

HB

640

(7)

COMMITTEE REPORT

HOUSE

1/30/80

FURTHER: FINANCE

Date: 11 Dec 80

Mr. Speaker:

The Committee on COMMUNITY AND REGIONAL AFFAIRS has had HB 640

"An Act making a special appropriation to the Alaska Power Authority for a study of hydroelectric development in the Tanana area; and providing for an effective date."

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

- do pass do not pass
 - do pass with attached amendments(s)
 - replace with CS for 640 same title
 new title
- and recommends _____

AND attaches a "Letter of Intent" New Fiscal Note

reports it back without recommendation

referred to the _____ Committee

**MEMBERS SIGNING
DO PASS**

**MEMBERS HAVING
OTHER RECOMMENDATIONS:**

Bill Paul

Gregory

Robert Young

Charles H. ...

Bill Paul

Bill Paul
CHAIRMAN



Alaska State Legislature

House of Representatives

Committee on

Community & Regional Affairs

Pouch V
State Capitol
Juneau, Alaska 99811

Official Business

BILL NUMBER AND TITLE: HB 640 Appropriation for a study of hydroelectric development in the Tanana area.

ORIGINAL SPONSOR: Moss

OTHER SPONSORS: _____

RECEIVED FROM: _____

FURTHER REFERRALS: Finance

HEARING DATE: 4/16/80

MEMBERS PRESENT: Bill Parker X
Margaret Branson X
Pat O'Connell

Pat Carney X
Charlie Parr X
Fred Zharoff
Ray Metcalf X

Committee discusses pchange suggested by the Alaska Power Authority to make the study broader than just a study of hydro and have it include all power possibilities.

Committee agrees with suggestions and approves a CS containing such changes.

COMMITTEE ACTION: CS to be drafted with suggested amendment.

TAPE # 8 SIDE 1 Footage 717- 787



Alaska State Legislature

House of Representatives

Committee on

Community & Regional Affairs

Pouch V
State Capitol
Juneau, Alaska 99811

Official Business

BILL WORK SHEET

BILL NUMBER

HB640

RE

Appropriation/Ar.

Received from _____

Fical Note _____

Referred to _____

LAA Legal Contact

Request

CONTACTS:

Sponsor: Mass 4990 (Shannon)

✓ 277-7641 Eric Gould

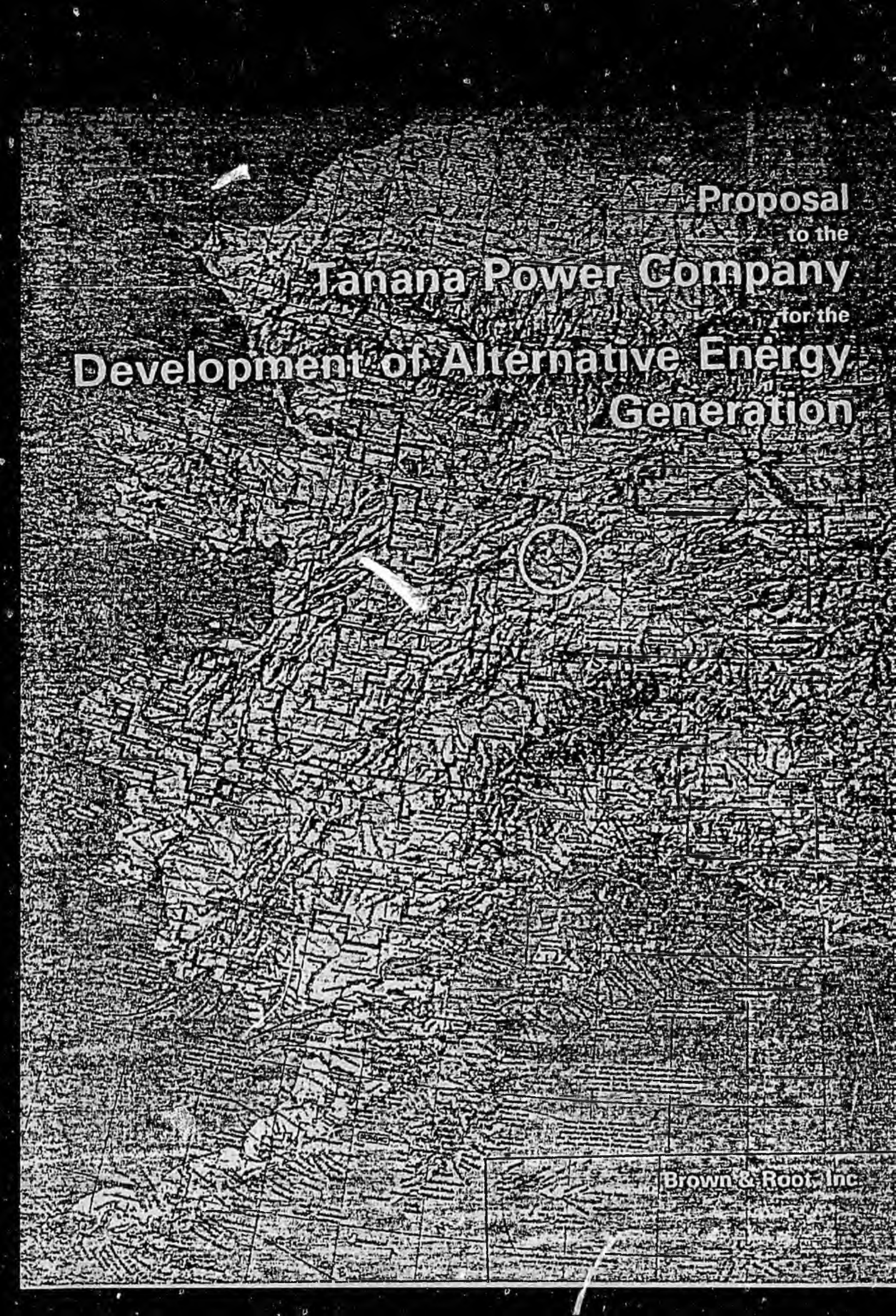
Have any studies been done in the area?
Power Authority would do if they had funds.
Not convinced

Corp. of Engineers due to make reconnaissance of this
study next year.

Supplemental hydro bill being developed in
Finland.

not high in priority - return might not be too
great. Further north you go, less chance of
finding streams & hydro potential.

Should look not only at hydro but that all alternatives
be considered.



Proposal
to the
Tanana Power Company
for the
Development of Alternative Energy
Generation

Brown & Root, Inc.

C. W. Weber
Vice President

(713) 678-9009



November 2, 1979

Tanana Power Company
P. O. Box 74
Tanana, Alaska

Gentlemen:

Brown & Root, Inc. and its joint venture partner, Marks Engineering, are pleased to submit their proposal stating their qualifications and the justification for their selection as Consultant to prepare a Reconnaissance Study for Development of Alternative Energy Generation for the Tanana Area. Brown & Root, Inc. is the sponsor of the joint venture, and the work will be carried out and performed on behalf of the joint venture under the direction of Brown & Root. Brown & Root, its Alaskan subsidiaries, and Marks Engineering of Anchorage, all have considerable experience working on major projects in Alaska. The joint venture has extensive manpower resources of more than 65,000 personnel, as well as considerable financial resources.

We have made an in-house evaluation of existing topographic and hydrological information of the area in close proximity to Tanana and believe that the potential for a small hydroelectric development is a promising viable alternative for Tanana's power needs.

The content of the proposal presents the technical discussion covering the objectives, background and work plan for preparing the study.

In particular, we would point out that:

- 1) All members of our team have experience in their relevant fields of interest.
- 2) We have performed work of a similar nature on other projects.
- 3) We will assign senior specialized personnel to carry out the effort.

We feel our combination of expertise, resources, and local presence in Alaska represent a unique team. We appreciate the opportunity

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November 2, 1979

of being considered for this important assignment and assure you of the commitment we feel for the attainment of project goals and objectives.

We propose to perform the work outlined herein for a lump sum amount of \$35,000 under the conditions set forth in the "Engineering and Technical Services - Fixed Sum", revised 7/78 and included in Section VII of this proposal.

We will be pleased to meet with you and to answer questions as well as to provide any amplifying materials.

We are prepared to proceed with the work upon receipt of one copy of this letter approved by you.

Very truly yours,

BROWN & ROOT, INC.

C. W. Weber
Vice President
Civil Engineering Projects

CWW/vls

cc: W. E. Heffler/F. M. Britton
T. E. Knight/A. B. Crossman/J. B. Weidler
E. M. Marselli
G. R. Poke
C. L. Fick
O. M. Hodgkins (L/O)

DATE

You are authorized to proceed with the work outlined in the proposal.

Tanana Power Company

SECTION I
INTRODUCTION

This proposal has been prepared for a Reconnaissance Study for Development of Alternative Energy Generation for the Tanana Power Company in the Tanana Market area.

Our proposal outlines:

- a) a statement of the study objectives and scope of work,
- b) the background, capabilities, and experience of the project team,
- c) the study plan which describes how the work will be performed,
- d) the organization and management plan for the study,
- e) the key personnel we propose to use, and
- f) the budget.



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SECTION II
STUDY OBJECTIVE AND SCOPE OF WORK

STUDY OBJECTIVE

The objective of the study is to identify the most suitable electrical energy generation system for the Tanana market area. The objective will be accomplished by:

- 1) Determining the present and projected electrical power needs of the area.
- 2) Evaluating alternative electrical generation sources including diesel generation, hydroelectric, pulp fired steam, wind, interconnection and conservation.
- 3) For the viable alternative generation sources, preliminary designs will be prepared to establish engineering acceptability and estimated costs.
- 4) Assess the environmental considerations for each viable alternative along with the licensing aspects.
- 5) Perform economic analysis that take into account the income and cost at the desired interest rates.
- 6) Present recommendations for those alternatives worthy of a more detailed investigation.

SCOPE OF WORK

The following scope of work will be performed to achieve the study objective.

- 1) Forecast the power requirements of the Tanana market area, describe and evaluate the market areas existing power system and determine its power needs.



- 2) Evaluate alternative energy sources such as hydroelectric, diesel, pulp fired steam, wind, interconnection, and conservation, and their viability to meet area needs.
- 3) Identify sites with hydroelectric potential and perform an initial screening of these sites.
- 4) For sites with a viable hydroelectric development potential establish an estimate of the average annual output from the facilities. Perform a preliminary reservoir regulation analysis to determine the storage capacity and drawdown characteristics of the reservoir.
- 5) Determine the hydroelectric plant capacity projected power production and configuration along with the type and number of units and operating schedule. Explain the decisions behind the unit selection process.
- 6) Assess the potential environmental impact of the projected power projects along with any institutional constraints that may be encountered. Identify any fish and wildlife resources which may be impacted by the projects. Discuss possible mitigation measures and their impact on project economics.
- 7) Assess the safety hazards, if any, introduced or eliminated by the development of the projects. Justify the design flood and spillway capacity for the sites with hydroelectric potential.
- 8) Prepare conceptual designs and layout for the proposed hydroelectric sites and estimate the order of magnitude costs.



- 9) Identify feasible transmission line routes to serve the market areas and prepare an order of magnitude cost estimate.
- 10) Estimate annual operation and maintenance costs for the viable power generation alternatives.
- 11) Estimate project costs for each viable energy power generation alternative and perform an economic analysis.
- 12) Present a plan and schedule for satisfying the licensing application requirements of the Federal Energy Regulatory Commission and any other agencies for the projects.
- 13) Prepare and publish a report which covers all the items outlined above and present recommendations for further action by the power company.



SECTION IV

STUDY PLAN

The objective of the study and the scope of work have been described in Section II of this proposal. The approach that we intend to use to perform the scope of work is now described.

1) Study Outline and Schedule

We propose, as the initial step in the study, to prepare an outline for the report and describe briefly the areas to be covered in each section. From this outline a schedule will be prepared which will be used as a monitoring tool to control the progress of the study.

2) Power Requirements

The forecast of power requirements will be made for the Tanana market area. The study will examine historical power and energy use trends and project future trends with particular consideration being given to potential large users. The area's existing power generating facilities will be evaluated. The forecasts of the power requirements and the area's existing power capability will influence the size of the energy generating alternatives to be examined.

3) Energy Alternatives

The energy alternatives of hydroelectric, diesel, pulp fired steam, wind, interconnections, and conservation will be evaluated. The evaluation of the alternatives will consider:

- a) the technical and engineering feasibility,
- b) economics,
- c) environmental and licensing aspects,



- d) safety, and
- e) overall suitability of each alternative.

It is anticipated that of the six alternatives that hydroelectric generation will be the principal viable alternative and this proposal is structured on this assumption.

4) Hydroelectric Power Plant Site Selection

The power requirements forecast will have established the size of the generating capacity required. It is assumed in preparing this proposal that the energy alternative analysis will have concluded that hydroelectric power is a viable alternative. A site selection study will be made to determine suitable locations for all viable and possible power plants.

Topographic maps of the surrounding areas will be studied and the sites that have the necessary hydropower potential will be identified. Sites that have potential for hydroelectric power development will be screened and those sites that appear suitable for further study will be identified. The screening criteria that we propose to use are as follows:

Geology

The USGS geological and stock maps of the area and pertinent literature listed in the North American Bibliography and Index for Geology will be reviewed. Those sites that have features such as major fault zones, rock glaciers, slide scars and adverse lithological characteristics will be eliminated from further study.



Hydrology

The topographic maps published by USGS, and any other readily available maps will be gathered for the study area. Hydrologic data from NOAA, stream gage records if available, and any other accessible published information will be obtained. This information will be used to determine the approximate hydro power potential at the sites. This potential will be compared with the power forecast for the market area and those sites that are not suitable for meeting the projected demand will be eliminated from further study.

Site Visits

A preliminary survey will be made of the sites developed from published topographic, geologic and hydrographic data to determine their acceptability for further study. A reconnaissance visit will be made to the study area if weather and terrain conditions permit.

5) Site Generation Capability

The hydrologic data will be used to project the stream flows at the selected sites and assessment will be made of maximum and minimum stream flows. This information along with reservoir storage capacity will be used to establish the power generation capability of the site.

Further input for the reservoir regulation analysis would include:

- a) The area capacity curve for the reservoirs which could be computed using the information from the topographic maps.



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- b) Evaporation loss and sedimentation build up which would be obtained from a literature search.
- c) Any water rights obligations or controlled releases required from the reservoir.
- d) The load demand curve from the power forecast.

To perform the reservoir regulation analysis Brown & Root has several computer programs in house which may be used to perform the computations. These are:

- U. S. Corps of Engineers Program HEC-5 Reservoir System Operation for Flood Control and Conservation
- Brown & Root Program CW-507 Yield Measures Study for Multi-lake System
- Brown & Root Program CW-501 Flood System Routing and Flood Hydrograph

The information that will be generated from this analysis will be:

- a) the power generated from the water release
- b) the preferred size of the reservoir
- c) the minimum height of the dam.

6) Hydroelectric Plant Unit Selection

The conceptual design, layout of the sites (see item 9) and the information derived from the reservoir regulation analysis will be used to determine the type of turbine/generator that would be most suitable at the sites.

The capacity of the units will be governed by the power requirements and variation in those requirements for the area.



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intake structure, outlet works, penstock, powerhouse, tailrace and switchyard.

This information will be used to make order-of-magnitude cost estimates for each site.

10) Transmission Routes

The transmission line routes from the project sites to the market area will be defined. The type and capacity of the lines will be determined from the power forecast analysis and the capacity of the generating units.

A one line diagram will be prepared of the proposed electrical system and the transmission routes will be shown on a map of the area.

The estimated costs of the transmission system will be made.

11) Operation and Maintenance Costs

Operation and maintenance costs will be estimated for each energy generation alternative and will be based on the location of the sites, the size of the generating units, and the operational mode of the power system.

12) Economic Analysis

An economic analysis will be made for each viable alternative energy source. Each analysis will be based on:

- a) at least two interest rates,
- b) an assumed rate of inflation,
- c) an assumed rate for the increase in power costs,
- d) the estimated project costs,



- e) the estimated operation and maintenance costs,
- f) a 35 year term, and
- g) that portion of the available power that can reasonably be marketed.

The results of this analysis will give the costs per kwh for each of the viable alternatives.

All the economic analysis will be compared with the diesel generation alternative which will be used as a yardstick for comparison.

13) Licensing Application Requirements

A survey will be conducted to determine which agencies will require licensing applications for the alternatives. In addition to the Federal Energy Regulatory Commission (for hydro alternatives) other submissions may be required due to location of the sites. The information to be prepared for these agencies for licensing applications will be listed and a proposed plan and schedule for submitting the material will be formulated.

14) Recommendations and Conclusions

The recommendations and conclusions of the study will be included in the report.

15) Publication

The study will be published and 5 copies submitted for draft review approximately 13 weeks after the notice to proceed. After review, the report will be finalized, and 30 copies issued.



ORGANIZATION AND MANAGEMENT PLAN

Organization

The study will be under the direction of a Project Manager who has had extensive experience in hydroelectric power projects. Reporting to him will be personnel from the specialized disciplines who will be engaged on the project as their need for services dictates.

The organization chart is shown in Figure 1 and indicates the functions to be performed by the various specialists.

Management Plan

The objective of project management will be the successful coordination of the project so that the project is completed on time and within budget, and the final report is of a high quality. Brown & Root will use the following in meeting the above objectives.

- a) Scheduling
- b) Location of the work
- c) Meetings
- d) Reviews

Scheduling

As described earlier, a project schedule will be prepared with a prerequisite being the preparation of a table of contents for the report. The schedule will indicate when the various phases of the study effort and sections of the report will have to be completed to meet the project deadline. As part of our proposal we have prepared a preliminary schedule



in bar chart form and this is shown as Figure 2. For the execution of the work a project schedule will be drawn as a network to show the cross transference of information that will be required from one work area to another.

Location of the Work

The work will be performed at the office of Marks Engineering in Anchorage, Alaska and at the Brown & Root offices in Houston, Texas. It is proposed to conduct the phases of the work that deal with the power forecasts for the Tanana market area, transmission routing, delineation of the alternative energy sources, and a part of the site screening phase in Alaska.

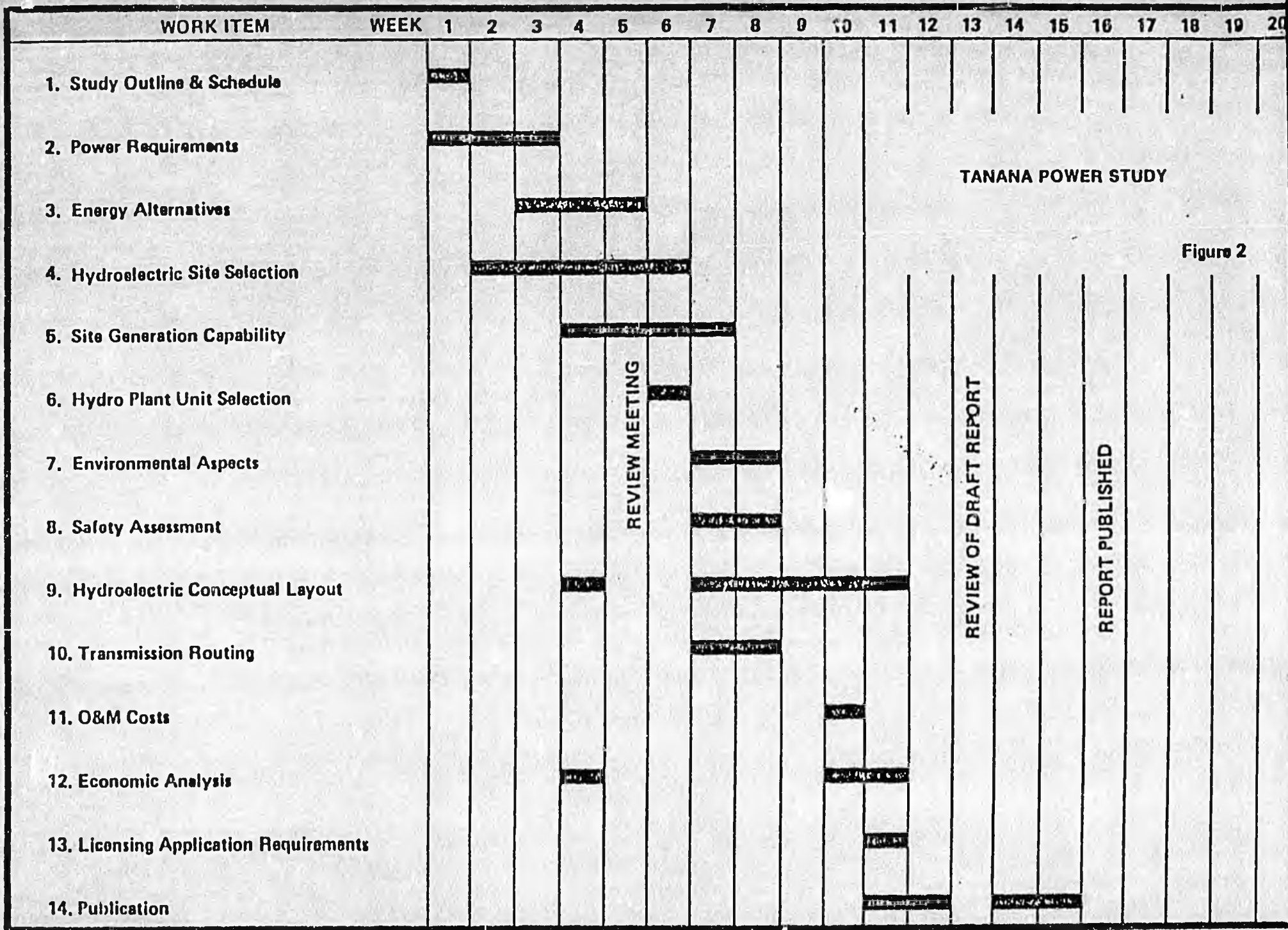
The phases of the work that require personnel from the specialized disciplines of Brown & Root will be performed in Houston where their experience can be readily drawn upon. All the work associated with the publication of the report will be performed in Houston.

The division of the work will be such that as much work as possible is performed in Alaska and that the personnel facilities at the two offices are used in an efficient and effective manner.

Meetings

We consider it important that a meeting be held with the Tanana Power Company in order that an evaluation of the work be performed. We propose to have a progress meeting approximately 5 weeks after the work has commenced. At this time the power forecast and alternative energy analysis phases of the work will have been essentially completed and the initial site screening work will be under way. At the meeting we would review the work already accomplished, the methodology to be used in the reservoir regulation and economic analysis, the schedule for the remainder of the study, and the proposed table of contents of the final report, the review





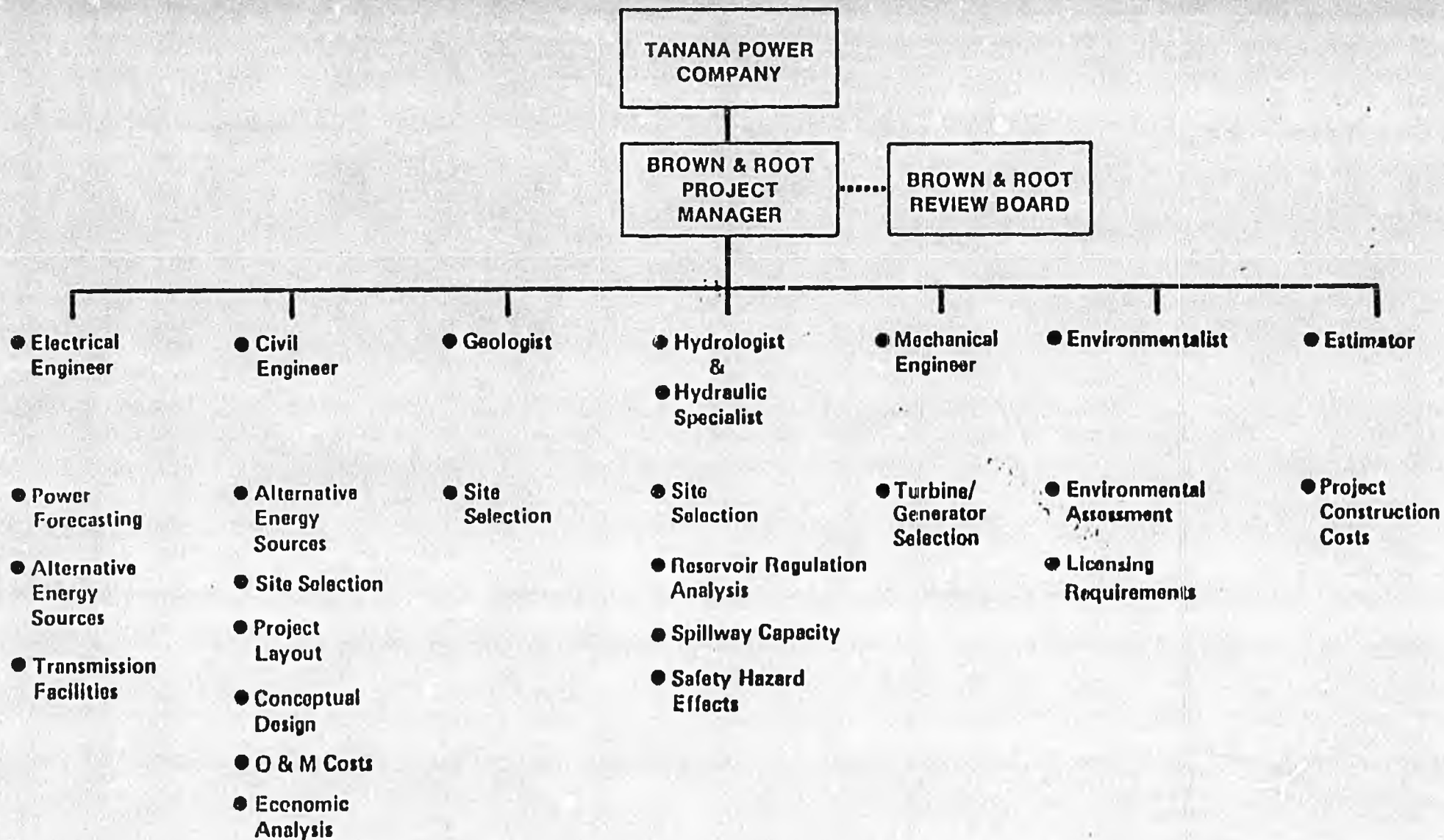
procedures for the draft copy of the report; and other pertinent matters. During this visit to Alaska a reconnaissance would be made of the sites under consideration for hydroelectric power development.

Mr. J. E. Marks will be residing in Anchorage and kept fully informed of the progress of the work and will act as the Brown & Root representative in all meetings with the Tanana Power Company.

Reviews

Reviews by the company of work accomplished by Brown & Root are essential for the transfer of information by the two groups. It is anticipated that information for review will be submitted to the Company before the draft report is issued. After the draft report has been issued for review we propose a meeting be held in Alaska to discuss and resolve the comments by the Tanana Power Company. The final report will be published after incorporating the comments of the Company.





TANANA POWER STUDY ORGANIZATION CHART

Figure 1

SECTION VII

BUDGET

Brown & Root proposes to complete the work described in this proposal for the fixed sum of \$35,000 based on the following conditions for "Engineering and Technical Services - Fixed Sum" - revised 7/78.



CONDITIONS FOR
ENGINEERING AND TECHNICAL SERVICES - FIXED SUM

1. The services performed hereunder by Engineer shall be subject to Owner's inspection, but the detailed manner and method of doing same shall be under the control of Engineer. Owner will provide full information regarding his requirements for the Project, will designate a representative authorized to act in his behalf with respect to the Project, will examine submissions made by Engineer and render decisions pertaining thereto promptly to avoid unreasonable delay in the progress of the work; Owner will furnish information required of him as expeditiously as necessary for orderly progress and Engineer may rely upon its accuracy and completeness.
2. Engineer shall retain all pertinent technical records relating to services performed hereunder for a period of at least 2 years after completion thereof. Owner shall have access during a period of 2 years to those records required for audit of items reimbursable at actual cost, if any.
3. Extra work shall not be performed, nor shall the scope of work be increased or decreased, unless authorized by Owner and agreed to by Engineer. The cost of studies and analyses required to determine scope changes shall be reimbursable and additive to the Fixed Sum.
4. For Engineer's personal services and non-labor costs for services requested by Owner which are not clearly within the scope of the work described as covered by the Fixed Sum, Engineer shall be entitled to an adjustment in the Fixed Sum, as mutually agreed. In the absence of mutual agreement on such adjustment to the Fixed Sum, Owner shall pay Engineer for the added work in accordance with Engineer's Terms and Conditions for Engineering and Technical Services current at the time of performance of such work, copy of which will be furnished upon request.
5. Engineer may submit periodic billings consistent with its standard billing procedures, not more frequently than weekly, based upon its estimates for work performed during the applicable period, subject to Owner's approval, and payment without retainage, will be due 10 days after receipt of each such billing. Should Owner not approve an entire billing, payment shall be due on the approved portion. On projects calling for substantial expenditures, Engineer may require arrangements for use of Owner's funds for payments of expenditures under procedures mutually agreed to.
6. Engineer shall provide the following insurance: Workmen's Compensation-Statutory; Employer's Liability - \$100,000; Comprehensive General Liability-Bodily Injury - \$100/300,000, Property Damage - \$100,000; Comprehensive Automobile Liability-Bodily Injury - \$100/300,000 and Property Damage - \$100,000.

Upon written request of Owner received within 5 days of the acceptance hereof, Engineer will provide additional insurance, if available, including increased coverage and/or limits; and the Owner will pay Engineer an agreed amount for the increased coverage. Engineer shall indemnify and hold harmless Owner from liability to third parties for personal injury



or property damage arising out of the Engineer's negligence or other actionable performance of work hereunder, provided, however, that such indemnity shall apply only to accidents occurring during the performance of work hereunder. Engineer's liability to Owner for the foregoing or other indemnity or for any damages arising in any way out of the performance of this contract is limited to the aforementioned insurances. In no event shall Engineer be liable for any indirect, special or consequential loss or damage arising out of the performance of services hereunder including, but not limited to, loss of use, loss of profit, business interruption or costs of field labor, equipment and materials, whether caused by negligence of Engineer or otherwise, nor shall Engineer be liable in any manner whatsoever for a failure attributable to design criteria provided by Owner, even though Engineer may have participated in the development of such criteria, and Owner shall indemnify and hold Engineer harmless from any such damages or liability. No indemnification, warranty, or hold harmless obligation regarding patents or other proprietary rights is assumed by Engineer, nor is any express or implied license under any prior patent or invention of Engineer granted Owner by virtue of this Agreement.

7. (a) All services hereunder will be performed in accordance with sound and generally accepted industry standards and practices. These services are to be performed by Engineer for Owner in consideration of the payments specified herein and with the obligation that should any of the services of Engineer hereunder not satisfy the aforementioned standards or practices, as a result of human error or omission on the part of Engineer, Engineer's sole obligation resulting therefrom will be to perform corrective services of the type originally undertaken by Engineer provided such corrective services are requested of Engineer by Owner in writing within one year from the completion (and delivery of the results thereof) of the services hereunder which include the alleged unsatisfactory services with no additional charge to be made for such corrective services.
 - (b) As to the warranty or guaranty of items of, or patent indemnity on, machinery, equipment or other products manufactured by others, or work of consultants, contract personnel or subcontractors, Engineer's responsibility with respect thereto is limited to the assignment by Engineer to Owner of the manufacturer's consultant's, contract personnel's, or subcontractor's warranty or guaranty and/or patent indemnity, and Engineer's cooperation with Owner in Owner's enforcement thereof.
8. Owner may, at its discretion, terminate the work under this agreement at any time by giving 10 days written notice. In such event, Owner shall assume all obligations, commitments, and claims that Engineer may have theretofore in good faith undertaken or incurred in connection with the work, and Owner shall pay Engineer an equitable portion of the Fixed Sum provided for in this agreement earned to date of termination by Engineer plus the costs of closing out of this work, less any amount previously paid to Engineer, plus a reasonable termination charge to be mutually agreed to between Owner and Engineer.



THE FOLLOWING DOCUMENT(S) MAY NOT FILM
LEGIBLY BECAUSE OF POOR QUALITY OF THE
ORIGINAL.



Scale 1" = 4 miles

THE PRECEDING DOCUMENT(S) MAY NOT FILM
LEGIBLY BECAUSE OF POOR QUALITY OF THE
ORIGINAL.

TABLE A

HYDROELECTRIC SITE POTENTIAL

TANANA AREA

SITE NAME	Approximate Drainage Area in Sq. Miles	Average Annual Flow Based on 1 cfs/Sq. Mi.	W. S. El. at Reservoir	Elevation of Power Plant	Penstock Length in Feet	Gross Head in Feet	Net Head in Feet	Potential Plant Size *	Annual Power Production in KWH **	Reservoir Storage Volume in Ac-F
Bear Creek #1	28	28	630	300	30,000	330	210	420 KW	2,200,000	4,000
Jackson Creek	24	24	660	300	25,000	360	260	450 KW	2,400,000	3,500
Spicer Creek	20	20	625	300	21,000	325	245	350 KW	1,800,000	2,900
Schieffelin Creek	24	24	800	300	22,000	500	415	720 KW	3,800,000	3,500
Morelock Creek	47	47	600	300	11,000	300	255	860 KW	4,500,000	6,800
Bear Creek #2	51	51	750	350	27,000	350	240	910 KW	4,800,000	7,400
Canyon Creek	67	67	700	350	27,000	350	240	1150 KW	6,000,000	9,700

* Potential plant size is based on the net head, 85% overall efficiency and a full gate flow rate equal to average annual flow.

** Average annual power production based on a plant factor of .60.

*** Based on three (3) months of generation with no inflow.

FISCAL NOTE

I. REQUEST

House Bill ~~640~~ No. 640 - Title: An Act making a special appropriation to
the Alaska Power Authority for a study of hydroelectric development
in the Tanana area; and providing for an Date 1/30/80
effective date.

Requested By 14 House Members

II. FISCAL DETAIL

Agency Affected Department of Commerce and 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		35.0				
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		35.0				

FUNDING (Thousands of Dollars)

GENERAL FUND		35.0				
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

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

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

A detailed reconnaissance study of the Tanana Valley area hydroelectric potential will cost approximately \$35,000. However, if hydrologic information is insufficient or not available the cost of obtaining this information could not be included in the cost of the study. The Power Authority would have to expend up to \$3,000 out of operating budget funds for proposal preparation, review, contract administration and study management.

IV. DATE 2/21/80 PREPARED BY Terry J. McGuire

AGENCY Alaska Power Authority

PHONE 276-2715

Original: Legislative Finance
 cc: Budget and Management
 Prime Sponsor (First Legislator Named)

TANANA POWER CO.
BOX 74
TANANA, ALASKA 99777

Alaska Power Authority
333 West 4th Avenue
Suite 31
Anchorage, Alaska 99501

Attention: Mr. Eric Yould, Executive Director

Dear Mr. Yould:

We have recently contacted the U.S. Army Corps of Engineers with regard to their proposed timetable to study our area for potential hydroelectric sites. The Corps plans to study the area during 1980 and 1981, however, we feel that Congressional and budgetary constraints will slow the development of any hydroelectric sources for the Tanana Area.

Our consultant, Brown & Root/Marks Engineering have made an evaluation of existing topographic and hydrological information of the area in and about the Tanana Area and have identified seven (7) potential creeks that can serve Tanana's power needs.

Tanana Power Co. now serves 140 consumers with an annual consumption of approximately 2,000,000 kilowatt hours and a demand of 500 kilowatts.

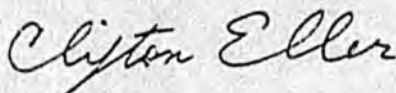
The attached map shows the potential dam locations, the drainage area limits, and location of power plants.

The attached table "A" lists information on each of the potential sites. It should be noted that in all cases, the reservoir is at a much higher elevation than the powerhouse. Higher dams could be employed to reduce the penstock lengths. Evaluations would have to be made to determine if higher dams with shorter penstocks are more suitable than the low dams with long penstocks shown in Table "A".

We are requesting that funds be made available by the Alaska Power Authority to proceed with a Reconnaissance Study in 1980 for the development of hydroelectric energy generation for the Tanana Area.

Your cooperation in this matter is sincerely appreciated.

Sincerely,



Clifton Eller, President
Tanana Power Co.

cc: Senator John C. Sackett
-Representative Pappy H. Moss

attachments (2)