Recreation Resources Study Plan/Scope of Work

Juneau Hydropower Inc.

Sweetheart Lake Hydroelectric Project P-13563

January 2011
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1.0 Introduction

In December 2009, the Federal Energy Regulatory Commission (FERC) in Washington D.C. issued to Juneau Hydropower Inc. (JHI) a Preliminary Permit (Permit) for the Sweetheart Lake Hydroelectric Project (FERC No. 13563, Project). This recreational resources study plan addresses the Lower Sweetheart Lake, Sweetheart Creek, and immediate area and associated facilities Project and is based on Project details provided in the Preliminary Application Document issued July 2010 and with subsequent September 7, 2011 public scoping meetings conducted by FERC and JHI.

The operational proposal include a storage dam; the current proposal is to draw water from Lower Sweetheart Lake in such a way as to contain lake level fluctuations to 60 feet, with final drawdown prescriptions to be determined based on further economic and environmental considerations. The proposed Project consists of an intake structure at Lower Sweetheart Lake, a dam at Lower Sweetheart Lake, a power conduit consisting mostly of tunnels, and a steel penstock leading to a buried or partially buried powerhouse located above or adjacent to the barrier falls at Sweetheart Creek. An operators' house would be built collocated at the power house but depending on public comments and final design could be built away from the powerhouse and situated toward the dock infrastructure on Gilbert Bay.

Transmission of electricity would occur either by a mix of submarine and overhead transmission traversing the west side of Gilbert Bay or through a submarine cable across Gilbert Bay to the Snettisham transmission line point of interconnection. (Figure 1).

Figure 1. Proposed Project Boundary and Transmission Line Alternatives.
During the initial consultation agency meeting of the Project, stakeholders, including entities representing the State of Alaska, the U.S. government, indicated the necessity to determine if there are potential Project effects on recreational resources stemming from land disturbances and the advent of infrastructure improvements in the area related to Project construction and operation. This study plan responds to study requests and issues made during the initial agency meeting held October 28, 2010, scoping meetings held on September 7, 2011 and subsequent written comments from agencies.

Recreational resource data gathering and recreational surveys discussed in this plan will be used by the FERC and state and federal resource agencies to help evaluate and resolve impacts of the Project prior to issuance of the Project license.

1.1 Study Objectives

The primary objective of the studies is to determine recreational resource utilization and to document current and potential recreation uses to address issues associated with the proposed project construction, long-term operation and maintenance. This information will be used to support National Environmental Policy Act (NEPA) requirements in the FERC licensing process.
1.2 Project Description

The Sweetheart Lake Project would be located about 30 air miles and 33 nautical miles southeast of the City of Juneau, Alaska on the western shore of the mainland just south of the Harding River and at the confluence of Sweetheart Creek and Gilbert Bay (Figure 1). The project would occupy federal lands within the Tongass National Forest, administered by the U.S. Forest Service. The proposed project would consist of:

(1) the existing Lower Sweetheart Lake, raised from a surface water elevation of 544 feet and a surface area of 1,414 acres to a new surface water elevation of 629 feet and a new surface area of 1,635 acres;
(2) a new, approximately 500-feet-long, 90-feet-high concrete and rock-faced dam, constructed at the outlet of Lower Sweetheart Lake; (3) an intake on the dam connecting to a 12-foot-diameter, 10,390-foot-long unlined tunnel; (4) a 9-foot diameter, 1,650-foot-long penstock installed within the lower 1,650 feet of the tunnel, extending to the powerhouse; (5) a powerhouse containing two new Francis generating units with a total installed capacity of 30 MW; (6) a new tailrace discharging flows to Sweetheart Creek; (7) a new approximately 0.6-mile long road from the powerhouse to the dock/landing site; (8) a new dock/landing site for boat, seaplane, and/or helicopter access, located on the east shore of Gilbert Bay; (9) a new 138-kilovolt transmission line that would be either 8.9 miles with 5.9 miles of overhead line and 3 miles of submerged line, or 8.4 miles with 0.4 miles of overhead line and 8.0 miles of submerged line; and (10) appurtenant facilities. The proposed Sweetheart Lake Project would have an average annual generation of 136 gigawatt-hours.

Juneau Hydropower Inc., as a responsible developer, seeks to voluntarily pre-mitigate recreational impacts and seeks to enhance the recreational experience for all visitors to the area.

In this mission, JHI has developed the following proposed measures which is intended to improve the recreational aspects related the proposed hydroelectric project. These measures will need to be agreed to by USFS decision makers in the licensing process. For instance, JHI proposes to consider hardening trails in and around Sweetheart Creek in order to decrease erosion and habitat disturbance from current human presence. This proposal along with particular design parameters would need to be approved by the USFS in the licensing process. The proposed measures to either mitigate or increase recreational aspects of the project area are as follows:

Sockeye Smolt line.

Design and implementation of a salmon smolt line to provide improved outmigration of the annually stocked Sockeye smolt at Sweetheart Lake. JHI proposes to build upon and adapt engineering aspects and design processes developed and used at two successful Alaska smolt lines in use. One of these smolt lines is the Deer Lake smolt line on Baranof Island which is utilized by the Deer Lake Coho stocking program with the Northern Southeast Alaska Aquaculture Association (NSRAA). The other smolt line is located on Spiridon Lake on Kodiak Island. The Spiridon Lake sockeye salmon stocking project was initiated in 1991 in cooperation between the Alaska Department of Fish and Game (ADF&G) and the Kodiak Regional Aquaculture Association (KRAA). More information of the Spiridon Lake smolt line can be found on ADFG website:

The smolt line is intended to substantially increase the annual amount of returning sockeye salmon to the Sweetheart Creek for the recreational enjoyment and use for Juneau personal use fishers. Douglas Island Pink and Chum hatchery (DIPAC) estimates that over one half of all smolts die as a result of the outmigration process which damages and disable smolt as they fall over the falls. Based on a 1995 ADFG report titled, Sockeye Salmon Smolt Production and Emigration Survival from the Initial Stocking of Sweetheart Lake, Smolt emigration survival down turbulent Sweetheart Creek was estimated at 53%. A smolt line is intended to lessen and perhaps eliminate the majority of deceleration trauma inflicted on outmigrating smolt as they outmigrate from Sweetheart Lake to tidewater. An increase in outmigration of smolt is likely to result in an increase of returning sockeye salmon for recreational and personal use fishers.

**Buried Powerhouse with mound wall.**

JHI proposes to build the project powerhouse into the slope of the hill and cavern out a buried powerhouse. Further, JHI intends to emplace a substantial mound wall around the perimeter of the opening face of the buried powerhouse that will be naturally seeded with local plant life. These two measures are intended to deafen and mitigate any sounds emanating from the powerhouse and its operations. Further, the buried powerhouse and mound wall are intended to further hide and or mitigate the aesthetic disturbance caused by traditional power infrastructure.

**Access trail rehabilitation.**

JHI proposes to rehabilitate and improve access trails to and from Gilbert Bay and salmon angler and net areas for recreationalist and personal use fishermen.

**New trail access route from beach to Sweetheart Creek.**

JHI will need to build and maintain a short access route from a proposed dock area to the power house for initial construction and then for maintenance of the power house infrastructure. It is likely that this access route will become a non-motorized pathway for recreational users frequenting the traditional fishing areas along the lower reaches of Sweetheart Creek.

**2.0 Existing Information**

Existing information regarding recreation use in the Project area has been collected by the Forest Service and the Alaska Department of Fish and Game and is summarized below:


  The purpose of the EIS was for a proposed timber sale in Gilbert Bay and related infrastructure, the establishment of a recreational cabin in Gilbert Bay and a lodge development in Williams Cove located in Tracy Arm. Below is a map area of the 1980 study area.
Figure 3. 1980 EIS Map of Gilbert Bay-Holkham Bay Area

The Environmental Impact reviewed and covered several proposed recreational alternatives of which it appears were never implemented. However, the USFS expended considerable resources to review the recreational opportunities of the Gilbert Bay area. The EIS did not cover recreational opportunities for Sweetheart Lake as the lake was outside the study area. No roads or trails were proposed to access the lake in the 1980 analysis nor are any proposed with the Sweetheart Lake Hydroelectric Project.

Below is the table of Resource Value Ratings for Gilbert Bay as illustrated at the time of the 1983 Environmental Impact Statement.
Table 3 - TLMP Recreation Resource Value Ratings for the Study Area

<table>
<thead>
<tr>
<th></th>
<th>Gilbert Bay</th>
<th>No Name Cove/Williams Cove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primitive Recreation</td>
<td>4*</td>
<td>3</td>
</tr>
<tr>
<td>Semi-Primitive Recreation</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Concentrated Recreation</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sport Fishing</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Wildlife Values</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Estuarine Sensitivity</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Scenery and Biotype</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Diversity</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

*The above ratings are based on a comparative scale of 1-5, low to high. Values represent a composite for the entire area and therefore, may not be accurate for specific sites.

Figure 4. TLMP Recreation Resource Value Ratings - Gilbert Bay
Shoreline Outfitter/Guide Analysis 2001

**Use Area 01-05B**

Port Snettisham – Juneau Ranger District

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**Recreation Carrying Capacity (Groups At One Time) 20**

**Description**

Point Coke at the entrance to Port Snettisham and south to the entrance of Holkham Bay.

- **LUD:** Modified Landscape, Old Growth, Remote Recreation, Semi-Remote Recreation, Scenic Viewshed, Timber Production.
- **ROS:** Primitive, Roaded Natural, Semi-Primitive Motorized, Semi-Primitive Non-Motorized, Rural.
- **National Forest Shoreline Miles:** 228
- **National Forest Shoreline Miles:** 47,762

**Communities**

None

**Alaska Coastal Management Act**

None

**Forest Service Facilities**

None

**Non-National Forest Lands**

The largest private holding is the Port Snettisham Power Plant. This facility is situated on 2,060 acres of state-selected lands and provides power to the City and Borough of Juneau. There is also a large fish hatchery on private land.

**Recreation Use**

<table>
<thead>
<tr>
<th>Area Attractions</th>
<th>Close to Tracy Arm Wilderness which allows for visit to Tracy Arm and shore excursion on same day; unaltered forest; shoreline conducive to walking, salmon viewing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Use</td>
<td>Mountain goat and brown bear hunting, sightseeing.</td>
</tr>
<tr>
<td>Non-commercial Use</td>
<td>Wildlife viewing, bear hunting, freshwater fishing. This unit is easily accessible from Juneau and has a number of anchorages.</td>
</tr>
<tr>
<td>Use Patterns</td>
<td>This area receives a high number of commercial gillnetting, shrimping, and crabbing vessels. Williams Cove receives concentrated use from commercial sightseeing and nature watch tours.</td>
</tr>
<tr>
<td>Primary Use Areas</td>
<td>Mallard Cove, Whiting River, Sweetheart Creek, and the head of Gilbert Bay, Williams Cove.</td>
</tr>
<tr>
<td>Areas of Concern</td>
<td></td>
</tr>
</tbody>
</table>

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Figure 5. Recreation Carrying Capacity Area 01-05B
• Tongass Land Management Plan 2008.

This Plan encompasses the management of the Tongass National Forest to include the Land Use Designations and related recreational use in and around the Project area.

Figure 6. TLMP land use designation map Sweetheart Lake Hydroelectric Project

• Juneau State Land Plan 1993

The marine waters of Port Snettisham are used for viewing marine Mammals. The south end of Gilbert Bay is particularly popular for viewing Waterfowl, bears, and for sport fishing.
3.0 Need for Additional Information

The following information was suggested to be investigated by the USFS comments to the Scoping Document 1.

Determine the effects to recreational activities, especially those taking place between the falls of Sweetheart Creek (camping, hiking, fishing and wildlife viewing) and the mean high tide mark on Gilbert Bay.

Analyze the effects of the location of the proposed submarine transmission line to determine if a submarine cable and its proposed location will interfere with recreational and commercial boaters seeking suitable anchorage in Gilbert Bay?
Will the project affect outfitter guide activities in the area of Gilbert Bay and Sweetheart watershed?

Further, under JHI, socioeconomic issues and considerations, the following issue overlaps onto Recreational Resource considerations: An increase in annual return of sockeye could lead to more success in achieving household bag limits for recreational as well as personal use fishermen.

4.0 Nexus between project construction, operations, maintenance and effects on recreational resources

The following Recreation Resources and Land Use issues were brought forward in Juneau Hydropower Inc.’s Scoping Document 1.

**Recreation Resources and Land Use**

Adequacy of existing recreation facilities and public access within the project boundary to meet current and future (over the term of a new license) recreational demand.

Effects on recreation resources in the vicinity of the project, including semi-remote recreation opportunities and water-based recreation in Gilbert Bay.

Feasibility of providing new recreation facilities or improving existing facilities located within the project boundary.

The effect of construction, operation and maintenance of a transmission line on recreation resources.

Evaluate the compatibility of the project with the semi-remote land use designation for this area.

Effects of project operation and maintenance on other land use activities, including hunting and trapping, in the vicinity of the project.

It is conceivable that some recreational usage of Sweetheart Lake and Sweetheart Creek existed prior to the 1929 Public Land Order identifying this area as a federal designated hydropower resource. However, in the last half of the last century, Rainbow Trout were introduced to this water system in 1953 and 1954. In the last quarter of the last century, Sockeye Salmon were introduced to this water system. Introduced species have for all purposes, integrated well with the indigenous species of salmon and Varden. However, the advent of these new species has increased the recreational attraction of sports fish users, and personal use fishers to the Sweetheart Lake and Creek water system.

The Gilbert Bay Sweetheart Creek area is a popular bear feeding area where local bears feast on returning salmon of which Pink Salmon is the predominate salmon species of Sweetheart Creek. The relatively low altitude barrier falls with a relatively long stream reach below the barrier falls provides an ideal fishing location for bear and recreational user alike.
The Gilbert Bay area is also known as a crossover point for migrating birds. The Gilbert Bay anchorage area also serves summer recreational vessels traversing Stephens Passage.

This proposed Recreation Resources Study primarily conducted by surveys will provide information regarding current recreational use patterns and user attitudes in the Sweetheart Lake Hydroelectric Project Area.

5.0 Study Area and Methods

The following outlines the study area and methodology to conduct the Recreation Resources Study.

5.1 Study Area

The proposed study area is the Sweetheart Lake Hydroelectric Project boundary area with expansion to include Gilbert Bay areas adjacent to Sweetheart Creek.
5.2 Methodology

Juneau Hydropower Inc.’s proposed Recreation Resources Study will primarily focus on mail and electronic surveys to Outfitters, Guides, Personal Use fishermen and others. Telephonic and or in-person surveys will be made to owner/management of Juneau based Air Charter businesses that offer services to Sweetheart Lake, Sweetheart Creek, and Gilbert Bay areas. In addition, JHI will interview Douglas Island Pink and Chum Hatchery personnel to elicit their input on recreational activities.

5.2.1 Data Collection

The USFS has provided Information to JHI consisting of a list of registered guides and outfitters that are registered for the Juneau Ranger District. The Alaska Department of Fish and Game has provided JHI
information to JHI consisting of a list for the personal use fishers requesting a personal use fisheries permit for 2011. JHI will also contact Juneau based Commercial Air Charter companies to determine number, frequency and other data on flights arriving to or leaving from Sweetheart Creek by recreational users. Additionally, DIPAC personnel will be interviewed to determine and acquire recreational information that the hatchery might possess related to their continued stocking program.

5.3 Products

5.3.1 Recreation Resources Study

The product of the Recreation Resources Study will be a final report discussing the results of the recreation surveying. The final study report will be provided to the USFS, other agencies and stakeholders.

6.0 Schedule

Data Collection efforts will be initiated in early 2012 to survey participants. Results from the Recreation Resources Study will be submitted and published in a Recreational Study Report. Further results from the Recreation Resources Study will be incorporated in Juneau Hydropower Inc.’s License application in 2012.

For further information related to the Recreational Resources Study Plan/Scope of Work, please contact Duff Mitchell, Business Manager (907) 789-2775 or by e-mail duff.mitchell@juneauhydro.com