Study Request 1: Stream Habitat Mapping and Characterization

Goals and Objectives

§5.9(b)(1) — Describe the goals and objectives of each study proposal and the information to be obtained.

Goals

The goal of this stream habitat mapping and characterization study is to determine the effects of the Ketchikan Lakes Hydroelectric Project and proposed changes on fish and habitat in order to recommend mitigation needed to conserve fish populations.

Objectives

1. Identify, delineate, and characterize riverine habitat types using current methodologies
2. For project area streams above the powerhouse, determine the upper extent of fish habitat by species using fish sampling and identification of natural, permanent barriers to fish passage.
3. For project area streams below the powerhouse, characterize the current site-specific conditions of meso- and microhabitat types by all fish species and life stages. This characterization should describe (quantify) the factors that control habitat suitability and utility (flow, water quality, structure, groundwater exchange, icing effects, temporal changes).
4. Integrate results from this study and the instream flow study to assess the temporal and spatial relationships between instream flow and riverine and biologic functions.

Relevant Resource Management Goals

§5.9(b)(2) — If applicable, explain the relevant resource management goals of the agencies or Indian Tribes with jurisdiction over the resource to be studied.
§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The overarching resource management goal of the Service is described in our mission:

> To conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

The U.S. Fish and Wildlife Service (Service) has authority to request fish and wildlife resource studies related to this project in accordance with provisions in the Federal Power Act (FPA, 16 U.S.C. § 791 et seq.), Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), Clean Water Act (CSA, 33 U.S.C. 1344), National Environmental Policy Act of 1969 (NEPA, 83 Stat. 852; 42 U.S.C. 4321 et seq.), Bald and Golden Eagle Protection Act (BGEPA, 54 Stat. 250, as amended, 16 U.S.C. 668a-d), and Migratory Bird Treaty Act (NBTA, 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.).

Under Section 18 of the FPA, the Service has authority to issue mandatory fishway prescriptions for safe, timely, and effective fish passage. Under Section 10(j) of the FPA, the Service is authorized to recommend license conditions necessary to adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat) affected by the development, operation, and management of hydropower projects. Section 10(a)(1) of the FPA requires the Federal Energy Regulatory Commission (FERC) to condition hydropower licenses to best improve or develop a waterway or waterways for the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat) based on Service recommendations and plans for affected waterways. Specific management goals are the protection of anadromous, trust fish species, and their habitats.

Consistent with our mission and with the legal authorities described above, our resource goal in this matter is to conserve existing fish and wildlife resources and their habitats in Ketchikan Lakes Watershed (Hydrologic Unit Code (HUC) 19010102040201) and Granite Basin Creek Watershed (HUC 19010102040202).

Background and Existing Information

§5.9(b)(4) — Describe existing information concerning the subject of the study proposal, and the need for additional information.

The Pre-Application Document (PAD, Ketchikan Public Utilities 2025) provides information on the existing aquatic habitat, communities, and native and non-native species within the project area. Project reaches are delineated and shown with respect to project features (PAD, page 76), reach specific information, including channel type classification, are provided in a table (PAD, page 77), and additional details are provided in reach-specific narratives (PAD, pages 78 to 80).

Additionally, species occurrence information from 1997 surveys are provided by project reach (PAD, page 81), and snorkel data from 1997 and 1998 are provided by reach to show relative abundance of fish species by project reach. Furthermore, the PAD provides the species-specific life history and periodicity charts (PAD, pages 86 to 96).

While the PAD details stream habitat information collected during the previous relicensing of the Project, there are some discrepancies with other commonly used datasets that present challenges for understanding the impacts of the project on fish and aquatic habitat. The Anadromous Waters Catalog maps Ketchikan Creek as anadromous through project reach K5 for the presence of chum salmon, coho salmon, king salmon, pink salmon, cutthroat trout, and steelhead (AWC Code 101-47-10250). The Tongass National Forest Stream Lines (data available at https://gis.data.alaska.gov/datasets/usfs::tongass-national-forest-stream-lines/about), another commonly used dataset in the region, also disagrees with the fish habitat delineations presented in the PAD, although not all of the stream lines in this dataset have been field verified. Furthermore, the geospatial location of project area streams appears inconsistent across datasets, and since the previous relicensing studies occurred, Light Detection and Ranging (LiDAR) technology has allowed for the identification of true flowline location.

Project reaches below the powerhouse were studied for previous relicensing, but some reassessment of habitat features is necessary to understand current condition and assess the potential project impacts.

Project Nexus

§5.9(b)(5) — Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Fish habitat exists above the powerhouse, but the project dataset, Anadromous Waters Catalog, and U.S. Forest Service (USFS) dataset, disagree on the upper extent of anadromy. Using current methodologies to delineate streams and habitat will resolve discrepancies and allow for accurate impact analysis and discussions.

Fish habitat below the powerhouse could be impacted by changes in ramping rates if Article 407 is refined to only apply to down ramping. Characterizing the current habitat features and current periodicity and distribution of fish in these reaches will provide a foundation for understanding how they could be impacted by project-related pulses in flow (see Instream Flow Study).

Proposed Methodology

§5.8(b)(6) — Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

Because the geospatial location of project area streams appears inconsistent across datasets, we recommend developing a LiDAR derived stream layer to capture true flowline locations and possibly identify currently unknown tributaries.

For project area streams above the powerhouse, fish habitat should be quantified using Tier One survey methods for coastal Alaska from the USFS Aquatic Habitat Management Handbook (USDA 2001, 2090.21_20). When determining channel type, refer to the Channel Type User Guide Tongass National Forest Southeast Alaska (Paustian et al. 1992, as amended in 2010). When determining the upper extent of fish habitat, barriers should be assessed using methods in the Aquatic Habitat Management Handbook (USDA 2001, 22.6 – Exhibit 01 and 23.71) with consideration for pool depths at bankfull flows regardless of flow conditions during surveys. The rationale for determining the end of fish habitat should be well documented. Fish should be sampled using backpack electrofishing units to inform changes in stream class and confirm barrier calls.

For project area streams below the powerhouse, fish habitat should be quantified using Tier Two survey methods, with Tier Three and Tier Four survey methods for reaches identified to be especially important for rearing and susceptible to changes in stream flows.

Level of Effort and Cost

§5.9(b)(7) — Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The level of effort and cost will be refined as the study plan is finalized, but the cost would be commensurate with a project the size of Ketchikan Lakes Hydroelectric Project and the likely license term.

Literature Cited

Ketchikan Public Utilities. 2025. Pre-Application Document Volume 1 – Public; Ketchikan Lakes Hydroelectric Project FERC NO. 420. 190pp.

Paustian, S.J. (ed.), K. Anderson, D. Blanchet, S. Brady, M. Cropley, J. Edgington, J. Fryxell, G. Johnejack, D. Kelliher, M. Kuehn, S. Maki, R. Olson, J. Seesz, and M. Wolanek. 1992. amended 2010. A Channel Type Users Guide Revision, October 2010, for the Tongass National Forest, Southeast Alaska, USDA, Forest Service, Alaska Region. Available online at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5413799.pdf

[USDA] United States Department of Agriculture Forest Service. 2001. USDA, Forest Service handbook, fsh 2090.21 – aquatic habitat management handbook. USDA, Forest Service, Alaska Region, Juneau, Alaska. Amendment No. 2090.21-2001-1. November. https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?2090.21!r10