

**Susitna–Watana Hydroelectric Project  
(FERC No. 14241)**

**Bat Distribution and Habitat Use  
Study Plan Section 10.13**

**Initial Study Report  
Part C: Executive Summary and Section 7**

Prepared for

Alaska Energy Authority



**SUSITNA-WATANA HYDRO**

*Clean, reliable energy for the next 100 years.*

Prepared by  
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## EXECUTIVE SUMMARY

Bat Distribution and Habitat Use 10.13	
Purpose	The purpose of this study is to assess the occurrence of bats, as well as the distribution of habitats used by bats, and to document roosting locations used by bats in the study area. These data will enable estimation of the potential loss and modification of habitat likely to result from Project development.
Status	Data collection and analysis for 2013 were completed as planned.
Study Components	The study has two major components: (1) assess the occurrence of bats and the distribution of habitats used by bats in the study area, using acoustic monitoring; (2) identify potential roosting locations of bats in the study area through literature review and conduct ground-based searches to locate roosts of bats in the study area.
2013 Variances	Acoustic monitoring and ground-based roost searches could not be conducted as planned on Cook Inlet Regional Working Group (CIRWG) lands due to lack of access in 2013 (RSP Section 10.13.4.1). The search effort for artificial roosts (RSP Section 10.13.4.1) was expanded to include nearby buildings outside of the study area.
Steps to Complete the Study	<p>In 2014, AEA will complete all remaining data collection for this study. Acoustic monitoring will be conducted at 10 sites (six on state and federal lands plus four on CIRWG lands) between mid-May and early October, supplemented by a study plan modifications involving the capture (by mist-netting), radio-tagging, and radio-tracking of up to 12 bats in two distinct periods (late July and late September/early October) to locate roost sites in the study area.</p> <p>AEA will implement a modification to the Study Plan, which involves the use of radio telemetry to locate bat roosts in the study area. AEA will deploy six radio transmitters each during two separate capture and tagging events (for a total of 12 transmitters). Using radio telemetry, AEA will be able to specifically identify the roosting locations of bats in the study area, accomplishing Study Plan objectives. In addition, AEA will conduct acoustic monitoring in 2014 by using six detectors deployed at sites with the highest rates of detection in 2013 and four detectors on CIRWG lands, which were not sampled in 2013.</p>
Highlighted Results and	The study team documented widespread occurrence of bats throughout the study area (85 percent of monitoring sites), including areas of seasonal concentration, using acoustic monitoring. The study team visited 26 structures

Achievements	at 11 sites during the artificial-roost search and characterized 102 cliff sections during the natural-roost search. No roosting bats were discovered during either the artificial- or natural-roost searches, however.
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## 7. COMPLETING THE STUDY

### 7.1. Proposed Methodologies and Modifications

To complete this study, AEA will implement the methods in the Study Plan, except as described in Sections 7.1.1 and 7.1.2. These activities include the following:

- Acoustic monitoring using bat detector stations to assess the occurrence, distribution, and habitat use by bats in the study area (RSP Section 10.13.4.1);
- Assess the occurrence of maternity colonies, winter hibernacula, and other roost sites in the study area (RSP Section 10.13.4.1).

#### 7.1.1. Decision Points from Study Plan

The Study Plan (RSP Section 10.13.4.1) stated that the discovery of seasonal concentration areas such as roosting sites, maternity colonies, or hibernacula would trigger additional fieldwork in 2014. Project researchers identified several seasonal concentration areas from the acoustic monitoring survey, but were unable to locate roosting sites, maternity colonies, or hibernacula. Due to the widespread occurrence of bats throughout the study area, the importance of roost sites to bat persistence, and to be able to accurately assess the potential loss and modification of roosting habitats from Project development, AEA will collect additional data in 2014 to identify bat roosts in the study area, employing a combination of acoustic detectors and radio telemetry.

AEA and the study team discussed study plans for 2014 with ADF&G and other resource agencies in a technical meeting on March 6, 2014 (see [http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT\\_Wildlife\\_MeetingNotes.pdf](http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf)), and the agencies concurred with the suggested modifications. ADF&G will be a collaborator in the 2014 capture and telemetry effort and will receive tissue samples from captured bats for inclusion in a state monitoring study that is separate from the FERC-approved Study Plan.

#### 7.1.2. Modifications to Study Plan

The Study Plan included further work in 2014 depending on the results obtained in 2013, but no specific requirements for 2014 work were set forth. Using the methods described in the Study Plan, the study team was unsuccessful in documenting roost locations (maternity colonies, hibernacula) of bats (Objective 3). The results of the acoustic monitoring study documented widespread bat use of the study area, however, demonstrating that bats roost within the study area. The results of the study to date suggest that bats are most likely to be roosting in the extensive cliffs along the Susitna River and its major tributaries in the proposed reservoir zone. Bat roosts in the study area may also occur in trees.

The most appropriate method for locating bat roost sites is radio telemetry. Hence, the study team plans to use radio telemetry to locate bat roosts in the study area, deploying six radio transmitters each during two separate capture and tagging events (for a total of 12 transmitters). Using radio telemetry, the study team will be able to specifically identify the roosting locations of bats in the study area, accomplishing objective 3 in RSP 10.13.1. Additional acoustic

monitoring in 2014 will employ six detectors deployed at sites with the highest rates of detection in 2013 and four detectors on CIRWG lands, which were not sampled in 2013. The acoustic monitoring will help to identify and target locations for the mist netting and telemetry effort and will strengthen inferences regarding roost locations. Little brown bats typically forage less than 3 km (1.9 mi) from roost sites (Henry et al. 2002), similar to other bats of the family *Vespertilionidae* (Brigham et al. 1997; Campbell et al. 1996), bolstering support for the presence of bat roosts in the study area. Additional acoustic monitoring at the most productive sites in 2014 will elucidate annual variability in bat activity and provide additional data for comparison of bat activity among habitats in the study area.

## 7.2. Schedule

In general, the schedule for completing the FERC-approved Study Plan is dependent upon several factors, including Project funding levels authorized by the Alaska State Legislature, availability of required data inputs from one individual study to another, unexpected weather delays, the short duration of the summer field season in Alaska, and other events outside the reasonable control of AEA. For these reasons, the Study Plan implementation schedule is subject to change, although at this time AEA expects to complete the FERC-approved Study Plan through the filing of the Updated Study Report (USR) by February 1, 2016, in accordance with the ILP schedule issued by FERC on January 28, 2014.

With regard to this specific study, AEA plans to complete all remaining data collection in 2014, which will be reported in the USR. The acoustic monitoring effort will extend from mid-May to early October 2014. Two distinct sessions (14 days each) are planned for bat capture with mist nets, radio-tagging, and radio-tracking in mid/late July and late September/early October 2014 to cover the periods of maternity colony and hibernacula use, respectively.

## 7.3. Conclusion

Implementation of the Bat Distribution and Habitat Use Study is planned for 2014, with the modifications described above, will meet Study Plan objectives of identifying potential for roosting, maternity, and hibernacula sites for bats in the study area and allowing for assessment of bat occurrence and distribution of habitats used by bats in the study area. This study is interrelated with the Evaluation of Wildlife Habitat Use Study (Study 10.19). AEA expects the approved Study Plan objectives for both this study and Study 10.19 will be achieved with these modifications. The results of this study will be reported in the USR.

## 7.4. Literature Cited

Brigham, R. M., M. J. Vonhoff, R. M. R. Barclay, and J. C. Gwilliam. 1997. Roosting behavior and roost-site preferences of forest-dwelling California bats (*Myotis californicus*). *Journal of Mammalogy* 78:1231–1239.

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Henry, M., D. W. Thomas, R. Vaudry, and M. Carrier. 2002. Foraging distances and home range of pregnant and lactating little brown bats (*Myotis lucifugus*). *Journal of Mammalogy* 83:767–774.