

**FINAL WILDLIFE MONITORING PLAN, GENERAL**

*And*

**FINAL WILDLIFE MONITORING PLAN for 2011-12**

**BLUE LAKE HYDROELECTRIC PROJECT EXPANSION  
FERC No. 2230-044**

**SITKA, ALASKA**

Prepared By:

**City and Borough of Sitka**

**Sept, 2011**

## **INTRODUCTION**

The City and Borough of Sitka Electric Department (“City”) has applied for an amendment to the existing FERC license for the Blue Lake hydroelectric project (“Project”, FERC No. 2230) to address recent electric load growth in the face of increasing diesel fuel costs. The amendment will reflect two significant changes in Project design: 1) construction of a new powerhouse including 3 new turbine generators and decommissioning of the existing turbine generators; and 2) raising the Project dam as much as 83 feet from the existing spillway height of El (elevation in feet above mean sea level) 342 to El 425. Collectively, these and other associated changes are referred to as the "Blue Lake Expansion" or simply "Expansion".

Details of the proposed Expansion are described in the Final Amendment Application (City, 2009), available at the City’s Project website:

<http://www.cityofsitka.com/government/departments/electric/BlueLakeExpansion.html>

## **NEED for WILDLIFE MONITORING**

In the Final Draft Environmental Assessment (FDEA), wildlife impacts were predicted to be in two primary areas: 1) impacts on mountain goats related to increased boat access to Blue Lake and 2) loss of wildlife habitat due to inundation of 362 acres of vegetation around Blue Lake and in the Blue Lake Creek valley. Further, while the licensing material did not predict impacts on certain species of special concern, wildlife monitoring will note all effects on these species during project construction and long-term operation. Finally, monitoring will also examine effects of construction, with emphasis on wildlife disturbance from construction activity, equipment operation and blasting. An escrow fund will be established to fund mitigation for any unforeseen impacts.

## **CONSULTATION and COMMENT**

The draft version of this monitoring plan was distributed in July, 2011, with a request for comment. No comments were received pursuant this request. However, on review of the draft wildlife study plan for the City's proposed Takatz Lake hydro Project (FERC No. 13234), Alaska Department of Fish and Game requested that brown bears be tagged to address cumulative effects of the Takatz and Blue Lakes, collectively. We have added tagging of two brown bears in the Blue Lake/Sawmill Creek area, and assistance in tracking those collars, to the scope of wildlife monitoring measures, as described on page 7 of this plan.

## **WILDLIFE MONITORING PROGRAM**

### **WILDLIFE MONITORING PLAN GENERAL PROVISIONS**

## **Fund and Conduct Monitoring Studies**

The City will fund and conduct, through approved contractor(s), wildlife monitoring studies beginning prior to construction and continuing for a period of three (3) years after reservoir filling.

## **Reports**

Prior to March 1 of each monitoring year, the City and its contractor(s) will prepare an annual report of all wildlife monitoring study results for the previous year, and distribute the report to the appropriate resource Stakeholders. The report will contain copies of all field data collection notes.

## **Annual meetings**

The appropriate resource agencies and licensee will meet once per year, 30 to 45 days after issuance of the annual monitoring report. At this meeting, the results of all monitoring activities and reports will be evaluated and, if necessary, the monitoring program will be redirected.

## **Yearly Study Plans**

The wildlife monitoring program will be implemented through a series of yearly monitoring studies, each preformed according to an accepted study plan for that year. Except for the first plan (for 2011-12), study plans will be prepared after Stakeholder review of monitoring reports for the previous year, and after the annual meetings. At the meetings and in yearly study plan development, the City will describe the stage of Project completion to guide monitoring for the coming year. In the early development years, the focus will be on construction and on continuing baseline surveys, particularly in the areas of Sawmill and Blue Lake Creeks; in later years the focus will shift to impact assessment relative to the issues described in amendment application material.

## **WILDLIFE MONITORING PROGRAM ELEMENTS**

The wildlife monitoring studies are expected to change over the time period beginning in 2011 and ending in 2018, about 3 years after the reservoir is filled. During this period, monitoring studies will take place in four primary time periods related to the Expansion schedule. These are:

- Pre-Project Construction (2011-2012);
- Project Construction (2012-2013);
- Reservoir Filling (2013-2015); and
- Long-term Operation (2015-2018).

Prior to the start of monitoring studies for each successive year, the City and its contractor(s) will prepare a draft monitoring study plan documenting study

time period, study areas, and study methods for the coming calendar year and will distribute the draft plan for Stakeholder review. Stakeholder comments will be incorporated with the objective of addressing all reviewer concerns without dispute.

Following are descriptions of general study parameters for the four monitoring time periods listed above:

### **Pre-Project Construction (2011-2012)**

The focus on wildlife monitoring studies during this time period will be the continuation of baseline surveys and updating wildlife temporal and spatial use of the project area, particularly the areas of Sawmill Creek construction and the inundation of Blue Lake Creek valley. Studies will include methods as described in Bovee 2010. GPS data from the cooperative mountain goat project with ADF&G (see section below) will be used to assess potential impacts on goats. Another, smaller scale cooperative project, will begin on brown bears, with the goal being to radio collar 2 brown bears, especially females, to determine denning sites and seasonal use patterns within and adjacent to the project area. This study will also help to assess and minimize potential bear/human interactions.

### **Project Construction (2012-2013)**

Monitoring during these two years will be focused on assessing any effects on wildlife from activities in construction areas. Baseline surveys will be continued as well. Potential disturbances to wildlife from construction could include -

- blasting
- tunneling
- drilling
- heavy equipment operation
- helicopter
- chainsaw
- burning

The degree to which these potential disturbances effect wildlife may depend on many factors, including nature of disturbance (i.e. intensity, duration, frequency, distance) and nature of wildlife (i.e. species, proximity, age, sex, prior exposure to disturbance, season). Review of literature has produced a "working" Disturbance Buffer Distance (DBD) (Table 1) but this will need to be revised with agency comments to the draft study plan. For the sake of this draft monitoring plan, DBD will apply to major disturbances, such as

blasting, and will be considered an approximate DBD, with the likelihood of it increasing or decreasing depending on agency comments and more details being provided by contractor (i.e. dB of blasting, frequency, timing).

### **Reservoir Filling (2013-2015)**

During reservoir filling, emphasis will shift to monitoring wildlife responses to raising water levels, particularly waterfowl and brown bear along Blue Lake shoreline and Blue Lake Creek and valley.

### **Long-term Operation (2015-2018)**

Standard field methods will continue during this time period and analysis of data from prior field seasons will be done to assess the impact of the project on wildlife. Any necessary mitigation measures will be determined and cooperative work with agencies will be done to address these concerns.

### **PROPOSED WILDLIFE MONITORING STUDIES for 2011-2012 (Pre-Project Construction)**

In order to assess impacts from construction activities, solid baseline data will be needed prior to activities to evaluate effects on wildlife. While prior studies have addressed this, data needs to be updated on temporal and spatial distribution of wildlife in the project area, particularly the areas of Sawmill Creek construction and the inundation of Blue Lake Creek. Proposed wildlife monitoring activities during 2011-12 will include three main aspects -

- Continuation of baseline surveys
- Mountain goat observations and telemetry study
- Brown bear observations and telemetry study

### **Wildlife Baseline Surveys**

Baseline information about temporal and spatial use by wildlife species in the project area has been gathered (Bovee 2006, 2010) and most of these studies will continue during 2011-2012, particularly in the areas of Sawmill Creek construction and the inundation of Blue Lake Creek. Level of effort in monitoring studies will be roughly the same as that in the 2010 field surveys for similar methods. Emphasis will be on the following species:

- Mountain goat
- Brown bear
- Northern goshawk
- Bald eagle
- Forest owls

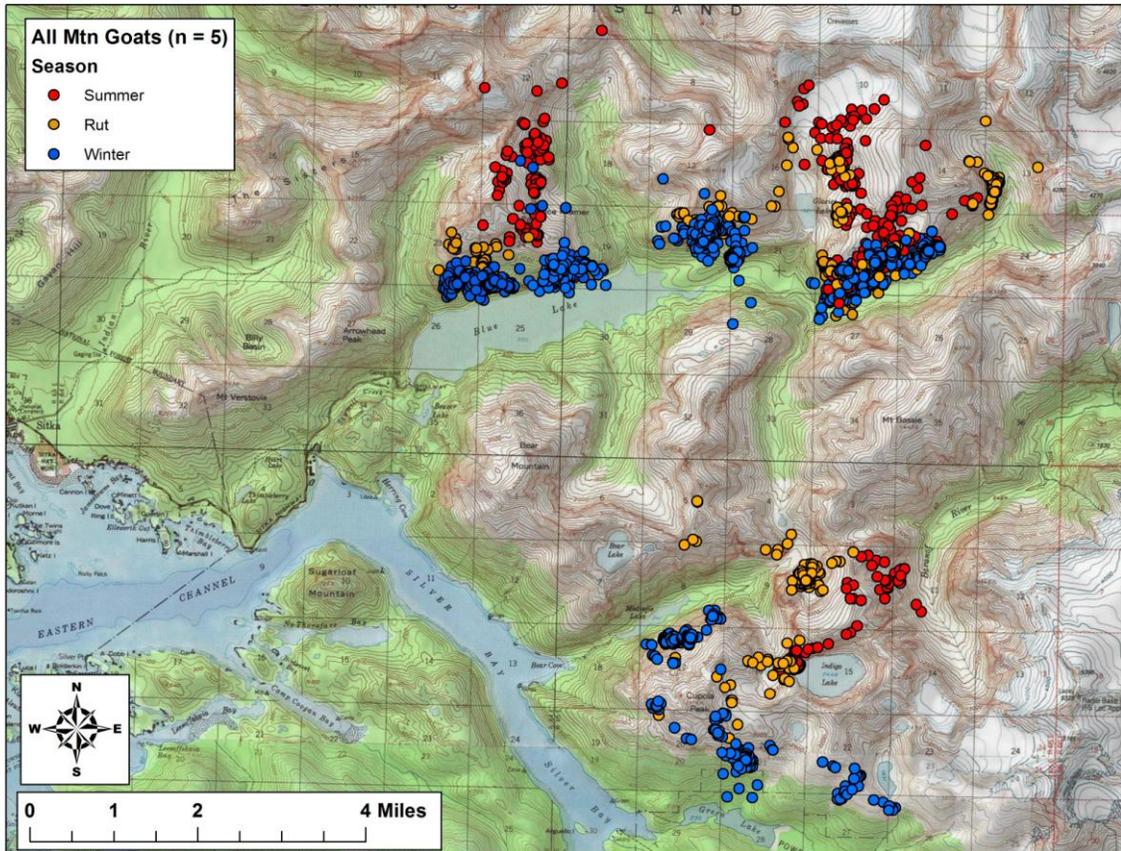
- Harlequin duck
- Marbled murrelet

Table 1 lists these species and their approximate DBD, with associated citation, time period of concern, and methods that will be used for monitoring. For more details on methods, refer to Bovee 2010. Existing data on the use of the project area by these species will be used to produce maps showing wildlife distribution and seasonal use. Field work during 2011 will be used to update and revise these maps as needed. This will assist stakeholders in making recommendations pertaining to potential wildlife effects from this project.

### **Mountain Goat Studies**

In 2010, the City joined in a cooperative agreement with ADF&G to help fund mountain goat research. In September 2010, ADF&G captured and radio collared 12 mountain goats in central Baranof Island, including 4 in the Blue Lake basin (White et al. 2010). One of the purposes of this research is to document goat movement and habitat utilization to better address cumulative impacts of the Blue Lake Expansion and Takatz Lake hydro project (FERC No. 13234) developments. Data from this research will provide critical information on goat use within and adjacent to the inundation zone and construction areas. It will also provide insight into goat responses to these activities.

Five of the 12 goats are equipped with downloadable GPS collars which were downloaded on April 26, 2011 (Figure 1). Three of these goats have winter locations within the inundation zone and one of these 3 also was within 1.6 km (1 mi) from the dam construction site, which is within the 1.5 - 2 km (0.9 - 1.2 mi) recommended DBD (Cote 1996, Table 1). Data such as this clearly show the importance of this technology in determining potential impacts of the project on mountain goats. The remaining 7 goats are equipped with GPS "store-on-board" transceivers and the data will not be available until June 15, 2014. The City will continue to participate in the goat telemetry studies through at least the 2011-2012 field season through cost sharing agreements and providing field work support.



**Figure 1. GPS locations of 5 mountain goats , September 7, 2010 - April 26, 2011, color coded by season (ADFG unpublished data), in central Baranof Island.**

### **Brown Bear Studies**

During past seasons of wildlife and fisheries studies, several different bears have been observed in the areas of the Sawmill Creek construction sites and the inundation zone. There have also been several bear/human interactions in the immediate area of Sawmill Creek and adjacent areas. Determining potential disturbances to bears from construction and inundation, especially as it pertains to denning activities, will be an important part to the monitoring activities. Equally important will be monitoring, and hopefully preventing, potential bear/human interactions. By deploying several radio collars on bears in the area these issues can be addressed. ADFG has ongoing bear research on bear/human interactions and has funding for collaring at least one bear. The City proposes working cooperatively with ADFG to deploy 2 more collars and assist in the monitoring of these bears. Bear monitoring under this plan would continue until completion of Project construction.

## LITERATURE CITED

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Table 1. Species of Concern, Approximate Disturbance Buffer Distance (DBD), Citation, Time Period of Concern, and Methods for Monitoring for Blue Lake Expansion Project

<b>Species</b>	<b>Approximate DBD*</b>	<b>Citation</b>	<b>Time Period of Concern</b>	<b>Methods for Monitoring</b>
Mountain Goat	1.5 - 2 km (0.9 - 1.2 mi) 1.6 km (1 mi)	Cote 1996 USFS 2008	Kidding, wintering	Radio telemetry Ground based observations
Brown Bear	1 km (0.6 mi)	Linnell et al. 2000	Spring, summer, fall Winter denning	GPS collars Ground base observations
Northern Goshawk	183 m (600 ft)	USFS 2008	Nesting (March 15-August 15)	Broadcast calling
Bald Eagle	0.8 km (0.5 mi)	USFWS 2007	Nesting (February-August)	Helicopter nest survey Ground based observations
Forest Owls	500 m (0.3 mi)	USFWS 2006	Nesting (February-July)	Broadcast calling
Harlequin Duck	50 m (164 ft)	Chatwin 2010	Nesting (April 1-July 30)	Ground based observations
Marbled Murrelet	500 m (0.3 mi) 200 m (660 ft)	USFWS 2006 USFS 2008	Nesting (May 1-August 15)	Audio-visual surveys

\* For the sake of this plan, DBD will apply to major disturbances (i.e. blasting) and will be considered an approximate DBD, with it very likely changing depending on agency comments and more details being provided by contractor (i.e. dB of blasting, frequency, timing).