

Susitna-Watana Hydroelectric Project Document

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W-S3: EAGLE AND RAPTOR NEST STUDY - DRAFT

INTRODUCTION

The Alaska Energy Authority (AEA) is preparing a License Application that will be submitted to the Federal Energy Regulatory Commission (FERC) for the Susitna-Watana Hydroelectric Project (Project) using the Integrated Licensing Process (ILP). The Project is located on the Susitna River, an approximately 300 mile long river in the Southcentral region of Alaska. The Project's dam site will be located at River Mile (RM) 184. The results of this study and other studies will provide the information needed for the FERC's National Environmental Policy Act (NEPA) analysis for the Project license. Information on Bald Eagle, Golden Eagle, and other raptor nest sites and habitats will be used to comply with the Bald and Golden Eagle Protection Act (BGEPA), the Migratory Bird Treaty Act (MBTA), and Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds.

Construction and operation of the Susitna-Watana Hydroelectric Project as described in the Pre-application Document (PAD; AEA 2011) will affect potential raptor nest habitats through clearing of trees and inundation of previously forested habitats and cliff nesting sites (Figure 1-1). Construction and operation will also increase human activity in the Project area that could disturb nesting eagles and other raptors. This study plan outlines the objectives and methods for characterizing existing raptor nest habitat within the Project area, and locations of active and inactive Bald Eagle, Golden Eagle, and other raptor nests, in order to evaluate potential Project-related habitat and disturbance effects. This study will initiate a multi-year effort, which will include data collection activities beginning in 2012.

STUDY OBJECTIVE

The overall, multi-year objectives of Eagle and Raptor Nest Study are to:

- Compile and prepare a spatial database for existing information on Bald Eagle, Golden Eagle and other raptor nest sites, and their fall and winter communal roost locations;
- Delineate suitable eagle and raptor forest, riparian and cliff nesting habitat;
- Survey and locate Bald Eagle, Golden Eagle and other raptor large stick and cliff nest sites in the Project area and determine the current nest activity; and
- Develop recommendations for work windows and avoidance radii for other Project-related field activities to prevent disturbance of all identified nests.

The 2012 study will identify and compile existing nest site and habitat use information, develop survey areas, and complete multiple inventory and monitoring surveys for Bald and Golden Eagles consistent with current guidelines. The 2012 study would identify potential Project-related impacts to eagles and raptors, identify critical data gaps, and would develop 2013-2014 study plans.

STUDY AREA

The study area will include suitable forested, riparian and cliff-nesting habitats that could be affected by the Project within and near the inundation zone up to a minimum elevation of 2,200 feet above mean sea level (msl), Project facility locations, road and transmission corridors, and proposed field study locations. Golden Eagle study guidelines include inventory and monitoring in suitable nesting and foraging habitats within 10 miles of the Project footprint (Pagel et al. 2010). Recommendations for survey extent will be developed in coordination with the U.S. Fish and Wildlife Service (USFWS) prior to initiating surveys.

EXISTING INFORMATION

Special status raptors that construct large stick or cliff nests and have been documented or are likely to occur in the Project area are listed in Table 1. Surveys completed in the middle and upper Susitna River area during the 1980s identified 23 Golden Eagle, 10 Bald Eagle, three Gyrfalcon, three Northern Goshawk, and 21 Common Raven nest sites (APA 1985). Although Common Ravens are not raptors, they construct both cliff and tree nests similar to raptors, are culturally significant, and are protected by the MBTA. Of the eagle nest sites identified in the 1980s, five Golden Eagle and three Bald Eagle sites were expected to be inundated by the original APA Susitna Hydroelectric Project, Phase I Watana impoundment (LGL 1984). While some information on Bald Eagle nest sites has been collected since these earlier surveys were conducted, the efforts have not focused on specific areas that could be affected by the currently proposed Project, and none of the surveys included both Bald and Golden Eagle habitats (ABR 2011).

Table 1. Special Status Raptors in the Study Area (Tables 4.6-2 and 4.8-2 PAD; AEA 2011)

Common Name	Scientific Name	Conservation Status ¹	Seasonal Status ²	Relative Abundance ³
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FS	B	uncommon
Boreal Owl	<i>Aegolius funereus</i>	PIF, FS	R	rare
Golden Eagle	<i>Aquila chrysaetos</i>	BLM, FS	B	fairly common
Great Gray Owl	<i>Strix nebulosa</i>	PIF, FS	?	rare
Great-horned Owl	<i>Bubo virginianus</i>	FS	R	uncommon
Gyrfalcon	<i>Falco rusticolus</i>	PIF, FS	R	uncommon
Merlin	<i>Falco columbarius</i>	FS	B	uncommon
Northern Harrier	<i>Circus cyaneus</i>	FS	B	fairly common
Northern Goshawk	<i>Accipiter gentilis</i>	FS	B	uncommon
Northern Hawk Owl	<i>Surnia ulula</i>	FS	R	uncommon
Osprey	<i>Pandion haliaetus</i>	FS	M	rare
Peregrine Falcon	<i>Falco peregrinus anatum</i>	BCC, FS	M	unknown
Red-tailed Hawk	<i>Buteo jamaicensis</i>	FS	B	uncommon
Short-eared Owl	<i>Asio flammeus</i>	BLM, FS	B?, M, S	uncommon
Sharp-shinned Hawk	<i>Accipiter striatus</i>	FS	B	uncommon

¹ Conservation Status: FS = Featured Species (ADF&G 2006); BCC = Birds of Conservation Concern (USFWS 2008); BLM =

Table 1. Special Status Raptors in the Study Area (Tables 4.6-2 and 4.8-2 PAD; AEA 2011)

Common Name	Scientific Name	Conservation Status ¹	Seasonal Status ²	Relative Abundance ³
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BLM Sensitive Species (BLM 2010); PIF = Boreal Partners in Flight Working Group (BPIF 1999)

² Seasonal Status: M = migrant (transient); B = breeding; S = summering; R = resident; ? = uncertain (Kessel et al. 1982; APA 1985: Appendices E5.3 and E6.3)

³ Relative Abundance: From Kessel et al. (1982) and APA (1985: Appendices E5.3 and E6.3).

METHODS

Inventory and monitoring methodologies will follow established aerial and ground-based protocols for eagle nest surveys (USFWS 2007, Pagel et al. 2010) using appropriately trained observers and suitable survey platforms (helicopter, fixed-wing aircraft). Reporting of inventory and monitoring data will comply with the protocols and standards described in the Memorandum of Understanding between the FERC and the USFWS (FERC and USFWS 2011). Although the primary focus of the surveys will be to evaluate the potential for the Project to impact eagles and eagle nests (USFWS 2009), all raptor and Common Raven nests will be recorded during surveys. Recommendations for survey extent and methods will be developed in coordination with the USFWS prior to initiating surveys. In order to prevent disturbance to Dall’s sheep during the lambing period, or near the Jay Creek mineral lick sites, standard eagle survey protocols may need to be modified (Pagel and Whittington 2011). The extent of the nesting survey may be adjusted or sectioned to match the extent of the 1980s survey. This will allow for comparison of the historic and current data to evaluate trends in raptor populations and/or habitat use. Winter surveys will focus on identifying foraging and night roost locations. Roost surveys are usually conducted at dusk or dawn; repeated surveys of suitable protected forest stands may be necessary due to the high mobility of wintering Bald Eagles.

Task 1: Review and Synthesize Existing Information

1. Identify, compile, and synthesize existing historical nest site locations.
 - a) Obtain copies of nest site records on file at the University of Alaska Museum (Kessel et al. 1982) including: geographic locations, annual nest activity, photographs, descriptions of nest site characteristics; and descriptions of cliff habitat in proximity of each site.

Task 2: Preliminary Mapping

1. Prepare maps of eagle and other raptor nest locations.
2. Prepare maps of current suitable tree and cliff nesting habitats.

Task 3: Aerial Surveys

1. Fly early spring (prior to leaf out) aerial surveys to document active tree and cliff nest sites.
2. Fly late-spring and summer surveys to verify and monitor nest activity, and search for additional nests.
3. Fly fall and winter foraging habitat and communal roost surveys to document any communal roost sites for bald eagles along the Susitna River.

Task 4: Data Reporting

1. Past eagle and other raptor nest and communal roost locations with survey extents to compare to current survey data.
2. Early reporting of current nest locations and activity for eagles with coordinates and appropriate species-specific avoidance areas to protect active nests from disturbance during field studies.
3. Summary and mapping of suitable forest, riparian, and cliff habitats to evaluate extent of suitable nesting habitats and facilitate nest searches within the Project area.

ANALYSIS

A geo-spatially referenced relational database will be developed which incorporates the historic and current data, including nest and roost locations for each species, occupancy/activity, nest type and characteristics, stand characteristics, and photographs. Suitable raptor nesting habitat will be delineated using ArcGIS software. Existing nest locations and distribution of timber stands with suitably sized nest trees from vegetation surveys and mapping and three dimensional topographic modeling will be incorporated into the identification and delineation of suitable raptor nesting habitats. Foraging habitats will also be delineated. Recommendations will be developed for future data gathering needs and analyses designed to evaluate potential Project-related impacts to eagles and other raptors.

NEXUS BETWEEN PROJECT AND RESOURCE TO BE STUDIED AND HOW THE RESULTS WILL BE USED

The Project may result in eagle nest site loss or alteration and disturbance due to increased human activity. Information on eagle and other raptor nest site locations will be necessary to develop avoidance and mitigation measures in compliance with the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and associated Executive Orders. Current nest site locations and nest activity in areas potentially affected by the Project, as well as areas that could potentially be disturbed during field study activities for other resources will be obtained. This information will be used to develop avoidance radii for field study activities, and to estimate potential Project-related impacts. If appropriate, these data will also be used to develop Eagle Conservation (USFWS 2009) and/or Migratory Bird Conservation plans in consultation with the USFWS.

The data gathered in 2012 will form the basis of future studies to determine the potential impacts of the Project on Bald Eagles, Golden Eagles and other raptors. Delineation and survey results of all suitable habitats within the Project area will identify occupied habitats and may be used in the future to evaluate occupied versus available habitats. Eagle nest sites and ground-based observations may be compared to determine pair territory size. Data on territory size can be used to determine whether raptors displaced from nest sites due to Project-related habitat loss, alteration, or disturbance maintain alternative nest sites within their territory that would be unaffected by the Project, or whether nesting pairs may be displaced into already occupied territories. Historic and current data may also be compared to evaluate trends in raptor populations and habitat use.

This study addresses the following issues identified in the PAD (AEA 2011):

- W1: Potential loss and alteration of wildlife habitats, including key habitat features such as den sites and mineral licks, due to Project construction and operation.
- W2: Potential physical and behavioral blockage or alteration of movements due to reservoir water and ice conditions; access and transmission corridors; and new patterns of human activities.
- W4: Potential impact of changes in predator and prey abundance and distribution related to increased human activities and habitat changes resulting from Project development.
- W5: Potential impacts to wildlife from changes in hunting, vehicular use, noise, and other disturbances due to increased human presence resulting from Project development.
- W6: Potential impacts to habitat of special status wildlife species.

Data gathered from other studies will be incorporated into the evaluation of potential Project-related impacts to eagles and other raptors. Vegetation surveys and mapping will be used to refine the distribution of timber stands with suitably sized nest trees and incorporated into the identification and delineation of suitable raptor nesting habitats. Distribution of spawning salmon will identify Bald Eagle foraging locations and potential fall eagle aggregation areas. Distribution of fall waterfowl staging areas will provide information valuable for locating fall Bald Eagle foraging locations and potential communal roost areas. Distribution of Dall's sheep lambing areas and caribou calving areas will provide information for Golden Eagle foraging habitat analyses.

PRODUCTS

Study products to be delivered in 2012 will include:

Development of final 2012 study plan. The final 2012 study will be developed from standard survey protocols and through consultation with USFWS and AEA, other resource agencies and licensing participants during the Work Group Meetings. The AEA-selected environmental consultant will assist AEA, the Program Lead, and the licensing participants develop the final study plan.

2013-2014 Raptor Study Plan(s). The 2013-2014 study plans will be developed through consultation with the Work Group under the formal FERC ILP study plan process. The AEA selected environmental consultant will participate in the Work Group, as appropriate, and assist AEA, the Program Lead, and licensing participants develop the study plan outline, draft and final Proposed Study Plans and draft and final Revised Study Plans.

Geospatially-referenced relational database. A geospatially-referenced relational database will be developed that incorporates all historic and current data, including nest and roost locations for each species, occupancy/activity, nest type and characteristics, stand characteristics, and photographs. This database will form the basis for additional data analysis in 2013-2014. All field data must be associated with location information collected using a Global Positioning System (GPS) receiver in unprojected geographic coordinates (latitude/longitude) and the WGS84 datum. All field data must be associated with location information collected using a Global Positioning System (GPS) receiver in unprojected geographic coordinates (latitude/longitude) and the WGS84 datum. Naming conventions of files and data fields and metadata must meet the ADNR standards established for the Susitna-Watana Hydroelectric Project.

Delineation of suitable eagle and raptor nesting habitats in ArcGIS software. All map and spatial data products will be delivered in the two-dimensional Alaska Albers Conical Equal Area projection, and North American Datum of 1983 (NAD 83) horizontal datum consistent with ADNR standards. Naming conventions of files and data fields and metadata descriptions must meet the ADNR standards established for the Susitna-Watana Hydroelectric Project.

Draft Technical Memoranda. Brief interim reports, including the database and raptor nest habitat map will be prepared and presented to AEA and the licensing participants to provide the status of the study, identify any issues that have occurred and allow for further refinement of the 2013-2014 component of the study.

Technical Memorandum. A technical memorandum summarizing the 2012 results will be presented to resource agency personnel and other licensing participants, along with spatial data products.

SCHEDULE

The schedule for deliverables is as follows:

- Final 2012 Study Plan – March 20, 2012
Delineation of suitable forested and cliff nesting habitat and compilation of historic eagle, raptor, and common raven nest site data into GIS will be completed prior to final design of aerial and ground-based surveys.
- Final Draft 2013-2014 Study Plan Outline – March 20, 2012
- Draft 2013-2014 Proposed Study Plan – April 27, 2012
- Final 2013-2014 Proposed Study Plan – May 21, 2012

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- Conduct Surveys – mid-May through late-July, 2012
Surveys will be conducted in mid-May and early July with multiple ground visits to all identified active nest sites between late-May and mid-July. A minimum of two aerial surveys at least 30 days apart are recommended for the Golden Eagle protocol (Pagel et al. 2010).
 - Draft Technical Memorandum – June 1, 2012
Early reporting of potentially active raptor nest sites after the initial survey in mid-May (or potentially earlier depending on USFWS recommendations) will be used to develop avoidance timing and radii for other Project-related field activities that could potentially disturb nest sites. Active eagle and other raptor nest sites will be reported to AEA as soon as they are found to develop avoidance radii for field studies.
 - Draft 2013-2014 Revised Study Plan – August 15, 2012
 - Technical Memorandum – August 31, 2012.
The Technical Memo will include a summary of 2012 results and recommendations for future data gathering needs and analysis to evaluate potential Project-related impacts to eagles and raptors. The findings will be presented to AEA and the other licensing participants to inform 2013-2014 studies.
 - QC'd geospatially-referenced relational database of historic and current data – August 31, 2012
 - Delineation of suitable eagle and raptor nesting habitat, old and active nest locations, fall and winter roost locations, etc. in ArcGIS software – August, 31, 2012
 - Conduct Surveys – mid-October through early-December, 2012
Surveys will be conducted in mid-October through early-December at 7 to 21 day intervals to identify use of winter foraging and communal roost sites along the Susitna River. A minimum of three aerial surveys at about 20 day intervals depending on weather will be completed.
 - Technical Memorandum – December 30, 2012.
The Technical Memo will include a summary of 2012 winter foraging and communal roost survey results and recommendations for future data gathering needs and analysis to evaluate potential Project-related impacts to winter foraging and communal roost sites. The findings will be presented to AEA and the other licensing participants to inform 2013-2014 studies.

REFERENCES

ABR (ABR, Inc.). 2011. Wildlife Data-Gap Analysis for the Proposed Susitna-Watana Hydroelectric Project. Draft Report, August 16, 2011. Prepared for The Alaska Energy Authority by ABR, Inc.—Environmental Research and Services, Fairbanks, Alaska. 114 pp.

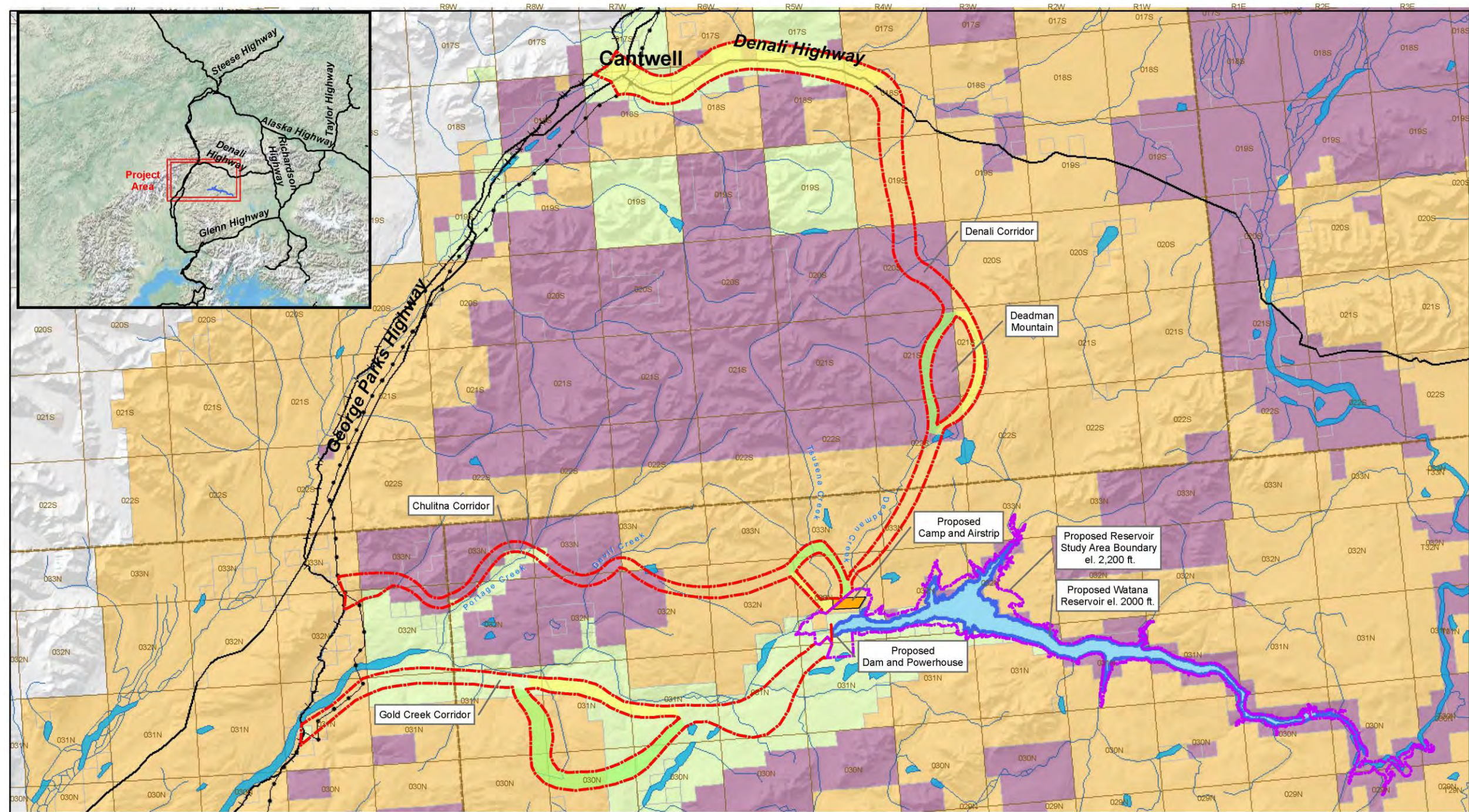
- ADF&G (Alaska Department of Fish and Game). 2006. *Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources*. Alaska Department of Fish and Game, Juneau, Alaska. 842 pp.
- AEA (Alaska Energy Authority). 2011. *Pre-Application Document: Susitna-Watana Hydroelectric Project FERC Project No. 14241*. December 2011. Prepared for the Federal Energy Regulatory Commission by the Alaska Energy Authority, Anchorage, Alaska.
- APA (Alaska Power Authority). 1985. *Before the Federal Energy Regulatory Commission: Draft Amended Application for License for Major Project – Susitna Hydroelectric Project*. Volume 11, Exhibit E – Chapter 3 Fish, wildlife, and botanical resources. 702 pp. (APA Doc. No. 3435]
- BLM (Bureau of Land Management). 2010. *BLM–Alaska sensitive animal and plant lists*. Alaska State Office, Anchorage.
- BPIF (Boreal Partners in Flight Working Group). 1999. *Landbird conservation plan for Alaska biogeographic regions*. Version 1.0 U.S. Fish and Wildlife Service, Anchorage, Alaska. 116 pp.
- FERC and USFWS (Federal Energy Regulatory Commission and U.S. Fish and Wildlife Service). 2011. *Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of the Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds”*. March 2011. Washington, D.C. and Arlington, Virginia. 13 pp.
- Kessel, B., S. O. MacDonald, D.D. Gibson, B.A. Cooper, and B.A. Anderson. 1982. *Susitna Hydroelectric Project environmental studies, Phase I final report – Subtask 7.11: Birds and non-game mammals*. Report prepared for the Alaska Power Authority by the University of Alaska Museum, Fairbanks, and Terrestrial Environmental specialists, Inc., Phoenix, New York. 149 pp. [APA Doc. Nol. 398]
- LGL (LGL Alaska Research Associates, Inc.). 1984. *Susitna Hydroelectric Project: update and refinement of bald and golden eagle impact assessments and mitigation plans*. Report prepared for the Alaska Power Authority by LGL Alaska Research Associates, Inc., Anchorage, Alaska. 68 pp. [APA Doc. No. 2374]
- Pagel, J.E., and D.M. Whittington. 2011. *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations: 2011*. Presented at the Western Raptor Symposium. J.L. Lincer and D. Bittner (Co-Chairs). Hosted by Wildlife Research Institute and The Wildlife Society, Western Section. Riverside Convention Center, Riverside, California. February 8-9, 2011.
- Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. *Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle*

management and permit issuance. Division of Migratory Bird Management, U.S. Fish and Wildlife Service. 30 pp.

USFWS (U.S. Fish and Wildlife Service). 2007. National Bald Eagle management guidelines. Washington, D.C. 25 pp.

USFWS (U.S. Fish and Wildlife Service). 2008. Birds of Conservation Concern, 2008. Division of Migratory Bird Management, Arlington, Virginia. 85 pp. Available online (Accessed November 2011) at:
<http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>

USFWS (U.S. Fish and Wildlife Service). 2009. 50 CFR Parts 13 and 22. Eagle Permits; Take Necessary to Protect Interests in Particular Localities; Final Rules. Federal Register 74:46836-46879.



LEGEND:

- Proposed Reservoir Study Area Boundary
- Proposed Transmission and Road Corridor
- Proposed Transmission Corridor
- Proposed Road Corridor
- Proposed Reservoir

- General Land Status Description**
- Federal BLM
 - Private Land
 - State Lands

- Existing Transmission Intertie
- PLS Meridian
- Alaska Railroad



Date: Dec. 2011
Scale: As Noted

State of Alaska
Susitna-Watana Hydroelectric Project Ferc No.14241

Figure 1-1

Susitna-Watana Project Area

