

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

**Wolverine Distribution, Abundance, and
Habitat Occupancy
Study Plan Section 10.9**

**Part D: Supplemental Information to
June 2014 Initial Study Report**

Prepared for

Alaska Energy Authority



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

Alaska Department of Fish & Game

Palmer, Alaska

November 2015

TABLE OF CONTENTS

1. Introduction.....	1
2. Background	1
2.1. Purpose of Study	1
2.2. Study Components	2
3. Status, Highlighted Results, and Achievements.....	2
4. Summary of Study 10.9 Documents	2
5. New Study Documentation Supplementing the ISR.....	3
6. Variances	3
6.1. 2013 Study Season	3
6.2. 2014 - 2015 Study Season.....	4
7. Study Plan Modifications	4
7.1. Modifications Identified in ISR.....	4
7.2. Modifications Identified since the June 2014 ISR	4
8. Steps to Complete the Study	4

1. INTRODUCTION

Section 1 (Part A) of the June 2014 ISR for the Wolverine Distribution, Abundance, and Habitat Occupancy (Study Plan 10.9) details the development of this study from the Revised Study Plan (RSP) in 2012, through the end of the 2013 study season. Section 7 of the ISR (Part C), filed in June 2014, sets forth AEA's plan and schedule, at that time, for completing this study and meeting the objectives of the RSP.

As detailed in Section 2.2 of the ISR Part D Overview, various circumstances have required AEA to extend the original timeframe for completing the Commission-approved Study Plan. However, AEA has completed this Study 10.9 since the filing of the ISR in June 2014. As detailed below, AEA's activities for Study 10.9 have consisted of the following:

- On October 21, 2014, AEA held an ISR meeting for the Botanical and Wildlife studies.
- The study team conducted a Sample Unit Probability Estimator (SUPE) Survey in 2015.
- The study team used survey data from ground tracking performed as part of the Terrestrial Furbearer Study (Study 10.10) to assess distribution and habitat use by wolverines.
- The study team released the Study Completion Report (SCR) in October 2015.

The primary purpose of this Part D Supplemental Information to the ISR is to report on the implementation of the Study Plan from the filing of the ISR in June 2014, through the filing of the ISR Part D. In light of this additional implementation, AEA has now completed Study 10.9 in a manner that meets the objectives of the Commission-approved Study Plan.

2. BACKGROUND

2.1. Purpose of Study

The overall goal of this study is to collect pre-construction baseline population data on wolverines in the Project area (reservoir impoundment zone; facilities, laydown, and storage areas; access and transmission line routes) to enable assessment of the potential impacts from development of the proposed Project. This information will be used to estimate the number of wolverines that may be affected by the Project and to evaluate impacts on habitats used seasonally by wolverines.

The four study objectives are established in RSP Section 10.9.1:

- Estimate the current population size of wolverines.
- Establish a population index for wolverines.
- Describe the distribution of wolverines in late winter.

- Describe habitat use by wolverines in late winter.

2.2. Study Components

This study consists of the following components:

- SUPE survey — Provides a precise population estimate of wolverine in the Wolverine Study Area (WSA) that the study team will use to assess the occupancy model density estimation.
- Occupancy Modeling (OM) — Estimates the proportion of the study area that is occupied by wolverines and provides a population index that has the potential to detect changes in population trends.

3. STATUS, HIGHLIGHTED RESULTS, AND ACHIEVEMENTS

The following tasks were completed in 2013 and reported in Part A of the ISR for Study 10.9:

- As reported in ISR Part A, Section 4.1 for this study, the study team conducted occupancy survey flights in 2013.
- As reported in ISR Part A, Section 4.2 for this study, the study team used Occupancy Modeling (OM) to estimate the proportion of the Wolverine Study Area (WSA) occupied by wolverines by calculating adjusted occupancy values that account for imperfect detection of wolverines.

The study team has completed the following activities for Study 10.9 since the June 2014 filing of the ISR:

- In 2015, snow conditions allowed for completion of a SUPE survey March 9-12, 2015, in the WSA. The study team was able to survey 173 of the 216 sample units previously identified for the SUPE.
- The calculated SUPE estimate was 62.81 wolverines (95% confidence interval 53.80–71.81 wolverines), corresponding to a density of 9.48 wolverines/1,000 km² (95% confidence interval 8.12–10.83 wolverines/1,000 km²). Wolverines were distributed throughout the WSA.

4. SUMMARY OF STUDY 10.9 DOCUMENTS

Since filing of the RSP in 2012, AEA and FERC have prepared several documents pertaining to this study. To aid review by FERC staff and licensing participants, each of these documents is listed below. Each of these documents is accessible on AEA's Project licensing website (<http://www.susitna-watanahydro.org/type/documents/>) by clicking on the entry in the "Link" column in the table. In addition, these documents are available on FERC's eLibrary system (<http://www.ferc.gov/docs-filing/elibrary.asp>), in Docket No. P-14241.

Title	Date Filed	Description	Link
10.9. Wolverine Distribution, Abundance, and Habitat Occupancy (Revised Study Plan)	12/14/2012	This document presents the plan for this study, including goals, objectives, the study area, and proposed study methods for wolverines.	RSP for Study 10.9
FERC Study Plan Determination for Study 10.9	2/1/2013	This document presents FERC approval of Study 10.9, which approved AEA's Revised Study Plan with no recommended changes.	FERC SPD for Study 10.9
Draft Initial Study Report for Study 10.9	2/3/2014	This draft of the ISR summarized the study methods and variances during the 2013 study season, and presented preliminary data collected for Study 10.9. This draft ISR was later republished as Part A of the final ISR.	Draft ISR for Study 10.9
Initial Study Report for Study 10.9	6/3/2014	This document is the Initial Study Report (Parts A, B and C) for Study 10.9. Part A republishes the Draft ISR. Part B identifies supplemental information and errata in Part A. Part C presents study modifications and plans for completing the study.	ISR Part A for Study 10.9 ISR Part B for Study 10.9 ISR Part C for Study 10.9
Initial Study Report Meetings, October 21, 2014	11/15/2014	Transcripts and AEA's Agenda and Powerpoint presentations for the ISR meeting concerning the Project wildlife studies filed by AEA.	Transcripts from ISR Meeting Materials from ISR Meeting
Wolverine Distribution, Abundance, and Habitat Occupancy Study (10.9) – Study Completion Report	11/4/2015	Study Completion Report: a summary of field survey results 2013–2015.	2013-2015 SCR for Study 10.9

5. NEW STUDY DOCUMENTATION SUPPLEMENTING THE ISR

The following table identifies and describes additional reports and other documents that update, refine, or otherwise supplement certain sections of the ISR pertaining to this Study 10.9, during AEA's continued implementation of the Study Plan since the ISR was filed in June 2014.

ISR Reference	Description
Part A, Section 4	This Section is updated and supplemented by the Study Completion Report for Study 10.9 (Section 4), describing 2013–2015 study plan implementation.
Part A, Section 5	This Section is updated and supplemented by the Study Completion Report for Study 10.9 (Section 5), describing the results of the 2013–2015 study plan implementation.

6. VARIANCES

6.1. 2013 Study Season

As noted in Section 4 of the ISR (Parts A and B) for this study, AEA encountered no variances when implementing this study in 2013.

6.2. 2014 - 2015 Study Season

The following variances occurred following the filing of the June 2014 ISR

- The study area used for analysis varied from the study plan (RSP Section 10.9.4) due to insufficient tracking conditions in the southern end and northwest edge of the planned study area during the survey.
- Twelve additional sample units entirely within the study area that were previously selected were not surveyed due to a variety of factors; including pilot error and insufficient time to survey those units before the units became too old to meet survey assumptions. However, these units lacked common characteristics (i.e., common habitat, weather reasons for not surveying, etc.) that could result in a biased estimate and were interspersed throughout the WSA with successfully surveyed units; therefore, the study team treated them as unselected, unsurveyed units in the analysis.
- The study team did not perform multi-season OM to create an index of the current wolverine population in the WSA as described in the study plan (RSP Section 10.9.4). Recent publications and results of surveys conducted for this study show a lack of statistical power of occupancy modeling to index population abundance.

7. STUDY PLAN MODIFICATIONS

7.1. Modifications Identified in ISR

As detailed in Section 7 of the ISR (Part C), AEA plans no modifications of the methods for this study.

7.2. Modifications Identified since the June 2014 ISR

As detailed in the Study Completion Report for this study, AEA made no modifications of the methods for this study, as this study is now complete.

8. STEPS TO COMPLETE THE STUDY

The field work, data collection, data analysis, and reporting for this study successfully met all study objectives in the FERC-approved Study Plan. In light of the results and variances described above, AEA has completed this study.