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Susitna-Watana Hydroelectric Project
(FERC No. 14241)

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

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

ABR, Inc.—Environmental Research & Services

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EXECUTIVE SUMMARY

Waterbird Migration, Breeding, and Habitat Use 10.15	
Purpose	The goal of the Waterbird Migration, Breeding, and Habitat Use Study is to collect baseline data on waterbirds migrating through and breeding in the Project area to enable assessment of the potential impacts of the Project and to inform the development of appropriate protection, mitigation, and enhancement measures.
Status	The first year of data collection and analysis was completed successfully in 2013.
Study Components	This multi-year study consists of the following components: 1. Aerial surveys of water bodies during the spring and fall migration periods throughout a large study area; 2. Ground-based visual and radar surveys of diurnal and nocturnal avian migration at a sampling site near the proposed Watana dam location; 3. Aerial surveys for breeding waterfowl; 4. Aerial stream surveys for Harlequin Ducks during the pre-nesting and brood-rearing periods; and 5. Aerial brood-rearing surveys for other waterbirds.
2013 Variances	For aerial surveys, the number of surveys flown during migration was reduced by three surveys during spring and two surveys during fall to maintain a 5-day interval between surveys, each of which typically required more than one day to complete (RSP Section 10.15.4.1.1). The "breeding-pair survey" proposed in the Study Plan (RSP Section 10.15.4.2.1) was replaced with "breeding population survey," which is a more inclusive survey method. Harlequin Duck surveys were restricted to 10 river miles beyond the study area buffer due to logistical constraints (RSP Section 10.15.4.2.2). After further clarification of the scope, objectives, limitations, and historical justification of the ground-based visual and radar methodologies proposed in the Study Plan, USFWS dropped its recommendation (which was accepted by FERC in the February 1 Study Plan Determination) for use of four observers for visual surveys during migration studies, so visual surveys were conducted using a single observer, as originally described in RSP Section 10.15.4.1.2. The Study Plan study objective for acquiring tissue samples of piscivorous waterbirds for laboratory analysis of mercury levels, which was based on opportunistically finding nests during breeding aerial surveys and visiting those nests after the nesting season to collect feather samples (RSP Section 10.15.4.3), was not met during the 2013 study season. Fewer nests of piscivorous waterbirds were found than expected during breeding aerial surveys in 2013.

Steps to Complete the Study	To complete this study, AEA will implement the following methods: (1) surveys during spring and fall migration; (2) surveys of breeding populations; (3) Harlequin Duck surveys during pre-nesting and brood-rearing; and (4) brood surveys. The FERC-approved Study Plan requires one more season of data collection for the aerial survey component, and AEA expects to complete all data collection in 2014. Aerial surveys of waterbirds in 2014 began in mid-May and will continue until approximately mid-October. Implementation of these methods will involve several modifications of the methods in the FERC-approved Study Plan: 1. As described in the ISR Overview, AEA has added the Denali East Option road and transmission corridor to the study area. 2. The aerial survey effort in 2014 will incorporate the variances from 2013 (identified above). 3. 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 feather samples, have been consolidated in the Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7).
Highlighted Results and Achievements	Distribution, abundance, relative use of water bodies, and timing of arrival, nesting and departure were documented for waterbirds in the study area in 2013. Overall movement rates, as well as those of focal species groups, were moderate to low relative to those reported for other migration studies in southcentral and interior Alaska.

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 below in Sections 7.1.1 and 7.1.2. These activities include the following (all aerial surveys):

- Conduct surveys during spring and fall migration (RSP Section 10.15.4.1.1);
- Conduct surveys of breeding populations (RSP Section 10.15.4.2.1);
- Conduct Harlequin Duck surveys during pre-nesting and brood-rearing (RSP Section 10.15.4.2.2);
- Conduct brood surveys (RSP Section 10.15.4.2.3).

7.1.1. Decision Points from Study Plan

RSP Section 10.15.6 stated that the decision to continue the ground-based migration monitoring task will be based on evaluation of the results obtained in 2013, the first year of study. Further discussion with USFWS, ADF&G, and other licensing participants began in technical meetings on March 6, 2014 (see http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf) and April 9, 2014 (see http://www.susitna-watanahydro.org/wp-content/uploads/2014/05/Wildlife-Technical-Meeting-Notes_04092014.pdf), and will continue during the ISR meeting and comment process to assess the adequacy of the 2013 radar/visual migration surveys in fulfilling the Study Plan objectives and providing sufficient data to address potential protection, mitigation, and enhancement measures regarding migrating birds in the Project area.

The study team data obtained in 2013 largely met the objective stated in the RSP to "document the occurrence, distribution, abundance, habitat use, and seasonal timing of waterbirds migrating through the Project area in spring and fall." The radar and visual surveys of bird movements in 2013 in the vicinity of the Watana Dam site were the most comprehensive migration surveys conducted for the upper Susitna River Basin to date. Swans were undercounted to some extent because of low visibility throughout the day with the highest number of (audio) detections for the spring season (May 3) and because fall observations concluded before freeze-up of all water bodies in the Project area that may have contained waterfowl (observed during aerial surveys). Based on trends observed throughout the seasons and on the thoroughness of the survey efforts relative to other studies in the region, however, it appears highly unlikely that these issues significantly affected the overall passage rates or results in relation to other regional locations and studies in interior and southcentral Alaska. It is unclear what effect, if any, the record late spring in 2013 may have had on the volume of migration through the study area, but it is considered unlikely to have caused a major shift in migratory pathways or flight volume.

7.1.2. Modifications to Study Plan

As described in the ISR Overview and as depicted in Figure 1, AEA has added the Denali East Option road and transmission corridor to the study area. With regard to this study, the modified study area showing the Denali East Option is depicted in Figure 7.1-1.

The aerial survey effort in 2014 will incorporate the variances from 2013 (described in Sections 4.1.1.1, 4.2.1.1, and 4.2.2.1 above). Migration surveys will be flown at 5-day intervals between the completion of one survey and start of the following survey, resulting in fewer total surveys than was stated in the Study Plan (see Section 4.1.1.1). The term "breeding-pair survey" used in RSP Section 10.15.4.2.1 has been replaced by "breeding population survey" to correctly characterize the data presented (see Section 4.2.1.1). Stream segments flown during aerial surveys for Harlequin Ducks will no longer be indefinite in length as implied in RSP Section 10.15.4.2.2, but have been truncated at reasonable, biologically meaningful distances upstream to maintain overall survey efficiency. As in 2013, stream surveys for Harlequin Ducks in 2014 will extend up to 10 linear miles past the study area buffer (see Section 4.2.2.1).

With regard to the first decision point discussed above in Section 7.1.1 (RSP Section 10.15.6), AEA will not conduct a second year of the ground-based migration monitoring effort in 2014 or 2015, based on the results of the radar and visual migration surveys (RSP Section 10.15.4.1.2) conducted in 2013 and reported in Part A and Appendix T of this ISR. The data collected in 2013 for the various avian migration survey tasks (both aerial and ground-based, as reported in ISR 10.14 and this ISR, including Appendix T) corroborate the conclusion of the APA Project studies in the 1980s (Kessel et al. 1982) that the Project area does not appear to be a major migratory flyway. AEA will continue to work with USFWS, ADF&G, and other licensing participants to ensure that best practices for transmission line siting and infrastructure lighting are incorporated into Project design.

RSP Sections 10.15.1 and 10.15.4.3 provide objectives and methods for the study team to review available information on food habits and diets of piscivorous waterbirds as background for the Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7), and to obtain tissue samples for laboratory analysis of mercury levels of piscivorous waterbirds (e.g., loons, grebes, mergansers, terns) for laboratory analysis of mercury levels. After further consideration of all mercury studies for the proposed Project, AEA has removed these objectives and methods related to mercury analysis of piscivorous waterbirds (RSP Sections 10.15.1 and 10.15.4.3) and consolidated this work under the Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7). Please see ISR Study 5.7.

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 by February 1, 2016, in accordance with the ILP schedule issued by FERC on January 28, 2014.

With regard to this specific study, which requires one more season of data collection for the aerial survey component, AEA expects to complete all data collection in 2014. Aerial surveys of waterbirds in 2014 began in mid-May and will continue until approximately mid-October. Based on the factors described in the preceding paragraph, however, and the outcome of further discussions regarding the adequacy of the ground-based radar/visual migration surveys conducted to date, some additional work may occur in the 2015 study season.

7.3. Conclusion

Except for the lack of feather collections for mercury analysis, the Study Plan objectives for the Waterbird Study were met in 2013. The same aerial survey methods will be employed again in 2014, including the continuation of variances from 2013. The Waterbird Study is on track to meet the objectives stated in the Study Plan, including information from other studies, including Evaluation of Wildlife Habitat Use Study (Study 10.19) and Mercury Assessment and Potential for Bioaccumulation (Study 5.7). Study results will be reported in the USR.

7.4. Figures

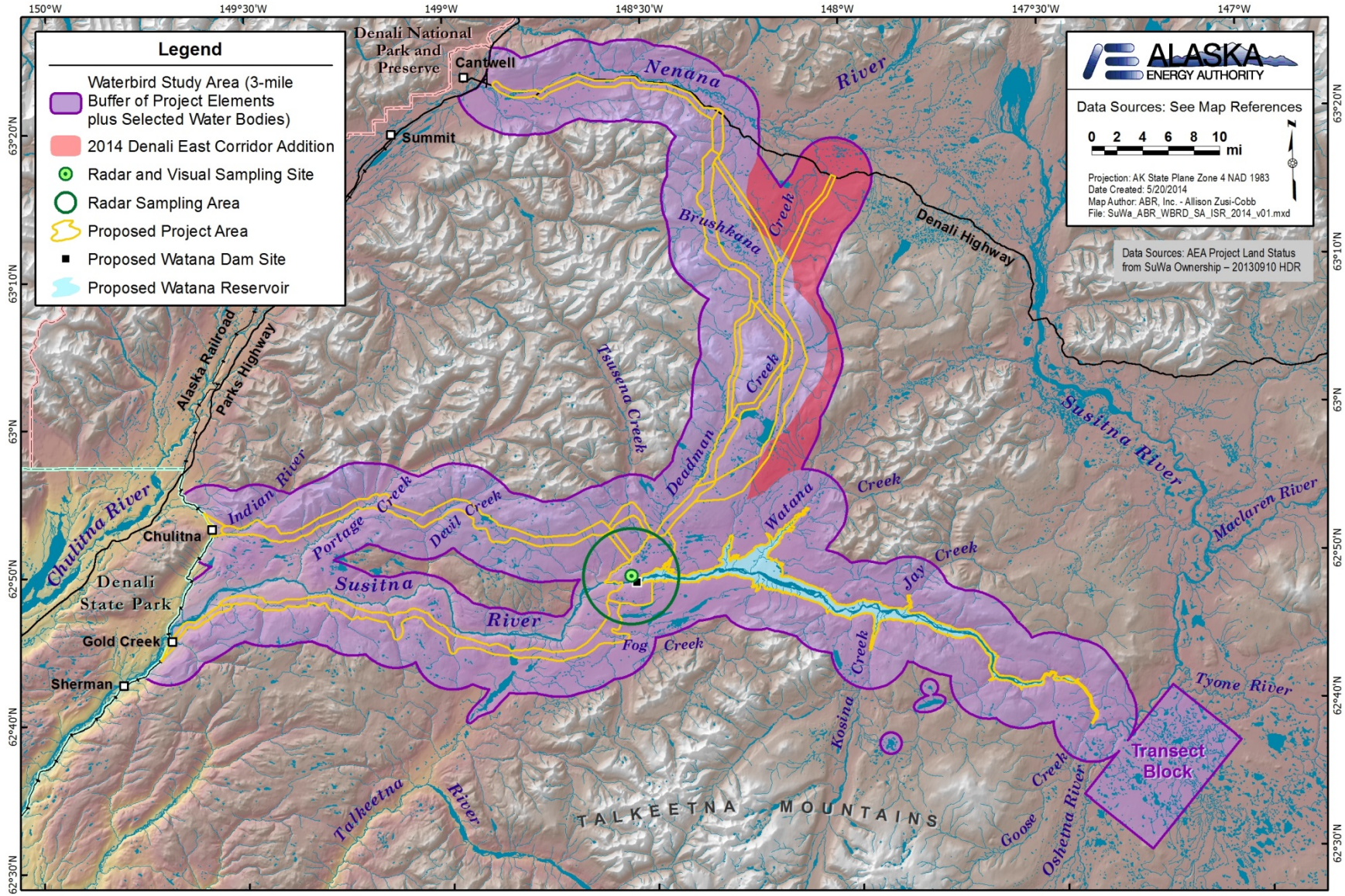

Figure 7.1-1. Revised study area for waterbirds, showing the Denali East Corridor Option added in 2014.