Fish Survey Study Plan

Sawmill Creek, 2001 And 2002.
Blue Lake Project, Federal Energy Regulatory Commission (FERC) No. 2230.

City and Borough of Sitka, Licensee

July, 2001

Introduction and Background

The Blue Lake Project, FERC license will expire on March 31, 2008. The City and Borough of Sitka (City) intends to obtain a new license under which to operate the project as a major electrical generation source for Sitka. Relicensing the project will require development of an environmental data base sufficient to allow FERC, as lead agency under the National Environmental Policy Act (NEPA), to adequately evaluate existing environments, potential impacts and mitigation measures associated with the project.

Under FERC regulations, the City will be required to consult with resource agencies to develop necessary study plans for all resources potentially affected by the relicensing. Among these resources, effects on Sawmill Creek fisheries are expected to be among the major environmental issues addressed.

The FERC regulations, relative to the license expiration date, require environmental studies to begin in 2003, after the City's submission of a Notice Of Intent to relicense the project. Given the need for multiple draft document reviews and revisions, this would provide, at most, two full field seasons of fisheries surveys prior to the required submission of the final application to the FERC for new license in March, 2006. The preliminary studies described in this plan are proposed to supplement the fisheries survey data base prior to new license application.

Objectives of the proposed 2001 and 2002 Sawmill Creek surveys would be to:

- Develop fish observation methods which will fulfill the needs for 1) NEPA analyses in the FERC relicensing process, and 2) ongoing ADF&G stream surveys and USFS and STA information needs;

- Gather data useful to extend the information base on species composition, distribution, periodicity, stream life and habitat use; and
- Develop a protocol for sharing of fish survey manpower among the City, ADF&G, STA and USFS.

This study plan outlines the general objectives and methods for the 2001 surveys. Detailed survey protocols, equipment, sampling sites, etc. will be documented in a supplement to this plan, after finalization of those details among the various participating parties.

Methods

The proposed Sawmill Creek studies will be based primarily on streamside observations. Three primary types of observations will be made:

- **Frequent general abundance ("Index") surveys**, at a single point, to determine estimates of run-strength and timing, to be used both for general information and to determine times when the Stream Foot Surveys, described below, would best be conducted; and

- **Periodic stream foot surveys**, at various observation sites, conducted as needed to determine anadromous fish distribution and abundance throughout the potentially occupied sections of the stream.

- **Juvenile fish captures**, up- and downstream of the cascade at SM 0.5 to determine presence of anadromous fish upstream of the cascade and to evaluate fish population characteristics upstream of the cascade.

Surveys and captures will be conducted beginning at a time just prior to expected in-migration of the earliest salmon species (probably pink salmon), more intensively throughout the periods when other species enter the stream, and less intensively as spawning declines and fewer fish are counted. This generally describes a period from late-July through late November. The survey and capture methods are described in detail in the following:

Index Surveys.

These surveys will be made frequently, as resources permit, by a researcher qualified to distinguish and enumerate salmon, trout and char species from

bankside. Daily observations will be made from a fixed point established to maximize visibility, ease of access and reproducibility of counts.

Counts may be made at fixed times or relative to tide fluctuation. Often peak counts at a fixed site are best made following a high tide.

The observer will note the following at each observation:

- Number of fish by species
- Time of day
- General weather condition
- Water and Air Temperatures
- Relation of observation time to tide status (this may be back-calculated using appropriate tide tables)
- Water transparency
- Activity (actively moving upstream, milling, exhibiting spawning behavior, etc.)
- Location of fish in the stream (i.e., are they concentrated in a pool or run, or are they spread evenly throughout the stream). Notations will include locations of fish both across and up and down the channel.

Periodic Stream Foot Surveys.

These surveys will be conducted about once per week, with observation intensity increasing during the collective peak of in-migration and spawning activity (August through mid-September), and decreasing as spawning for all species diminishes, probably in late September. (Although the actual frequency of observation may be more or less than weekly, these surveys will be called "Weekly Stream Foot Surveys" in this study plan.) Throughout the observation period, the average frequency is estimated to be about once per week.

To conduct Stream Foot Surveys, the researcher will observe fish along stream reaches which represent various available habitat types and offer safe access and streamside travel.

These Surveys will use essentially the same observation and data recording techniques as the Index Surveys, except the observer will note fish locations throughout various observation reaches. A base map of the stream will be annotated during each survey to show stream mile (to the nearest 0.1 mile, if possible) and specific points of observation within the channel. Of particular

importance in these surveys will be species composition, spawning activity and habitat utilization.

Stream foot survey and Index Count techniques will be calibrated among various assigned observers. Estimates of fish species, numbers and locations made by one observer at a specific location and time will be made by the other assigned observers, to determine differences and "calibrate" estimation techniques.

The Stream Foot Surveys will be conducted initially in accessible areas which appear to offer habitat for resting and spawning, and those which might serve as migration barriers at low flow. Upstream of the cascade at SM 0.5, observations will be made to determine presence of any life stage of anadromous fish, given that adults may not be able to access the reaches above the cascade every year due to varying streamflow and resulting hydraulic conditions of the cascade. Observations upstream of the cascade will be concentrated at times when stream conditions are optimal for viewing adult fish. The primary survey method upstream of the cascade will be juvenile fish collections described below.

Juvenile Fish Captures.

Captures will be made using baited minnow traps placed in areas selected to optimize capture efficiency for all expected species. Minnow traps will be set at locations both below and above the cascade.

Minnow traps will be baited with salmon eggs and soaked overnight. Traps will be checked immediately the next day to minimize trap mortality. Trapped fish will be identified to species, measured to fork length and returned to the water immediately.

Data Management and Reporting.

Observers will retain and copy all field notes from both the daily and weekly surveys, and distribute the copies to all other observers from USFS, the City and ADF&G. The City will be primary record keeper and information center.

After the 2001 and 2002 observation seasons, the City, with assistance from ADF&G and USFS will prepare summary reports for the foregoing anadromous fish season. These will be informal reports distributed to other interested agencies, both state and Federal. Format of the reports will be consistent with the City's need to prepare sections of draft NEPA documents and to make available all resource-related reports required by the FERC during later relicensing stages.

Reports will have the following sections:

- **Introduction.** This section should be brief, describing need for surveys within the context of FERC relicensing and data needs of the participating agencies;

- **Methods.** In this section, authors will describe observation methods, including sites, dates, observations recorded (fish numbers and species, weather, water clarity, etc, as described above) identification keys used and other items;

- **Results.** Authors will describe the results of the daily and weekly .observations and other recorded data. Stream maps will be used to the extent possible to identify fish locations from the weekly surveys, noting habitat utilization and life history activities.

- **Discussion.** This section may be brief in these pre-consultation studies, and limited to general discussions of species present, timing and habitat utilization, as they relate to other streams and systems in Southeast Alaska, and to any previous data collected on Sawmill Creek. More intensive interpretation of these data in terms of species importance, impacts and mitigation measures will be done as part of development of the NEPA documents.