



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

National Marine Fisheries Service

P.O. Box 21668

Juneau, Alaska 99802-1668

September 15, 2010

Duff W. Mitchell
Juneau Hydropower, Inc.
P.O. Box 22775
Juneau, AK 99802

Re: FERC P-13563 Sweetheart Lake Project

Dear Mr. Mitchell:

The National Marine Fisheries Service (NMFS) has reviewed Juneau Hydro's Preliminary Application Document (PAD) for the proposed Sweetheart Lake hydroelectric project development (FERC P-13563). The PAD describes the project as a 500-foot long, 90-foot high concrete and rock face dam at the natural outlet of Lower Sweetheart Lake that would create a 1,635 acre impoundment. A nine-foot diameter, 1650 foot long penstock from the impounded lake would feed into a 30MW powerhouse. A bypass reach would be created in Sweetheart Creek, and tailrace waters would be returned to the creek downstream of this reach. Transmission lines would consist of either about nine miles of overhead lines or a combination of mostly buried lines with less than a half mile of overhead lines. Annual average generation would be approximately 136 Gigawatt-hours.

NMFS is entrusted with federal jurisdiction over marine, estuarine, and anadromous fishery resources under statutory authorities originating in the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Anadromous Fish Conservation Act, and the Pacific Salmon Treaty Act. Section 305(b) of the MSA requires federal agencies to consult with NMFS on all actions that may adversely affect Essential Fish Habitat (EFH). If the proposed action would adversely affect EFH, NMFS is required to make EFH Conservation Recommendations, which may include measures to avoid, minimize, mitigate or otherwise offset adverse effects. Section 10(j) of the Federal Power Act (FPA) authorizes NMFS to recommend license conditions necessary to protect, mitigate damage to, and enhance fish and wildlife habitat affected by the project. Section 18 of the FPA provides NMFS authority to issue mandatory fishway prescriptions. In addition, NMFS has responsibilities related to FERC proceedings derived from the Fish and Wildlife Coordination Act, the Clean Water Act, the Endangered Species Act and the Marine Mammal Protection Act.

Project construction and operation details including return flow locations, operating schedule, habitat resources, and study plans are not currently known, however we suggest that Juneau Hydropower begin its pre-project investigations by studying the possible effects of the project operations on environmental flows and anadromous fish habitat in the affected anadromous and intertidal reaches. The resource management goal would be to limit the impacts on marine and anadromous fish and habitat from the operation of the Sweetheart Lake Project.



General recommendations for the Sweetheart Lake project studies include: identification and characterization of all marine and anadromous species, life stages, and timing in the project area; inventory and mapping of stream habitat and determination of how habitat would be affected by changing flows; location and characterization of existing and proposed fish passage barriers; examination of how project operation would affect instream flow conditions, including amount of flow and water quality. Changes in tailrace discharge associated with power house operation should be determined to predict the effects of project operations on habitat availability, quality and use. Continuous stream flow gauging should be conducted in the anadromous reach for a minimum of five years to adequately characterize the stream flow in Sweetheart Creek and allow for extrapolation of flow records from proxy sites with long term stream gauge records or use of other methods of estimating long term stream flow. These stream flow data and habitat information in combination with detailed operation plans, locations of the tailrace discharge area, and ramping rates are needed to design adequate in-stream flow requirements for the anadromous reach.

NMFS recommends that the regional impacts of predictable climate variability and long-term climate change be assessed in planning stages for this project given that inflows to Sweetheart Lake are predominantly from surface runoff, rain, snowmelt and seasonal glacial meltwater. Climate models project annual warming of three to four degrees Celsius over the 21st century for southeast Alaska and a five to eight percent increase in annual precipitation, with a significant shift from snow to rain. Increases in runoff are expected to exceed increases in precipitation in basins with glaciers, as those glaciers melt, but not after they have receded entirely. Analysis of historical data shows that approximately half of the observed warming in southeast Alaska since 1920 is attributable to the variability of the Pacific Decadal Oscillation, a naturally occurring mode. This pattern of climate variability drives persistence of temperature and precipitation anomalies in such a way that hydropower utilities, developers, and managers should anticipate the possibility of 'non-normal' inflows for an entire decade or longer, as part of natural variability. On top of this decadal persistence are the long-term trends associated with global climate change: warming and wetting (Cherry, et. al., in prep.). Scoping for new projects such as Sweetheart Lake should analyze long-term (multi-decadal) climate and hydrology datasets and assess downscaled climate projections, while recognizing the limitations of these data and models.

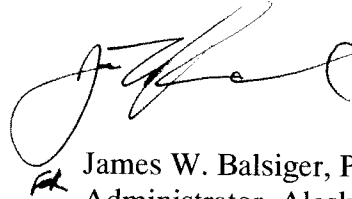
We recommend development of SMART objectives in order to ensure that studies are well designed and with a clear purpose. The SMART objectives concept is Specific- concrete, detailed, well defined; Measurable- numbers, quantity, comparison; Achievable- feasible, actionable; Realistic- considering resources; and Time-Bound- a defined time line. We suggest that Juneau Hydro review the U.S. Fish and Wildlife Service publication: *Guidelines for Establishing Project Objectives for Biological Fisheries Investigations*.

When more information is available, after agreed upon studies are designed and conducted, it will be possible to determine flows needed for ecological functions, target ramping rates, and recommend lake storage and operation schedules that are protective of anadromous and marine fish and habitat. Addressing these information needs would result in comprehensive, detailed study plans and would provide necessary information for NMFS to make effective conservation

recommendations relative to the protection, mitigation, and enhancement of fish and wildlife resources that may be impacted by the project per Section 10(j) of the FPA.

NMFS looks forward to the project public meeting and site visits. Please contact Susan Walker at (907) 586-7646 (susan.walker@noaa.gov) or Eric Rothwell at (907) 271-1937 (eric.rothwell@noaa.gov), with any questions regarding this project review.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Balsiger', with a stylized flourish at the end.

AK James W. Balsiger, PhD
Administrator, Alaska Region

Cc: Shawn Johnson, ADF&G
Richard Enriquez, USFWS
Sheila Cameron, sheila.cameron@alaska.gov
Eric Rothwell, NMFS