community at the Clear Creek Springs site, utilizing the total energy of the springs, for:

  (a) Generation of electricity

  (b) Space heating

  (c) Controlled agriculture environment

  (d) Salmon hatchery operations

CLEAR CREEK PROJECT

Scheduled Work

Sandia Laboratories (ERDA) and the Geophysical Institute have agreed to conduct joint investigations at Clear Creek Hot Springs. Sandia is currently developing a thermodynamic working fluid generating system which could be evaluated at Clear Creek Springs in 1976 and/or 1977.

The experiment would also include the generation of additional electricity via a 400 ft. fall of outflow water to the valley floor, and the possible transmission of power to the village of Elim.

Although equipment readiness dates are not yet firm, site evaluation and selection must proceed during summer 1976, if applications engineering studies are to proceed at the desired rate. Funding is requested for one month's field work, including helicopter support, to conduct the necessary reconnaissance. The field evaluation will include:

(1) Water temperature and flow rate measurements.

(2) Geologic and geophysical investigations of the site.

(3) Route surveys for possible power transmission and/or hot water pipelines.

(4) Site selection for generating equipment.

(5) Mixing potential with Clear Creek, in respect to possible fish farming and hatchery operations.

Prior to the field work, a land status search will be conducted, to answer questions relating to the stewardship of Clear Creek Springs; and clearance will be sought for the planned experiments.

Preliminary Proposal

For

Wind Power Demonstrations at Selected Alaskan Sites (Umnak Island, Cold Bay, and Kotzebue)

October 1975

Submitted to

Director
Alaska State Energy Office
Anchorage, Alaska 99501

by

Geophysical Institute*
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Fairbanks, Alaska 99701

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Early solution of the well known energy problems that beset rural Alaskans now, and probably for at least several years if no actions are taken, requires positive efforts. Further problem definition and exploratory experiments will only prolong the difficulties. Problem solutions using existing technology should be started soon. However, especially where new, unconventional, or unfamiliar technology is involved, natural caution calls for limited but meaningful demonstrations prior to large and costly plant installations. In brief, FIELD DEMONSTRATIONS OF USEFUL ENERGY-PRODUCING HARDWARE SHOULD BE STARTED AS QUICKLY AS POSSIBLE.

This is a proposal for necessary (for installation) planning studies and actual demonstrations of wind power at three different Alaskan locations. These are included in one project because of cost savings through best use of personnel and similarity of equipment. The locations are the former Cape Air Force Base (and also formerly Fort Glenn) on Umnak Island in the Aleutians (referred to below as Umnak), Cold Bay and Kotzebue.

In view of several discussions regarding Alaskan wind power projects with the Director of the Alaska State Energy Office (ASEO) and the interest expressed by Governor Hammond, we do not dwell on the motivation for these tasks. Briefly, the sites were selected because:

1. Umnak is a prime site for an important aquaculture (salmon hatchery) demonstration facility, where the abundant resources of wind and warm water can be exploited.
2. Cold Bay is an outstanding location for windmill evaluation and use of the wind-derived energy. It has a large state-owned airport, using a considerable amount of expensive power. It presents an opportunity to use an existing distribution grid for wind work,

an important feature for possible future ERDA support. Also the local utility (Northern Power and Engineering Corp.) will cooperate in the project, including significant manpower contributions. Cold Bay is one of the best locations in Alaska for windmill exploitation. The Geophysical Institute has considerable experience in the area, including a close and continuing cooperative relationship with the U.S. National Weather Service (First Class Station) at Cold Bay.

3. Kotzebue offers a high visibility location for wind power demonstrations, since it is a major way-station for much travel between bush communities, or between the bush and Fairbanks, Anchorage, etc. A demonstration at the state-owned U of A Community College at Kotzebue (CCK) would also permit energy economies at the CCK and also real-life training in wind machine utilization, and thus a propagation among the villages of windmill use information.

Project Special Features

A major feature of this proposal is the expectation that a private foundation (The Kresge Foundation) will supply at least $50,000 as a gift to the Geophysical Institute for capital equipment (mostly the windmills*).

*These windmills would remain the property of the University of Alaska; the grant would be specifically to a regular 4-year college or university. These would be installed in the locations selected, on an indefinite long-term, no-cost loan basis. They would not be removed, except by mutual consent of the Geophysical Institute and the actual user at the selected locations. This proviso is only to insure proper use for the grantor's intended purposes.

This gift requires the guaranteed support by others to insure satisfactory completion of the project, and we intend not to re-apply for this gift until such support (detailed in the budget) is assured in writing. However, there are problems in making even parts of the entire project dependent on Kresge support. These are:

1. The amount Kresge might grant will not cover enough capital equipment for all three sites.
2. Kresge probably will not respond to our new grant application until 1 July 1976, too late for field implementation until early 1977.
3. Umnak, and perhaps Cold Bay, will not qualify under Kresge's conditions.

These problems are elaborated on below.

There are not enough funds in the expected Kresge grant to supply windmills and necessary auxiliary equipment for all three sites. At least two machines will be needed for Kotzebue, and one twice the size (and cost) for Cold Bay. Also the electric power requirement for the Umnak hatchery needs to be defined. In any case, one windmill for Umnak is the minimum.

Also the ground rules on which our earlier successful application to Kresge was based were that the capital equipment was for native village electrification demonstration and energy use by the villagers. Cold Bay thus does not qualify, and Umnak Island (excluding Nikolski) has no native settlement now. Nelson Lagoon would qualify, but for the purposes of the State (and FRDA funding) Cold Bay is a better candidate for a demonstration.

Another problem exists in basing this proposal on Kresge support. While the probability of the grant is very high (approved once, but then reluctantly relinquished by us), we must formally reapply for such a grant (telcon to me from Kresge, October 1975). The probability will be increased if we show in writing the endorsement of the Governor and guaranteed State fiscal support. Kresge will not entertain an application before 1 January 1976, or notify us of the result until 1 July 1976. Unless we can order windmills by about March 1976, their delivery at the field locations will be too late for installation before spring 1977. We propose that the State of Alaska's initial funding be such as to cover the entire project, with the understanding that the State contribution would probably be decreased eventually by the amount of the Kresge grant.

Another feature is the combination of the Umnak and Cold Bay activities initially at Cold Bay. Much planning and preliminary work for an Umnak wind system can be accomplished at Cold Bay, and money could be saved by doing this. There is no merit in installing windmills at Umnak until the actual hatchery site selection there is well defined; possible topographic shielding must be evaluated before wind machines are installed. There is no question that windmills will work on Umnak, but the maximum energy production can vary considerably with the specific location. Also, the wind machines should not be operated until personnel (Aleuts or others) are resident, and so can learn about and monitor machine behavior. However, wind speed surveys should be started at Umnak as soon as other activity, like geothermal measurements (temperature, flow rates, etc.), are begun. Soil surveys to insure satisfactory tower footings should also be made as early as possible.

Activity for Umnak

Depends on project details (exact location and energy requirements as defined by Bill McNeil or others).

1. Survey trip* to establish tower location and footing requirements, and shelter† facilities.
2. Supervise tower erection and start wind checks (tower to be used for windmill later). Local labor required.
3. Plan and order wind power system (includes auxiliary equipment).
   (a) Machine selection (December 1975?) depends on project needs and also best kind available; actual choice may indicate that first erection and testing should be done at Cold Bay, then moved to Umnak.
4. Supervise and instruct on windmill erection, checking and routine operation. Local labor required.
5. Write evaluation reports, for project use and for best educational and useful publicity effects in and out of state government.

Activity for Cold Bay

Depends on availability of wind machines, determined in connection with other site tasks. Geophysical Institute personnel will work in close cooperation with Northern Power and Engineering Company (NPEC) of Anchorage, the Cold Bay utility.

1. With NPEC advice, design wind power system (with minimal energy storage capacity) for tie in with the existing electric grid.
2. Order appropriate wind power system (estimated 13 KW rated).

*All Umnak activity coordinated with Cold Bay task, to save time and money
†For staging and use in wind and power facilities.

3. In conjunction with NPEC install tower and wind power system. Local labor used. NPEC will contribute significant manpower in installation and operation.
4. Continue present U of A cooperative wind behavior program with National Weather Service facility at Cold Bay, as these relate to the actual windmill operation.
5. Investigate specific wind power uses as these may apply to the State-owned Cold Bay Airport electrical needs, and for extrapolation to other Alaskan airports.
6. Write evaluation reports, for project use, and for best educational and useful publicity efforts in and out of State government. Stress economics of the wind-produced power.

Activity for Kotzebue

This project has been detailed elsewhere for use as a significant electricity source for the U of A Kotzebue Community College (KCC). Considerable planning has been done already. The Kotzebue effort combines the attractive features of cost-savings to the State, high visibility to native transients through this way-point, and teaching opportunities through "real-life" operating equipments and short courses at a facility that is directed to education of the rural people.

Initial cost savings for this project may stem from cooperation with the U of A effort for the actual construction of the KCC in early 1976. Equipment such as for tower footings and erection will be available and combined logistics also may effect savings.

We would do at Kotzebue:

1. Wind measurements at site selected (KCC?) to establish vertical effects, and determine the validity of extrapolation of wind data

from Kotzebue Airport. (Use a tower intended for a windmill later.)

2. Based on results of (1) above, supervise installation of 2 or 3 windmill systems for demonstration; also use for electric lighting of KCC facility.
3. Write evaluation reports, etc., as in item (5) of Umnak activity.
4. Organize and give short course in windmill technology and use at KCC, if interest exists.

APPENDIX G

The Alaska Geothermal Resources Act of 1971

higher cash offerings than plaintiffs' bids, the defendants acted properly in determining that the high cash bids on those 33 tracts were th apparent high bids, not plaintiffs' bids. Kelly v. Zamarello, Sup. Ct. Op. No. 705 (File Nos. 1255, 1256), 486 P.2d 906 (1971).

Royalty legislation on state oil and gas leases is a matter within the paramount jurisdiction of the state. The conservation of oil and gas is a matter within the authority of the states. 1969 Op. Att'y Gen., No. 6.

The royalty provisions of a mineral leasing act are related to conservation of natural resources. 1969 Op. Att'y Gen., No. 6.

The United States, under the 10th amendment to the Constitution of the United States, has no authority to legislate on state royalty provisions and state oil and gas leases. 1969 Op. Att'y Gen., No. 6.

An overriding gross royalty of 2% of all proceeds from any state and federal lands conflicts with the Statehood Act and the province of the Alaska state legislature. 1969 Op. Att'y Gen., No. 6.

A 2% overriding gross royalty cannot apply to a federal lease on public lands within the State of Alaska. 1969 Op. Att'y Gen., No. 6.

A 2% overriding gross royalty cannot apply to a State of Alaska oil and gas lease issued pursuant to AS 38.-05.180. 1969 Op. Att'y Gen., No. 6.

Cited in Shell Oil Co. v. Pan American Petroleum Corp., 5 Alas. L.J. No. 11, p. 230 (Nov., 1967).

ALR reference.—Validity of compulsory pooling or unitization statute or ordinance requiring owners or lessees of oil and gas lands to develop their holdings as a single drilling unit and the like, 37 ALR2d 434.

Sec. 38.05.181. Geothermal resources. (a) *Purpose.* The legislature finds and declares that

(1) the people of Alaska have an interest in the development of the state's geothermal resources potential for

(A) use in the generation of electrical power that may reduce the state's dependence on fossil fuel power plants that seriously pollute the atmosphere in a number of areas;

(B) the production of geothermal steam that may provide central heat for urban areas close to geothermal areas;

(C) the production of valuable minerals and other byproducts associated with geothermal steam and accompanying brines; and

(D) the distillation of fresh water;

(2) the state, through the Department of Natural Resources and its division of lands, should exercise its authority to encourage the exploration for, discovery and production of, geothermal resources in the public interest to

(A) encourage maximum economic recovery of this potentially important natural resource and prevent its waste;

(B) ensure that the exploration for, and production of, geothermal resources, and the disposal of wastes from them, are carried on in a way that will safeguard life, health, property, public welfare and the environment; and

(C) preserve the state's natural, scenic values especially in those areas where geothermal resources are or may be found; although the need to develop new sources of energy rapidly is be-

coming urgent, every effort also must be made to protect those hot springs and geysers that are among nature's scenic wonders.

(b) *Land survey and classification.* (1) Because of the absence of detailed geothermal mapping and the limited geochemical, geological or geophysical knowledge of the state's geothermal resources that is available, a survey of geothermal resources shall be included in the complete geological survey of the state authorized by AS 41.07.020, and a statement of the progress of the geothermal resources survey shall be contained in the annual report required by that section.

(2) The classification of known geothermal resources areas, each of which shall contain at least one well capable of producing geothermal resources in commercial quantities, shall be made by the commissioner upon recommendations of the director, the state geologist or the United States Geological Survey under AS 41.07.040.

(3) Within 125 days after August 15, 1971, the commissioner shall publish a statement of all lands which were included within any known geothermal resources areas on August 15, 1971. He shall also publish from time to time his determination of other known geothermal resources areas specifying in each case the date the lands were included in the area.

Revisor's note (1973). — The provisions of AS 41.07, referred to in (b)(1) and (2) of this section, have been repealed. See AS 41.08.

(c) *Authority.* (1) Under the provisions of this section and subject to §§ 135 — 145 of this chapter, where applicable and not in conflict with this section, the commissioner may issue prospecting permits and leases for the exploration, discovery, development, utilization, extraction and removal of geothermal resources in or from state lands administered by him.

(2) Rights to develop and utilize geothermal resources underlying lands owned by the State of Alaska may be acquired solely in accordance with the provisions of this section.

(3) The commissioner shall prescribe those regulations he considers appropriate to carry out the provisions of this section. The regulations may include, without limitation, provisions for

(A) the prevention of waste,

(B) development and conservation of geothermal and other natural resources,

(C) the protection of the public interest,

(D) assignment, segregation, extension of terms, relinquishment of leases, development contracts, unitization, pooling, and drilling agreements,

(E) compensatory royalty agreements, suspension of operations or production, and suspension or reduction of rentals or royalties,

(F) the filing of surety bonds to assure compliance with the terms of the lease and to protect surface use and resources,

(G) use of the surface by a lessee or permittee of the lands embraced in his lease or permit,

(H) the maintenance by the lessee of an active development program, and

(I) protection of water quality and other environmental qualities.

(d) *Eligibility.* (1) Prospecting permits and leases under this section may be issued only to or held by

(A) persons or associations of persons who are citizens of the United States or who have declared their intention of becoming citizens, or who are citizens of any country, dependency, colony, or province, the laws, customs, and regulations of which permit the grant of similar or like privileges to citizens of the United States;

(B) any corporation or corporations organized and existing under and by virtue of the laws of the United States or of any state, territory or the District of Columbia; or governmental units, including, without limitation, municipalities or boroughs;

(C) any alien person entitled to a prospecting permit or lease by virtue of a treaty between the United States and the nation or county of which the alien person is a citizen or subject.

(2) In every case of joint bidding, the names of all persons, firms, or corporations interested in a particular joint bid shall be specified.

(e) *Land administration.* (1) Administration of this section shall be under the principle of multiple use of public lands and resources, and, insofar as feasible, shall allow coexistence of other permits or leases of the same lands for deposits of other minerals under this chapter, and the existence of permits or leases issued under this section does not preclude other uses of the areas covered by them. However, operations under other permits or leases or other uses may not unreasonably interfere with or endanger operations under a permit or lease issued under this section, nor may operations under permits or leases issued under this section unreasonably interfere with or endanger operations under a permit or lease issued under any other law. This section does not supersede the authority which the head of a state department or agency has with respect to the management, protection, and utilization of the state lands and resources under his jurisdiction. The commissioner may prescribe by regulation those conditions he considers necessary for the protection of other resources.

(2) If the commissioner determines independently or on advice of the director, the state geologist or the United States Geological Survey that the production, use, or conversion of geothermal steam is susceptible of producing a valuable byproduct, including commercially demineralized water for beneficial uses in accordance with applicable state water laws the commissioner shall require substantial beneficial production or use of these byproducts unless, in individual circumstances he modifies or waives this requirement in the interest of conservation of natural resource or for other reasons satisfactory to him. However, the production or use of those byproducts is subject to the rights of the holders of preexisting leases, claims, or permits covering the same land or the same minerals, if any.

(3) For the purpose of properly conserving the natural resources of any geothermal resources areas, or any part of them, the lessees may unite with each other or with others in collectively adopting and operating under a cooperative or unit plan of development or operation of the geothermal resources lands. The commissioner may, with the consent of the holders of leases involved, establish, alter, change, and revoke any drilling and production requirements of these leases, permit apportionment of production, and may make those regulations with reference to these leases, with like consent on the part of the lessees, in connection with the institution and operation of any cooperative or unit plan, as the commissioner considers necessary or proper to secure the proper protection of the interests of the state.

(4) Any person engaged in the production of geothermal resources under a lease issued by the commissioner may commingle geothermal resources from any two or more wells without regard to whether the wells are located on the lands for which the lease was issued or elsewhere. However, the lessee shall install and maintain meters or other measuring devices satisfactory to the commissioner to measure the amount of geothermal resources produced from lands for which leases were issued by the commissioner.

(f) *State land; limitations, exclusions.* Leases or permits for lands withdrawn or acquired in aid of the functions of the Department of Natural Resources may be issued only under those reasonable terms and conditions that the commissioner may prescribe by regulation to insure adequate utilization of the land or its waters for the purposes for which they were withdrawn or acquired. However, leases or permits under this section may not be issued for

(1) lands administered as state parks, recreation or wilderness areas, or

(2) lands in a fish hatchery, wildlife refuge, wildlife range, game range, wildlife management area, waterfowl production area, or for land acquired or reserved for the protection and conservation of fish and wildlife that are threatened with extinction.

(g) *Unknown land; prospecting permits.* (1) Subject to the provisions of (c) of this section, the commissioner shall issue a prospecting permit to the first qualified applicant under this section and those regulations he may prescribe for lands which have not been classified as known geothermal resources areas, upon the payment to the commissioner of not less than $1 an acre for each acre of land included in the permit, in accordance with (k) (1) (C) of this section. An application for a permit shall be denied if, before the issuance of the permit, the land is classified or reclassified as known geothermal resources land under (b) (2) of this section.

(2) A permit gives the permittee the exclusive right for a period of three years to prospect for geothermal resources upon land included within the permit. The commissioner may, in his discretion, extend the primary term of a permit for a period not exceeding two years, except that the combination of the primary term and extension of a permit may not exceed a total of five years. The commissioner may amend or terminate a permit issued by him within the primary term period or within the extension, if any, with the consent of the permittee.

(3) Upon the classification of any of the land included within a permit issued under this section as known geothermal resources land areas, the permittee is entitled to a lease for this land. The classification of this land shall be made in accordance with (b) (2) of this section. The terms of the lease shall include the royalties and other terms contained in (j), (k) and (l) of this section on the effective date of the lease.

(h) *Known areas; leases.* (1) If the land to be leased under this section is within a known geothermal resources area and no prospecting permit on it has been issued, this land shall be leased to the highest responsible qualified bidder under this section and those regulations the commissioner may prescribe for notice to the public of terms and conditions of the sale, conduct of the sale, receipt of bid, and awarding of the lease, and bidding shall be by competitive bid, oral or sealed at the discretion of the commissioner, under regulations he promulgates, and on the basis of a cash bonus, net profit, or other single biddable factor.

(2) In leasing land under this section, the commissioner may prescribe a development program. In prescribing the program, the commissioner shall consider all applicable economic factors, in-

cluding market conditions and the cost of drilling for, producing, processing and utilizing of geothermal resources.

(i) *Conversion of leases and permits.* (1) Notwithstanding any other provisions of this section, at any time within 180 days following August 15, 1971,

(A) with respect to all land which was subject to valid leases or permits issued under §§ 135—180 of this chapter or to existing mining claims located on or before August 15, 1971, the lessees or permittees or claimants or their successors in interest who are qualified to hold geothermal leases may convert their leases or permits or claims to geothermal leases covering the same land;

(B) where there are conflicting claims, leases, or permits embracing the same land, the person who first was issued a lease or permit, or who first recorded the mining claim is entitled to first consideration;

(C) with respect to all land which was, on August 15, 1971, the subject of applications for leases or permits under §§ 135—180 of this chapter, the applicants may convert their applications to applications for geothermal leases having priorities dating from the time of filing of applications under this chapter.

(2) No person may convert mineral leases or permits, or applications for them, or mining claims for more than 10,240 acres.

(3) The conversion of leases, permits, and mining claims and applications for leases and permits shall be accomplished in accordance with regulations promulgated by the commissioner; no right to conversion to a geothermal lease accrues to a person under this section unless the person shows to the reasonable satisfaction of the commissioner that substantial expenditures for the exploration, development, or production of geothermal steam or other resources have been made by the applicant who is seeking conversion, on the land for which a lease is sought or on adjoining, adjacent, or nearby federal or state land.

(4) With respect to land within a known geothermal resources area and which is subject to a right to conversion to a geothermal lease, the land shall be leased by competitive bidding, except that the competitive geothermal lease shall be issued to the person owning the right to conversion to a geothermal lease if he makes payment of an amount equal to the highest bona fide bid for the competitive geothermal lease, plus the rental for the first year, within 30 days after he receives written notice from the commissioner of the amount of the highest bid.

(j) *Acreage.* (1) An application for a prospecting permit or lease may not be made for less than 640 acres nor more than 2,560

acres and shall embrace a reasonably compact area. However, a permit or lease may be issued for a parcel less than 640 acres if that parcel is isolated from or not contiguous with other parcels of land available for permit or lease under this section, or if the land is irregularly subdivided.

(2) Prospecting permits or leases for land beneath lakes and rivers, and below the mean high tide level of tide and submerged land, may be issued for not less than 640 acres nor more than 5,760 acres and shall embrace a reasonably compact area, except that a permit or lease may be issued for a parcel less than 640 acres if the parcel is isolated from or not contiguous with other parcels of land available for permit or lease under this section.

(3) Except as otherwise provided in this section, no person, association or corporation may take, hold, own, or control at one time, whether acquired directly from the commissioner under this section or otherwise, any direct or indirect interest in state geothermal leases exceeding 25,600 acres, including leases acquired under the provisions of (i) of this section.

(4) At any time after 15 years from August 15, 1971 the commissioner, after public hearings, may increase this maximum holding by regulations, not to exceed 51,200 acres.

(5) Subject to the other provisions of this section, the permittee or lessee is entitled to use as much of the surface of the land covered by his geothermal lease or permit as may be found by the commissioner to be reasonably necessary for the exploration, production, utilization, and conservation of geothermal resources. However, any well drilled for the discovery and production of geothermal resources, which is located within 300 feet of an outer boundary of the parcel of land on which the well is situated or within 300 feet of a public road, street or highway dedicated before the commencement of drilling of the well, is a public nuisance. Where several contiguous parcels of land in one or different ownerships are operated as a single geothermal resources lease or operating unit, the term "outer boundary" means the outer boundary line of the land included in the lease or unit. In determining the contiguity of any of these parcels of land, no street, road or alley lying within the lease or unit is considered to interrupt that contiguity.

(k) *Royalties and rentals.* (1) Each permit or lease issued under this section shall provide for

(A) a royalty of not less than 10 per cent nor more than 15 per cent of the gross revenue, exclusive of charges, approved by the commissioner made or incurred with respect to transmission or other services or processes, received from the sale of steam,

brines, from which no minerals have been extracted, and associated gases at the point of delivery to the purchaser of them;

(B) a royalty of not less than two per cent nor more than 10 per cent of the gross revenue received from the sale of mineral products or chemical compounds recovered from geothermal fluids in the first marketable form as to each mineral product or chemical compound for the primary term of the lease;

(C) an annual rental payable in advance of not less than $1 an acre or fraction of an acre for each year of a permit or lease.

(2) The royalties specified in this section are subject to renegotiation under (m) of this section based upon recommendations of the director and the renegotiations are not limited by the maximum royalties specified in (1)(A) and (B) of this subsection.

(3) Royalty payments shall be made for all geothermal resources used by the lessee, but which he does not sell. The value of these geothermal resources used, but not sold, shall be determined by the commissioner and set out in the terms of the lease. The commissioner shall consider the cost of exploration and production and the economic value of the resource in terms of its ultimate utilization.

(4) Upon request of the commissioner, other state departments and agencies shall furnish him with any relevant data then in their possession or knowledge concerning or having bearing upon fair and adequate charges to be made for geothermal steam produced or to be produced for conversion to electric power or other purposes. Data given to a department or agency as confidential under law may not be furnished in a way which identifies or tends to identify the business entity whose activities are the subject of the data or the person or persons who furnished the information.

(5) The commissioner independently or upon the advice of the director, may waive, suspend, or reduce the rental or minimum royalty for the land included in any permit or lease, or any portion of it, and waive, suspend, alter or amend the operating requirements contained in the lease or regulations promulgated under this section affecting operations of the lease or permit, in the interests of conservation, and to encourage the greatest ultimate recovery of geothermal resources if he determines that that action is necessary or beneficial to promote development or finds that the permit or lease cannot be successfully operated under the permit or lease terms or under the regulations.

(6) If, after the discovery of geothermal resources in commercial quantities, the total royalties due to the state during any calendar year do not equal or exceed a sum equal to $2 an acre for each acre or fraction of an acre then included in the permit

or lease, the permittee or the lessee shall, within 60 days after the end of the year, pay whatever sum is necessary to equal a minimum royalty of $2 an acre.

(l) *Term of leases.* (1) Leases under this section shall be for a primary term of 10 years. If geothermal resources are produced or utilized in commercial quantities within this term, the lease shall continue for as long as geothermal steam or other byproducts are produced or utilized in commercial quantities, but the continuation may not exceed an additional 40 years.

(2) If, at the end of that 40 years, steam or other geothermal resources are produced or utilized in commercial quantities and the land is not needed for other purposes, the lessee has a preferential right to a renewal of the lease for a second 40-year term in accordance with the terms and conditions as the commissioner considers appropriate; but in any event a lease may not exceed a cumulative total of primary and subsequent terms of 99 years.

(3) A lease for land on which, or for which under an approved cooperative or unit plan of development or operation, actual drilling operations were started before the end of its primary term and are being diligently prosecuted at that time shall be extended for five years and as long thereafter, but not more than 35 years, as geothermal resources are produced or utilized in commercial quantities. If at the end of the extended term, steam or other resources are being produced or utilized in commercial quantities and the land is not needed for other purposes, the lessee has a preferential right to a renewal of the lease for a second term in accordance with this section and those terms and conditions the commissioner considers appropriate.

(4) For purposes of (1) of this subsection, production or utilization of geothermal resources in commercial quantities includes the completion of one or more wells producing or capable of producing geothermal resources in commercial quantities and a bona fide sale of geothermal resources for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of commencement of the primary term of the lease.

(5) Leases which have extended by reasons of production, or which have produced geothermal resources and have been determined by the commissioner to be incapable of further commercial production and utilization of geothermal resources may be further extended for a period of not more than five years from the date of that determination but only for as long as one or more valuable byproducts are produced in commercial quantities. If the byproducts are leasable under this chapter and the leasehold is primarily

valuable for the production of these byproducts, the lessee is entitled to convert his geothermal lease to a mineral lease under, and subject to all the terms and conditions of, this chapter upon application at any time before expiration of the lease extension by reason of byproduct production. The lessee is entitled to locate under the mining laws all minerals which are not leasable and which would constitute a byproduct if commercial production or utilization of geothermal resources continued. The lessee in order to acquire the rights granted him by this section shall complete the location of mineral claims within 90 days after the termination of the lease for geothermal resources.

(m) *Readjustment of lease terms.* (1) Except as otherwise provided, the commissioner may readjust the terms and conditions of any lease issued under this section at not less than 10-year intervals beginning 10 years after the date the geothermal resources are produced, as determined by the commissioner. Each lease issued under this section shall provide for that readjustment. The commissioner shall give notice of any proposed readjustment of terms and conditions, and, unless the lessee files with the commissioner objection to the proposed terms or relinquishes the lease within 30 days after receipt of the notice, the lessee conclusively shall be considered to have agreed to those terms and conditions. If the lessee files objections, and no agreement can be reached between the commissioner and the lessee within a period of not less than 60 days, the lease may be terminated by either party.

(2) The commissioner may readjust the rentals and royalties of any geothermal lease issued under this section at not less than 20-year intervals beginning 35 years after the date geothermal resources are produced, as determined by the commissioner. In the event of any readjustment neither the rental nor royalty may be increased by more than 50 per cent over the rental or royalty paid during the preceding period, and in no event may the royalty payable exceed 12½ per cent. Each geothermal lease issued under this section shall provide for that readjustment. The commissioner shall give notice of any proposed readjustment of rentals and royalties, and, unless the lessee files with the commissioner objection to the proposed rentals and royalties or relinquishes the lease within 30 days after receipt of the notice, the lessee conclusively shall be considered to have agreed to those terms and conditions. If the lessee files objections, and no agreement can be reached between the commissioner and the lessee within a period of not less than 60 days, the lease may be terminated by either party.

(n) *Rights of [illegible] lessee.* In case of an application for a permit or lease covering land which has been

sold by the state, subject to a reservation by the state of the geothermal resources in them by anyone other than the owner of that land, the owner has six months from the date of service of notice on the owner of the application within which to file his application for a permit or lease. The notice shall be served by the applicant together with a copy of the application. If the owner exercises his rights and is a qualified person, his application shall be granted but subject to all the other provisions of this section. If the owner fails to exercise the rights granted by this section, then the owner's rights under it shall immediately cease and terminate and the original applicant shall be permitted to proceed with his application. If the lands subject to classification are classified as within a known geothermal resource area, then, after the commissioner has determined the highest competitive bid on it the owner may within 10 days after notification by the commissioner submit a bid identical to the highest acceptable bid, in which case the commissioner shall issue a lease to the surface landowner. If the surface landowner does not file a bid within that period of time, the commissioner may proceed with the award of the bid to other than the surface landowner.

(o) *Termination of permits or leases.* (1) A permit or lease may be terminated by the commissioner, lessee or permittee only under the provisions of this section, or under the terms of the lease or permit or both. The commissioner shall insert in every permit or lease issued under this section appropriate provisions for its cancellation in accordance with the provisions of this section.

(2) The commissioner reserves the authority to cancel any prospecting permit or lease upon which a commercially valuable deposit of geothermal resources has not been discovered in paying quantities upon failure of the permittee or lessee (after 30 days written notice and demand for performance) to exercise diligence and care in the prosecution of the prospecting or development work in accordance with the terms and conditions of the permit or lease. After discovery of a commercially valuable deposit of geothermal resources on lands subject to any permit or lease issued under this section, the permit or lease may be forfeited and canceled only upon failure of the lessee after 90 days written notice and demand to comply with any of the provisions of the permit or lease or of the regulations applicable to it and in force at the date of the permit or lease. However, in the event of a cancellation the permittee or lessee under any geothermal resource permit or lease may retain under the permit or lease all drilling or producing wells as to which no default exists, together with a parcel of land surrounding each well and the rights-of-way through the land under

permit or lease, that may be reasonably necessary to enable the permittee or lessee to drill and operate the retained well or wells. In the event of the cancellation of a permit or lease the permittee or lessee has a reasonable time within which to remove all property, equipment and facilities owned or used by the permittee or lessee in connection with operations under the permit or lease.

(3) If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date terminates the lease by operation of law. However, whenever the commissioner discovers that the rental payment due under a lease is paid timely but the amount of the payment is deficient because of an error or other reason and the deficiency is nominal, as determined by the commissioner under regulations promulgated by him, he shall notify the lessee of the deficiency and the lease shall not automatically terminate unless the lessee fails to pay the deficiency within the period prescribed in the notice. If a lease has been terminated automatically by operation of law under this paragraph for failure to pay rental timely and it is shown to the satisfaction of the commissioner that the failure to pay timely the lease rental was justifiable or not due to a lack of reasonable diligence, he in his judgment may reinstate the lease if

(A) a petition for reinstatement, together with the required rental, is filed with the commissioner, and

(B) no valid lease has been issued affecting any of the lands in the terminated lease before the filing of the petition for reinstatement.

(4) A permit or lease issued under this section may be assigned, transferred, or sublet as provided for by law, or under regulations promulgated by the commissioner.

(5) The holder of a geothermal lease or permit at any time may make and file in the appropriate land office a written relinquishment or quit claim of all rights under the lease or permit or of any legal subdivision of the area covered by the lease or permit. The relinquishment is effective as of the date of its filing. Thereupon the lessee or permittee is released of all obligations accruing under the lease or permit with respect to the land relinquished, but no relinquishment releases the lessee or permittee, or his surety or bond, from liability for breach of any obligation of the lease or permit, other than an obligation to drill, accrued at the date of the relinquishment, or from the continued obligation, in accordance with the applicable lease or permit, terms and regulations.

(A) to make payment of all accrued rentals and royalties,

(B) to place all wells on the relinquished lands in condition for suspension or abandonment, and

(C) to protect or restore substantially the surface and surface resources.

(6) The commissioner, upon application by the lessee or permittee, may authorize the lessee or permittee to suspend operations and production on a producing lease or permit and he may, on his own motion in the interest of conservation suspend operations on any lease or permit but in either case he may extend the lease term for the period of any suspension, and he may waive, suspend, or reduce the rental or royalty required in the lease or permit.

(7) Leases or permits may be terminated by the commissioner for any violation of the regulations or lease or permit terms, or of this section after 30 days notice if the violation is not corrected within the notice period, or in the event the violation is of a nature that it cannot be corrected within the notice period then if the lessee or permittee has not started in good faith within the notice period to correct the violation and thereafter to proceed diligently to correct the violation. The lessee or permittee is entitled to a hearing on the matter of the claimed violation or proposed termination of lease or permit if request for a hearing is made to the commissioner within the 30-day period after notice. The period for correction of violation or commencement to correct the violation of regulations or of lease terms or of this section shall be extended to 30 days after the commissioner's decision after the hearing if the commissioner finds that a violation exists.

(p) *Conservation; prevention of waste and pollution.* (1) All leases or permits under this section are subject to the condition that the lessee or permittee will, in conducting his exploration, development and production operations, use all reasonable precautions to protect the environment and to prevent pollution of the state's waters and waste of geothermal resources developed in the land leased or granted for prospecting under a permit.

(2) With the approval of the commissioner, a permittee or lessee may drill special wells, convert producing wells or reactivate and convert abandoned wells for the sole purpose of reinjecting geothermal resources of their residue.

(3) The owner or operator of a geothermal well on land producing or reasonably presumed to contain geothermal resources shall properly construct the well in accordance with methods approved by the commissioner. The owner or operator shall make every reasonable effort to prevent damage to life, health, property and natural resources, to protect the geothermal resources de-

posits from damage or waste, to shut out detrimental substances from underground strata containing water suitable for irrigation or domestic purposes and from surface water suitable for these purposes, and to prevent the infiltration of detrimental substances into these strata and into surface water.

(4) The commissioner shall require those tests or remedial work of the owner or operator of a geothermal well that in his judgment are necessary to prevent damage to life, health, property, and natural resources, to protect geothermal resources deposits from damage or waste, or to prevent the pollution of the state's waters by the infiltration of detrimental substances into underground or surface water suitable for irrigation or domestic purposes, for the best interests of the neighboring property owners and the public. To this end he may request the assistance of the Department of Environmental Conservation under AS 46.03.

(5) Any act by a lessee or permittee, or by an owner or operator of a geothermal well, that pollutes the state's waters in violation of AS 46.03 shall be punished in accordance with AS 46.03.760.

(6) Subject to (o)(7) of this section, leases or permits may be canceled by the commissioner for any persistent, repeated violations of the water pollution provisions in AS 46.03. On recommendation of the director, the commissioner shall request the district attorney in the judicial district where the alleged violation occurs, or the attorney general, to bring an action to enjoin the acts prohibited by AS 46.03, or to impose the penalties authorized by AS 46.03.760. Nothing in this paragraph precludes the imposition of both injunctive relief, the criminal penalties, and cancellation of the lease or permit, or any combination of these remedies, that the commissioner or the court considers appropriate.

(q) *Definitions.* In this section

(1) "byproduct" means any mineral or minerals (exclusive of oil, hydrocarbon gas, helium or other hydrocarbon substances) which are found in solution or in association with geothermal resources and which have a value of less than 75 per cent of the value of the geothermal resource or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves;

(2) "commissioner" means the commissioner of the Department of Natural Resources;

(3) "department" means the Department of Natural Resources;

(4) "director" means the director of the division of lands in the Department of Natural Resources;

(5) "division" means the division of lands in the Department of Natural Resources;

(6) "geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, the natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases, and steam, in whatever form, found below the surface of the earth, exclusive of oil, hydrocarbon gas, helium or other hydrocarbon substances, but including, specifically:

(A) all products of geothermal processes, embracing indigenous steam, hot water and hot brines;

(B) steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations;

(C) heat or other associated energy found in geothermal formations, and

(D) any byproduct derived from them;

(7) "geothermal area" means a surface area which is underlaid, or reasonably appears, to be underlaid by geothermal resources;

(8) "known geothermal resources area" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the commissioner, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal resources are good enough to warrant expenditures of money for that purpose;

(9) "lease" means a geothermal lease issued under this section;

(10) "operator" means any person drilling, maintaining, operating, pumping, or in control of any well; "owner" includes "operator" when any well is operated or has been operated or is about to be operated by any person other than the owner; "operator" includes "owner" when any well is or has been or is about to be operated under the direction of the owner;

(11) "permit" means a prospecting permit issued under this section;

(12) "person" includes any individual, firm, association, corporation or any other group or combination acting as a unit;

(13) "well" means any well for the discovery of geothermal resources or any well on land producing geothermal resources or

reasonably presumed to contain geothermal resources, or any special well, converted producing well or reactivated or converted abandoned well employed for reinjecting geothermal resources or their residue.

(r) *Construction.* This section shall operate prospectively and shall be liberally construed to meet its objectives, and the commissioner and director have all the powers necessary to carry out the purposes of this section.

(s) *Short title.* This section may be cited as the Geothermal Resources Act of 1971. (§ 1 ch 71 SLA 1971; am § 6 ch 104 SLA 1971; am §§ 34—36 ch 71 SLA 1972)

Revisor's note (1971).—The numbering, as it appeared in ch. 71, SLA 1971, of certain provisions in this section has been corrected, as follows: (d)(1), (2) and (3) changed to (d)(1)(A), (B) and (C), respectively; (d)(4) changed to ')(2); (i)(1), (2) and (3) changed to (i)(1)(A), (B) and (C), respectively; (i)(4), (5) and (6) changed to (i)(2), (3) and (4), respectively; (k)(1)(D) changed to (k)(C).

Effect of amendment. — The 1972 amendment, in subsection (p)(4), substituted "Department of Environmental Conservation under AS 46.03" for "Department of Health and Social Services under AS 46.05" in the last sentence; in subsection (p)(5), the amendment substituted "AS 46.03" for "AS 46.05" and substituted "AS 46.03.760" for "AS 46.05.210"; and in subsection (p)(6), the amendment substituted "water pollution provisions in AS 46.03" for "water pollution control act (AS 46.05)" at the end of the first sentence, substituted "AS 46.03" for "AS 46.05" in the second sentence, substituted "AS 46.03.760" for "AS 46.05.210" in that sentence, and substituted "considers" for "consider" in the last sentence.

Legislative committee report.—For report on ch. 71, SLA 1972 (HCSSB 383 am H), see 1972 House Journal, p. 898.

Sec. 38.05.182. Royalty on natural resources. Any royalty provided for in §§ 135—181 of this chapter may be taken in kind rather than in money at the discretion of the commissioner if he determines that the taking in kind would be in the best interest of the state. (§ 1 ch 56 SLA 1970; am § 7 ch 71 SLA 1971)

Revisor's note (1970). — In ch. 56, SLA 1970, AS 38.05.182 and 38.05.183 were numbered AS 38.05.362 and 38.05.363, respectively.

Legislative committee report.—For report on ch. 56, SLA 1970 (CSSB 185 am H), see 1969 House Journal, p. 571.

Sec. 38.05.183. Sale of royalty products. (a) The sale of any mineral, including oil and gas, obtained by the state as a royalty under § 182 of this chapter shall be by competitive bid and the sale made to the highest responsible bidder, except that competitive bidding is not required when the commissioner determines that the best interest of the state does not require it or that no competition exists.

(b) The commissioner may reject all bids if he determines that because of the amount of the bids or the lack of responsibility on

the part of the bidders, the acceptance of the bids would not be in the best interest of the state.

(c) If the commissioner determines that a sale or other disposal of royalty products is not to be made by competitive bid, he shall make public, in writing, the specific findings and reasons on which his determination is based.

(d) Details of bidding shall be established by regulation by the commissioner. (§ 1 ch 56 SLA 1970)

Legislative committee report.—For report on ch. 56, SLA 1970 (CSSB 185 am H), see 1969 House Journal, p. 571.

Article 7. Mining Rights.

Section		Section	
185.	Generally	230.	Lien for performance of annual labor
190.	Qualifications	235.	Lien for annual labor is independent of other liens
195.	Mining claims	240.	Labor defined for §§ 210—235 of this chapter
200.	Changes in locations and amended notices	245.	Prospecting sites
205.	Mining leasing	250.	Tide and submerged lands
210.	Annual labor	255.	Surface use
215.	Notice to co-owners to contribute to cost of annual labor or improvements and forfeiture for failure to contribute	260.	[Repealed]
220.	Recording the notice to contribute and affidavits	265.	Abandonment
225.	Lienholder may perform the annual labor	270.	Transfers
		275.	Recognition of locations
		280.	Definitions

Sec. 38.05.185. Generally. (a) The acquisition and continuance of rights in and to deposits on state lands of minerals which on January 3, 1959, were subject to location under the mining laws of the United States shall be governed by §§ 185—280 of this chapter. Nothing in §§ 185—280 of this chapter affects the law pertaining to the acquisition of rights to mineral deposits owned by any other person or government. The director, with the approval of the commissioner, shall determine those lands from which mineral deposits may be mined only under lease, and, subject to the limitations of § 300 of this chapter, those lands which shall be closed to mining.

(b) The failure on the part of a mining lessee or a locator to comply strictly with §§ 185—280 of this chapter and regulations adopted under it does not invalidate his rights if it appears to the satisfaction of the commissioner that the locator complied as nearly as possible under the circumstances of the case, and that no conflicting rights are asserted by any other person. Unless otherwise provided, the usages and interpretations applicable to

HB
836

Official Business

Alaska State Legislature

Senate

Committee on Resources

April 24, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: CSSSHB 836am

This bill amends the Alaska Fish and Game statutes involving master guides. It adds non-resident aliens to the current requirement that a non-resident must be accompanied by a guide (as defined in the Business and Professions statutes) when hunting big game animals.

Persons applying for a non-resident big game tag will be required to furnish a sworn statement showing they will be accompanied by a qualified person. Falsification of this statement will result in perjury under the Criminal Law statutes.

Non-resident alien is added to sub-paragraph (b) which deals with the guide requirement for the importation of polar bears.

Sub-paragraph (d) is added making it unlawful for a non-resident alien to trap, hunt, pursue or take game unless personally accompanied by a guide.

Sub-paragraph (e) is added which states that the Board of Game shall designate by regulation the kinds of small and unclassified game which may be hunted without a guide.

Violation of the above is a Class A misdemeanor, punishable by imprisonment of not more than one year or by a fine of not more than $2500.

The next portion of the bill adds license fees for non-resident aliens as follows:

	(C) Non-resident alien fur dealer license.	$500
	(C) Non-resident alien taxidermy license	$500
(21)	Non-resident alien licenses	
	(A) Hunting license.	$150
	(B) Hunting and sport fishing license.	$200
	(C) Hunting and trapping license	$300
	(D) Visitor's special sport fishing license valid for the period inscribed on the license.	
	(i) for 10-day license	$ 25
	(ii) for one-day license	$ 10
	(E) Sport fishing license.	$ 50

The final portion of the bill adds sub-paragraph (28) to the Definitions section of the Fish and Game Statutes which defines "non-resident alien" as being a person who is not admitted to the United States with Immigrant or other resident alien status.

See attached fiscal note.

Official Business

Alaska State Legislature

Senate

Committee on Resources

May 9, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: Senate CS for CSSSHB 836

This bill amends the Alaska Fish and Game Statutes by the addition of:

A new paragraph which would allow Fish and Game to establish separate seasons for the taking of game by non-resident aliens. It would have no affect on present statutes that deal with hunting seasons for non-residents and resident Alaskans.

The next portion of the bill adds license fees for non-resident aliens as follows:

	(C) Non-resident alien fur dealer license.	$500
	(C) Non-resident alien taxidermy license	$500
(21)	Non-resident alien licenses	
	(A) Hunting license.	$150
	(B) Hunting and sport fishing license.	$200
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	(i) for 10-day license	$ 25
	(ii) for one-day license	$ 10
	(E) Sport fishing license.	$ 50

The final portion of the bill adds sub-paragraph (28) to the Definition section of the Fish and Game Statutes which defines "non-resident alien" as being a person who is not admitted to the United States with Immigrant or other resident alien status.

This Committee Substitute was drafted after a meeting between the air taxi representatives, the Alaska Professional Hunters and Representative Hurlbert. It was agreed to delete the guide requirement for non-resident aliens and insert the enabling legislation for Fish and Game to control the number of non-resident aliens hunting in Alaska.

See attached fiscal note.

Official Business

Alaska State Legislature

Senate

Committee on Resources

April 24, 1980

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: CSSSHB 836am

This bill amends the Alaska Fish and Game statutes involving master guides. It adds non-resident aliens to the current requirement that a non-resident must be accompanied by a guide (as defined in the Business and Professions statutes) when hunting big game animals.

Persons applying for a non-resident big game tag will be required to furnish a sworn statement showing they will be accompanied by a qualified person. Falsification of this statement will result in perjury under the Criminal Law statutes.

Non-resident alien is added to sub-paragraph (b) which deals with the guide requirement for the importation of polar bears.

Sub-paragraph (d) is added making it unlawful for a non-resident alien to trap, hunt, pursue or take game unless personally accompanied by a guide.

Sub paragraph (e) is added which states that the Board of Game shall designate by regulation the kinds of small and unclassified game which may be hunted without a guide.

Violation of the above is a Class A misdemeanor, punishable by imprisonment of not more than one year or by a fine of not more than $2500.

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The final portion of the bill adds sub-paragraph (28) to the Definitions section of the Fish and Game Statutes which defines "non-resident alien" as being a person who is not admitted to the United States with immigrant or other resident alien status.

See attached fiscal note.

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SKS OUTFITTERS, INC.
BOX 8-229
ANCHORAGE, AK 99508

21 April 1980

Senator Bill Sumner
Pouch V
Juneau, Alaska 99811

Re: CS For SSHI 836

Dear Bill,

Your letter of 18 April received 21 April announcing a hearing set for 25 April in Juneau leaves me little time to respond. I have written you concerning this problem and on several occasions attempted to reach you by phone. In an effort to once again inform you of my total opposition to this type of legislation I will ask Brad Bradley to personally deliver this protest to you to insure you receive my thoughts prior to the Senate Resources Committee hearing this Friday.

The enclosed remarks outline some of the reasons I am totally opposed to CSSSHB836. I appreciate the opportunity to be heard on this matter.

Sincerely,

Dean E. Salmeier

1017 Bench Court
Anchorage, Alaska 99504



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Abflugtermine: ab März 1979

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Puma — Abschußtaxen ab 500 Dollar
Niederwild

Jagdgebiet: Über 100 000 ha in den Vorbergen der Anden und im Parque Diane bei Lago Hermoso.
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ČSSR Rehböcke bitte baldmöglichst buchen, weitere Jagdmöglichkeiten auf Bär, Rot- und Damhirsche sowie Muffions.

BULGARIEN Für das Jagdjahr 79/80 wurden von der staatl. Forstbehörde sehr gute Reviere für die Bejagung durch Ausländer freigegeben. Ausgezeichnete Jagdmöglichkeiten auf Bär, Rehbock, Rot- u. Damhirsch, Schwarzwild.

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Frühjahr – Sommer – Herbst 1979

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Alaska State Legislature

Senate

Committee on Resources

May 6, 1980

Official Business

Pouch V
State Capitol
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TO: Legal Services

FROM: Jens Zehbe, Senator Sumner's office

REGARDING: House Bill 836

Please draft a Committee Substitute with the following changes:

Delete entire first page and up to and including Line 21 of page 2. Retain portion of the bill which deals with fees for non-resident aliens and the definition section of a non-resident alien. The title of the bill may also need some changing.

In addition, please incorporate the following into the bill. You may need to reword or clean it up.

16.05.255

(11) Establishing for aliens not lawfully admitted to residency in the United States different hunting seasons from those extablished for other persons, and establishing maximum numbers of such aliens who may hunt for any given species of game in any game management unit or part thereof.

16.05.255

(11) Establishing for aliens not lawfully admitted to residency in the United States different hunting seasons from those established for other persons, and establishing maximum numbers of such aliens who may hunt for any given species of game in any game management unit or part thereof.

16.05.407(d) It is unlawful for a nonresident alien to trap, hunt, pursue or take big game in this State except under authority of a permit which may be issued by the Commissioner. The Commissioner may issue such permits to nonresident aliens in accordance with species and numbers of permits allocated for each GMU or part thereof as may be authorized by the Board of Game under procedures established under AS 16.05.255(11).

SS17B836

Bill,

Here's the dope you wanted from the morgue on alien hunters.

But there's more.

A fellow here in town by the name of Bruno Zedler is a wealth of information on the foreign hunter and guide racket. He is ~~xxxxxxxxx~~ a naturalized U.S. citizen and Alaskan from Germany and is familiar with the local guides who cheat by putting out too many hunters in too many spike camps and the germans who are booking hunts in germany and bringing their clients over here, hunting with them and going back.

He also knows of booking agents in Europe which arrange hunts here for guides who subsequently hire europeans to do the guiding. One guy, by the name of Hans, has hunted here for about three years without a guiding license. He worked, as did the Obwaller fellow mentioned in the articles, for one of the Brunners.

If you need more, call me. Also Bill Bellinger with the guide board is continueing the state probe into the case against Mort Mason, the fellow who hired Obwaller from Germany.

Bill Blessington

A cure worse than the problem



APRIL 10, 1980

By Bill Blessington
Times Outdoor Editor

The recent move by the state House to outlaw hunting by aliens needs a hard reexamination.

Not because it doesn't have some measure of emotional appeal but because it may be a cure worse then the problem.

Between the lines, the bill addresses two issues. There's the question of laws being intentionally flaunted by trophy hunters. There's also a problem of the amount of game being harvested by nonresidents of all classes.

The violations of law attributed to aliens hunting without guides are vastly overstated. One keeps hearing the same story about the 40 Swedes near Aniak over and over. It doesn't do any good to point out that Protection officers and Fish and Game investigated the operation and found it above board. It also doesn't do any good to point out that the organizer of the trip is taking his clientiele to Canada this year because of the regulatory hassles here.

This writer, for one, has seen more violations in camps run by registered guides than in camps of drop off hunters but be assured that we haven't seen all of them either.

Wanton waste is another problem that has statewide implications. Aliens can't take the meat home and are, according to some of the air taxi operator not as motivated as Alaskans or other Americans who see meat as a valuable commodity. The solution to that particular problem is fairly simple: require all nonresidents, even residents as well, to show the meat to a state agent.

Since nonresident aliens primarily travel by air from Lake Hood, a check station there could inspect both antlers and meat as airplanes are unloaded. If meat is turned over to village councils, they can certify the transactions. Fish and Game and Protection both have local offices in major villages and could do the work there. A plus for the state would be more accurate information about the game that's harvested and collection of biological samples.

If violations of law are a problem, it is a problem that lies with the individual hunter, not the person that shuffles him or her around.

If there's too much pressure on the game in some areas, the state can resort to permits allocated between residents and nonresidents. Many other states do. The state can also increase the price of licenses and tags. The last time this occurred, hunting by nonresidents dropped significantly but didn't put anyone out of business.

For air taxi operators, salvaging meat means more money since they are paid on the number of hours they fly. To go back and pick up a load of meat means that a hunter's bill increases by at least one-third. It just makes sense for the air taxi operators to want that extra business.

On the other hand, they point out, big game guides operate on a fixed fee. They more flying they do, the lower their profit. The air taxi operators this writer spoke to this week stopped short of making direct accusations about guides. But by pointing out the temptation that exists, their side of the ledger at least needs to be listened to. Hopefully, the Senate will schedule hearings on the bill in Anchorage.

It would be nice to hear the numbers of violations reported by Protection and it would be nice to hear some authoritative testimony from the Department of Fish and Game to find out if herds are being wiped out and who, exactly, is at fault.

Examples Of Waste Cited

Foreign Guides Work Openly

By LILL BLESSINGTON
Times Outdoor Editor

A lack of game law enforcement and loose restrictions on alien hunters have allowed a full-blown international ring of foreign guides and clients to operate openly in Alaska without licenses or regard for wanton waste laws. NOV 1 1979

"I worked for one guide who had eight spike camps set up with individual guides," one German-speaking assistant guide told The Anchorage Times this week.

"And we had two other Germans guiding for us the whole season," he added.

The man, who asked that his name not be used, said he personally saw five moose and two caribou wasted by hunters, who left them in the field, or by the guide, who oversaw their operation and let the meat spoil next to a runway at their base camp. The nameless assistant guide is a 10-year resident of Alaska and was legally licensed to guide hunters this year under the supervision of a registered guide.

The incidents took place on the far side of the Alaska Range, between Lake Clark and Rainy Pass.

And from the same area came reports of at least two "freelance" German-speaking guides who booked their hunters on Europe and came over with them, departing Alaska at the end of the hunting season without benefit of licenses either to guide or do business.

Confirmation about the foreign guiding ring came from two other sources, one an Austrian professional hunter who guided in Alaska as an unlicensed assistant guide this year, and from a local hunter who gave three German-speaking men a ride in his plane.

The Austrian, Otto Obwaller of Felberbrunn in the Tirol, was involved in apparent wanton waste of a moose which was left untouched after a German client cut the head off for the antlers.

Obwaller said he knew of three other Germans working for Alaskan guides this year. In addition, he admitted that this season was his third year working in Alaska as a pirate guide for two Alaskan registered guides. State law prohibits non-residents from guiding.

Local hunter Bill Hudok reported two weeks ago that he encountered three German-speaking men along a river just west of the Alaska Range in September. Two of the men were being guided by the third who told Hudok that their hunt had been arranged in Germany.

Two years ago, Obwaller said, he began working for a well-known Anchorage guide who paid him $60 a day and gave him a bonus for each animal his hunters bagged. Then, according to Obwaller's story, the guide had one other German professional hunter. Last year, said Obwaller, the guide employed an additional German as a guide for a total of three. "If somebody from the Fish and Game showed up," he said, "(the guide) told us to say that we were just packers."

Obwaller claimed he had a falling out with the guide over pay and didn't plan to return to Alaska this year. One of his former German speaking colleagues referred him to another Anchorage guide for this past season and Obwaller said he was paid $80 per day with a $200 bonus per animal.

German-speaking guides are in such high demand that a few local registered guides seem willing to take the risks connected with hiring them.

"A lot of the Germans who come over here to hunt are older people," said the anonymous assistant guide. "Many of them are in their 50s, 60s and 70s and they don't speak any English. They specifically ask for German-speaking guides."

"This registered guide charged between $4,000 and $6,000 per hunt," he continued. "I know that fellow had in excess of 20, maybe 25 hunters go through his camps in five weeks."

"And the state only gets between $100 and $250 per hunt for tags and fees. It's no wonder the state ain't got no money to go and enforce the laws."

"I was in camp for 47 days," he said, "and we never saw a protection officer."

Wanton waste is common, according to the assistant guide, because the foreign hunters don't know what to expect in Alaska and aren't familiar with the size of moose and caribou.

"I was in camp one day and two Germans hiked in with caribou racks on their backs. In the course of their conversation, I learned that they had no intention of salvaging the meat because of the distance."

"The hunters don't seem to have any judgment for the vastness of the area. They are in good shape because many of them come from Austria or Germany where they are very active and hunt in the mountains to stay in shape so they hunt a full eight hours away from camp in all directions. Then when they down a moose or something, there's no

John Vania, regional game supervisor for the Alaska Department of Fish and Game, says the alien hunter problem has surfaced rapidly in the past year.

"Five or 10 years ago," he said, "the European hunter was the best hunter in the field. They took every scrap of meat out and they worked like heck for their game. They were really good hunters. NOV 1 1979

"Now they can come over here cheap and instead of getting a lot more of the good hunters like we used to, we're getting a lot of slobs."

Vania has been requested by one legislator to prepare a bill that would put tighter controls on alien and non-resident hunters. NOV 1 1979

State officials are familiar with the alien guiding operations as well as international booking operations that bring large numbers of foreign hunters into the state seeking moose, caribou and black bear.

"There's one Swede who brings in a bunch of hunters every year," said game biologist Ray Cramer. "Last year he brought in 40 and I'm sure he brought in the same number this year. That's all he does — look for places to hunt and broker the ticket sales and collect the money from other Swedes. He goes all over the world."

Cramer said the booking agent was tough with his hunters about wanton waste and observing local laws. "He told me he went in to pick up two hunters who just had the moose racks and he gave them 24 hours to go back and get the meat or they would have to find their own way back to Sweden."

"They got the meat and took it to a village so it wasn't wasted," Cramer continued. "We put one protection officer on his operation for a season and he couldn't find any waste at all."

Vania says the increasing numbers of non-resident and alien hunters will eventually create friction between themselves and Alaskans seeking big game on smaller and smaller areas.

Are We Giving It Away?



By Bill Blessington
Times Outdoor Editor OCT 1 1 1979

Only a week or so ago, this writer had the unfortunate experience of seeing the meat from a great Alaskan animal wasted.

A big moose — a trophy bull in the prime of his life — shot and left to rot. Only the antlers taken out of the woods, eventually stolen.

Its not the firs. time I've seen such waste but that makes it no easier.

Who did it? I can say and probably will have to under oath.

Who's ultimatly responsible? I don't know. The parties who pulled the trigger and cut the head off have left the country. When the moose was shot, it was done with the hunter's full knowledge of the laws about wanton waste. What can you do when you remind someone of the law and all they do is shrug? The licensed guide involved did what he could to arrange salvage of the meat as soon as he arrived on the scene.

It would be dead wrong to portray Alaska's hunters and guides as lawbreakers. The vast majority of them respect the law and go out of their way to make sure that game is taken fairly.

But a single incident such as the one I saw, despicable as it was, should not be taken out of context. The context, however, bothers me.

It's simply too easy to break the game laws in Alaska and get away with it. A very thin brown line of less than 70 men and women is the only buffer between the rip off artists or those who don't care and the game which most of us love.

I recently spent a couple of days at Lake Hood, watching planeloads of hunters return to town. The obvious non-residents, dressed in green wool with jaunty caps and tweeds, carried their caribou horns, moose racks and bags to waiting taxis.

But then something struck me as odd. Only baggage came off the planes. I failed to see any meat. It wasn't one plane, it was one after the other, as long as the past was open.

It is possible that the meat was given to natives for their winter supply. It's also possible that a lot of it was eaten in camp by a crew of hungry hunters.

But it's also possible that Alaska is selling its game too cheaply. A policy which not only insults Alaskans and sportsmen but threatens the herds themselves.

Jack Carter bags 3 ducks

OCT 1 3 1979 ANCHORAGE NEWS

Jack Carter bagged three ducks during a full day of shooting Friday on the Knik River, one of his hunting partners reported.

The President's son — visiting the state for the first time ever — "hit just about every bird he shot at" during a generally slow day of hunting, said Brad Snodgrass of Palmer.

"It was a fair shoot," Snodgrass said. "We could have done a lot better...There were a lot of birds in the area but not many hunters out there to move them around."

Two Secret Service agents joined the 31-year-old Carter and two others for the hunt at a blind owned by Snodgrass. Before going out, Carter purchased the required $50 nonresident hunting license and a $7.50 duck stamp.

In all, Snodgrass said, the six-member party bagged down "seven or eight" ducks.

Carter told The Daily News prior to the hunt that he hadn't done much duck hunting in his native state. "Georgia isn't on any of the flyways," he said.

The ex-owner of a grain elevator in Calhoun, Jimmy Carter accompanied his wife, Judy, to Anchorage for her appearance as a keynote speaker before the Alaska Association of Community Education. As director of career education for the Palmer School District, Snodgrass helped to host the Carters during their visit.

The Carters also delivered a round of speeches at area schools and interviews were scheduled to return home today.

Before leaving town, however, Carter was greeted by a blast from the Alaska Waterfowl Association, which issued a statement through secretary Dick White of Anchorage criticizing the duck hunt as being "in quite poor taste."

White said the association's board of directors were "quite incensed about the son of the President who has locked up our lands...coming up here to go duck hunting. It's the epitome of the ancient feudal landlord system."

President Carter's declaration of 17 national monuments in Alaska last December banned sport hunting on some 56 million acres of land, but allowed continued subsistence hunting. The Knik River area where his son hunted Friday was not affected by the presidential order.

Foreigners Flock To Alaska To

By BILL BLESSINGTON
Times Outdoor Editor

"Zie elk!"
"Zie elk!" OCT 1 1 1979

Less than 100 yards ahead of me was a fine specimen of Alaskan bull moose and a guide. Behind me, was an excited German hunter and his wife who had just spotted the animal in the gathering dusk.

The moose watched us, obviously nervous about the intrusion into his rutting ground. His antlers stood out like twin beacons above his head, their whitened tips and palms in contrast with the rain-soaked brush on a slight rise behind him.

The German, Conrad Wineber, slipped his pack to the ground and after being told to shoot by the guide, Austrian Otto Obwaller, moved ahead of us.

Wineber made no attempt to use cover as I stood frozen. He pushed ahead five yards and ran a round into the chamber of his 375 H & H.

"Shoot, shoot," said Obwaller.

The moose climbed up on top of a ten — foot bank in a single easy movement. He stood there glaring at us.

With an ear-splitting roar, the heavy Saur spoke. I listened for the "thwock" of the bullet hitting its' target. Another shot, a third shot, and still no sign that the moose had been hit.

The bull looked off into the brush and took a few steps, disappearing neatly in a scrub of alders and black spruce.

"I don't think he hit it, I didn't hear anything," I said to Obwaller.

The German moved forward, his excitement obvious.

When the guide and I reached the spot where the moose had been standing, there was no sign of blood or hair which would have indicated a hit. I briefly relaxed, thinking that my pack wouldn't get any heavier over the next four miles to a lake where we were scheduled to be picked up.

Off to my left, a small bull looked on, probably wondering what all this new noise had to do with the mating season.

Then another shot rang out forty yards away through the brush. A second shot came just a minute afterward.

"Conrad, zu habst?" shouted Wineber's wife Erica.

"Ja, ja!" came the muffled reply.

The moose had fallen after being cleanly hit and travelling about 50 yards. The huge animal died quietly from the heart/lung shots.

The moose was not a gigantic trophy as far as moose go, but it was a trophy nonetheless for Wineber, a chemist with a German industrial combine.

The brow tines were almost perfectly matched with five well-shaped points on each side. The palms of the antlers stretched 61 inches, both sides almost perfectly symmetrical.

After a photo session, Obwaller began preparing the trophy by severing the moose's head at the atlas joint.

The skinning of the head was to be left for the hunter. An eventual wall mount was planned in the European fashion where the entire skull is left attached to the antlers and mounted on a plaque.

The young bull was still circling us slowly, his curiousity obviously getting the better of his natural sense of wariness. At one point, he stood calmly thirty yards away and watched for several minutes without moving.

Without a sound, he finally moved off. The rutting ground his if he could defend it.

Moose hunting in Alaska has many scenarios. They range from unfortunate ones like this where the hunters did not salvage the meat to those involving horses, bulls standing next to the highway, riverboats and airboats, tent camps on riverbanks and airplanes.

Residents and non-residents alike hunted the woodland giants this year, most of them legally and a very few illegally.

But it is clear that several factors are compounding to increase the pressure drastically on Alaska's moose. Some of them have to do with laws, some of them with administrative decisions both here and in the Iron Curtain countries, some of them with international currency, some with terrorism, some with simple greed.

More and more areas are being closed to hunting in Alaska.

This year sportsmen were shut out of 41 million acres of the state where national monuments were created and placed under the control of the park service.

cont'd

At the time of the action, President Carter indicated the measure would be temporary. But that term has become a lawyer's term. The net effect of the closure is permanent, at least as far as the Alaska hunter is concerned. And when hunting is closed in one area and left open in others, hunting pressure builds in the areas left open.

Although the D2 bills in Congress set up park preserves which may be open to hunting, a ringer is present in the word "may". If the Wrangells ever reopen to legal hunting, it will be only on a permit basis and, thanks to court rulings, Alaskans will likely get no preference for having their needs for hunting taken care of first.

More than likely, national permit drawings might be held for the white

OCT 1 1 1979

sheep, caribou and bears of the Wrangells. And that means tens of thousands of applications from anti-hunting and anti-gun groups who feel they can "save the animals" by foiling legitimate hunters.

The other major increase in hunting pressure in Alaska this year comes from the international scene.

Alaska is cheap and Alaska is a fad.

Hunting in Europe, according to guides, hunters and tourism officials, is expensive, if it is available at all.

"We just don't have the places to hunt that you do," explained Nells Tuxen of Denmark.

As a result, European hunters are used to paying top dollar for hunting and travelling long distances. Good hunting can still be found in some parts of Germany, Austria and the Scandanavian countries. But the best European hunting is behind the Iron Curtain, a fact which has not escaped the attention of tax collectors.

OCT 1 1 1979

"A good deer in Rumania costs about $10,000," explained one hunter.

"They have a very modest fee for a license and a guide but they charge you so many dollars per gram of horn."

"You literally go out on a hunt and when the guide points out the deer, you count dollars to make sure you have enough for the animal."

Animals taken under thge Eastern European system are "sold" to the hunters on the basis of a complicated formula involving weight and size of trophies. The bigger the buck, the bigger the bill.

Hunters, however, don't touch the meat, which is sold in butcher shops as a delicacy. For them, Alaskan wanton waste laws and the packing of meat are something new.

Another hunter said a bear hunt in Russia or Bulgaria could easily run as high as $12,000 when the costs of transportation, guides, lodging, trophy fees, licenses and duties were added up.

In Alaska, a non-resident hunter pays $250 for a tag which would allow him to take any big game animal in the state with the exception of musk ox.

During the past year, a constant downward valuation of the dollar in relation to European currencies has meant lower and lower air fares from Europe to Alaska. Additional savings are also realized by hunters who book two or three week hunts and travel on discount fares.

The net result, according to Bernd Guetschow, the German consul in Alaska, is "that hunting here in Alaska for Germans is cheaper than hunting 300 miles away in Eastern Europe."

"The cost of a guided hunt here is about $5,000," said Guetschow, "which compares with $7,000 or $8,000 there."

In addition to the financial attractriveness of the Alaskan hunt, there has been a closure of most of Africa to legal hunting. The great game herds of Kenya, Mozambique, Gabon and other third world nations have been decimated by poaching and fueled by escalating Asian prices for hides and horns.

The African countries where hunting is still allowed include South Africa and Rhodesia. In Rhodesia, armed guards with automatic rifles accompany hunters on jaunts for plains game. Many parts of South Africa are similarly stressed because of military priorities and tense border situations.

The Middle Eastern countries of Iran and Iraq have closed to sportsmen because of revolution and a growing distrust of foreigners.

Alaska, for now, has some good hunting left. How long the hunting will stay good is a matter of speculation but some signs are evident that the pressure is being felt.

OCT 1 1 1979

"It is exotic," said Guetschow and it has a great appeal to Europeans looking for a new place to hunt.

OCT 1-6 1979

man who took President
on duck hunting says criti-
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Snodgrass of Palmer took
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didn't get into any big politi-
ussions. We talked about
ting in Alaska and quail
Georgia."
as aware his father had an-
gered people in Alaska," Snodgrass said. "And I'm sure he took back to his father" the Alaska sentiment.

Snodgrass also is a waterfowl artist and president of the Mat-Su chapter of Ducks Unlimited.

Carter shot three ducks, a mallard, a pintail and a scaup, during the day's hunt on the Knik River, Snodgrass said. The two Secret Service men didn't bag any game.

Carter came to Alaska with his wife, Judy, who was the keynote speaker before a community education conference in Anchorage. The couple left the state Saturday.

More Game Waste Reported

OCT 1 8 1979

"They just took the four legs off it and the cape and horns and the head."

Another incident of wanton waste of a moose by European hunters was reported in that fashion this week by Bill Hudok of Anchorage.

Hudok said the incident took place last month in the Swift River Valley, on the western slope of the Alaska Range.

Hudok and a friend were flying in Hudok's plane when they spotted three men in the valley. Hudok said he landed and the hunters offered to give him one of the moose's hindquarters for a ride down to a cabin they were using on the river.

"The fellow who was acting as a guide was a German," said Hudok. "He spoke real good English."

"They're just raping the country," he added.

"The rest of the carcass was just left there," Hudok said. "It was a good sized animal, a real trophy [illegible]"

"I was under the impression that they were working with a guide, since they had the use of the cabin," he said. "One of the Germans was a game warden or field policeman back home and he gave me a little medal."

"The hunter who shot the moose said he probably spent 45,000 marks for the trip to get his trophy. He'd been here before but hadn't gotten a trophy."

Details of the incident have been reported to the Department of Public Safety. The state is continuing another investigation into the reported wanton waste of a bull moose by other European hunters in the Stony River area. That incident was reported in The Anchorage Times last week.

Under state law, wanton waste of game meat is a misdemeanor; so is guiding hunters without a license or operating as a guide inside another guide's exclusive guiding area.

Hunt Violations Net $100 Fines

Judge John Mason, in Anchorage District Court, fined two German hunters a total of $100 each for killing two moose over their limit and wanton waste.

According to Kenneth Rourke of Anchorage, who reported the incident to Fish and Wildlife Protection officers, the two hunters shot four moose some three miles off the Petersville Road in a swamp. Rourke and a department spokesman said the Germans had only two moose tags when the four bulls were killed.

"All they got was a $100 fine," said Rourke, who found one of the carcasses which had been left to spoil.

"The moose was not skinned and was left in the water for about two days when I found it," said Rourke.

The hunters, Hans-Peter Filtgen and Manfred Ceraficki, were arrested as a result of Rourke's complaint.OCT 1 8 1979

In the Oct. 6 decision, Filtgen received a $500 suspended fine for killing an overlimit of moose and another $500 fine for wanton waste. All but $100 of the wanton waste fine was suspended by Judge Mason.

Ceraficki was fined $100 for killing the extra moose when $400 of a $500 fine was suspended.

A department spokesman said the case was complicated because the Germans apparently gave the meat from the kills to some other hunters they encountered in the field. The other hunters, according to Rourke, had no way of salvaging the meat.

"I think the person who pulls the trigger should be responsible for the meat," said Rourke.

Two of the bulls shot by the Germans were mulligans, or young bulls; a third had a rack of about 50 inches. According to Game Board member Daryl Farmen, who owns D & C Expediters, the larger rack was returned to the hunters by the judge the day after it was seized at his warehouse by enforcement agents.

Farmen said he has favored the concept of forcing non-resident aliens to employ registered guides for Alaskan hunts.

"At least it would make somebody responsible for their actions," he said, "and it would cut down on the numbers of them."

A guide's only restriction on non-residents would require an act of the state legislature.

Non-resident hunters are now required to have registered guides only when they hunt brown or grizzly bears and Dall sheep.

Rep. Vern Hurlbert, D-Sleetmute, said he expects further action in the legislature next year on requiring non-residents to have guides.

A tougher meat salvage law with the guide requirements for non-resident moose and caribou hunts in units 22, 23 and 19 A and C was passed by the House last session and is presently in Senate committee, according to Hurlbert.

"A moose in my opinion," he said, "is to hunt for subsistence, for meat. The taking of the horns should be incidental. It galls me to see our resources shattered like that," said Hurlbert.

Missing Hunter Found Dead

A 50-year-old German hunter was found dead Tuesday near the Kichatna River north of Rainy Pass.

Alaska State Troopers said the man, whose name has not been released, had been missing since Sunday morning. His body was found by a military helicopter at 4:30 p.m. Tuesday, troopers said.

OCT 4 1978

Cause of death was unknown this morning.

The victim reportedly walked away from his two-man camp at 6 a.m. Sunday and failed to return. His disappearance was reported to the Rescue Coordination Center Monday by Ketchum Air Service, troopers said.

A combined air-ground search was conducted by troopers, the rescue center and volunteers from the Alaska Rescue Group.

The German consulate in Seattle has been attempting to notify the victim's relatives in West Germany, troopers said.

Hunt Victim Identified; Exposure Caused Death

Alaska State Troopers have identified a German hunter found dead Tuesday north of Rainy Pass.

The body of Martin Brackelsberg, 40, was found by a rescue helicopter dispatched to the area when the man was reported missing from a hunting camp, troopers said.

OCT 5 1978

Autopsy results indicate Brackelsberg died of exposure, troopers said.

The victim was a resident of Darmstadt, West Germany.

Brackelsberg had been missing since 6 a.m. Sunday when he left his two-man camp near the Kichatna River, troopers said.

OCT 5 1978

Guided Alaskan Hunts Prove More Successful

"Hunt in Alaska!" OCT 1 1 1979

Big game hunters looking for adventure and a trophy in a foreign country have been flocking to Alaska in increasing numbers for the past three years.

Most of them take home at least one trophy, either a moose or caribou. A smaller number take home black or brown bears.

The marketing of hunting and game in Alaska is now a bigger business than ever before involving international booking agencies, travel agencies and advertising.

The big game guides, in some instances, support hundreds of thousands of dollars worth of loans and mortgages, airplanes, lodges, all terrain vehicles and camps.

There are three major ways in which Alaskans are cashing in on the growing number of non-resident hunters, the largest now being the air taxi operations which transport hunters to and from the field.

Probably the second largest business is the registered guide business where a hunter books with a guide for an escorted hunt for a particular species. Guides are required for non-resident sheep and brown or grizzly bear hunters.

The third kind of business available to Alaskans is that of the game and hunter transporter. Anyone with a riverboat, weasel or airplane can, for a $10 fee, be licensed as a transporter and take hunters and their gear to and from hunting places.

For the Alaskan or out of state hunter on a budget, some good hunting experiences can be obtained with drop off hunts provided by air taxi operators and transporters.

Under this system, people are flown out for a fee ranging from $300 to $1,500 or more and dropped off in a likely looking spot for a specified period of time. Food, tents, camping gear and other services are available from most of the air taxi operators at additional cost.

Registered guides provide a more complete service in most instances by having an employee stay with the hunter during the hunts. The costs run from several thousand dollars for a guided moose hunt to over $8,000 for some guided brown bear hunts. It's not unusual for clients of registered guides to spend $10,000 or more for a hunt in Alaska, including air transport, new gear, the guide's fees and tips.

Transporters charge varying rates, depending upon their equipment, location and services. Their businesses usually involve aircraft, although more have sprung up in recent years with riverboats.

The problem for non-resident hunters is that some have purchased a pig in a poke because of loose use of the words "guide" and "outfitter".

What might be advertised as a guide service may in fact be a simple drop off hunt.

And a guide who supposedly cannot operate within another guide's hunting area can do so with impunity under the guise of a "transporter".

"You're almost a fool to get a guide's license anymore," said one guide.

"It's just too much bother to go through the five-or eight-year process, the examinations and the oral tests and then find out that there are no more exclusive guide areas left open."

Its no secret that guided hunters have a better success rate than resident Alaskans when it comes to bagging game.

In 1976, for example, Department of Fish and Game statistics from harvest reports indicate that 4,037 moose were killed by hunters statewide. Of that total, 636 were taken by non-residents who had a 52.7 percent success rate. The state's 15,000-odd hunters who reported that they hunted moose in 1976 had a success ratio of 21.3 percent, although residents took the vast majority of the total.

In 1977, an estimated 4,500 moose were legally taken. Non residents took roughly 12 percent of the total but their success rate was about 60 percent.

Last year, 5,171 moose were harvested legally and reported to the state. Non-residents again took a total of about 12 percent of the kill but with a 57 percent success rate.

For sheep, where a non-resident is required to have a guide, the diference in success rates is more obvious.

In 1976, non-residents had a success rate of 70 percent, residents 28 percent.

In 1977, non-residents had a success rate of 62 percent, residents 30 percent.

In 1978, non-residents had a success rate of 77 percent, residents 33 percent.

For brown and grizzly bears, 823 were taken in Alaska during the 1977-78 regulatory year.

This past spring, 337 of the great bears were taken, 62 percent of them by non-resident hunters with guides.



SUCH A TERRIBLE WASTE OCT 1 1 1979

Otto Obwaller cuts the head off a moose shot just west of Merrill Pass. The moose was taken by a German hunter who left it to rot after skinning the head. Wanton waste of big game under Alaskan law is a misdemeanor.

'Keep Meat Dry, Cool'

Game Processer Explains Job

OCT 1 1 1979

"Don't ever get the meat wet and keep it cool," says Spiro George, the owner of George's Game Processing.

George, as he prefers to be called by his customers, has been in the food business for over 25 years and has been dressing moose, caribou and even ducks in Alaska for close to 20 years.

"The biggest moose I ever saw," he said," was one that weighed 1,150 pounds when it came in through that door."

George pointed toward the door leading to another portion of his store at Mile 6 on the Old Seward Highway.

"The neck was so big they had to cut it in two different pieces and each of them weighed in at over 100 pounds."

"And you know what?", he asked. "They shot that moose right up off O'Malley Road, put it in the back of a truck and brought it down here."

Although it's not a service available at every neighborhood supermarket, George and two or three other butchers and sausage making firms in Anchorage, will handle a hunter's meat from the moment it comes back to town.

"We weigh everything when it comes in the door," explained George, who with his wife and son, do all the game processing themselves.

"A man works hard for that moose and I like to make sure he knows why there might be a difference between the weight when the meat comes in and when he takes it home."

George says if meat is well taken care of by hunters, then almost no waste will take place in the butcher shop. George says hunters should bring the meat to their butchers as soon as they come back from a trip, rather than trying to guess the best lenth of time for aging the meat.

As soon as the game is taken "the hunters should keep their meat in a cool, dry place," he said. "And they must use cloth bags to keep the flies and dirt off the meat."

George and other game processors charge by the pound for meat cutting, boning, sausage making and grinding.

Mooseburger, for instance, usually has a minimum of 20 percent suet added. The original meat has almost no fat and when ground, does not cook well unless fat is added.

"I have to ship in beef suet from Outside," said George, who also adds beef suet and pork fat to his sausage.

Hunters can have either Polish or summer sausage made from the game. George and the other sausage plants in Anchorage smoke the sausage on the premises and can adjust the receipes to make the sausage hotter or milder according to the taste of the customer.

When a large animal is processed, the hunter can expect to receive steaks, roasts and ground meat much like those obtained from cows.

Smaller animals are cut into roasts and chops, "but its only the name that's different," according to George.

Parker Cites Harm To Hunters

OCT 1 6 1979

Urban sportsmen will get the worst deal under subsistence provisions of D2 legislation, Walt Parker says.

"Its the urban sportsman who has taken it in the shorts, much more so than even the miners," said Parker, former member of the state Game Board and state co-chairman of the now defunct Federal-State Land Use Planning Commission.

He said sporting organizations basically failed in their congressional lobbying efforts to keep large areas of Alaska open to regulated hunting.

"The national organizations tried hard but it was just too big a game for them," he said. "They didn't back our management concept and lost out as a result."

The plan supported by the commission called for joint management of large tracts of land between federal, state and native owners.

Parker says the new national park and monument restrictions on hunting involve essentially only non-native hunters.

"The refuges were set up to take care of the subsistence needs of the natives," he said, "the conflict over the monuments is not with the natives because the monuments are in areas that were never used to any great extent by natives for subsistence purposes."

Parker denied that native leaders forged what one state official termed an "unholy alliance" with environmental groups, exchanging support for large park withdrawals for support on exclusive hunting and fishing rights for natives.

"It was a natural alliance rather than a political plot," said Parker of the seeming agreement between natives and environmentalists on some issues.

Some of the native support for federal oversight of fish and game management in the state was attributed by Parker to "a reaction against the failure of the Alaska Department of Fish and Game to meet the needs of some of the native groups."

"The natives were really dealing in their own interests and occasionally those interests coincided with the environmentalists."

Parker said sportsmen have lost hunting opportunities on 60 percent of the Dall sheep range in the United States as a result of the D2 bills. "And," he said, "they'll loose big on bear too." Parker said he expects drastic changes in hunting opportunities for sportsmen in the state within the next few years.

Hunting Response

Dear Editor: OCT 2 0 1979

I was in a sour mood. After a very long day as I read the front page of the Oct. 11 Times, I saw a notice that Outdoor editor, Bill Blessington, had witnessed the waste of a big game animal. And as I read the articles on page 52, I became increasingly incensed.

As an employee of a local airline for the past few years, I have witnessed an increasing number of antlers, taken from animals killed by foreign hunters, coming in from the bush. Even if the European full-skull mount were not in vogue, they would easily be recognizable; they accompanied no meat. With the no-hunting laws in the National Monument laws, us folks in Alaska's big cities are being unfairly restricted. I feel that most of us had come up here to live as self-reliant a life-style as possible, that the term "subsistence" therefore, had been unfairly interpreted by the state and federal governments for people who paid the highest taxes, the most for land and housing and had the least access to this state's wilderness acreage.

— Foreign hunters should be placed in a lottery system; the big-game-tag fee for lottery-drawn participants should be increased ten fold; foreign hunters should be accompanied by registered guides on all big game hunts; hunting should be closed during the rut, to all hunters — approximately the month of October, as it would prevent the deaths of animals whose meat would balk a village dog; guides should be held strictly accountable for the meat of animals killed by their clients.

At this point, I am in a state of amazement. In Sunday's "Times", page A-8, a short article stated Jack Carter had killed three ducks. In Letters to the Editor of the same edition, a letter from the Alaska Waterfowl Association protested the projected hunt, which had been written about in articles a few days prior. Monday's Letters to the Editor had an expression of concern about the deaths of three ducks, which (as an aside) happened to occur during open season and in an unrestricted area. Tuesday's front page photo actually showed Jack Carter at the scene of the crime.

If that is the pervasive mentality of us big city hunters, then the anti-hunting people and lock-up types might have a valid point after all.

Where is the outcry for the wasted moose on the headwaters of the Stony River?

James L. Bachman Jr.
Muldoon

State Game Rules Apply

JUNEAU (AP) — Alaska's hunters should keep in mind that state game regulations still apply in national monuments, the Department of Fish and Game says. OCT 2 5 1979

"A recent opinion by the Department of Law confirms that state laws and regulations still apply on monuments, unless more restrictive federal regulations have been adopted," said Commissioner Ron Skoog of the department.

"Federal agents, not state enforcement officers, will enforce (more restrict federal rules)," he added.

Hunting Fines

Dear Editor:

In recent weeks the Anchorage Times has contained several articles concerning violations of hunting regulations by European hunters. Wanton waste appears to be a habit shared by many foreign hunters visiting our state. In the most recent article two German hunters shot two moose over their allowable limit and left the meat to spoil. The honorable Judge John Mason slapped these naughty hunters on the fingers and fined each of them $100. He really taught them a lesson for violating our state's game regulations.

The following day the Anchorage Times carried an article about two local hunters who mistakenly shot two sheep which they thought were goats. These hunters carried legal permits for goats and, being honest hunters, took their "goat" horns to the Alaska Department of Fish and Game to be tagged as required under the conditions of the permit. They were each fined $250, forfeited their game, and had their hunting privileges suspended for one year. I would bet that Judge John Mason did not rule on this case, or if he did, he certainly has his priorities mixed up.

I will not expound on the punishment received versus the violation committed in the case of the two local hunters. However, I do feel that the violations committed by the two German hunters warranted a much, much stiffer punishment than was handed down by Judge Mason. The punishment in this case certainly did nto fit the crime. According to Mr. Hobbs' Letter to the Editor (Friday, October 26) the hunters were even allowed to keep the antlers.

NOV 2 1979

Judge Mason and other judges who hand down minor punishments for violations of fish and game regulations certainly do not have protection of our wildlife resources in mind. I think its time that our judges realize that Alaska's fish and wildlife resources are important on a local, national and international level as evidenced by the people who come to Alaska to harvest them. I suggest that everyone who feels that our judges are being too lenient on fish and game violators keep the names of these judges in mind when they come up for re-election.

Frank Wendling
SRA Box 559
Anchorage



Rabbits

NOV 8 1979

The lowbush moose, also known as the bunny, is beginning a comeback as target for the Alaska hunter. Times Outdoor Editor Bill Blessington tells all about it in Alaska's most comprehensive Outdoor section on page 50 today.

Alaska House of Representatives

COMMITTEE ON NATURAL RESOURCES
POUCH V • JUNEAU, ALASKA 99811

4/8

Jens - The House is voting today on HB 836 about Nonresident alien hunters. If it passes it should be referred to Sen. Resources. If & when you schedule it please notify Mr. Ketch Kethum of Ketchum Air Center in Anchorage 243-5525. He is really upset about the bill & didn't learn about it til it was too late for input in the House. He may be writing to you on it also. I told him to talk to "Jens" if he calls Sen. Resources. (This bill would hurt air taxi business by requiring non-resident aliens to hire big game guides - now air taxis just fly hunters in & out & thus serve as pseudo-guides themselves

thanks,
Mary

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Alaska State Legislature

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House of Representatives

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RESOURCES

BUDGET & AUDIT

SPECIAL AGRICULTURE

April 10, 1980

To: Senate Resources Committee Members

From: Representative Carney

I am interested in expanding the scope of CSSSHB 836 am to include non residents as well as non resident aliens. Please notify me when this bill is scheduled in your committee so that I may answer questions if necessary.

Pat Carney

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

Agenda

Senate Resources Committee
April 25, 1980
1:30 p.m.
Butrovich Room

CSSSHB 836am An Act relating to alien and non-resident hunters

Testimony:

Randy Smith- Alaska Professional Hunters Assoc.
Bob Hinman- Department of Fish and Game
Joe Geldhof- Alaska Center for the Environment

In addition, several representatives may appear from the air taxi industry.

Question No. 2. If the state chose to pass legislation setting different tag fees and guide requirements for aliens as opposed to non-resident U.S. citizens, what court tests would it have to pass? How should the legislation be drafted so as to maximize the possibility of surviving judicial review?

Summary Answer: A state law that discriminated against aliens by charging them a higher hunting license fee would be subject to strict judicial scrutiny and would have to be the least drastic means of furthering a compelling state interest.

Analysis of this rather complex question requires several steps: (1) Who is an "alien"? (2) What is the basis for classifying aliens differently from U.S. citizens? (3) What state interest is protected?

A. Aliens Defined. An alien is defined generally as a citizen or subject of a foreign state or a foreign government (see Black's Law Dictionary, at 95 and DeCano v. State, 110 P.2d 627 (Wash. 1941)). The Board of Fisheries defines "alien" in 5 AAC 39.975 as:

> [A] person who is not a citizen of the United States, and who does not have a petition for naturalization pending before the district court.

An alien may be a resident alien or a non-resident alien, and may live legally in the United States even though he is not naturalized. Aliens living within the United States are granted certain protections (to make contracts, sue and be sued, be protected by law enforcement, etc.) and as a result they owe a temporary and local allegiance to the country in which they reside.

B. Basis of Challenge to Laws that Discriminate Against Aliens. Whether a law that discriminates against an alien will withstand constitutional scrutiny may depend on whether the alien is: (1) an alien not lawfully in the state; (2) a non-resident alien; or (3) a resident alien.

Probably a law prohibiting an alien not lawfully in the U.S. from taking fish and game would be upheld under a state's police powers. (See, e.g., AS 16.05.905, prohibiting aliens not lawfully admitted to the U.S. from engaging in commercial fishing or taking marine mammals in territorial waters.)

Laws or regulations that discriminate against a non-resident alien, a non-resident citizen, or a resident alien, are subject to attack under:

(1) Article IV § 2 of the U.S. Constitution - privileges and immunities;

(2) 14th Amendment of the U.S. Constitution - equal protection;

(3) Article I § 8 of the U.S. Constitution - commerce clause; or

(4) Article VI, U.S. Constitution - supremacy clause.

Analysis of the constitutionality of the law or regulation depends on which constitutional challenge is raised.

(1) Privileges and Immunities. A law or regulation aimed directly at aliens could not be overturned under the privileges and immunities clause, because that clause protects only citizens. Similarly, a law that discriminated against non-resident American citizens by restricting or prohibiting them from sport hunting might arguably withstand a privileges and immunities challenge on the grounds that sport hunting, unlike commercial fishing, is not a right of citizenship to be protected, but is merely a privilege.

The test applied by the U.S. Supreme Court to determine whether a law that discriminates against non-residents violates the privileges and immunities clause was set out in Toomer v. Witsell, 334 U.S. 385 (1948). The court there struck down a South Carolina shrimp fishing law that charged non-residents one hundred times the resident license fee for shrimping in its three-mile coastal waters. The court distinguished its earlier decision, McCready v. Virginia, 94 U.S. 391 (1876), (which had upheld a law allowing Virginia citizens only to plant oysters in state tidal waters) on the grounds that McCready involved non-migratory fish in inland waters and that it was based on an outdated "ownership" theory of fish game. The court then held that the ability to engage in commercial fishing is a right protected by the privileges and immunities clause, and that no law may discriminate against non-citizens (of the state) unless "there is something to indicate that non-citizens constitute a peculiar source of the evil at which the statute is aimed" Toomer, supra at 398.

In a subsequent case, the U.S. Supreme Court addressed a similar privileges and immunities challenge to a Montana law that charged non-residents a higher hunting license fee. The court in Baldwin v. State Fish and Game Commissioner, ___U.S.___, 98 S.Ct. 1852 (1978) upheld the scheme, on the ground that the privileges and immunities clause does not encompass recreational sport hunting:

> Some distinctions between residents and non-residents merely reflect the fact that this is a Nation composed of individual States, and are permitted; other distinctions are prohibited because they hinder the formation, the purpose, or the development of a single union of those states. Only with respect to those "privileges" and "immunities" bearing upon the vitality of the Nation as a single entity must the State treat all citizens, resident and non-resident, equally.... Equality in access to Montana elk is not basic to the maintenance or well-being of the Union. ___U.S. at 98 S.Ct. at 1861-62.

Thus the initial test for a privileges and immunities challenge is whether the law affects a right to engage in a livelihood or whether the activity is merely recreational and a sport. If the latter, a privileges and immunities challenge will not prevail.

(2) Equal Protection Under 14th Amendment. State laws that discriminate against aliens or non-residents must withstand a different test when challenged under the "equal protection" clause of the 14th Amendment.

First, the court must determine whether the class discriminated against is "inherently suspect" or if the law affects a "fundamental right." If so, the court will "strictly scrutinize" the intent and purpose of the law to establish whether there is a "compelling state interest" that necessitates the law and that the law is the least drastic means to further that interest. Dunn v. Blumstein, 405 U.S. 330 (1972). If the classification is not "suspect," and the right not "fundamental" the court will restrict its review of the law to a determination whether the law and the classification it establishes is "rationally related to a permissible state interest."

The Court in Baldwin, supra, at 1862 concluded that recreational hunting was not a "fundamental right" (for purposes of privileges and immunities analysis which protects a longer list of rights than does the equal protection clause. (Hicklin v. Orbeck, 565 P.2d 159, 168 n.16 (Alaska 1977), rev'd on the grounds ___U.S.___, 57 L.Ed.2d 397 (1978)). However, the class of aliens (regardless of residency) has been held to be a suspect class for state laws, though not federal laws. Mathews v. Diaz, 426 U.S. 67 (1976), Sugarman v. Dougall, 413 U.S.634 (1973) (civil service); Takahashi v. Fish and Game Commission, 334 U.S. 410 (1948) (commercial fishing); Frovlov v. Delo, 383 N.Y.S.2d 470 (N.Y. 1976) (hunting license). Thus, in order to uphold a law that discriminated between resident citizens and resident aliens, the state would have to show that distinguishing the class of aliens was necessary to further a compelling state interest. Frovlov, supra, at 472; Takahashi, supra at 416-17. A classification based solely on alienage must thus correspond to the class from which an "evil" is to be feared. Patsone v. Commonwealth of Pennsylvania, 232 U.S. 138 (1914) (upholding a state law prohibiting aliens from killing game for sport and to that end making possession of shotguns by aliens unlawful).

It may thus be more difficult to demonstrate that a law directed at aliens only is directed at the primary source of the problem. The court in Takahashi, supra at 41[illegible] held:

> The protection of this section [8 U.S.C. § 41 relating to rights of all persons under U.S. Jurisdiction] has been held to extend to aliens as well as to citizens. Consequently the section and the Fourteenth Amendment on which it rests in part protect "all persons" against state legislation bearing unequally upon them either because of alienage or color...The Fourteenth Amendment and the laws adopted under its authority thus embody a general policy that all persons lawfully in this country shall abide "in any state" on an equality of legal privileges with all citizens under non-discriminatory laws. [Footnotes omitted.]

The court concluded that the power of a state to apply its laws exclusively to alien inhabitants is "confined within narrow limits." Takahashi, supra at 420.

Applying this language to an Alaska law that would bar aliens from hunting, or otherwise restrict their ability to engage in sport hunting, its validity would depend in part on whether the privilege of sport hunting is encompassed by the privileges citizens can also enjoy. Arguably, sport hunting is not such a privilege enjoyed by all citizens, but is a special privilege that may be restricted to state citizens in order to protect the resource. In Patsone v. Pennsylvania, 232 U.S. 138 (1914) (cited in Takahashi, supra at 410) the Supreme Court sustained, against Fourteenth Amendment due process and equal protection challenges, a state law barring aliens from hunting wild game in the interest of conserving game for citizens of the state. The distinction between the Patsone and Takahashi cases apparently was that in Patsone the court found no conflicting federal law or treaty, that the privilege of taking wild game was not a right of citizenship, and a state could keep game for its own citizens. (Citing Geer v. Connecticut, 161 U.S. 519 (1896)).

Takahashi, suggests that to earn a living by fishing is a right of citizenship, and that:

> To whatever extent the fish in the three-mile belt off California may be capable of ownership by California, we think that "ownership" is inadequate to justify California in excluding any or all aliens who are lawful residents of the state from making a living by fishing in the ocean off its shores while permitting all others to do so.

Based on the Takahashi case, it appears that a law directed at non-residents, rather than aliens (whether resident or non-resident), would be easier to justify.

Earlier analysis used to uphold state laws directed at non-residents (citizen or alien) relied on the theory of "state ownership" of fish and game resources. In re Eberle, 98 F. 295 (7th Cir. 1899) (upholding state law charging non-residents a much higher hunting license fee); State v. Tower, 24 A. 898 (Me. 1892) (upholding a state law forbidding non-residents from hunting in the state).

The "state ownership" theory is that the wild game (and fish) in a state is the property of the state under its "sovereign ownership." Patsone v. Pennsylvania, 232 U.S. 138 (1914) (no resident aliens may hunt deer); McCready v. Virginia, 94 U.S. 391 (1877) (state title to oysters in tide waters). This analysis has, in recent years, been severely eroded, although not overruled. Fish that migrate have been deemed not the state's property, Toomer v. Witsell, 334 U.S. 385 (1948) and state laws prohibiting aliens from commercial fishing in territorial waters, when the aliens held a federal gear license, have been stricken. Douglas v. Seacoast Products, Inc., 431 U.S. 265 (1977). Although the ownership theory has been deemed "but a fiction," Toomer v. Witsell, 334 U.S. 385, 402 (1948), and a "slender reed," Missouri v. Holland, 252 U.S. 416, (1920), nevertheless it has not been overruled.

Courts today have, however, tended to replace "ownership" concepts with the principle that under a state's police powers, the state is trustee of the fish and game within its borders and may take reasonable measures to protect and manage it. Baldwin, supra at 1864 (Burger concur.); State v. Kemp, 44 N.W.2d 214 (S.D. 1950), dis'd 340 U.S.923 (1951) (U.S. S.Ct.dis'd for want of "substantial federal question" a South Dakota law excluding non-resident from hunting migratory waterfowl.)

Alaska's supreme court has taken a similar approach to protection of its natural resources. The court in Hicklin v. Orbeck, 565 P.2d 159 (Alaska 1977) struck down the durational (one year) residency requirement for pipeline jobs, on the grounds that, under equal protection analysis, a "fundamental right" (travel or migration) was infringed upon and the law must be strictly scrutinized; however the court also upheld a non-durational residency provision, claiming the right to work is not a fundamental right, and therefore the law must merely "bear a fair and substantial relation to a permissible state interest." Hicklin, supra at 167. The court relied on McCready v. Virginia, 94 U.S. 391 (1877) and the Alaska Constitution Art. VIII § 2, that holds Alaska's natural resources for the benefit of her people, to conclude that the natural resources of the state "belong" to Alaskans "in a way that, in our federal system, Alaska's society and economy in general do not." Hicklin, supra, at 169. The United States Supreme Court reversed the state decision in Hicklin v. Orbeck, ___ U.S. ___, 57 L.Ed.2d 397 (1978), however, stating that Alaska's hire law violates

the privileges and immunities clause because the state failed to show that non-residents are "a peculiar source of the evil" and because the Alaska hire preference does not bear a substantial relationship to the problem. The Supreme Court further held that the theory of state ownership of its resources does not remove a law concerning that resource from the prohibitions of the privileges and immunities clause.

The analysis suggested by the above equal protection cases, assuming "strict scrutiny" is not used, is whether the state can present sufficient evidence that the discriminatory law is justified by problems that class creates. For example, the court in Baldwin, supra found that residents contributed to the feeding of elk, that non-resident hunting pressure threatened the resource, and that the law was supportable on these and similar grounds. In contrast, the court in Gullaney v. Anderson, 342 U.S. 415 (1952) struck down a territorial fishing law that required aliens and non-residents to pay higher fishing license fees; the court found no evidence that the higher fee represented actual compensation to the state for a higher enforcement burden, but did not rule out the possibility that this could be a legitimiate basis for discrimination. Thus the "rational basis" for the law was not established, and it failed constitutional scrutiny.

(3) Supremacy Clause: Art. VI § 2.

Constitutional challenges to discriminatory state laws based on the supremacy clause fall into two categories: first, laws directed at aliens that conflict with rights granted to aliens under federal laws or treaties; second, state laws that impinge upon a federally granted license or privilege. Both types of cases receive the analysis discussed by the court in Takahashi, supra: no law that conflicts with a treaty, or with a particular federal right or privilege, will survive U.S. Supreme Court scrutiny. Federal legislation pre-empts state law in fields that have been traditionally occupied by the states only where there is a manifest intent of Congress. This has been held to include federal vessel licenses to engage in fisheries. Douglas v. Seacoast Products, Inc., 524 ed.2d 204. See also Kleppe v. New Mexico, 426 U.S. 529 (1976) which struck down a state wild burro law that "conflicted" with a federal law protecting the animals on federal lands.

Assuming there is no overriding federal law involved, a state could pass a discriminatory law if it is based on, and rationally related to, a valid state interest. Since the Baldwin court has concluded that sport hunting is not a fundamental right of citizenship, a sport hunting law aimed at restricting non-residents or aliens would probably survive a challenge under the supremacy clause.

(4) Commerce Clause; Art. I § 8. A state law that restricted access by non-residents or aliens to a resource and thereby detrimentally affected interstate commerce, could be struck down under the commerce clause. For example, the court in Douglas v. Seacoast Products, Inc., ___U.S.___, 52 L.Ed.2d 304 (1977) held that Congress had the power to regulate the taking of fish in state waters where there was some effect on interstate commerce. The court struck down a Virginia law that limited the right of non-residents and aliens to catch fish in territorial waters.

It is unlikely that this analysis would find a similar sport hunting law invalid, since the Baldwin court has held sport hunting to be a purely recreational activity, not a source of livelihood.

Summary. Whether Alaska could pass a constitutionally supportable law or regulation that restricted the ability of non-residents or aliens from taking game would depend on whether the state could gather enough evidence showing the need to protect this resource and showing that the non-residents or aliens were a special threat.

The evidence to look at includes: the higher tax burden borne by state residents, which taxes support game management; the likelihood of enforcement problems generated by aliens or non-residents; the likelihood of non-residents or aliens not abiding by, or being familiar with, state game laws; dangers to non-residents and aliens unfamiliar with climate, terrain, wildlife habits [see attached article on point]; the need to limit the overall take of the species; protection of game and conservation purposes.

If the state simply charges a higher license fee to non-residents, the evidence to support this will be easy to supply. If only aliens are charged a higher fee, the burden will be much higher on the state. [The burden of proof is on the one who challenges the law, of course, but once the discrimination is established, the state must defend the classification.]

A second possibility for legislation would be to require all aliens to be accompanied by guides. If directed only at aliens and not non-resident citizens, it would be necessary to demonstrate that aliens present a different danger to the game (because of language barriers making it difficult to comprehend rules, training, allegiance to laws, culture, or other reasons).

The easier-to-justify approach would be to require all non-residents (aliens or citizens) to be accompanied by guides. The justification then would rest on: greater likelihood of violations due to unfamiliarity with laws; costs of enforcement and need to have the guide function as a person responsible for the legality of the hunt; danger to the non-resident who is not familiar with weather, terrain, and animals, and the likely cost to the state of aiding non-residents in distress.

One problem with the required guide approach is that as the law (AS 16.05.407) now stands guides are only required for brown bear, grizzly bear, polar bear and sheep. This makes it difficult to justify a guide requirement based on safety of the hunter, since it does not include goat, moose and other species that present as great or greater potential hazards to the hunter, in terms of terrain, weather, etc. Thus AS 16.05.407 would have to be expanded to include all species.

In State v. Jack, supra, the supreme court in Montana struck down a state law requiring guides for non-residents on national forest, wilderness or game refuge lands or state game refuges. The basis for the decision was that because the law did not apply to deer and antelope, it could not be based on legitimate safety needs, and therefore had no reasonable connection with the classification.

In conclusion, although the Supreme Court has severely eroded a state's sovereign ownership of game, it has not ruled out the possibility of establishing a constitutionally sound law reserving sport hunting to resident citizens. In order to draft a supportable resident law or regulation, the state or state board must demonstrate clearly that the purpose of the discriminatory law is strictly related to valid biological interests, essential state management goals and similar unimpeachable motives and that the law does not conflict with established federal laws or treaties.

SEF:ln
cc: Robert Hinman
Marcus Jensen
Ronald Skoog
Col. Wolstad
Bill Bellingar
Don Harris
Ron Somerville
John Gissberg

Attachment

(j) Notwithstanding any other provisions of this section, the commissioner shall issue permits for the possession of neutered skunks, neutered raccoons, and neutered ferrets legally possessed in the State of Alaska before January 1, 1980, upon receipt of applications postmarked no later than July 1, 1980.

Authority: AS 16.05.050(6)
AS 16.05.255(5), (8) and (9)
AS 16.05.920
AS 16.05.930

5 AAC 81.140 is repealed and re-adopted to read:

5 AAC 81.140. POSSESSION AND TRANSPORTATION.

(a) No person may possess, transport, or place into the possession of another, any game or parts of game that the person has taken in violation of AS 16 or a regulation promulgated thereunder.

(b) No person may possess or transport game or parts of game received from a person who took the items contrary to AS 16 or a regulation promulgated thereunder, if the person receiving the items knows, has reason to know, or should know that the item was taken in violation of AS 16 or a regulation promulgated thereunder.

(c) No person may possess or transport game or parts of game that the person knows were taken in violation of AS 16 or a regulation promulgated thereunder.

Authority: AS 16.05.250(3)

5 AAC 81.145 is amended to read:

(a) No person may transfer possession of game or parts of game that he has taken unless he provides immediately upon request of any person authorized to enforce these regulations, a statement, signed by himself and the person to whom the game or its parts are transferred, stating the date of the transfer and the name and address of the person to whom the game was transferred.

(b) No person may possess or transport any game or parts of game not taken by himself unless he provides immediately upon request of a person authorized to enforce these regulations, a statement signed by the person who took the game, stating that person's name, address, and license or permit number, and the place the game was taken.

(c) No guide, transporter, or common carrier may possess or transport any game or parts thereof unless he first obtains from the person seeking to transfer possession or transport the game or its parts, and produces immediately upon request of any person authorized to enforce these regulations, a statement signed by the person who took the game, stating that person's name, address, and license or permit number, and the place the game was taken.

(d) A person who takes an animal that has been marked or tagged by the Department for scientific studies must, within a reasonable time, notify the Department of the date when and the place where the animal was killed, and any ear tags, collars, tattoos, or other identification must be retained with the hide until it is sealed, if sealing is required, and in all cases any identification equipment must be returned to the Department.

Authority: AS 16.05.250(3)

It was agreed by the air taxi representatives and Randy Smith of the Professional Hunters to delete the guide requirement for non-resident aliens. ~~In addition the~~ Bob Hinman of the Board of Game stated that the Department had received and strengthened its regulations pertaining to the wanton waste of meat which ~~yet retains the higher fees for~~ non-resident ~~aliens which are~~ as well as a means for controlling their numbers.

The air taxi representatives agreed to promote more self enforcement within their industry ~~adopted~~ as it pertains to aliens and the wanton waste of game meat.

Bob Hinman of the Board of Game was also present and stated that the Department had revised ~~and strengthened~~ its regulations on the wanton waste of meat and he felt that might help alleviate the problem. He also spoke addressed the need for enabling legislation

LA11 0707 09.18 JA01 0008 09.18 05/08/80

TO: ALL LEGISLATORS

FROM: LINDA SHEY, 923 W. 58TH, ANCHORAGE

IT SEEMS I HAVE BECOME NOTHING BUT A NUMBER AND NOW YOU ARE CONSIDERING DISCRIMINATING AGAINST ME IF I MAKE TOO MUCH MONEY OR WANT TOO BIG OF A HOUSE. I AM AGAINST A SLIDING SCALE INTEREST RATE THAT DISCRIMINATES.

LA11 4240 17.14 JA01 0062 17.14 05/07/80

TO:ALL LEGISLATORS
FROM: BOB POSMA
PRESIDENT OF AK. HUSKEY BATTERY
MT. VIEW DR., ANCHORAGE, AK. 99504
PH. 333-5509

"IF OSHA COMPLIANCE IS TURNED OVER TO THE FEDERAL GOVERNMENT AK. BUSINESSMEN WILL HAVE A VERY REMOTE ACCESS TO AN EAR TO HEAR THEIR COMPLAINTS OF HARASSMENT ON EFFECTIVE EMPLOYMENT. PLEASE FUND THE STATE OSHA COMPLIANCE PROGRAM. THIS MEANS YOU MAY HAVE TO LISTEN TO SOME COMPLAINTS , BUT IT WILL HELP ALASKA."

LA11 4019 16.40 JA01 0056 16.40 05/07/80

TO: ALL LEGISLATORS

FR: BILL SHERWOOD, 4142 SHORECREST DRIVE, ANCHORAGE 99502 243 4469

I SUPPORT FUNDING TO THE ALASKA HOSPITAL. WE NEED A CHOICE OF HOSPITALS IN ANCHORAGE.

156° W longitude - latitude -

Proposals split the state in terms of one area would require a guide for alien

Delete all animals except moose ~~to be~~ be required, to be hunted with a guide

OK Air Carriers -

Delete - Guide requirement for non-resident aliens.

Top portion of bill which specifies - fees for non resident aliens.

Letter of Intent - directed to all concerned that they use self-enforcement.

Enabling legislation

Dispersement Plan - FTC come up with the numbers - #'s of hunters that an air taxi operator can drop in one particular zone - Game - need to define the zones and optimum #'s

Give possibility for a hunter if you might want an extra perm

Draft enabling legislation to distinguish between alien & non-resident

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH V · STATE CAPITOL
JUNEAU, ALASKA 99811
907/465-3800

M E M O R A N D U M March 26, 1980

SUBJECT: Nonresident alien hunters
CSSSHB 836

TO: House Resources Committee
ATTN: Mary Levan, AA

FROM: Kenneth E. Vassar
Legislative Counsel

Enclosed is the committee substitute you requested for sponsor substitute for House Bill 836. The fees for licenses established in this bill for nonresident aliens are generally higher than the fees for the same licenses for residents, and the fee for one type of license (hunting and trapping) is 20 times the fee for the same license for residents. I realize you are in a rush to receive this bill, so I have not conducted any research into the equal protection questions these fees raise; I believe that the United States Supreme Court has upheld state fees for fish and game licenses for nonresidents which were as much as seven times the fee for the same licenses for residents and has ruled unconstitutional fees for nonresident licenses which were 100 times the fee for resident licenses. Whether the court would uphold a nonresident fee which is 20 times the resident fee, I cannot say with certainty.

Also, I am confused by the special visitor's sport fishing license fee established in the bill. When would a nonresident alien be considered a visitor and thus eligible for this special fee rather than the general nonresident alien sport fishing fee established in the bill? I realize this simply parallels the special visitor's license already included in AS 16.05.340(a)(6), but I am not sure I understand that provision either.

KEV:jdn

Enclosure

LA11 2407 14.34 JA01 0062 14.35 04/11/80

TO ALL LEGISLATORS

FM KIRK D. GAY
ALASKA SAFARI, INC.
BOX 6583
ANCHORAGE 99502 243 6394

I URGE YOU TO SUPPORT A LAW REQUIRING NON RESIDENT ALIENS TO REQUIRE LICENSD PROFESSIONAL GUIDES FOR ALL BIG GAME HUNTING. THIS LAW IS ESSENTIAL FOR CONSERVATION AND PERPETUATION OF OUR RENEWABL RESOURCES.

THIS LAW IS ESSENTIAL IN GUARANTEEING A NON-RESIDENT ALIEN A SAFE, PROPERLY OUTFITTED, PROPERLY CONDUCTED HUNTING EXPERIENCE. THE NON-RESIDENT HAS RECOURSE AGAINST A GUIDE PER CONTRACTUAL AGREEMENT.

TO SENATOR SUMNER
REP. HURLBERT

FROM: BRUCE DOORLY
BOX 6532
ANCHORAGE, AK 99502 243-5865

I SUPPORT HB 836 CONCERNING ALIENS HUNTING IN ALASKA WITHOUT A GUIDE.

@@@

TO SEN. SUMNER, CHAIRMAN, SENATE RESOURCES COMMITTEE, AND ALL MEMBERS OF THE COMMITTEE

FROM: GEORGE PALMER, BOX 878, PALMER 99645 745-3168

I URGE YOU TO PASS HB 834.

LA11 3819 18.35 04/23/80 JA01 0009 C .41 04/24/80

TO: SENATORS SUMNER, DANKWORTH, BENNETT, MULCAHY, FAHRENKAMP, KERTTULA, MELAND

FROM: WAYNE MUNDY, P.O.BOX 034, CHUGIAK,AK.99567 688-2535

I URGE YOUR SUPPORT OF HB-836.

HP

1

TO: Senators Meland, Kertula, Fahrenkamp, Mulcahy, Bennett, Sumner, and Representative Hurlburt

FROM: Mary Porter, 4225 Spenard Road, # 96, Anchorage, AK 99503 243-6454
Dan McGimpsey, 4225 Spenard Road, Anchorage, AK 99503 243-6454

We are in favor of HB 836.

To Senators Kerttula and Sumner
Representatives Montgomery and Hayes

From: Keith Johnson, 3646 North Point Drive, Anchorage 99502
243-5087

Help support HB 836. The natives need it and so does Alaska.

TO: SENATOR BILL SUMNER
FROM: DEAN E. SALMEIER, Lake Creek Lodge
SUBJECT: OPPOSITION TO CSSSHB 836

CSSSHB 836 has judged and found guilty a valued and important industry in the state of Alaska -- TOURISM. It is special interest legislation giving a part of the natural resources of this state to one group -- GUIDES. HB 836 is fraught with invalid reasoning in the name of game management, meat preservation, and safety. It accuses air taxi operators of acting as guides but does not consider that guides act as air taxi operators. It infers that the nonresident alien who have not secured the service of a guide are unlawful. This is an absolute aburdity.

This bill addresses the alleged problems which nonresident alien hunters are causing. It states that they are unfamiliar with the English language; not true, most of them speak very good English. It says they are unfamiliar with the language spoken in the area of Alaska in which they hunt; I submit that all hunters -- resident, nonresident, as well as guides -- are also unfamiliar with many of the languages spoken in Alaska. I would like to see a figure on how much money the state has spent on search and rescue of nonresident aliens and further what number of these lost hunters were clients of registered guides as opposed to the drop-off hunter. I believe state paid rescue of nonresident alien hunters is minimal.

The history of game management laws in Alaska, in my opinion, are a pyramid of ridiculous special interest group legislation which does little to conserve game resources. Rather it is a hodge podge of nearly unworkable and largely unenforceable laws, which in effect allows a commercial operator full monopoly of a public resource. It is time to address the total problem -- that of true game management and conservation. Another "limited entry" into game resources is certainly not conducive to this desired successful game management.

This legislation will have adverse affect on the growing tourist industry in Alaska -- now our number two industry. Tourism is a renewable industry of the highest order and nothing should be done to jeopardize it.

Air Taxi operators perform a necessary service to Alaskans throughout rural Alaska. Nonresident hunters provide much of the revenues which in essence "subsidize" this industry so it can provide that service. These operations will not be able to continue if they are constantly restricted and their very livelihoods are endlessly threatened by special interest legislation.

HB 836 will seriouly diminish the income of my own operation on Lake Creek. I own and operate two lodges, Lake Creek and Martana, in Game Management Unit 16B. I also have an air taxi certificate with a base at Lake Creek Lodge. This area is designated an exclusive guide area for Brown Bear and Dall Sheep. I have invested several hundred thousand dollars in my business and have spent years building my business into an honored and honest operation. The vast majority of my business is sport fishing and I have guests from all parts of the United States, from Europe and the Far East. Also, I have developed a small but valued following of European hunters who come each season to hunt our area. These hunters (some have been with me for more than one hunt) are true sportsmen, being interested mainly in experiencing a good hunt and the possibility of taking a trophy. They salvage all the meat which is given to persons who live in the local area or to an Alaskan hunter who has not been successful. It is my responsibility to see that there is no waste of meat and I have accepted that responsibility.

If overhunting becomes a problem in any area then some method of limiting the kill is essential to game conservation. I would suggest a permit system in this case which is a workable management method and should be used to address the problems outlined in HB 836.

I have grave concerns as to the motives of the sponsors of this legislation. The chronology of this legislation and legislation like it, indicates that it will not go away simply because it is not passed in a given session. In one form or another it surfaces again and again. I urge you to do whatever is necessary to defeat HB 836 and to discourage any further action to reserect the elements of this special interest legislation concerning the natural resources of Alaska. The resources of this state belong to all Alaskans and should not be for the exclusive use of any one group.

Dan Schmier

ALASKA AIR GUIDES, INC.

NORTH SHORE LAKE HOOD
MAILING ADDRESS: 327 E. FIREWEED LANE • ANCHORAGE, ALASKA 99503 • (907) 278-4842

MAINTENANCE & OVERHAUL – CHARTER & CONTRACT FLYING – FLIGHT INSTRUCTION

TO ALL SENATE HOUSE MEMBERS

WE URGENTLY REQUEST YOU VOTE AGAINST H.B. 836 WHICH REQUIRES A GUIDE FOR NONRESIDENT HUNTERS FOR BIG GAME ANIMALS.

1. If this bill is passed it will be an economic hardship on all businesses associated with tourism such as sporting good stores, hotels, air taxis, airlines, taxidermests, etc. It would discourage hunters from coming to Alaska that cannot afford the fees of a big game guide.

2. We feel that the public has not had a reasonable opportunity for public input on this bill. The air taxi industry has been unjustly accused of being the culprit in wanton waste of big game meat, with no chance of rebuttal.

3. This bill if passed would give an exclusive monopoly of all big game animals to small segment of the industry, registered guides. This would not be in the best interest of the state, it's people or it's big game animals. And it would not be a solution to the problem of wanton waste of big game meat.

Sincerely,

Don Cogger

Don Cogger
General Manager
Alaska Air Guides, Inc.

Alaska Travel Air

FULLY INSURED AND LICENSED AIR CARRIER

P.O. Box 6012
Anchorage, Alaska 99502

Telephone
(907) 243-4200

TO: ALL MEMBERS OF THE SENATE
FROM: DEAN CARRELL---ALASKA TRAVEL AIR
DATE: APRIL 9, 1980

We are opposed to HB836. We urgently ask that you delay passage of this bill until hearings can be held here in Anchorage in order to collect input from the public concerning proper game management.

This proposed bill will only create a monopoly of Alaska's big game industry in favor of Alaska's Big Game Guides.

We are in favor of stricter game management and feel that a possible solution to waste, such as leaving meat in the field, could be solved simply by setting up check points by Fish & Game requiring that all trophys be accompanied with the meat.

With reference to a solution for all alien, non-english speaking hunters, we feel that Fish & Game could easily print game regulations in three (3) languages; English, German & Latin, which would cover the largest percentage of alien hunters.

This bill is detrimental to Tourism, Alaska's #2 industry and the mainstay of my livelyhood in the air carrier business. It also effects the economy of all Alaskan Communities; Hotels, Sporting Good Stores, Major Airlines etc.....

YOUR VOTE AGAINST PASSAGE OF HB836 IS URGENTLY REQUESTED----------

April 14, 1980 The House action on HB 836 was done in much to hasty a fashion. Senator Sumner now has the bill in his Senate Resources Committee and Bill tells me that everyone concerned will get a fair shake.

I suggest you call his office upon receipt of this letter at 465-3791/92/93 and ask about his plans for scheduling.

Regards,

BQ3

Robert H. Ziegler, Sr.

cc: Senator Sumner

Ketchum AIR SERVICE, INC.

MAIL: 2708 ASPEN DRIVE ANCHORAGE, ALASKA 99503 (907) 279-5511

TO: Senator Bill Sumner
Alaska State Legislature
Pouch V (MS3100) Juneau, AK. 99811

11 April 1980

CONCERNING: HB836

We are opposed to HB836, this is a special interest bill. It has very little to do with game management or meat harvesting control.

It gives the Game Guide Industry a virtual monopoly on non-resident and foreign hunters. "This is putting the Fox in charge of the Hen House."

This bill is directed against segments of the Air Carrier Industry and is counter productive to Alaska's # 2 industry, "TOURISM"!

Fish and Game now has the laws on the books. We are opposed to Bill HB836 because:

a. It will not control Game Harvest or Game Meat Salvage. Guides are Trophy Hunters, NOT Meat Hunters!

b. It is directed against a segment of the Air Carrier Industry.

c. It is directed against Tourism,"Alaska's #2 Industry".

d. It will reduce the State of Alaska's Tax Base by reducing visitors to our State.

e. It gives a special interest group, the GAME GUIDE INDUSTRY, a virtual monopoly!

As representatives of the Air Carrier Industry, we propose:

a. Give HB836 "due process" by holding hearings in Anchorage and other locations thru out the State.

b. Ask Fish and Game to set up controls, such as "Trophy and Meat Check Points", requiring ALL Hunters (resident, non-resident, and foreign) to check their Trophy and Meat thru these points.

c. Translate Hunting and Fishing Regulations into appropriate foreign languages. ✓

Respectfully,

Ketchum

L. H. "Ketch" Ketchum

LHK:de

BANKAMERICARD

HELP PROTECT OUR WILDERNESS RESOURCES

FISHING - LODGES - CAMPS - CHARTER - CONTRACT - RIVER FLOAT TRIPS - BOATS - MOTORS - RUBBER RAFTS

LA11 0972 10.14 JA01 0018 10.14 04/09/80

TO ALL LEGISLATORS

FROM DEAN CARROLL, P.O. 6012, ANCHORAGE, AK 99502 PHONE 243-4200

I AM OPPOSED TO SS HB 836, THE LIMITED ENTRY PROGRAM WHICH I SEE AS ANOTHER SPECIAL INTEREST LEGISLATION. THIS MEASURE WOULD TEND TO CREATE A MONOPOLY ON THE GAME GUIDE INDUSTRY. THIS IS NOT EFFECTIVE GAME MANAGEMENT AND IS DIRECTLY DETRIMENTAL TO TOURISM, ALASKA'S NUMBER 2 INDUSTRY AND OUR ONLY RENEWABLE RESOURCE. YOUR VOTE AGAINST HB 836 IS URGENTLY REQUESTED.

TELEGRAM

ALASCOM, INC.
PHONE: 586-6442
JUNEAU, AK 99802

HB836

02040 NL ANCHORAGE ALASKA 63 04-06 1000P AST '80 APR 6 PM 3 54

PMS REP ALVIN OSTERBACK

572

JUNEAU AK

WE ARE OPPOSED TO HB836. THIS MEASURE WOULD TEND TO CREATE A MONOPLY FOR THE GAME GUIDES INDUSTRY. ALASKAN GAME, A RENEWABLE RESOURCE, MUST BE MANAGED FOR ALL PEOPLE, NOT A SPECIAL INTEREST GROUP.

THE BILL DOES NOT PROMOTE EFFECTIVE GAME MANAGEMENT AND IS DETRIMENTAL TO TOURISM, ALASKAS NUMBER TWO INDUSTRY.

YOUR VOTE AGAINST PASSAGE OF HB836 IS URGENTLY REQUESTED.

LAKE HOOD AIR TAXI ASSOCIATION

KETCH KETCHUM ACTING PRESIDENT, ANCHORAGE.

LA11 3177 16.48 JA01 0081 16.48 04/11/80

Chairman Sumner

TO ALL MEMBERS OF THE SENATE RESOURCES COMMITTEE, AS WELL AS ALL OTHER MEMBERS OF THE SENATE

FROM ROBERT. W. WHITE
5369 E. 4TH APT. 2
ANCHORAGE, AK 99504
333-8069

RE: HB 836 SECTION 3 (D)

MORE VIOLATIONS BY OUR REGISTERED GUIDES ARE EVIDENT EACH YEAR. MANY WHO WOULD COME HERE TO HUNT CANNOT AFFORD THE HIGH FEES. THEREFORE LESS VISITORS - LESS REVENUE. HAVING CHECK POINTS THAT AIR TAXI OPERATORS MUST CHECK IN WILL SOLVE MOST PROBLEMS. CLOSING AIR TAXIS DEFINITELY WON'T HELP OUR UNEMPLOYMENT.

4/30/ 4

Rep Herbert -
Stated Reason for the bill - would like to see aliens not encroaching but compromise is to disperse them over a larger area; not concentrated ~~over~~ in

Bob Hinman 825

Bob Hinman asked

Legal question - when violation occurs - state has a better control on guides - than they do on air taxi operators.?

4

A/Taxi Response - legally yes but they have the economic motivation - and also they can be charged when they don't report a violation by a hunter

Possibility of applying it only to moose -

Delete guide requirement - increase non-resident fees

Original sponsors: Hurlbert, Anderson, Hayes, et al

Offered: 3/31/80
Referred: Rules

IN THE HOUSE BY THE RESOURCES COMMITTEE

CS FOR SPONSOR SUBSTITUTE FOR HOUSE BILL NO. 836 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the use of state fish and game resources by aliens and nonresidents; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

This section adds alien as it pertains to

* Section 1. AS 16.05.407 is amended to read:

Sec. 16.05.407. NONRESIDENT OR NONRESIDENT ALIEN HUNTING GAME ANIMALS MUST BE ACCOMPANIED BY GUIDES. (a) It is unlawful for a nonresident to hunt, pursue or take brown bear, grizzly bear, polar bear or sheep in this state, unless personally accompanied by a person who is licensed as a master guide, registered guide or assistant guide under AS 08.54 or [BY THE DEPARTMENT, OR WHO IS PERSONALLY ACCOMPANIED] by a resident Alaskan over 19 years of age who is the spouse of or is related by blood within and including the second degree of kindred to the nonresident. A person who applies for a nonresident big game tag for the taking of an animal specified in this section shall first furnish to the state, on a form provided by the state, a sworn statement [AN AFFIDAVIT] showing that he will be accompanied in his hunt by a person who is qualified under the terms of this section. A person who falsifies the required sworn statement commits the crime [AFFIDAVIT IS GUILTY] of perjury under AS 11.56.200.

Presently - The law only calls only for an affadavit - Court does not specify the penalty

(b) It is unlawful for a nonresident or a nonresident alien to import polar bear into this state unless personally accompanied by a person who is licensed as a master guide, registered guide or assistant guide under AS 08.54 [BY THE DEPARTMENT].

Reason necessary is most polar bears are taken outside the 3-mile limit, ie. brought back dead that is considered imported. At this point there are no polar bears to be taken but should it come up the

(c) A [THE] nonresident who violates (a) or ( ) of this section or a nonresident alien who violates (b) or (d) of this section is guilty of a class A misdemeanor [AND UPON CONVICTION IS PUNISHABLE BY IMPRISONMENT FOR NOT MORE THAN ONE YEAR, OR BY A FINE OF NOT MORE THAN $2,500, OR BY BOTH].

this section pertains to the taking of all games unless it is

(d) Except as provided in (e) of this section, it is unlawful for a nonresident alien to trap, hunt, pursue or take game in this state unless personally accompanied by a person who is licensed as a master guide, registered guide or assistant guide under AS 08.54 or by a resident Alaskan over 19 years of age who is the spouse of or is related by blood within and including the second degree of kindred to the nonresident alien. A nonresident alien who applies for a hunting license or a big game tag shall, when required by the Board of Game, furnish to the state, on a form provided by the state, a sworn statement showing that he will be accompanied in his hunt by a person who is qualified under this subsection. A person who falsifies the required sworn statement commits the crime of perjury under AS 11.56.200.

(e) The Board of Game shall designate by regulation species of small or unclassified game which a nonresident alien may hunt without being personally accompanied by a guide or resident Alaskan related to the nonresident alien.

This section sets up a new classification of licenses for non-resident aliens

* Sec. 2. AS 16.05.340(a)(13) is amended by adding a new subparagraph to read:

(C) Nonresident alien fur dealer license..... 500

* Sec. 3. AS 16.05.340(a)(14) is amended by adding a new subparagraph to read:

(C) Nonresident alien taxidermy license..... 500

* Sec. 4. AS 16.05.340(a) is amended by adding a new paragraph to read:

(21) Nonresident alien licenses

(A) Hunting license..... 150

(B) Hunting and sport fishing license..... 200

(C) Hunting and trapping license..... 300

(D) Visitor's special sport fishing license - valid for the period inscribed on the license

(i) for 10-day license..... 25

(ii) for one-day license..... 10

(E) Sport fishing license..... 50

* Sec. 5. AS 16.05.940 is amended by adding a new paragraph to read:

(28) "nonresident alien" means a person who is not a citizen of the United States and who is not admitted to the United States with immigrant or other resident alien status under the immigration and naturalization laws of the United States.

* Sec. 6. This Act takes effect immediately in accordance with AS 01.10.-070(c).

Alaska State Legislature

Senate

Committee on Resources

April 24, 1980

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

REGARDING: CSSSHB 836am

This bill amends the Alaska Fish and Game statutes involving master guides. It adds non-resident aliens to the current requirement that a non-resident must be accompanied by a guide (as defined in the Business and Professions statutes) when hunting big game animals.

Persons applying for a non-resident big game tag will be required to furnish a sworn statement showing they will be accompanied by a qualified person. Falsification of this statement will result in perjury under the Criminal Law statutes.

Non-resident alien is added to sub-paragraph (b) which deals with the guide requirement for the importation of polar bears.

Sub-paragraph (d) is added making it unlawful for a non-resident alien to trap, hunt, pursue or take game unless personally accompanied by a guide.

Sub-paragraph (e) is added which states that the Board of Game shall designate by regulation the kinds of small and unclassified game which may be hunted without a guide.

Violation of the above is a Class A misdemeanor, punishable by imprisonment of not more than one year or by a fine of not more than $2500.

The next portion of the bill adds license fees for non-resident aliens as follows:

	(C) Non-resident alien fur dealer license.	$500
	(C) Non-resident alien taxidermy license	$500
(21)	Non-resident alien licenses	
	(A) Hunting license.	$150
	(B) Hunting and sport fishing license.	$200
	(C) Hunting and trapping license	$300
	(D) Visitor's special sport fishing license valid for the period inscribed on the license.	
	(i) for 10-day license	$ 25
	(ii) for one-day license	$ 10
	(E) Sport fishing license.	$ 50

The final portion of the bill adds sub-paragraph (28) to the Definitions section of the Fish and Game Statutes which defines "non-resident alien" as being a person who is not admitted to the United States with Immigrant or other resident alien status.

See attached fiscal note.

Alaska State Legislature

PAT CARNEY
DISTRICT 6
POUCH N
WASILLA, ALASKA 99687

POUCH V
JUNEAU, ALASKA 99811

House of Representatives

COMMITTEES

VICE CHAIRMAN
COMMUNITY & REGIONAL AFFAIRS

RESOURCES

BUDGET & AUDIT

SPECIAL AGRICULTURE

TO: Senate Resource Committee Members

FROM: Representative Pat Carney

DATE: April 24, 1980

I am not able to attend the hearing on House Bill 836 but would like to make the following recommendations:

1. I feel all out of state hunters should be considered under these same provisions.

2. A provision should be provided to exclude persons from being forced to hire a guide if they can prove they are experienced as hunters in Alaska.

PJC

ALASKA

MEMORANDUM

TO: R. D. Stevenson
Special Assistant
Department of Revenue

DATE: March 28, 1980

FILE NO:

TELEPHONE NO:

FROM: N. David Ziemer
Chief, Audit Services
Audit Division

SUBJECT: CS SS HB No. 836

This memorandum of fiscal impact has been prepared at the request of Mary Levan, Administrative Assistant to the House Resources Committee.

CS SS HB 836 would require nonresident hunters to use the services of registered guides while in Alaska. It would also raise both hunding and fishing fees for this class of visitor. From usage figures developed by the Alaska Professional Hunters Association, this bill would increase revenues by $240,820 each year. This increase was computed with two assumptions:

1. The number of nonresident - alien hunters will decrease 25% from current figures due to increased fees and the required use of a guide.

2. The number of nonresident - alien fishermen will remain the same.

There would not be any added fiscal impact to the Department of Revenue.

IV. DATE March 28, 1980 • PREPARED BY (N. David Ziemer)
AGENCY Department of Revenue, Audit Division
PHONE 465-2320

Original: Legislative Finance
cc: Budget and Management

HB836

Persons requesting testimony -

Randy Smith Alaska Professional Hunters Assoc.
789-9789
OR through Rick Halford's office

Ketch Ketchum Ketchum Air

Joe Geldhof - Alaska Center for the
Environment

" 1979 "

5,400 NR Hunters
1,020 NR Alien Hunters = 18%

Residents / Non-Residents entitled to Hunt

78,711 Total
1,020 NR Alien = .01%

SPORT FISH & GAME RECEIPTS
Calendar Year 1979
Final - January 1, 1979 thru December 31, 1979
Prepared January 14, 1980

CODE	TYPE OF LICENSE	NUMBER	GROSS	NET	NET/SPORT	NET/GAME	NET/GENERAL
201	R. Sport Fishing	83,782	$ 836,726.58	$ 793,793.33	$ 793,793.33	$----------	$----------
202	R. Hunting	22,618	271,416.00	259,240.47	----------	259,240.47	----------
203-A	R. Hunt/Trap	2,170	32,550.00	30,909.33	----------	28,536.43	2,372.90
204	R. Spt. Fish/Hunt	29,004	638,088.00	604,913.93	274,960.90	329,953.03	----------
205	R. Fish/Hunt/Trap	9,328	233,200.00	220,723.25	88,289.31	114,632.27	17,801.67
206	NR. 10-Day Spt. Fish	34,473	517,095.00	492,039.41	----------	----------	----------
207	NR Sport Fishing	12,411	372,330.00	353,964.63	353,964.63	----------	----------
208	NR Hunting	4,345	260,700.00	248,300.74	----------	248,300.74	----------
209	NR Fish/Hunt	1,002	90,180.00	85,562.50	28,462.04	57,100.46	----------
210	NR Hunt/Trap	53	10,600.00	10,022.98	----------	6,030.43	3,992.55
211	NR 1-Day Spt. Fish	16,346	81,730.00	77,531.45	77,531.45	----------	----------
212	NR Military Spt. Fish	6,980	69,800.00	66,448.15	66,448.15	----------	----------
213	NR Military Small Hunt	979	11,748.00	11,127.95	----------	11,127.95	----------
214	NR Military Fish/Hunt	878	19,316.00	18,431.46	8,377.93	10,053.53	----------
217-3B	R. Trap	1,465	4,395.00	4,189.10	----------	1,532.94	2,656.16
218	Duplicate License	2,905	5,810.00	5,524.47	----------	----------	5,524.47
120	Fish/Fur/Game Farm	4	400.00	381.41	----------	----------	381.41
121	R. Fur Dealer	105	5,250.00	4,942.74	----------	----------	4,942.74
122	NR Fur Dealer	5	1,000.00	931.56	----------	----------	931.56
123	R. Taxidermy	97	2,775.00	2,604.56	----------	----------	2,604.56
124	NR Taxidermy	2	400.00	382.82	----------	----------	382.82
200	Permit Fees	18,915	96,595.00	94,665.50	----------	94,665.50	----------
201-B	R. Blind Spt. Fish	10	2.50	2.37	2.37	----------	----------
205-A	R. 25c Hunt/Fish/Trap	8,334	2,083.50	1,981.92	660.57	1,149.51	171.84
SUBTOTAL		256,151	$3,564,190.58	$3,388,616.03	$2,184,530.09	$1,162,323.26	$41,762.68
215	R. Big Game Tags	3,538	90,825.00	87,481.14	----------	87,481.14	----------
216	NR. Big Game Tags	7,301	1,290,050.00	1,229,716.83	----------	1,229,716.83	----------
TOTAL		266,990	$4,945,065.58	$4,705,814.00	$2,184,530.09	$2,479,521.23	$41,762.68

1857

RESIDENT TAGS		
B/G Bear	3,533	$88,325.00
Muskox	5	2,500.00
TOTAL	3,538	$90,825.00

Gross	$4,945,065.58
Cost	239,251.58
Net	$4,705,814.00

4.83%

NON-RESIDENT TAGS		
B/G Bear	1,036	$ 259,000.00
Black Bear	1,262	126,200.00
Deer	390	13,650.00
Moose	1,837	367,400.00
Sheep	661	165,250.00
Elk	12	1,500.00
Goat	392	49,000.00
Caribou	1,389	276,600.00
Wolf	249	12,450.00
Wolverine	60	3,000.00
Bison	-----	----------
Muskox	15	15,000.00
Walrus	4	1,000.00
Total	7,301	$1,290,050.00

30% Aliens
- 311 -
- 379 -
- 552 -
- 198 -
- 118 -
- 415 -

1.35 Tags / Hunter

Residents entitled to Sport Fish	130,458	
Non-residents entitled to Sport Fish	72,090	202,548
Residents entitled to Hunt	71,434	
Non-residents entitled to Hunt	7,257	78,731
Residents entitled to Trap	21,297	
Non-residents entitled to Trap	53	21,350

55%

10%

Less Military = 5400
7.5%

.002%

NUMBER SOLD EACH YEAR BY CLASS		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
201	R. Sport Fishing	39,442	40,503	44,139	47,881	50,593	54,561	66,409	76,892	83,824	81,782
202	R. Hunting	22,148	21,453	19,957	23,875	19,699	16,205	17,003	21,470	21,803	22,618
203-A	R. Hunt/Trap	1,042	854	842	1,059	1,109	1,181	1,328	2,063	1,947	2,170
204	R. Spt. Fish/Hunt	22,951	25,686	27,625	29,937	32,394	34,779	37,380	30,403	29,885	29,004
205	R. Fish/Hunt/Trap	3,955	4,167	4,387	5,343	6,239	7,551	9,606	9,153	9,141	9,328
206	NR. 10-Day Spt. Fish	17,387	17,662	19,486	22,166	21,702	24,228	26,706	23,564	28,600	34,473
207	NR Sport Fishing	20,790	18,405	19,269	14,374	16,009	19,953	20,777	12,766	12,935	12,411
208	NR Hunting	9,004	8,033	8,067	7,066	6,636	5,437	5,390	3,656	3,552	4,345
209	NR Fish/Hunt	3,506	3,476	3,592	1,639	1,680	1,640	1,711	803	787	1,002
210	NR Hunt/Trap	9	16	10	23	24	26	37	52	67	53
211	NR 1-Day Spt. Fish	--------	--------	--------	--------	--------	--------	--------	11,174	14,800	16,346
212	NR Military Spt. Fish	--------	--------	--------	--------	--------	--------	--------	6,527	7,447	6,980
213	NR Military Small Hunt	--------	--------	--------	--------	--------	--------	--------	841	1,077	979
214	NR Military Fish/Hunt	--------	--------	--------	--------	------	--------	--- ---	987	912	878
217-3B	R. Trap	815	672	822	1,137	890	759	1,210	1,589	1,480	1,465
218	Duplicate License	--------	--------	1,154	1,537	1,611	1,487	2,218	2,748	2,949	2,905
120	Fish/Fur/Game Farm	16	21	18	4	5	1	2	2	2	4
121	R. Fur Dealer	--------	--------	--------	126	136	121	136	107	189	105
122	NR Fur Dealer	--------	--------	--------	2	3	4	3	4	7	5
123	R. Taxidermy	--------	--------	--------	54	42	36	41	45	63	37
124	NR Taxidermy	--------	--------	--------	3	--------	2	--------	1	1	2
	R. Fur Dealer-Taxid.	159	166	121	--------	--------	--------	--------	--------	--------	--------
	NR Fur Dealer-Taxid.	13	7	6	--------	--------	--------	--------	--------	--------	--------
	Reg & Master Guides	346	352	379	233	--------	--------	--------	--------	--------	--------
	Ass't Guides	458	535	495	66	--------	--------	--------	--------	--------	--------
	Class "A" Ass't Guide	52	65	79	18	--------	--------	--------	--------	--------	--------
200	Permit Fees	--------	--------	--------	--------	--------	--------	--------	218	20,034	18,915
201-B	R. Blind Spt. Fish	4	1	1	2	3	5	3	2	13	10
203-A	R. 75¢ Hunt/Fish/Trap	5,359	5,595	5,936	6,658	6,256	5,004	5,281	5,463	6,887	8,334
215	R. Big Game Tags	--------	--------	--------	--------	--------	--------	--------	2,937	3,449	3,538
216	NR Big Game Tags	12,602	11,955	11,866	8,339	8,331	6,956	7,415	5,775	5,426	7,301
TOTAL		160,058	159,644	168,301	171,564	173,367	179,936	202,656	219,262	257,277	266,990

GROSS SPORT FISH AND GAME LICENSE RECEIPTS 1970 thru 1979

1977 NR Hunting - 68%
NR Hunting & Fishing - 47%
NR Big Game Tags - 78%

"1979" Sport Fish & Game Receipts

RS 3-28

Type of License	Number	Gross	
NR Hunting	4345	260700 #	195525
Alien 25%	1086	- 65175	162900
		195,525	358425.00
Alien Lic Fee / 150.00	162900.00		- 260700.00
			$97,725.00
NR Hunting & Fishing	1002	90180 #	67635
Alien 25%	251	- 22545	50200
		67635.00	117835.00
Alien Lic Fee / 200.00	50,200.00		- 90180.00
			$27655.00
NR Hunting & Trap	53	10600 #	7950.00
Alien 25%	14	- 2650	4200.00
		7,950.00	12150.00
Alien Lic Fee / 300.00	4200.00		- 10600.00
			$1550.00
Total NR Hunt -	$126,930.00		
Total NR Fish -	168,701.25		$295,631.25
NR Fish	12411	372330 #	279247.50
Alien 25%	3103	- 93082.50	155150.00
		279,247.50	434397.50
Alien Lic Fee / 50.00	155,150.00		- 372,300.00
			$62,097.50
NR 10-Day Fish	34473	517095 #	387821.25
Alien 25%	8618	- 129273.75	215450.00
		387821.25	603271.25
Alien Lic Fee / 25.00	215450.00		- 517095.00
			$86176.25
NR 1-Day Fish	16346	81730 #	61297.50
Alien 25%	4086	20432.50	40860.00
		61297.50	102157.50
Alien Lic Fee / 10.00	40860.00		81730.00
			$20,427.50

Randy Smith
Ketch Ketchum
Don Coggers

1) Where does the problem lie with the bill –
2) Do we eliminate aliens entirely –

Mtg with Ketchikan Air Taxi -

1:1:70 HB 830 -

Conmat Ketchikan - problem in seeing where guides are controlling game. Should be done by Fish & Game not guides or Air Taxi people -

Idea of Mtg is to work out some compromise between air taxi, ~~air~~ guides and tube

✓ ATC - SB 60 find out where work or matter bill is

Free Conference -

Check SB 159 Re: Leasing Fergie & Holman Bryan's leasing get them put on some bill as a vehicle together

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

Pouch Y, State Capitol
Juneau, Alaska 99811
(907) 465-3991

MEMORANDUM

April 24, 1980

TO: Representative Vern Hurlbert

FROM: Christine Johnson, Research Analyst

THROUGH: Duncan L. Read, Director

RE: Moose and Caribou Hunting
Research Request No. 125

We have prepared the following information in response to your request regarding moose and caribou hunting in the state. According to the Department of Fish and Game, the number of moose and caribou in the state has declined significantly since 1970.

Moose and Caribou
Populations

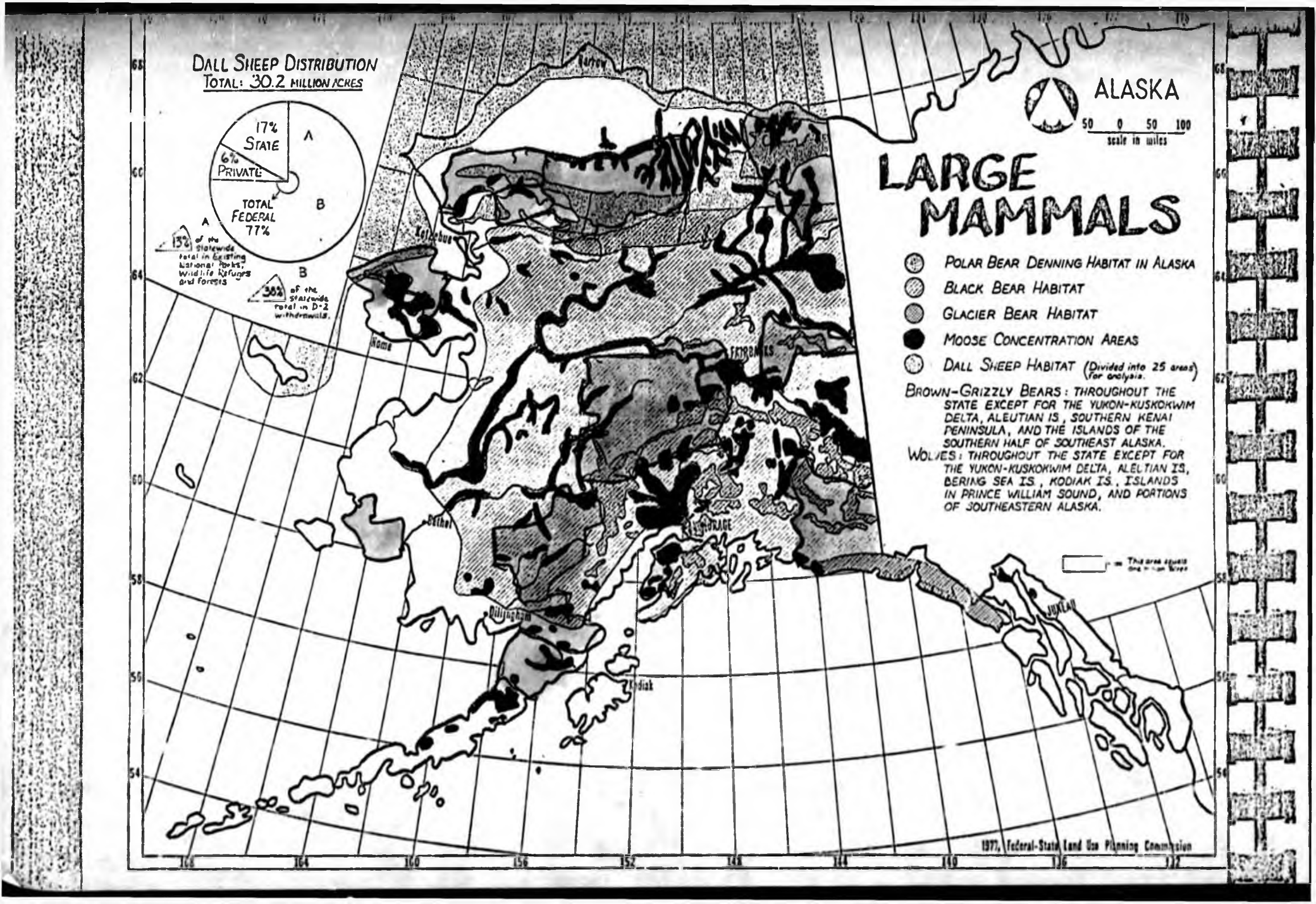
	1970	1979
Moose	141,000	77,000
Caribou	415,000	264,000

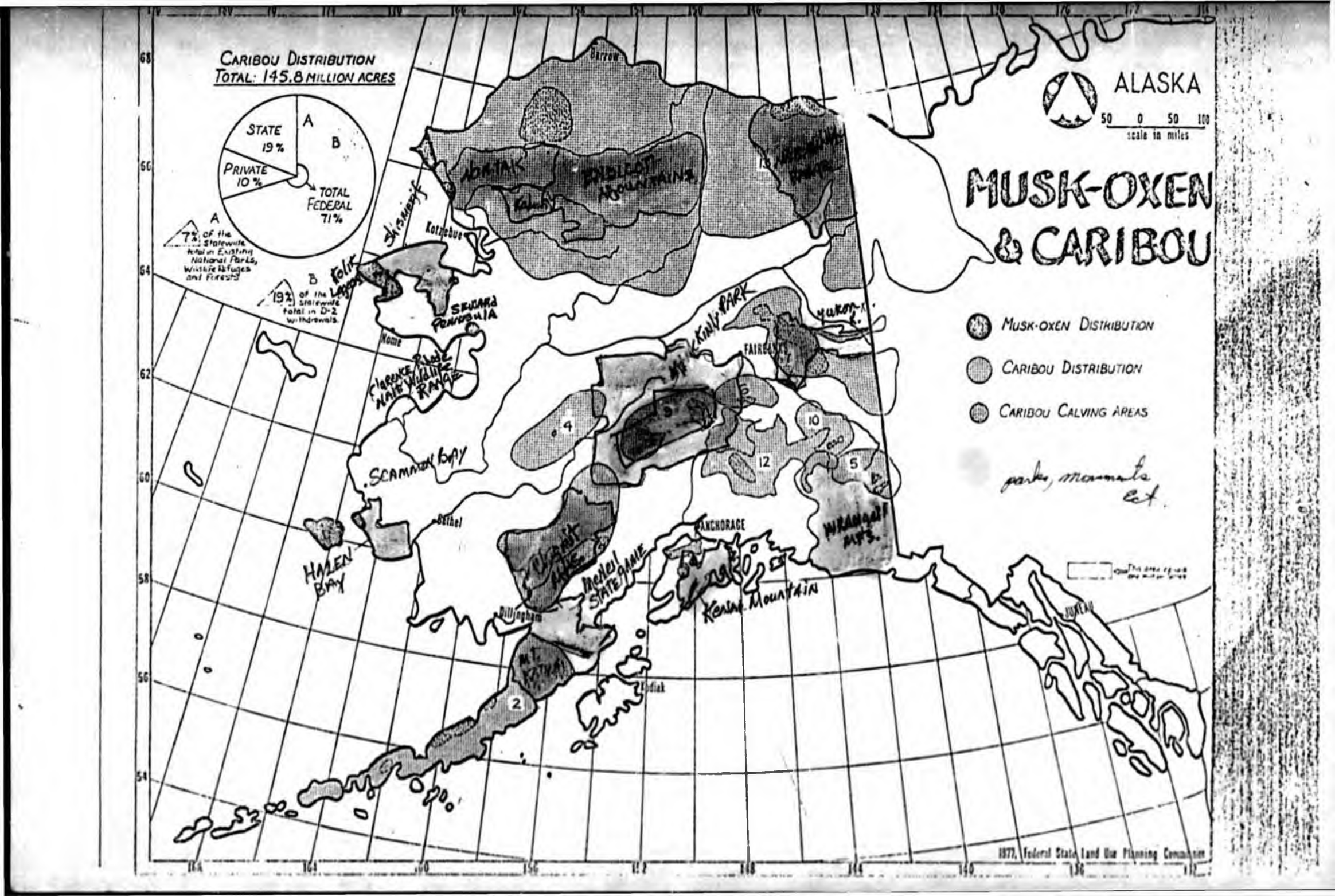
This data indicates that the moose population is presently 55% of what it was in 1970, and the number of caribou has declined by 35%. A spokesperson for the Department of Fish and Game attributed the population reductions to particularly severe winters during the early 1970's, and a reduction in the amount of suitable moose habitat. (Many ranges have matured beyond ideal moose conditions, and, due to wildfire control efforts, few new ranges have appeared to replace them.) We have attached several maps of current moose and caribou habitat for your reference.

Available Hunting Lands

Since 1970 the amount of unrestricted hunting land has been reduced by 130,000,000 acres. The federal government has designated approximately 40,000,000 acres as National Park Monuments, where some subsistance hunting (by local rural residents) is permitted, and 56,000,000 acres as

National Forest and Wildlife Refuges, where a limited amount of both sport and subsistence hunting is allowed. (Monument managers have been instructed to determine a quota of animals to be taken by hunters.) Approximately 44,000,000 additional acres have been transferred to private owners who may restrict hunting on their land as they choose. (Native land selections comprise 43.7 million acres of this private land.)


DALL SHEEP DISTRIBUTION
TOTAL: 30.2 MILLION ACRES
17% STATE
6% PRIVATE
TOTAL FEDERAL 77%
A
B
13% of the statewide total in existing National Parks, Wildlife Refuges and Forests
38% of the statewide total in D-2 withdrawals.
ALASKA
50 0 50 100
scale in miles
LARGE MAMMALS
POLAR BEAR DENNING HABITAT IN ALASKA
BLACK BEAR HABITAT
GLACIER BEAR HABITAT
MOOSE CONCENTRATION AREAS
DALL SHEEP HABITAT (Divided into 25 areas for analysis.
BROWN-GRIZZLY BEARS: THROUGHOUT THE STATE EXCEPT FOR THE YUKON-KUSKOKWIM DELTA, ALEUTIAN IS., SOUTHERN KENAI PENINSULA, AND THE ISLANDS OF THE SOUTHERN HALF OF SOUTHEAST ALASKA.
WOLVES: THROUGHOUT THE STATE EXCEPT FOR THE YUKON-KUSKOKWIM DELTA, ALEUTIAN IS., BERING SEA IS., KODIAK IS., ISLANDS IN PRINCE WILLIAM SOUND, AND PORTIONS OF SOUTHEASTERN ALASKA.
= This area equals one million acres
Barrow
Kotzebue
Nome
Bethel
Dillingham
Kodiak
FAIRBANKS
ANCHORAGE
JUNEAU
1977, Federal-State Land Use Planning Commission


CARIBOU DISTRIBUTION
TOTAL: 145.8 MILLION ACRES
STATE 19%
PRIVATE 10%
TOTAL FEDERAL 71%
A
B
7% of the statewide total in Existing National Parks, Wildlife Refuges and Forests
19% of the statewide total in D-2 withdrawals
ALASKA
50 0 50 100
scale in miles
MUSK-OXEN & CARIBOU
MUSK-OXEN DISTRIBUTION
CARIBOU DISTRIBUTION
CARIBOU CALVING AREAS
parks, monuments etc.
BARROW
ARCTIC
BROOKS RANGE
NOATAK
KOBUK
KOYUKUK
PORCUPINE
YUKON FLATS
KOYUKUK
SELAWIK
KOTZEBUE
KOTZEBUE LAGOON
SEWARD PENINSULA
NOME
KANUTI
FAIRBANKS
YUKON R.
CLARENCE RHODE WILDLIFE RANGE
SEAMAN BAY
BETHEL
HALEN BAY
ANCHORAGE
WRANGELL MTS.
DILLINGHAM
MT. KATMAI
KENAI MOUNTAIN
KODIAK
1977, Federal State Land Use Planning Commission

4/25/80 Adjourned 2:50 pm

Present
Bennett -
Dankworth
Fahrenkamp
Mulcahy

Absent
Sumner -
Meland -
Kerttula -

Rep. Halbert - Prime sponsor of HB836
Rep. Barnes - Opposition to bill
Greg Cook - Exec. Dir. Board of Game - Board in favor of the bill - Benefits outweigh negative effects
Randy Smith - AK Prof. Hunters Association
Joe Geddes - AK Center for the Environment.
Bob Penman - Dep. Director Division of Game - Support bill
Recommend change Pg 2 Line 13 to Dept. of Revenue

Adjourned 2:45 pm

Let Randy Smith
789-9789

Dean Erick - AK Visitors Association
279-4116

HB
878

Alaska State Legislature

House

HOUSE RESOURCES COMMITTEE

FISH & GAME ISSUES
Alvin Osterback, Chairman

Pouch V, State Capitol
Juneau, Alaska 99811
(907) 465-3715

HEARING NOTIFICATIONS

Re: Musk Oxen

BILL	DATE INFORMED	LETTER/ PHONE	INFORMED	HEARING DATE
*SS HB 878	4/3/80		Rep. Fuller ✓ Dept. of Fish & Game will testify Bob Hinman of Game Div. to testify 4/9! 4/9? Rep. Phil Guy, to testify ✓ will Call back Alaska Proffessional Hunters, ✓ Randy Smith Dept. of Revenue.	4/8/80

CSSSHB 878 An Act relating to fees for hunting musk oxen

The bill permits the Department of Fish and Game and the Board of Game to lower the resident tag fee for musk oxen in certain situations. There are presently 167 musk oxen counted on Nelson Island. This amount of musk oxen has been determined by the Department of Fish and Game to be too many for the habitat. Therefore it is necessary for some of the musk oxen to be harvested. The people of Toksook Bay and the Central Bering Sea Fish and Game Advisory Committee requested that the legislature lower the tag fee in order that they be given the opportunity to take these surplus musk oxen for their personal use. The Nelson Island area is very poor in red meat resources and the musk oxen would be a beneficial supplement to their diet. Presently the tag fee for residents makes the taking of musk oxen prohibitively expensive. Allowing the Board of Game to lower the tag fee and provide for an open season when a surplus exists would enable these villagers to take musk oxen while providing for a healthy and stable populations on the island.

The people of Toksook Bay and the advisory committee decided that they would rather not have a sports hunt of musk oxen on the island. Rather than follow a plan similar to that on Nunivak Island, where local villagers take part in the guiding for musk oxen, the people of Toksook Bay requested that they and the other villagers of the Nelson Island area be able to harvest this surplus in the discretion of the Board of Game. This bill

would provide for similar arrangements for other musk oxen herds. Something needs to be done at this time to provide for the welfare of the musk oxen herd on Nelson Island and this bill provides the flexibility to harvest the surplus animals according to the desires of the people who have lived with the musk oxen since their transplant from Nunivak Island. It also should be noted, however, that nothing in this bill is intended to require the Board of Game to reduce or eliminate the resident Big Game Tag for musk oxen in instances such as the Nunivak Island sport hunt in which the Board determines that the $500 resident tag is appropriate.

SECTIONAL ANALYSIS

Section 1. Addition of a sub-paragraph that institutes a $1000 non-resident big game tag fee for musk oxen.

Section 2. Paragraph 18, which presently deals only with bears, is revised to include musk oxen. It requires a $500 resident big game tag fee for musk oxen. Additional language is inserted stating: However, the Board of Game may reduce or eliminate the fee for a resident big game tag for musk oxen for an open season.

Section 3. The present secion on musk oxen is repealed and replaced by Permit Applications:

(a) If the Board of Game declares an open season for

musk oxen and has not reduced or eliminated the $500 resident tag fee, the department shall conduct a drawing for permits to take musk oxen.

(b) If an open season is declared and the Board has reduced or eliminated the resident tag fee, permits to take musk oxen shall be issued in the order the applications were received. No person is eligible for more than one permit per year. The department may not charge an application fee for permits if the tag fee has been reduced or eliminated. In all other cases the application fee is $10.

(c) Except for musk oxen, the permit application fee for which a limited drawing is conducted is $5.

Fiscal note indicates no fiscal impact.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. CSSSHB 878
Title Relating to fees for hunting musk oxen
Requested by _____ Date _____

II. FISCAL DETAIL
Agency Affected Revenue
Program Category Affected Fish & Game Support
BRU, Program, or Subprogram(s) Affected Fish & Game Licensing
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

		FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100	PERSONAL SERVICES		Ø	Ø	Ø	Ø	Ø
200	TRAVEL						
300	CONTRACTUAL						
400	COMMODITIES						
500	EQUIPMENT						
600	LAND & STRUCTURES						
700	GRANTS, CLAIMS, ETC.						
	TOTAL		Ø	Ø	Ø	Ø	Ø

FUNDING (Thousands of Dollars)

GENERAL FUND		Ø	Ø	Ø	Ø	Ø
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

This BILL would return it to the present law.

IV. DATE April 7, 1980 PREPARED BY Donald Barnes
AGENCY Revenue
PHONE 465-2313

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33 001 (Rev. 12/79)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. CSSSHB 878
Title An Act relating to fees for hunting musk oxen
Requested by Resource Committee Date 4/21/80

II. FISCAL DETAIL
Agency Affected Department of Fish and Game
Program Category Affected Natural Resource Management
BRU, Program, or Subprogram(s) Affected Game Division
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		-0-	-0-	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND		-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		-0-	-0-	-0-	-0-	-0-
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

There is no fiscal impact on the operation of the Department with this Act. Also, there will be no major revenue impact by this Act.

IV. DATE 4/23/80 PREPARED BY Russell H. Clark
AGENCY Department of Fish and Game
PHONE 465-4120

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)
Office of the Governor-Keith Specking

33 (01 (Rev. 12/79)

SPORT FISH & GAME RECEIPTS
Calendar Year 1979
Final - January 1, 1979 thru December 31, 1979
Prepared January 14, 1980

CODE	TYPE OF LICENSE	NUMBER	GROSS	NET	NET/SPORT	NET/GAME	NET/GENERAL
201	R. Sport Fishing	83,782	$ 836,726.58	$ 793,793.33	$ 793,793.33	$----------	$---------
202	R. Hunting	22,618	271,416.00	259,240.47	----------	259,240.47	---------
203-A	R. Hunt/Trap	2,170	32,550.00	30,909.33	----------	28,536.43	2,372.90
204	R. Spt. Fish/Hunt	29,004	638,088.00	604,913.93	274,960.90	329,953.03	---------
205	R. Fish/Hunt/Trap	9,328	233,200.00	220,723.25	88,289.31	114,632.27	17,801.67
206	NR. 10-Day Spt. Fish	34,473	517,095.00	492,039.41	492,039.41	----------	---------
207	NR Sport Fishing	12,411	372,330.00	353,964.63	353,964.63	----------	---------
208	NR Hunting	4,345	260,700.00	248,300.74	----------	248,300.74	---------
209	NR Fish/Hunt	1,002	90,180.00	85,562.50	28,462.04	57,100.46	---------
210	NR Hunt/Trap	53	10,600.00	10,022.98	----------	6,030.43	3,992.55
211	NR 1-Day Spt. Fish	16,346	81,730.00	77,531.45	77,531.45	----------	---------
212	NR Military Spt. Fish	6,980	69,800.00	66,448.15	66,448.15	----------	---------
213	NR Military Small Hunt	979	11,748.00	11,127.95	----------	11,127.95	---------
214	NR Military Fish/Hunt	878	19,316.00	18,431.46	8,377.93	10,053.53	---------
217-3B	R. Trap	1,465	4,395.00	4,189.10	----------	1,532.94	2,656.16
218	Duplicate License	2,905	5,810.00	5,524.47	----------	----------	5,524.47
120	Fish/Fur/Game Farm	4	400.00	381.41	----------	----------	381.41
121	R. Fur Dealer	105	5,250.00	4,942.74	----------	----------	4,942.74
122	NR Fur Dealer	5	1,000.00	931.56	--------- --	----------	931.56
123	R. Taxidermy	37	2,775.00	2,604.56	--------- --	----------	2,604.56
124	NR Taxidermy	2	400.00	382.82	----------	----------	382.82
200	Permit Fees	18,915	96,595.00	94,665.50	----------	94,665.50	---------
201-B	R. Blind Spt. Fish	10	2.50	2.37	2.37	----------	---------
205-A	R. 25c Hunt/Fish/Trap	8,334	2,083.50	1,981.92	660.57	1,149.51	171.84
SUBTOTAL		256,151	$3,564,190.58	$3,388,616.03	$2,184,530.09	$1,162,323.26	$41,762.68
215	R. Big Game Tags	3,538	90,825.00	87,481.14	----------	87,481.14	---------
216	NR. Big Game Tags	7,301	1,290,050.00	1,229,716.83	----------	1,229,716.83	---------
TOTAL		266,990	$4,945,065.58	$4,705,814.00	$2,184,530.09	$2,479,521.23	$41,762.68

	RESIDENT TAGS		NON-RESIDENT TAGS		
* B/G Bear	3,533	$88,325.00	B/G Bear	1,036	$ 259,000.00
* Muskox	5	2,500.00	Black Bear	1,262	126,200.00
TOTAL	3,538	$90,825.00	Deer	390	13,650.00
			Moose	1,837	367,400.00
			Sheep	661	265,250.00
			Elk	12	1,500.00
			Goat	392	49,000.00
			Caribou	1,564	234,600.00
			Wolf	249	12,450.00
			Wolverine	60	3,000.00
			Bison	-----	----------
*			Muskox	15	15,000.00
			Walrus	4	1,000.00
			Total	7,301	$1,290,050.00

Gross	$4,945,065.56	
Cost	239,251.56	4.83%
Net	$4,705,814.00	

Residents entitled to Sport Fish	130,458	
Non-residents entitled to Sport Fish	72,090	202,548
Residents entitled to Hunt	71,454	
Non-residents entitled to Hunt	7,257	78,711
Residents entitled to Trap	21,297	
Non-residents entitled to Trap	53	21,350

Section 3. AS 16.05.345 is repealed and re-enacted by the following: Charges the Board of Game with declaring open seasons on male and female musk oxen. If the Board of Game declares a open season for female musk oxen the department shall issue permits in the order the applications are recieved. The department may not charge a fee for an application for a female musk oxen.

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. Sponsor Substitute for House Bill No. 878
Title An act relation to fees for hunting muskoxen
Requested by Resources Date March 20, 1980

II. FISCAL DETAIL
Agency Affected Department of Revenue
Program Category Affected Fish & Game Support
BRU, Program, or Subprogram(s) Affected Fish & Game Licensing
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars)

Revenue Effects

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						
Game Management fund	-0-	.6	.6			

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

IV. DATE March 20, 1980 PREPARED BY Linda Gene Lockridge
AGENCY Department of Revenue
PHONE 465-2376

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

...OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. Sponsor Substitute for House Bill No. 878
Title An act relating to fees for hunting muskoxen
Requested by Resources Date March 20, 1980

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Agency Affected Department of Revenue
Program Category Affected Fish & Game Support
BRU, Program, or Subprogram(s) Affected Fish & Game Licensing
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	-0-	-0-	-0-			

FUNDING (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

IV. DATE March 20, 1980 PREPARED BY Linda Gene Lockridge
AGENCY Department of Revenue
PHONE 465-2376

Original: Legislative Finance
c Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/79)

Alaska State Legislature

Senate

Committee on Resources

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

April 22, 1980

TO: Senate Resource Committee Members

FROM: Jens Zehbe, Staff Member

..EGARDING: CSSSHB 878

This bill amends the Fish and Game statutes with the following:

1) Addition of a sub-paragraph that institutes a $1000 non-resident big game tag fee for musk oxen.

2) Paragraph (18), which presently deals only with bears is revised to include musk oxen. It requires a $500 resident big game tag fee for musk oxen. Additional language is inserted stating: However, the Board of Game may reduce or eliminate the fee for a resident big game tag for musk oxen for an open season.

3) The present section on musk oxen AS 16.05.345 is repealed. It is replaced by a new section entitled Permit Applications which states:

   a) If the Board of Game declares an open season for musk oxen and has not reduced or eliminated the $500 resident tag fee, the department shall conduct a drawing for permits to take musk oxen.

   b) If an open season is declared and the Board has reduced or eliminated the resident tag fee, permits to take musk oxen shall be issued in the order the applications were received. No person is eligible for more than one permit per year. The department may not charge an application fee for permits if the tag fee has been reduced or eliminated. In all other cases the application fee is $10.

   c) Except for musk oxen, the permit application fee for which a limited drawing is conducted is $5.

CSSSHB 878- An Act relating to fees for hunting musk oxen

This bill is intended to permit the Department of Fish and Game and the Board of Game to lower the resident tag fee for musk oxen in certain situations. There are presently 167 musk oxen counted on Nelson Island. This amount of musk oxen has been determined by the Department of Fish and Game to be too many for the habitat. Therefore, it is necessary for some of the musk oxen to be harvested. The people of Toksook Bay and the Central Bering Sea Fish and Game Advisory Committee, meeting in Toksook Bay, requested that the legislature lower the tag fee in order that they be given the opportunity to take these surplus musk oxen for their personal use. The Nelson Island area is very poor in red meat resources and the musk oxen would be a very beneficial supplement to their diet. Presently, the tag fee for residents makes the taking of musk oxen prohibitively expensive. Allowing the Board of Game to lower the tag fee and provide for an open season when a surplus exists would enable these villagers to take musk oxen while providing for a healthy and stable population on the island.

The people of Toksook Bay and the advisory committee decided that they would rather not have a sports hunt of musk oxen on the island. Rather than follow a plan similar to that on Nunivak Island, where local villagers take part in the guiding for musk oxen, the people of Tooksok Bay requested that they and the other villagers of the Nelson Island area be able to harvest this surplus in the discretion of the Board of Game. This bill would provide for similar arrangements for other musk oxen herds. Something needs to be done at this time to provide for the welfare of the musk oxen herd on Nelson Island, this bill provides for the flexibility to harvest the surplus animals according to the desires of the people who have lived with the musk oxen since their transplant from Nunivak Island. It also should be noted however, that nothing in this bill is intended to require the board of Game to reduce or eliminate the resident Big Game Tag for musk oxen in instances such as the Nunivak Island sport hunt in which the Board determines that the $500 resident tag is appropriate.

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

BOARD OF FISHERIES/BOARD OF GAME
DEPARTMENT OF FISH AND GAME

SUBPORT BUILDING
JUNEAU, ALASKA 99801

WRITTEN TESTIMONY TO THE SENATE RESOURCES COMMITTEE
ON SSHB 878

by Greg Cook, Executive Director
Boards of Fisheries and Game
(465-4110)

The Board of Game has received a request from Representative Phillip Guy to consider SSHB 878. Please accept the following comments.

I. The Board of Game strongly supports that portion of SSHB 878 lowering the tag fee for resident hunters of cow muskoxen. The Board's decision, briefly stated, rests on biological reasoning. The muskox herd presently located on Nelson Island is acknowledged to be at a population level that is in excess of what the habitat can sustain over a term of years. Consequently, the Board of Game is desirous of reducing the number of animals in the herd. The most effective way to achieve a rapid, long-term reduction in the population is to kill females.

At their regulatory meeting in Fairbanks in April 1980, the Board of Game adopted an amended version of Proposal #282 providing for a hunting season on Nelson Island in which twenty cows may be taken by registration permit. The Board directed the Department of Fish and Game to administer the hunt in such a manner as to favor residents of Nelson Island; permits will be available on a first come, first served basis and will only be available on Nelson Island.

If no hunters take the cows available, then the Board has directed the Department to kill twenty animals and distribute the meat to local villagers.

II. The Board of Game does not favor the portion of SSHB 878 imposing by statute a system for the administration of permits. The Board's opinion is that our present permit system functions well, and the public would not be served by the procedure the bill proposes.

III. The concept of reserving the Nelson Island muskox resource for the exclusive use of Island residents deserves special comment. The Board opposes any "Nelson Island residents only" hunt.

Muskoxen on Nelson Island originate from a 1967-1968 transplant from Nunivak Island by the U.S. Fish and Wildlife Service and the State of Alaska acting in concert. The funds for this transplant were derived from revenues generated by the hunting public as a whole. The Board of Game believes that the muskoxen on Nelson Island are a common property resource; they exist on Nelson Island only by virtue of funds derived from the public as a whole. To foreclose hunting by the general public by limiting the use of that resource to only residents of Nelson Island would be improper. Such a limitation would be both biologically unnecessary and constitutionally suspect. Following the subsistence policy of the Board of Game, the Board has structured the permit hunt described in paragraph two of this letter to heavily favor local residents

without absolutely denying hunting to other Alaskans. The Board feels this is the proper approach and respectfully requests that you delete Section 3 of SSHB 878 so that the permit hunt may be administered as described in this letter.

Thank you for your consideration of these views.

HB 878

Relating to fees for hunting musk oxen.

Section 1. AS 16.05.340 (a) (16) is amended by adding a new subparagraph:
(O) Musk oxen, each $1,000

Section 2. AS 16.05.340 (a) (18) is amended by the following: adds big game to Resident tags deletes For Bear Brown or Grizzly, Each ....$25 adds subsections
(A) Bear, brown or grizzly, each $25
(B) Musk oxen male, each $500
(C) Musk oxen female, each $50

Section 3. AS 16.05.345 is repealed and re-enacted by the following: deletes the big game tag fee of $500 for residents and $ 000 for non-residents adds subsection (b) the permit application ee for all species for which a limited drawing is conducted is $5 except as provided in (a) of this section.

Section 4. AS 16.05.345 (a) (19) is repealed

CSSSHB 878 "An Act relating to fees for hunting musk oxen."

This bill is intended to permit the Department of Fish and Game and the Board of Game to lower the resident tag fee for musk oxen in certain situations. There are presently 167 musk oxen counted on Nelson Island. This amount of musk oxen has been determined by the Department of Fish and Game to be too many for the habitat. Therefore, it is necessary for some of the musk oxen to be harvested. The people of Toksook Bay and the Central Bering Sea Fish and Game Advisory Committee, meeting in Toksook Bay, requested that the legislature lower the tag fee in order that they be given the opportunity to take these surplus musk oxen for their personal use. The Nelson Island area is very poor in red meat resources and the musk oxen would be a very beneficial supplement to their diet. Presently, the tag fee for residents makes the taking of musk oxen prohibitively expensive. Allowing the Board of Game to lower the tag fee and provide for an open season when a surplus exists would enable these villagers to take musk oxen while providing for a healthy and stable population on the island.

The people of Toksook Bay and the advisory committee decided that they would rather not have a sports hunt of musk oxen on the island. Rather than follow a plan similar to that on Nunivak Island, where local villagers take part in the guiding for musk oxen, the people of Toksook Bay requested that they and the other villagers of the Nelson Island area be able to harvest this surplus in the discretion of the Board of Game. This bill would provide for similar arrangements for other musk oxen herds. Something needs to be done at this time to provide for the welfare of

the musk oxen herd on Nelson Island, this bill provides for the flexibility to harvest the surplus animals according to the desires of the people who have lived with the musk oxen since their transplant from Nunivak Island. It also should be noted, however, that nothing in this bill is intended to require the Board of Game to reduce or eliminate the resident Big Game Tag for musk oxen in instances such as the Nunivak Island sport hunt in which the Board determines that the $500 resident tag is appropriate.

Harold Sparck DR Nanamkitsisti
Norm Cohen Ti'lhatsisti
Request Rural Cap Nanamkithatsisti

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