SUS 10040 **(also part 1 of SUS 347)**

Comments on Draft Exhibit E of Susitna Hydroelectric Project License Application. Letter to Eric Yould from Robert W. McVey, January 25, 1983.

- To Eric Yould, Executive Director, Alaska Power Authority
- From Robert W. McVey, Director, National Marine Fisheries Services, Alaska Region
- 13 p.

This document is one of four agency memorandums addressed sent in January 1983 to Eric Yould. These memorandums are assigned individual SUS numbers 10040, 10041, 10042, and 10043.

These memorandums appear also in a collected document: Agency Comments on Draft Exhibit E of Susitna Hydroelectric Project License Application : Comments by NMFS, DEC, DNR, USFWS. -- SUS 347.

These submitted comments are in reference to: Susitna Hydroelectric Project FERC License Application. Exhibit E / prepared by Acres. Draft. -- APA Document nos. 157-161.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

SUS
10040

JAN 28 1983

January 25, 1983

Mr. Eric Yould
Executive Director, Alaska Power Authority
334 W. 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The National Marine Fisheries Service (NMFS) is entrusted with Federal jurisdiction over marine, estuarine, and anadromous fishery resources. Under Reorganization Plan No. 4 of 1970, 3 C.F.R. Section 203 (1970 compilation), reprinted in 5 U.S.C. Appendix II at 64 (1970), NMFS was established to exercise those functions previously carried out by the Bureau of Commercial Fisheries. By virtue of this delegation of authority, NMFS is responsible for oversight and evaluation of activities which may affect marine, estuarine, and anadromous fishery resources. Under the Fish and Wildlife Act of 1956, 16 U.S.C. Section 661-666 (c) requires that NMFS be consulted "whenever the waters of any stream or other body of water are proposed or authorized to be impounded... for any purpose whatever... by any public or private agency under Federal permit or license." NMFS interests in the protection of marine, estuarine, and anadromous fishery resources also derives from the Anadromous Fish Conservation Act, the Magnuson Fishery Conservation and Management Act, and the National Environmental Policy Act. The FERC rules and regulations require consultation with NMFS whenever a project may affect anadromous, estuarine, or marine fishery resources.

The National Marine Fisheries Service has reviewed draft Exhibit E of the license application for the Susitna Hydroelectric Project. We are submitting comments on this document which satisfy, in part, the agency coordination mechanism established by the Federal Energy Regulatory Commission (FERC). The formal position of NMFS in regards to the Susitna Project has been requested and provided to the Alaska Power Authority (APA) in several previous instances. Specifically, we refer to the following NMFS correspondence which should be considered, along with the Exhibit E comments, as formal coordination.

1. Letter to Eric Yould from Robert McVey, Director, Alaska Region NMFS, November 29, 1982.

2. Statement of Robert McVey before the Alaska Power Authority Board of Directors, April 16, 1982.

3. Letter to Eric Yould from Robert McVey, October 15, 1982.

Because of the nature and magnitude of this project, and certain unresolved issues concerning resources for which NMFS bears responsibility, we do not feel the formal consultation process is complete at this stage. NMFS will continue to assist your agency throughout the planning and licensing process.

General Comments

Our review found this license exhibit to be very informative and generally well developed. It represents a considerable improvement over the 1981 Feasibility Report, particularly in its consideration of filling concerns and in discussing project effects from a Watana alone and Watana/Devil Canyon combined perspective.

We have not commented extensively on chapters 5, Socioeconomic impacts or 10, Alternatives. However we believe it is important to recognize certain recent developments which will influence the feasibility of this project. World oil prices have failed to escalate as projected in earlier economic studies. Natural gas alternatives have been influenced by recent pricing agreements and a proposal to construct a gas pipeline capable of supplying much of the Southcentral population. We have recently reviewed the Battelle Railbelt Electric Power Authority Study Newsletter #4, December, 1982. This newsletter presents an updated electrical demand forecast which, for the year 2010, is 44 percent lower than the 1980 ISER forecast. Load forecasts will dictate facility design and operations which, in turn, will determine the amount of water required for power production and available for downstream fisheries flow. In an ACRES report of October 1982, Energy Simulation Studies to Select Project Drawdown and Mitigation Flows, energy simulations were made which assumed a medium load forecast for the year 2010 of 7791 GWH, a figure significantly in excess of the recent Battelle forecast of 3844 and 4986 for medium and low 2010 demand. It appears that many of the basic economic premises upon which this project was planned have now changed. We believe the license application should fully consider the impact of these events and discuss their effect or impact on overall project feasibility, the need for Watana to be operational by 1993, and the economics associated with providing sufficient downstream flows to minimize fishery impacts.

The data gathered from the environmental field studies, begun in June 1981, and presented in the Exhibit, show the Susitna River system to support large, valuable runs of pacific salmon, other anadromous fish, and several freshwater resident fish species. The proposed project would impact these resources, particularly in that reach of the Susitna River between Devil Canyon and Talkeetna. The primary interests and concerns of NMFS in the Susitna feasibility studies have been to assure that (1) the fishery resources are identified and quantified, (2, specific impacts are identified, (3) impacts are avoided whenever possible, and (4) specific and effective mitigative measures are developed for all unavoidable adverse impacts.

The results of these studies and other materials presented within license Exhibit E indicate that project construction and operation will significantly affect fishery resources through changes in streamflow, water quality, temperatures, ice conditions, vegetation, and slough habitat. Studies to identify and assess these changes and to describe the fishery resources of the project area were initiated in 1981. At this time two field seasons of data have been gathered. However, the draft Exhibit E does not include most of the 1982 data nor the results or analysis of that data. The document clearly suffers by this omission, and we recommend that Exhibit E of the license application include a presentation and analysis of the 1982 data.

Throughout Exhibit E references are made to ongoing or proposed studies which will address issues we consider critical to the feasibility of this project. Yet it is not clear what these studies will entail, who will conduct them or when they will occur. We recommend that the license application detail ongoing and proposed studies.

The information presented in Exhibit E regarding reservoir operations does not sufficiently convey the range of impacts presented by the project. We recommend the license application be expanded to include a more precise description of impacts and present the following design/operating concerns:

- Flow releases - based upon weekly rather than monthly averages.
- Quantification of "normal" spillages, below the 1 in 50 year event, passed through the outlet/cone valve facility.
- Potential peaking operations at Watana without the Devil Canyon Dam. ACRES has identified this as a possibility. What circumstances would dictate such operation? What daily and hourly fluctuations would result? How would such fluctuations be attenuated by tributary input and the river distance between Watana and Devil Canyon?
- Compensation flow pumps at the Devil Canyon facility. What flows will they provide? How were these flows established? Are these pumps still planned for this facility?

We continue to be concerned about development of a release schedule which would mitigate impacts to fisheries. The draft Exhibit E states that reduced flows could impair fish migration, de-water spawning and rearing habitat, prevent access to slough and side channel habitats, and lower or eliminate inter-gravel flows to slough and side channel spawning grounds. The minimum flows proposed in Exhibit E, however, were not developed using any recognized in-stream flow predictive methodologies, and may not constitute the preferred flow regime for minimizing such effects. The license exhibits do not explain how the 12,000 cubic feet per second (cfs) minimum operational flows for August and September were determined. We note that these flows have been reduced from those recommended minimum flows presented in the 1982 Final Draft Feasibility Report, Volume 2. Similarly, no rationale is provided which supports "minimum" winter flows ten times that of existing natural winter flows. We believe that maximum winter flow limits should be required as well, particularly in light of potential staging should ice cover develop below Devil Canyon.

Exhibit E suggests that it may be desirable to spike spring flows to accommodate out-migrants and facilitate flushing of sloughs and side channels. It also states that the project release schedule will need to incorporate both volume and temperature considerations. However, neither of these concerns is reflected in the proposed flow regime. The release schedule presented is not supported by biological data, nor does it reflect concerns for fish passage. We recommend that the license application contain a specific, detailed flow release schedule, developed through a quantifiable in-stream flow analysis and coordinated with NMFS, US Fish and Wildlife Service and the Alaska Department of Fish and Game (ADFG), which would minimize impacts and/or enhance conditions for spawning, feeding, passage, out-migration, and overwintering in the Susitna River.

The Watana and Devil Canyon dams will cause changes to the existing water temperature regime of the Susitna River, generally releasing cooler water during summer months and warmer water in winter. Temperature variations affect the ability of fish to migrate, spawn, feed, and develop in the Susitna system. Ice formation will be delayed or possibly not occur. Exhibit E discusses this matter at length but does not present an accurate description of post-project temperature alterations. A model was developed to project temperatures, yet it has been operated with only one year of data (1981). Further, this model was run only for the months of June through October. Temperature modeling is not presented for the Devil Canyon Reservoir, yet Exhibit E states that the location of ice formation above Talkeetna will depend on the outflow temperatures from Devil Canyon Dam.

Realizing the importance of an accurate understanding of the thermal structure within the reservoirs and of outflow temperatures, we believe additional information is warranted. We recommend that modeling be done for both reservoirs throughout the year, and the resultant data be incorporated into the riverine temperature model calibrated with at least two seasons data.

Of the various fish habitats below Devil Canyon Dam, the sloughs between Talkeetna and Portage Creek are the most likely to be adversely affected by the proposed work. Approximately thirty-five sloughs exist in this reach. Adult salmon have been observed in at least twenty-six of these. Post project flows and water temperatures will present several significant impacts to these habitats. These are discussed in some detail in Exhibit E. However, on only one of these, slough 9, has detailed investigation been conducted which included groundwater flow, upwelling, and temperature studies. These sloughs are the most important spawning areas influenced by the mainstem Susitna River. They are also identified as potential sites for mitigating fishery resource losses through physical modification. We feel it is important therefore, that Exhibit E present an informed opinion based on site specific data as to the effects of project operation on slough habitat. In a draft

report prepared for Acres American, Inc. [1/], the author notes that until the 1982 field data are analyzed, any statements regarding streamflows necessary for chum salmon access to the side sloughs are provisional. Within Exhibit E, there are vague and seemingly contradictory statements concerning slough impacts. Statements are made within this Exhibit that data on the areal extent of upwelling within the sloughs at low flows are not presently available, that ground water upwelling is driven by mainstem river stage, that spawning areas of the sloughs may be affected by reduced upwelling, and that flows of 16,000 to 18,000 cfs are required for easy access to the sloughs. The document also contains statements that 12,000 cfs will provide access to most sloughs, that a 12,000 cfs release will assist in maintaining groundwater flow and upwelling within sloughs, and that changes in streamflow during the open water season predicted under operation of Devil Canyon are not expected to affect slough habitats. Clearly, post-project impacts to these important and sensitive habitats are poorly understood. NMFS recommends that the final license application contain the results and analysis of the 1982 field data being gathered by the Alaska Department of Fish and Game, et al, and results of an expanded study of sloughs in the Devil Canyon to Talkeetna reach which would provide a larger and more representative sample than currently available.

Exhibit E discusses the impact of project construction and operations on river ice formation. Apparently, post-project ice formation will be delayed due to higher release temperatures from Devil Canyon. Currently, ice originating from the upper Susitna contributes 75 to 85 percent of the ice load to the lower River. With this input reduced or delayed by the project, ice formation on the lower River will be affected. This impact is not adequately discussed in the Exhibit.

Ice formation above Talkeetna will also be delayed by the project. The location of the ice front in this reach has important implications to fisheries habitat within the mainstem, side channels, and sloughs. In areas with ice cover, staging is expected to occur which would increase water surface elevations, possibly increasing upwelling, overtopping the upstream berms of sloughs, and causing high velocities and scour to occur.

In those areas where ice formation does not occur, water elevations would drop below natuarally occurring levels, leading to potential de-watering of spawning gravels and reductions in upwelling areas. Exhibit E predicts that the ice front should occur at some location between Talkeetna, RM 100 and Sherman, RM 130 and will depend upon the upstream temperature, i.e. the Devil Canyon outflow. As no model was completed for winter riverine or reservoir temperatures, the full scope and measure of these effects cannot be assessed.

1. Preliminary Assessment of access by Spawning Salmon to Side Slough Habitat above Talkeetna. Draft Report. ACRES American, Inc. November, 1982.

Measures to mitigate unavoidable impacts to fisheries resources are presented in the Exhibit. Many of those measures designed to mitigate construction impacts effectively address this concern. Development of a flow regime that minimizes loss of habitat and maintains normal timing of flow related biological stimuli is also proposed. We recommend that such a release schedule be included in the final license application. The Exhibit proposes to mitigate fishery losses by physical modification of side sloughs and creation of mainstem and side channel spawning areas. This vague commitment to an approach that is only a paper concept dependent upon the results of ongoing or proposed studies does not allow us to fully evaluate the feasibility of the proposed project nor to assess the effectiveness with which project impacts can be mitigated.

We support the concept of retaining the habitat value of side sloughs through physical alteration. Further, we recommend that Exhibit E incorporate a slough mitigation plan which identifies the sloughs to be modified, the design criteria, and the operational plan and target fish species specific to each slough. Details for the mitigation goals and operational monitoring efforts for this plan should be included. The applicant should note, however, that we feel the release schedule proposed in Exhibit E should be refined based upon an accepted instream flow predictive methodology and the specific requirements of the selected species. We believe this is essential to serious consideration of a slough modification program.

Exhibit E states that if alternative mitigation schemes prove infeasible, a hatchery could be developed. While we regard such artificial methods to be the least desirable form of addressing fishery losses, we realize that slough modification is largely untried in Alaska and that these mitigative efforts may indeed fail. Therefore, we recommend that Exhibit E should advance this discussion beyond the statement that "a hatchery could be developed." Information should be included within license Exhibit E which describes the number of hatcheries needed, locations, sizes, what the production target for each species would be, and cost estimates.

Finally, none of the mitigative measures presented comply with FERC rules and regulations under Section 4.41 (F)(3)(iii); i.e., costs for these features are not presented, nor are design plans for mitigation features included.

Specific Comments

Exhibit E

Chapter One - No comment.

Chapter Two

page 15, para. 4. Breakup
The section should describe when breakup normally occurs, specifically the dates of the earliest, mean, and latest recorded events.

page 38, para. 3
This section should consider that at least eight sloughs exist above Gold Creek, several of which support large numbers of spawning salmon, e.g., slough 21. While Gold Creek may be a logical point at which to gauge flow, it does not necessarily guarantee that upstream flow will be sufficient to maintain habitat value in these sloughs. Exhibit E should discuss this concern and recommend necessary measures to guarantee adequate flow to these sloughs.

page 47. Section (v) Impacts on Sloughs
The section notes that data to confirm the areal extent of upwelling at low flows are unavailable at this time. Currently only one slough has been investigated sufficiently to predict project influences on groundwater and upwelling. This slough is not representative of all such sloughs in the Devil Canyon to Talkeetna reach.
Under existing winter flows, ice formation causes staging equivalent to an open water flow elevation exceeding 20,000 cfs. Filling flows of 1,000 cfs, for which ice formation may be delayed or fail to occur, could significantly impact sloughs through de-watering gravel spawning areas and overwintering habitat.

page 49, para 2
As the temperature of groundwater is considered a function of the average annual temperature of the mainstem Susitna; what will be the impacts of the second filling year release temperatures to the groundwater? How long would any change persist? No data are presented to support the statement that groundwater temperatures will not change.

page 51, para 3. Monthly Energy Simulations
The referenced program utilized load forecasts developed by ISER, Woodward-Clyde, and Battelle. These forecasts are now seriously questioned in light of recent developments (see General Comments). We recommend these simulation studies be updated and run with the most recent load forecasts available.

page 58, para. 1. Reservoir and Outlet Water Temperatures
This suggests that winter outflow temperatures between 1° and 4°C can be selectively withdrawn through a multiple intake structure. This control would be dependent upon the thermal profile of the reservoir during winter, a set of conditions which has not been modeled. Therefore, we question the validity of the statement which suggests one degree water temperatures would be available on request. Information presented by ACRES during the Nov. 29 - Dec. 3 workshop showed winter temperatures in Eklutna Lake to be between 0 and 3.6° in the upper 2 meters, while isothermal conditions exist below this level.

page 59, para. 2. Ice
It is not clear what impact will occur to the lower River from reduction of ice flow from the upper Susitna. How far downriver would ice formation occur? When does freeze-up normally occur?

page 91, para. 2. Mitigation of Watana Impoundment Impacts
This section states that a proposed 12,000 cfs flow at Gold Creek would provide salmon access to most of the sloughs and would assist in maintaining adequate ground water levels and upwelling rates. There are no studies which would support these conclusions, as only one of approximately thirty-six sloughs has receive detailed study. Similarly, current information does not permit the development of mitigation measures within the sloughs, as stated in the last paragraph on this page.

page 93, para. 2. Nitrogen Supersaturation
While we support the concept of installing cone valves at the outlet works of both dams, the subject requires further discussion. These valves will only operate (and afford gas supersaturation benefits) during spillages below the 1 in 50 year high flow event. According to the discussion presented on pages 79 through 81, such spillages would be a relatively uncommon event (for the 32 year period simulated, there were 4 years during which spillages occurred). The discussion on these valves should present data on their frequency of use and explain the criteria by which they are planned and installed. This should include the following:

1. Potential temperature impacts resulting from withdrawal from these outlet structures.
2. Potential impacts to river ice formation attributed to operation of these valves during winter.

page 95, para. 1. Temperature
The discussion of Devil Canyon post-project temperature mitigation is inadequate. What advantages are gained by the multiple release structure? Will Devil Canyon reservoir stratify during summer and winter?

Chapter Three

page 8, para. 2
"Since the greatest changes in physical habitats are expected in the reach between Talkeetna and Devil Canyon, fishery resources using that portion of the river were considered to be the most sensitive to project effects." Transforming the mainstem Susitna River into a reservoir is also a considerable change. Later in this paragraph is the statement "The mitigations proposed to maintain chum salmon should allow sockeye and pink salmon to be maintained as well." We are unable to locate specific mitigation plans for chum salmon. Those conceptual plans presented for slough modification and mainstem

spawning bed construction deal principally with one life history stage. The statements made here that improved mainstem conditions will replace loss of slough rearing habitat and that juvenile overwintering areas are not expected to be adversely affected by the project are not supported. In fact, preliminary data presented elsewhere in the Exhibit indicate that overwintering habitat will be impacted and that sloughs may provide important rearing habitat.

page 12. Species Biology and Habitat Utilization in the Susitna River Drainage

Estimates of adult salmon presented in this section depict only escapement. A more meaningful estimate should be made using catch to escapement ratios, as done in chapter five. For instance, in 1982 77,000 pink salmon migrated above Talkeetna. However only one fish in every 3.8 escaped the commercial fishery. Using the 3.8 to 1 ratio, this reach of the Susitna accounted for over 350,000 pink salmon of which over 277,000 were available to the commercial fishery. Escapement estimates alone fail to indicate the high values associated with anadromous fishery resources.

page 76. Slough Habitat

This section does not describe impacts associated with lowered winter river stage during filling. Should upwelling and backwater effects during winter prove critical to developing eggs or juvenile salmonids, any reduction in these areas could create significant damage.

We question the figure presented as the number of sloughs in which salmon spawn within the Chulitna to Devil Canyon reach. Using information supplied by the ADFG and from Exhibit E, adult salmon have been observed in 26 of these sloughs. Exhibit E should clearly present the total numbers of sloughs in this reach and the 1981 and 1982 data on spawning adults.

page 77

The discussion presented on impacts to slough habitat is not clear. As Exhibit E states that groundwater upwelling in the sloughs is probably driven by the mainstem stage, which would cause a decreased flow in the sloughs (post-project), why does this section state that under post-project conditions only the backwater areas (of the sloughs) would be affected?

The second paragraph of this page states, "With mainstem flows above 14,000 cfs, a backwater forms at the mouth of the slough." How is this known? Which slough is being discussed? Is this true for each slough? The same paragraph explains that, during the 1982 field season, flows in the 12,000 to 14,000 cfs range occurred and afforded opportunity to observe fish passage at flows below normal August levels. These flows appeared to hamper or restrict fish passage into sloughs. Backwater effects were not seen at flows of approximately 12,000 cfs, yet project low flow limits for August have been established at 12,000 cfs. This section underscores the problems

associated with such proposed flows. It is apparent that some significant changes occur to the slough habitat within a relatively narrow range of flows; changes which may have important biological implications.

page 87, para. 5
While the described floods may transport sediment and scour the River bed, reduction or elimination through flow regulation may not necessarily be beneficial. The Exhibit presents no data to support the comment that high mainstem velocities limit fish usage (page 87, para. 2). Further, such high flow events may be critical to maintaining side channel and slough habitat through flushing and replenishment of gravels and by removing vegetation and beaver dams which may reduce habitat value. This point is not discussed in the following sections on slough or side channel habitats.

page 103, paragraph 3. Slough Habitat
We disagree that changes in streamflow during the open-water season are not expected to affect slough habitats.

page 116. Aquatic Studies Program
We believe this discussion suffers from omission of the majority of the 1982 field study results. We strongly believe that two years of study are the minimum required as a basis to discuss the impact of hydroelectric development on the Susitna River.

page 130. Measures to Minimize Impacts
It is stated that "A flow release schedule will be used that minimizes the loss of downstream habitat and maintains normal timing of flow-related biological stimuli." The flow schedule presented in Exhibit E, chapter 2 does not minimize habitat loss, nor does it maintain normal flow related biological stimuli. This section should also discuss installation of compensation flow pumps at Devil Canyon which would provide flow between the dam and tailrace channel.

page 130, para. 2. Measures to Minimize Impacts
The section states that "Instream flow requirements are being determined for each species/life stage/time unit combination." Who is performing these studies? How will they be determined? Again, it is impossible to understand what flow regime, if any, is actually being suggested within Exhibit E. Is the release schedule presented in Table 2.17 just a "first cut?" This is apparently the case. Considering that the final release schedule is to be based on future studies as suggested here and may be modified to accommodate out-migration (page 3-132, para. 1) and will need to consider temperature and volume (page 3-143, para. 1); why is a flow regime proposed in the absence of such information?

page 131, para. 1
This states, in effect, that slough habitat will either be enhanced or degraded by the project, and that actual impacts to habitat are the subject of ongoing studies. These ongoing studies should be described. What will be investigated? Which sloughs will be studied?

page 132, para. 4
This states that flows of 12,000 cfs are sufficient to undertake rectifying impacts by modifying habitat. How is this known? The paragraph should discuss the studies upon which this is based or qualify any such conclusions as preliminary and subject to further study.

page 133, para. 1. Winter Flows
The statement is made that "Since minimal impacts are expected during both filling and operational winter flow, rectifying measures are not needed." This is not supported. On page 131, para. 1, we learn slough habitat may be degraded by winter flows and that these impacts are the subject of ongoing studies. Page 94 presents a lengthy discussion of impacts attributed to altered winter flows.

page 133, para. 5. Reduction of Impacts Over Time
"Post-operational monitoring will be conducted to evaluate the effectiveness of mitigation measures (see Section 2.6)." The license application should detail what monitoring will occur and how the effectiveness of mitigation efforts will be evaluated.

page 136, para. 3
The discussion of hatchery development is inadequate. In the event that other mitigation alternatives fail, it will be important to present a clear picture of what measures would be taken to compensate for fisheries losses.

page 137, para. 3
We believe that the water temperatures of 5° to 6°C during the second filling year will present significant adverse impacts to salmon. Addition of a low level portal could apparently avoid much of these effects. We recommend such a device be incorporated into the final design.

page 143, para. 1
"Continuing reservoir thermal modeling will allow an evaluation of available water temperatures throughout the year so that a detailed release plan can be developed. The release plan will need to consider both water temperatures and volume in order to minimize impacts." We strongly agree with this, and recommend that the license application contain just such a release plan which would most effectively minimize impact.

Chapters 4-9 - No Comment.

Chapter 10

page 28, para. 6. Diversional Emergency Release Facilities
The release levels referred to do not avoid adverse effects on the salmon fishery downstream.

page 30, para. 3
Figure E.2.90 indicates that three, rather than four portals would be constructed at Watana. We question which is correct and how the numbers and position of the portals were considered in minimizing impact. Also we cannot concur that temperatures will be controlled within acceptable limits.

page 30, para. 4
We are not aware of studies which have occurred to mitigate project impacts through provision of streamflow at Gold Creek. These should be described.

page 31, para. 5
According to presentation by ACRES American at an APA-sponsored workshop in Anchorage during the week November 29 to December 3, 1982, no temperature model has been run for Devil Canyon reservoir. How, then, can the utility of a multi-level draw-off at Devil Canyon be known? This again underscores the present lack of understanding of project temperature impacts.

The following statements of concern were presented by NMFS before the APA Board of Directors on April 16, 1982.

"One area of limited information in the Feasibility Report deals with the effects of post project flows on the fishery resources..." "These sloughs therefore represent an area requiring consideration of potential mitigation and/or enhancement measures. To date, less than one eighth of the side channels and slough areas have been surveyed. Further, the impacts of various flow regimes on the habitat are unknown because the hydrological and ecological relationships between the mainstem Susitna and these areas have not been adequately studied..." "The results of a comprehensive In-Stream Flow Study would allow a balancing of fish habitat losses against power generation..." "Currently, we do not believe a high level of confidence exists in the projected post project temperature within the two reservoirs, the Susitna mainstem, and the side channels and sloughs..." "...specific studies must occur which will develop mitigation options..." "It is not reasonable to assume that (one field season of fisheries data) is adequate for proper characterization of the resources."

"We are concerned that the (license) application will reflect the serious deficiencies we have mentioned. If our review shows this to be the case, we feel our agency will have no alternative but to request the FERC to reject the application or direct that the deficiencies be corrected."

Our review of the material presented in draft license Exhibit E indicates that these deficiencies still exist. It is regrettable that we have reached the draft license application stage while these issues remain unresolved. We feel that these issues and data must be incorporated into Exhibit E and that without them the license

application will be found deficient. We believe that Exhibit E should be sufficiently developed so as to form the basis for specific license conditions which would protect anadromous fish and their habitat. As written, Exhibit E only leads to further studies. The FERC guidelines specify that information within Exhibit E be developed to a level commensurate with the scope of the project. The Susitna project will be the most costly and complex hydroelectric facility ever considered by the FERC[2/], and this complexity and depth should be reflected in license Exhibit E.

We appreciate this opportunity to comment on the draft Exhibit E.

Sincerely,

Robert W. McVey
Director, Alaska Region

2/ Susitna Project Status Report - Preliminary Draft. Federal Energy Regulatory Commission - Data for Decisions. December 1, 1982.