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SUSITNA HYDROELECTRIC PROJECT

Preliminary Final Plan of Study Fish and Wildlife Studies proposed by the

Alaska Department of Fish and Game

November 1979

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STATE OF ALASKA DEPARTMENT OF FISH AND GAME

LAY S. HAMMONO, GOVERNOR

ANCHORAGE SSST

Mr. Eric Yould, Director Alaska Power Authority 333 W. 4th Avenue Anchorage, Alaska 99510

Cctober 31, 1979

And Andrews -as.

Dear Mr. Yould:

The Alaska Department of Fish and Game is providing the enclosed Phase I 25 month portion of the 5-year fisheries and wildlife study proposed to be conducted as part of the Susitna Hydroelectric feasibility investigations. The proposals were developed following discussions with Acres-American and their environmental studies subcontractor, Terrestrial Environmental Specialists. We have also met with representatives of the U.S. Fish and Wildlife Service and the Alaska Department of Natural Resources to obtain their suggestions and advice relative to portions of our proposals and the development of a final revised plan of study. I must indicate, however, that it should not be inferred that USFWS and ADNR have formally endorsed these proposals in their entirety. Their formal positions regarding the entire revised plan of study will undoubtedly come during the next agency and public review-stage.

In his letter to me on October 4, Robert Mohn of your staff discussed a number of issues and subject areas which required our input on the development of the revised plan of study. The information provided herein should satisfy part of those requirements outlined by the APA, but specific refinements addressing our concerns outlined in our attached proposal and comments of other agencies will be needed during the period Acres or the Corps of Engineers is revising the POS next month.

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Thomas W. Trent Jegional Supervisor Aabitat Protaction Section

 cc: Representative R. Halford Representative B. Rodgers
Commissioner R. O. Skoog - AOF4G Commissioner E. W. Mueller - ADEC Commissioner 3. S. LaResche - ADEC

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PROGRAM JUSTIFICATION

The programs proposed by the Alaska Department of Fish and Game (ADF&G) are the first phase of a five year study program, necessary in the opinion of this Department, to meet the provisions of numerous federal and state laws and regulations providing for the consideration of fish and wildlife values in pre-project planning and evaluation of impact assessment, project possibility determination, mitigation of probable impacts should the project be constructed, and surveillance and monitoring during and after project construction. The biological objectives and justification are explained in the task work plans; the statutory and regulatory mandates for conducting these proposed work plans_are_outlined hereafter:

Federal/State Laws

Fish and Wildlife Coordination Act (FWCA)

The Fish and Wildlife Coordination Act, draft uniform procedures for compliance, May 1979 further standardizes procedures and interagency relationships to insure, "that wildlife conservation is fully considered and weighed equally with other project features in agency decision making processes by integrating such considerations into project planning, dational Environmental Policy Act (NEPA) compliance procedures, financial and economic analyses, authorization documents, and project implementation."

As stated in the Federal Register (Vol 44, No. 98) this Act-applies-not only in the project area, but wherever project impacts may occur.

Subpart B FWCA Compliance Procedures

Sec. 410.21 Equal consideration

Equal consideration of wildlife resource values in project planning and approval is the essence of the FWCA compliance process. It requires action agencies (the Alaska Power Authority, APA) to involve wildlife agencies (the Alaska Department of Fish and Game and U.S. Fish and Wildlife Service, USFWS) throughout their planning, approval, and implementation process for a project and highlights the need to utilize a systematic approach to analyzing and establishing planning objectives for wildlife resource-needs and problems-and developing and evaluating alternative plans.

Sec. 410.22 Consultation

(a) Initiation. The FWCA compliance process may be initiated by a potential applicant, an action agency, or a wildlife agency.

(b) Potential Applicants. Implementing procedures of action agencies shall provide that applicants for those non-federal project approvals which require a water-dependent power project approval from the Federal Energy Regulatory Commission (FERC) (also applies to preliminary FERC permit) contain written evidence that they initiated the FWCA compliance process with both Regional Directors and the head of the State wildlife agency exercising administration over the fish and wildlife resources of the state(s) wherein the project is to be constructed. The intent of this paragraph (a)(1) of this section is to assist applicants in designing environmentally sound projects without waste of their planning resources and to minimize the potential for delay in the processing of applications. Action agency implementing procedures shall advise that consultation should be initiated by the applicant at the earliest stages of its project planning, and that its submissions to wildlife agencies shall indicate the general work or activity being considered, its purpose(s), and the general area in which it is contemplated.

National Environmental Policy Act (NEPA)

The Council on Environmental Quality (CEQ), Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR, Parts 1500-1508, July 30, 1979) specifies provisions requiring the integration of the NEPA process process into early planning, the integration of NEPA reqirements with other environmental review and consultation requirements, and the use of the scoping process.

Clean Water Act

Section 404 of the Clean Water Act of 1977 and regulations for implementation of the permit program of the Corps of Engineers (33 CFR, Parts 320-329, July 19, 1977) requires that a Department of the Army permit(s) be obtained for certain structures or work in or affecting waters of the United States. The application(s) for such a permit(s) will be subject to review by wildlife agencies.

Executive Order 11990 (Wetlands) -

This order was issued "in order to avoid to the extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable altenative," and Executive Order 11988 (Floodplains) was issued "to avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative." All federal agencies are responsible to comply with these EO's in the plaining and decision-making process.

Endangered Species Act

Section 7(c) of the Endangered Species Act, 87 Stat. 884, as amended, requires the APA to ask the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service, whether any listed or proposed endangered or threatened species may be present in the area of the Susitna Hydroelectric Power Project. If the Fish and Wildlife Service advises that such species may be present in the area of the project, the APA is required by Section 7(c) to conduct a Biological Assessment to identify any listed or proposed endangered or threatened species which are likely to be affected by the construction project. The assessment is to be completed within 180 days, unless a time extension is mutually agreed upon. No contract for physical-construction may be entered into and no physical construction may begin until the Biological Assessment is completed. In the event the conclusions drawn from the Biological Assessment are that listed endangered or threatened species are likely to be affected by the construction project, the APA is required by Section 7(a) to initiate the consultation process.

Water Resources Council, Principles and Standards

The principles and standards for Planning Water and Related Land Resources (18 CFR, Part 704, April 1, 1978) were established for planning the use of the water and related land resources of the United States to achieve objectives, determined cooperatively, through the coordinated actions of the Federal, State, and local governments; private enterprise and organizations; and individuals. These principles include providing the basis for planning of federal and federally assisted water and land resources programs and projects and federal licensing activities as listed in the Standards. The President in his June. 6, 1978 statement further defined federal water policies.

State Laws

Title 16

Title 16, independently of Federal laws, mandates the Alaska Department of Fish and Game to manage, protect, maintain, enhance, and extend the fish and game, and aquatic plant resources and the habitat that sustains them including assisting the U.S. Fish and Wildlife Service in the enforcement of federal laws and regulations pertaining to fish and wildlife.

Sec. 16.05.870 also states that:

(b) If a person or governmental agency desires to construct a hydraulic project, or use, divert, obstruct, pollute, or change the natural flow or bed of a specified river, lake or stream, or to use wheeled, tracked, or excavating equipment or log-dragging equipment in the bed of a specified river, lake, or stream, the person or governmental agency shall notify the commissioner of this intention before the beginning of the construction or use.

(c) . . . If the commissioner determines to do so, he shall, in the letter of acknowledgement, require the person or governmental agency to submit to him full plans and specifications of the proposed construction or work, complete plans and specifications for the proper protection of fish and game in connection with the construction or work, or in connection with the use, and the approximate date the construction, work, or use will begin, and shall require the person or governmental agency to obtain written approval from him as to the sufficiency of the plans or specifications before the proposed construction or use is begun. Purpose. The purpose of this section is to protect and conserve fish and game and other natural resources. 1964. Att'y Gen., No. 10

Alaska Coastal Management Program

The recently approved Alaska Coastal Management Program (ACMP) mandates that all State, Federal and Local government agencies must coordinate all planning and development activities in the State's coastal zone to ensure adequate consideration and protection of Alaska's coastal waters and resources. As the proposed Susitna Hydropower project Will occur within Alaska's coastal zone and certainly will directly influence coastal waters all planning and development plans must be consistent with the Coastal Standards and the Mat-Su Borough's District Coastal Plan once it is completed and approved. The Coastal Standards are presently in effect and all State and Federal actions must be consistent with them. Section 6AA C 80.130 states that:

(a) habitats in the coastal area which are subject to the Alaska Coastal Management Program include:

- (1) offshore
- (2) estuaries
- (3) wetlands and tidal flats
- (4) rocky islands and sea cliffs
- (5) barrier fislands and lagoons
- (6) exposed high energy coasts
- (7) rivers, streams and lakes
- (8) important upland habitat

These habitats which are specifically defined in the Standards must be identified within the Susitna Hydro Study area during the feasibility studies. In addition, Section (b) states that habitats contained in (a) of this section <u>shall</u> be managed so as to maintain or enhance the biological, physical and chemical characteristics of the habitat which contributes to their capacity to support living resources. Specific guidelines are also provided for each coastal habitat. The Coastal Zone Management consistancy requirements are manadated in both the Alaskan and Federal---CZM Acts and the Fish and Wildlife Coordination Act. The Question of consistancy with CZM standards goes well beyond the FERC licensing requirements and should be treated as a separate step in determining the feasibility of Hydro Power alternatives.

The Alaska Department of Fish and Game has a strong mandate under these laws to insure that adequate planning study and evaluation of the fish and wildlife resources in the Susitna Hydro Project area are completed and become a part of the decision making information used to determine project feasibility. If the project is constructed these studies will be the basis for mitigation plans or the formulation of mitigation studies to offset project impacts. Mitigation as defined in Section 1508.20 of the National Environmental Policy Act Implementation Regulations (a) Avoiding the impact altogether by not taking a certain action or parts of an action.

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(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing-substitute resources or environments.

ISSUES, PROBLEMS, CONCERNS AND RECOMMENDATIONS REGARDING THE SUSITNA HYDRO PLAN OF STUDY

Project Review and Interagency Coordination

Because of the magnitude of the Susitna Hydroelectric Feasibility Study, continuous coordination in accord with the Uniform Procedures for compliance with the Fish and Wildlife Coordination Act will be best accomplished through formation of a Susitna Hydroelectric Steering Committee. The function of this committee would be to provide coordinated exchanges of information between the Alaska Power Authority and interested resource management agencies. Through this exchange, the concerns of all agencies involved would be identified early and hopefully prevent unnecessary delays in the progress of the feasibility study.

We propose that the Steering Committee be composed of representatives of resource agencies with responsibilities pertaining to the Susitna Hydroelectric Feasibility Studies (ADF&G, ADEC, ADNR, USFWS, USGS, and NMFS). This committee would provide for interagency coordination through joint review of project related materials and for development, through convening the committee, of more informed and uniform positions representing all resource interests to be transmitted to the applicant. This we believe provides that applicant with a more efficient process for information exchange.

The objectives of this committee are to:

- 1. develop plans of study which are based upon full agency participation throughout each phase of the planning process;
- select the resource specialists who will undertake the required studies and investigations;
- 3. insure that the biological and related environmental studies, their timing, and technical adequacy are planned, implemented, and conducted to provide the quantitative and qualitative data necessary to: a) assess the potential impacts to fish and wildlife resources; b) provide the basis for mitigation and compensation of resource losses which will result from the project at the time of submisssion of a FERC license application; and c) select the favored mitigation and/or compensation alternative from the product generated by "b";
- 4. provide the forum for continued project review to jointly develop all aspects of the studies and to provide for a timely exchange of information and for redirection of studies should the accomplishment of specific objectives be in jeopardy;

5. assure that the studies are conducted in compliance with all state and federal laws, regulations, Executives Orders, and mandates as they apply to fish and wildlife resources; and

6. provide unified agency comments from the committee to the applicant.

The Susitna Hydroelectric Steering Committee should convene on a regular basis as dictated by planning and review requirements. However, it seems appropriate to meet at a minimum on a monthly basis to exchange reports and to be advised of progress toward objectives by the Alaska Power Authority and principle investigators. A record of agreements reached, recommendations and comments provided, and responsibilities assigned in meetings should be distributed to all parties involved.

Progress reports should be submitted to members of the committee quarterly. Comments from the committee to APA would then be submitted at a preestablished time thereafter. Comments provided to the Alaska Power Authority should be appropriately addressed and incorporated into project documents.

The participating members of the committee must have free access to all data collected during the study. In addition, principal project personnel should be accessible to members of the committee in case clarification of any aspect of the field studies is required.

Phase I Studies Initiation

The programs outlined in the work plans are scoped into a 24 month time frame for Phase I field work and one additional month covering Phase I annual report development during January 1982. The completion of several of these studies between January 1980 and January 1982 is not considered feasible.

A large amount of materials, equipment and scientific gear will be required for these studies. Many of these items will require ordering well in advance of the date on which they would be employed in the field. For example, major sonar and radio-telemetry development is anticipated for anadromous adult stock assessment and migrational work. The Bendix Corporation, the supplier of the sonar equipment the Department uses, has indicated a minimum of 18 months from order to delivery of ______ sonar equipment. Also, members of the USFWS who have utilized radiotelemetry in the State have indicated an up to one year delay in the fielding of that equipment until radio frequencies are approved by the FCC.

New State personnel regulations may also affect this Department's timely implementation of studies unless an expedited procedure for employing staff dedicated to these studies is developed. If funds are released on January 1, 1980, several months will be required to obtain the staff needed to begin field work in 1980. These staff are crucial to the continued progress of specific planning and organizational work which must necessarily begin as close to January as possible or further study delay will be encountered.

Allowance must be made for the impacts of equipment and personnel constraints on the ability of this Department to conduct the proposed fish and wildlife studies. These are realities which must be dealt with and are fundamental determinants of the adequacy of the work we have proposed to do.

Phase II Studies

A major position of the Department for the past several years is that many of the biological studies must be conducted through a five year period to provide the basic cyclical, environmental information needed to evaluate project impacts and the mitigation requirements or alternatives that are available. In the time availed us, we have not been able to provide a specific budget or work plan proposal for the studies that may be required in the years succeeding Phase I into Phase II, and it may not be reasonable to do so at this stage.

An acceptable Plan of Study must insure that studies are continued into Phase II. It is the position of this Department that study continuation and redirection should be based on the outcome of Phase I information. The proposed Susitna Hydroelectric Steering Committee, which has been proposed herein, is an important group, in our opinion, to insure scoping and budgeting of Phase II studies are executed in a consistent and systematic fashion.

Socioeconomic Considerations

Of primary importance to this Department is Objective 4: to determine the economic, recreational, social, and aesthetic values of the existing resident and anadromous fish stocks and habitat.

This objective will enable the Susitna Hydro environmental studies to assess the socioeconomic impacts on commercial, recreational, and subsistence users and industries supporting them... Over half of Alaska's growing ______ population resides in the proximity of the impact area. Not only this population, but commercial fishermen, recreationists, and businesses from throughout the nation and other countries may be affected by the hydroelectric project. The popularity of Denali State Park and nearby Mt. McKinley National Park further attests to the high social, recreational, and aesthetic qualities of the area.

The basic problem in regard to the Susitna Hydro POS is to define and conduct the studies which will adequately evaluate the socioeconomic (monetary and nonmonetary) and cultural values of fish and wildlife and

the habitat that supports them when comparing them with other (more tangible) monetary resource values and uses associated with hydropower development.

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It must be emphasized that to ultimately select the best uses of the natural resources of the Susitna Basin from which society will receive the most long term benefit, the net benefits (total benefit minus total costs) must be adequately evaluated. Consequently, values must be assigned to each potential resource use. When monetary terms are inappropriate, agencies will need to devise nonmonetary means of evaluating impacts to fish and wildlife resources. Existing regulations require agencies such as the Corps of Engineers (COE) or the Alaska-Power-Authority (APA) to search out, develop and follow procedures reasonably calculated to bring environmental factors to peer status with dollars and technology in their decision-making. NEPA directs action agencies to "the fullest extent possible":

> identify and develop methods and procedures which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations (42 U.S.C. S4332 (a) (B).

These methods should quantify habitat values which are equivalent to the extent and type of habitat affected by the planned project and estimate the quantity and quality of habitat needed to be acquired and/or improved to mitigate loss. It can then be determined if the socio-economic impacts of the project can be mitigated and at what cost. Furthermore, the Water Resources Council directs action agencies to devise nonmonetary means of evaluating fish and wildlife impacts:

When effects cannot or should not be expressed in monetary terms, they will be set forth, insofar as is reasonably possible, in appropriate quantitative and qualitative physical, biological or other measures reflecting the enhancement or improvement of the characteristics relevant to the type of effect under consideration (38 F.R. 24797).

As a result, the often-cited excuse that the evaluation of supposedly "intangible" habitat values is difficult or impossible is no longer valid (Horvath 1978; Dwyer 1977; Copeland 1976; Morrow 1979).

Specific data to analyze both the nonmonetary and monetary socioeconomic recreational, social, and cultural values of the Susitna River Basin are lacking. It should also be stressed that an adequate assessment of monetary values by traditional methods must be based on commercial,

recreational, and subsistence use data which are not currently available and not being collected. Designs for this data collection and the data collection itself would best be done by the Department of Fish and Game, the traditional collector of data on these users. Therefore, this Department would like to actively participate in planning those portions pertaining to socioeconomics, recreational, cultural and aesthetic values of the Susitna River Basin.

Administrative Overhead and Time Delays

Overhead costs have not been included in the attached budget. The Alaska Department of Fish and Game (ADF&G) normally charges overhead to cover costs incurred by its Division of Administration. On most outside contracts, this amounts to approximately 10 percent of all costs except equipment. However, overhead is usually not charged on reimbursable service agreements (RSA) between State agencies. Susitna Hydroelectric Project studies will place an additional burden on the Division of Administration particularly during the first year when major equipment purchases and personnel hiring will occur. However, this additional work load is not likely to cost 10 percent of the proposed budget (approximately \$600,000 during 1980 and 1981). Surplus money would presumably revert to the General Fund without accomplishing any purpose.

A more reasonable approach would be for the Division of Administration of the ADF&G, the Alaska Department of Administration, and the Alaska Power Authority to design a realistic program for administering the funds and to have APA reimburse the appropriate agencies for actual costs. These costs should be added to the overall budget.

The time normally required to process purchase requisitions and contracts is likely to create problems with APA's time table. A similar problem developed when the Legislature appropriated Bristol Bay disaster relief funds during 1974 after a failure in the salmon run. The problem was solved by funding a position in the Anchorage office of the Department of Administration to expedite purchasing. This allowed the rapid purchase of items without violating purchasing procedures and without excessively burdening the State's regular administrative staff. A similar approach would be beneficial to the Susitna Program. It is recommended that APA and Administration consider it as an option.

Monitoring & Surveillance

Monitoring and surveillance of Phase I and II project activities to minimize the impact of these activities on fish and wildlife and their habitats will be necessary.

The Susitna Hydro Coordinator will be responsible for assuring that the Department reviews and comments upon the host of State and Federal permit actions which may be required each year for land and water use. He will be specifically responsible for ADF&G Title 16 permit applications review and development stipulations to protect fish and game.

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Estuarine Studies

The Department of Fish and Game has not attempted to detail possible estuarine studies for the preliminary final POS. These studies can be delayed pending the outcome of Phase I studies.

If demonstrable hydrologic and water quality changes near the mouth of the Susitna River are shown or projected (based on the analysis of 1980 or 1981 data), estuarine studies should be initiated to identify the potential for project impacts on that environment.

AQUATIC STUDIES

Introduction

The Susitna River drainage, located north of Cook Inlet, encompasses an area of 19,400 square miles. The free-flowing Susitna River is approximately 275 miles long from its source in the Alaska Mountain Range to its point of discharge into Cook Inlet. The mainstem river and its major tributaries originate in glaciers and carry a heavy silt load during the ice-free months, but there are also many smaller tributaries which are perennially silt-free.

The construction of power dams on the Susitna River will adversely affect portions of the fish and wildlife resources of the Susitna River Basin. The two dam system proposed by the Corps of Engineers (COE) would inundate in excess of 50,500 acres of the Susitna River Basin aquatic and terrestrial habitat upstream of Devil Canyon. Regulation of the mainstem river will substantially alter the natural flow regime downstream. The transmission line corridor, substations, road corridor, and construction pad sites may also impact aquatic and terrestrial communities and their habitat. Historically, the long-and-short-term environmental impacts of hydroelectric dams have adversely altered the extremely delicate balance of ecosystems (Keller 1976; Hagan et al 1973).

Background knowledge of the Susitna River Basin is limited. The proposed hydroelectric development necessitates gaining a thorough knowledge of its natural characteristics and populations prior to final dam design approval and construction authorization in order to protect the aquatic and terrestrial populations from unnecessary losses. All engineering, hydrological, biological, and other project feasibility study activities conducted by the various governmental and private agencies will also have to be monitored and regulated to prevent ecological disturbances.

A survey of the fishery resources should cover complete life history cycles. A 30 month program prior to license application (Phase I), although supplying essential information about the fishery, is inadequate and should be continued through supplemental studies in Phase II. The proposed studies should be conducted for a minimum period of 5 years.

Five species of Pacific salmon (chinook, coho, chum, pink, and sockeye) inhabit the Susitna River drainage during their freshwater life history stages. The majority of chinook, coho, chum, and pink salmon production in Cook Inlet occurs within this drainage. An anadromous smelt, the eulachon, also utilizes the lower reaches of the river.

Cook Inlet is one of the major anadromous fish producing areas in the State of Alaska. The commercial catch of salmon reported for Cook Inlet during the five year period from 1971 to 1975 averaged over a million fish per year, and represented an average of 7.4 percent of the total catch for the State of Alaska. In addition to the commercial catch of salmon, the recreational fisherery took about 90,000 salmon a year and the personal-use fishery, an additional 10,000 salmon per year. Sockeye, pink, and chum salmon are by far the most important commercial species in the area, making up over 90 per cent of the total catch from Cook Inlet; coho and chinook salmon make up the remainder. Chinook and coho salmon also are the species most favored by the recreational fishermen.

Grayling, rainbow trout, Dolly Varden, burbot, lake trout, and whitefish are some of the important resident fish species common to this system. Approximately 50 percent of the statewide sport fishing effort occurs within the Cook Inlet area. The recreational marine fishery is, however, very limited with the exception of a popular fishery at the vicinity of Deep Creek on Cook Inlet. The majority of the anadromous sport fish harvest occurs as the fish approach their spawning areas. Most, anglers within the Cook Inlet area show a preference for salmon rather than resident game fish when both types of fisheries are available. Resident populations are fished more heavily during fall and spring months during the absence of salmon runs.

Therefore, the proposed Susitna River hydroelectric project will have various impacts on both the indigenous organisms and the natural conditions within the aquatic environment. Potential impacts to fish populations are the most obvious source of concern due to their socioeconomic and recreational importance to the people of Alaska and the Nation.

STUDY PROPOSALS

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Individual study proposals are designed to provide the necessary background information to enable proper evaluation of impacts. Six general objectives have been outlined:

- 1. Determine the relative abundance and distribution of adult anadromous fish populations within the drainage.
- 2. Determine the distribution and abundance of selected resident and juvenile anadromous fish populations.
- 3. Determine the spatial and seasonal habitat requirements of anadromous and resident fish species during each stage of their life histories.
- 4. Determine the economic, recreational, social, and aesthetic values of the existing resident and anadromous fish stocks and habitat.

The Department has not developed a specific work plan for this objective but strongly believes the Acres-American POS must be strengthened to cover fish and wildlife concerns during Phase I.

- 5. Determine the impact the Devil Canyon project will have on the aquatic ecosystems and any required mitigation prior to construction approval decision. This is the primary objective of both Phase I and II studies. This will be discussed in detail in the Phase II work when it is written.
- 6. Determine a long-term plan of study, if the project is authorized, to monitor the impacts during and after project completion. This is also an objective of Phase II.

The study areas are generally categorized within the following locations:

A. Cook Inlet area

8. Cook Inlet to the Yentna River confluence

C. Yentna River to the Talkeetna River confluence

D. Talkeetna River confluence to the Devils Canyon dam site

E. Devil Canyon dam site to the Tyone River confluence

F. Proposed transmission line corridor(s), access roads, and construction pad sites

Scaling of the proposed studies with respect to timing, geographic locations, and intensity has been done with consideration of the resource knowledge available for each of the geographic locations identified above.