

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

**Waterbird Migration, Breeding, and Habitat Use  
Study Plan Section 10.15**

**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

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## 1. INTRODUCTION

Section 1 (Part A) of the June 2014 ISR for Waterbird Migration, Breeding, and Habitat Use (Study Plan 10.15) 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 ISR 10.15 (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 10.15 since the filing of the ISR in June 2014. As detailed below, AEA's recent activities for Study 10.15 have consisted of the following:

- In 2014, the study team conducted a second year of aerial surveys for waterbirds during the spring and fall migration periods, as well as breeding waterfowl population surveys, stream surveys for Harlequin Ducks, and brood-rearing surveys.
- On October 21, 2014, AEA held an ISR meeting for the Wildlife and Botanical studies.
- The study team completed data analyses, including compilation of data on species composition, summarizing the timing and magnitude of migration, and identification of water bodies important to migrating waterbirds.
- The study team performed quality assurance/quality control (QA/QC) of data deliverables.
- The study team completed 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 Study Completion Report and this ISR Part D. In light of this additional implementation, AEA has now completed Study 10.15 in a manner that meets the objectives of the Commission-approved Study Plan.

## 2. BACKGROUND

### 2.1. Purpose of Study

The goal of the Study is to collect baseline data on waterbirds migrating through and breeding in the Project area and surrounding study area to enable assessment of the potential impacts of the Project and to inform the development of appropriate protection, mitigation, and enhancement measures. As used here, "waterbirds" is applied broadly to include swans, geese, ducks, loons, grebes, cranes, cormorants, herons, gulls, and terns. Shorebirds frequently are included in the general category of waterbirds, but they are addressed separately for this Project under the Landbird and Shorebird Migration, Breeding, and Habitat Use Study (Study 10.16) because the ground-based survey methods for shorebirds are similar to those used for landbirds. The Study

Plan for the Waterbird Study includes breeding surveys for the Harlequin Duck, a species of conservation concern that requires specific stream-survey techniques.

The study objectives are established in RSP Section 10.15.1:

- Document the occurrence, distribution, abundance, habitat use, and seasonal timing of waterbirds migrating through the Project area in spring and fall.
- Document the occurrence, distribution, abundance, productivity, and habitat use of waterbirds breeding in the Project area.
- Review available information to characterize food habits and diets of piscivorous waterbirds documented in the study area as background for the Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7).

## 2.2. Study Components

This study consists of the following components:

- Aerial surveys of water bodies during the spring and fall migration periods throughout a large study area.
- Ground-based visual and radar surveys of diurnal and nocturnal avian migration at a sampling site near the proposed Watana dam location.
- Aerial surveys for breeding waterfowl.
- Aerial stream surveys for Harlequin Ducks during the pre-nesting and brood-rearing periods.
- Aerial brood-rearing surveys for other waterbirds.

## 3. STATUS, HIGHLIGHTED RESULTS, AND ACHIEVEMENTS

The following tasks were completed in 2013 and reported in Part A of the ISR for Study 10.15:

- In 2013, the study team conducted aerial migration surveys and waterfowl breeding population surveys.
- In 2013, the study team conducted ground-based surveys of bird migration in spring and fall by using a combination of visual observations and radar monitoring.
- The study team conducted breeding population surveys of waterbirds in the survey area using a lake-to-lake survey approach as well as a transect sampling approach.
- The study team conducted Harlequin Duck pre-nesting and brood-rearing surveys by helicopter along all rivers and stream flowing through the study area.

- The study team conducted brood surveys by helicopter on the subset of water bodies within a 1-mi buffer around the locations and alignments of proposed Project infrastructure, including access road and transmission corridor alternatives.

The study team has completed the following activities for Study 10.15 since the June 2014 filing of the ISR:

- The study team conducted a second year of aerial surveys for waterbirds during the spring and fall migration periods, following the same methods used in 2013.
- The study team conducted a second year of breeding waterfowl population surveys, following the same methods used in 2013.
- The study team conducted a second year of stream surveys for Harlequin Ducks, following the same methods used in 2013.
- The study team conducted a second year of brood surveys, following the same methods used in 2013.

#### 4. SUMMARY OF STUDY 10.15 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	Description	Link
10.15. Waterbird Migration, Breeding, and Habitat Use (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 waterbirds.	<a href="#">RSP for Study 10.15</a>
FERC Study Plan Determination for Study 10.15	2/1/2013	This document presents FERC approval of Study 10.15, which approved AEA's Revised Study Plan with additional recommendations.	<a href="#">FERC SPD for Study 10.15</a>
Draft Initial Study Report for Study 10.15	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 10.15. This draft ISR was later republished as Part A of the final ISR.	<a href="#">Draft ISR for Study 10.15 (File 1)</a> <a href="#">Draft ISR for Study 10.15 (File 2)</a>

Title	Date	Description	Link
Initial Study Report for Study 10.15	6/3/2014	This document is the Initial Study Report (Parts A, B and C) for Study 10.15. 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.	<a href="#">ISR Part A for Study 10.15 (File 1)</a> <a href="#">ISR Part A for Study 10.15 (File 2)</a> <a href="#">ISR Part B for Study 10.15</a> <a href="#">ISR Part C for Study 10.15</a>
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.	<a href="#">Transcripts from ISR Meeting</a> <a href="#">Materials from ISR Meeting</a>
Waterbird Migration, Breeding, and Habitat Use Study (10.15) – Study Completion Report	11/4/2015	Study Completion Report: a summary of field survey results in 2013–2014	<a href="#">2013-2014 SCR for Study 10.15 (File 1)</a> <a href="#">2013-2014 SCR for Study 10.15 (File 2)</a> <a href="#">2013-2014 SCR for Study 10.15 (File 3)</a>

## 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 10.15, 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 10.15 (Section 4), describing the 2013–2014 study plan implementation.
Part A, Section 5	This Section is updated and supplemented by the Study Completion Report for Study 10.15 (Section 5), describing the 2013–2014 study results.
Part A, Appendices A–S	This Section is updated and supplemented by the Study Completion Report.

## 6. VARIANCES

### 6.1. 2013 Study Season

The following variances are reported in the June 2014 Study 10.15 ISR (Part A, Section 4):

- Fewer migration aerial surveys were conducted than expected during spring and fall 2013 due to the temporal spacing of multi-day surveys and to patterns of spring breakup and fall freeze-up and bird departure.
- A single visual observer was used during ground-based migration surveys, as was originally proposed in the RSP. The number of observers had been increased to 4 in the

SPD following a recommendation by USFWS, but this recommendation was reversed after further consultation.

- The term “breeding pair survey” in the RSP was replaced with the more inclusive “breeding population survey” method, which is designed to estimate the number of breeding pairs in an area and includes grouped birds to derive a breeding population estimate for the area.
- Harlequin Duck surveys were restricted to 10 river miles beyond the study area buffer due to logistical constraints and based on the published sizes of Harlequin Duck home ranges during the breeding season.
- The study objective for acquiring tissue samples of piscivorous waterbirds for laboratory analysis of mercury levels was not met because very few nests of piscivorous waterbirds were found and access to those nests was not possible in 2013.

## 6.2. 2014 Study Season

As noted in Section 4 of the Study Completion Report for this study, the following variances occurred following the filing of the June 2014 ISR:

- Fewer migration aerial surveys were conducted during spring and fall 2014 than expected due to the temporal spacing of multi-day surveys and to patterns of spring breakup and fall freeze-up and bird departure.
- The term “breeding pair survey” in the RSP was replaced with the more inclusive “breeding population survey” method.
- Harlequin Duck surveys were restricted to 10 river miles beyond the study area buffer due to logistical constraints and based on the published sizes of Harlequin Duck home ranges during the breeding season.
- As explained in Section 1.3 of the ISR Part D Overview, the Denali East Corridor Option was added to the study area in the June 2014 ISR, and the area was surveyed in 2014.
- The collection of tissue samples of piscivorous waterbirds was consolidated under Study 5.7, after consulting with resource agencies to identify a reduced number of target species for sampling.
- As explained in Section 1.3 of the ISR Part D Overview, the Chulitna Corridor was removed from the study area by AEA after the filing of the 2014 ISR, so that area was not surveyed in 2014.

## **7. STUDY PLAN MODIFICATIONS**

### **7.1. Modifications Identified in ISR**

Section 7 of the ISR (Part C) details modifications for this study following the 2013 study season. These modifications are generally summarized as follows:

- As explained in Section 1.3 of the ISR Part D Overview, AEA added the Denali East Corridor Option road transmission corridor to the study area.
- The aerial survey effort in 2014 will incorporate the variances from 2013 (identified above).
- AEA will not conduct a second year of ground-based migration monitoring, based on the results of the ground-based radar and visual migration surveys in 2013.
- The objectives and methods in this study related to mercury analysis, including the literature review of food habits and diets of piscivorous waterbirds and the collection of tissue samples, have been consolidated under Study 5.7, Mercury Assessment and Potential for Bioaccumulation.

### **7.2. Modifications Identified since the June 2014 ISR**

As detailed in the Study Completion Report for this study, the following modification, added after the June 2014 ISR and prior to the 2014 field season, was implemented during the 2014 field season:

- As explained in Section 1.3 of the ISR Part D Overview, AEA removed the Chulitna Corridor from the survey area.

As detailed in the Study Completion Report for this study, AEA plans no further 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, variances, and modifications described above, AEA has completed this study.