COOK INLET BELUGA WHALE ANADROMOUS PREY ANALYSIS – DRAFT FINAL

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 (Watana Dam) will be located at River Mile (RM) 184 (AEA 2011). The results of this study and of other proposed studies will provide information needed to support the FERC's National Environmental Policy Act (NEPA) analysis for the Project license.

Due to the listing of the Cook Inlet Beluga Whales (CIBW) as "endangered" under the Endangered Species Act (ESA) in October 2008 and the subsequent designation of critical habitat in April 2011, development projects within Cook Inlet are required to identify and mitigate potential impacts to CIBW and critical habitat, including prey resources. CIBWs reside in Cook Inlet year-round and are documented to spend significant portions of time in Upper Cook Inlet, particularly in late summer and fall (Allen and Angliss 2011). Critical habitat includes two specific marine area types in Cook Inlet, of which, Type 1 extends into the mouth of the Susitna River. The Susitna Flats portion of upper Cook Inlet has also been identified as important calving grounds for CIBW (Huntington 2000).

CIBWs may be impacted by Project-induced changes to the abundance, density, productivity, and run timing of important Susitna River prey species: eulachon and adult Chinook, sockeye, chum, and coho salmon, all of which have been identified as primary constituent elements of the critical habitat. Project-induced changes to discharge and water levels may impact CIBW access to the river and/or to available prey. Therefore, an understanding of CIBW distribution (both spatially and temporally) and prey species information is necessary to evaluate potential project-related impacts on CIBWs and their critical habitat.

STUDY OBJECTIVES

To assess potential Project-related impacts to CIBW and their prey resources, this study consists of literature and data reviews of the use of the Susitna River by CIBWs and their important anadromous prey species (eulachon and adult Chinook, sockeye, chum, , and coho salmon). The overall study objectives are to:

1) Summarize life history, run timing, abundance, distribution, and habitat of beluga whale anadromous prey species in the Susitna River and in other Cook Inlet tributaries used by beluga whales.
2) Summarize temporal and spatial distribution of beluga whales in Cook Inlet, the Susitna River delta, and the Susitna River relative to the availability of eulachon and adult Chinook, sockeye, chum, and coho salmon.
3) Initiate consultation with the National Marine Fisheries Service (NMFS) for Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) permitting and requirements for the Project study program.

Existing information on pink salmon (juveniles and adults), juvenile Chinook, chum, coho, and sockeye salmon and all life stages of Chinook, sockeye, chum, and coho salmon above River Mile (RM) 50 will be compiled under F-S1, Synthesis of Existing Fish Population Data, and

additional data will be collected during F-S2, Susitna River Salmon Run Apportionment Study, and F-S3, Middle River Habitat Utilization Study. FS-6, This study will focus on compiling and synthesizing life history and use information for eulachon and adult Chinook, sockeye, chum, and coho salmon and CIBWs.

STUDY AREA

The study area consists of the Susitna River within anadromous fish distribution, with an emphasis on the lower river (up to RM 50) and the Susitna River delta that could be affected by Project operations. Escapement and run timing data will also be compiled for other Cook Inlet tributaries where significant salmon and/or eulachon predation by CIBW occurs.

EXISTING INFORMATION

Aerial surveys for CIBWs were completed in 1982 and 1983 as part of the original licensing effort (Harza-Ebasco 1985). Annual aerial surveys are completed each June and July by the NMFS to monitor the beluga whale population in Cook Inlet (NMFS 2012). These surveys all recognize the summer aggregations of belugas in the Susitna River delta that have been consistently documented by aerial surveys and telemetry studies (NMFS 2008). In addition, whale movement and habitat use studies using satellite telemetry and hydrodynamic modeling indicate that beluga distributions are controlled not only by water temperature and ice coverage, but also by the seasonal flow patterns of various rivers. This suggests that availability of salmon and other fish in river mouths influence beluga movements (Ezer 2011). CIBWs primarily use the Susitna River delta beginning in late-April or early May, coincident with the presence of eulachon and the first Chinook salmon runs. CIBW use of the delta area continues through the summer and into September, as they forage on salmon during spawning runs (NMFS 2008).

Preliminary data from studies of eulachon in the 1980s indicate that their spawning requirements are broad and that most spawning occurs below RM 28, but some spawning activity can be found as far upstream as RM 50 (HDR Alaska, Inc. 2011). Eulachon, also known as smelt or hooligan, may be commercially harvested in the salt waters of the Upper Cook Inlet between the Chuit and Little Susitna Rivers from May 1 to June 30 using a hand operated dip net; the harvest is not allowed to exceed 100 tons (ADF&G 2012). Annual harvest rates over the period 2006 to 2010 averaged 55 tons (Shields 2010). As indicated by the Aquatic Resources Data Gap Analysis (HDR Alaska, Inc. 2011), existing information about Susitna River eulachon has not been synthesized.

The Alaska Department of Fish and Game (ADF&G) has conducted ongoing salmon escapement studies in the Susitna River drainage basin including: helicopter and foot surveys to index counts of Chinook salmon; coho escapement surveys; and coho and chum salmon telemetry studies. Study F-S2: Susitna River Salmon Run Apportionment Study describes additional capture and tagging efforts on the Susitna River near Sunshine (RM 80), Talkeetna (RM 103), and Curry (RM 120.6) that will augment ADF&Gs telemetry studies of chum and coho salmon and will also mark Chinook and pink salmon.

METHODS

The methods for this study include identification, compilation, and synthesis of existing published and gray literature and data on CIBW and their anadromous prey including: eulachon and adult Chinook, sockeye, chum, and coho salmon.

Objective 1: Summarize life history, run timing, abundance, distribution, and habitat of beluga whale prey species in the Susitna River and in other Cook Inlet tributaries used by beluga whales.

1. Identify, compile and review literature to prepare a white paper describing the life history and habitat requirements of eulachon in glacial river systems.

2. Synthesize available data on the Upper Cook Inlet eulachon and Chinook, sockeye, chum, and coho salmon fisheries; and Susitna River eulachon and Chinook, sockeye, chum. and coho salmon escapement, life history and distribution below RM 50. Information will be included in the fisheries white paper.

    a) Identify key habitat requirements (e.g. stream temperatures, stream flows) for critical periods including spawning (late April through June) and outmigration (June through August).

    b) Identify remaining data gaps and evaluate the potential for Project-related impacts on eulachon and salmon habitat to determine future study needs.

3. Compile existing escapement and run timing data for eulachon and Chinook, sockeye, chum, and coho salmon focusing on adult salmon and all life stages of eulachon within other Cook Inlet tributaries used by CIBWs that also use the Susitna River and delta.

4. Identify data needs for 2013–2014 CIBW prey studies and develop study plans.

Objective 2: Summarize temporal and spatial distribution of beluga whales in Cook Inlet, the Susitna River delta, and the Susitna River relative to the availability of eulachon and adult Chinook, sockeye, chum, and coho salmon.

1. Identify and review literature to prepare a white paper describing the life history and habitat requirements CIBW in Cook Inlet, focusing on their presence in the Susitna River delta.

2. Compile temporal and spatial distribution data for CIBWs in and around the Susitna River and delta, especially during spawning periods of Susitna River eulachon and Chinook, sockeye, chum and coho salmon. Information will be included in the CIBW white paper.

    a) Data will be requested from the Port of Anchorage, Joint Base Elmendorf Richardson, Cook Inlet Region Incorporated, Knik Arm Bridge and Toll Authority, and the NMFS stranding database. However, these entities may not be able to provide data and/or may not be able to meet the desired project schedule.

    b) 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 Alaska Department of Natural Resources (ADNR) standards. Naming conventions of files and data fields, spatial resolution, and metadata descriptions will comply with the ADNR standards established for the Project.

3. Identify potential Project-induced impacts to CIBWs and critical habitat; synthesize relevant existing information and identify critical data gaps.

4. Identify data needs for 2013–2014 CIBW studies and develop study plans.

Objective 3: Initiate consultation with the NMFS for MMPA and ESA permitting and requirements for the Project study program.

1. In consultation with the NMFS and AEA, determine MMPA and ESA permit requirements for the Project studies program and begin preparation of appropriate permit applications.

   a) Permits are required for all studies conducted within CIBW-designated critical habitat (up to RM 9), all studies that may have low-level aircraft flights to transport personnel and/or equipment over open water (up to RM 9) and for CIBW surveys throughout Type 1 critical habitat planned for spring 2013.

   b) The schedule and scope of the permits may be altered during agency consultation.

2. Develop a "No Impact" protocol to be implemented by all projects with 2012 field studies since the Project will not have MMPA or ESA permits for 2012 activities.

NEXUS BETWEEN PROJECTS

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

- F10: Potential impacts to the Endangered Cook Inlet beluga whale.

Several studies will be conducted to evaluate the impacts of Project-related changes to sediment transport and delivery, stream temperature, water quality, stream flow, and ice processes on salmon habitat, productivity, abundance and run timing. This study will synthesize the available information on primary CIBW prey to facilitate the understanding of how the Project may affect CIBW and their prey in the Susitna River and identify data gaps to inform future studies. For instance, the temporal and spatial distribution of CIBWs within the Susitna River will be used to identify the study area for the 2013–2014 eulachon studies.

SCHEDULE AND DELIVERABLES

The following schedule covers Objectives 1 and 2. The schedule and deliverables for Objective 3: MMPA and ESA permitting will follow direction from AEA and NMFS.

Draft 2013–2014 Proposed Study Plan – April 27, 2012

The 2013-2014 study plans will be developed through consultation during the Work Group meetings through the formal FERC ILP study plan process. The study lead will participate in the Work Group, as appropriate, and assist AEA and the licensing participants develop the study plan draft and final Proposed and Revised Study Plans.

Final 2013–2014 Proposed Study Plan – May 21, 2012

Draft Technical Memorandum/Fisheries and Beluga White Papers – June 29, 2012

Draft 2013–2014 Revised Study Plan – August 15, 2012

Final 2013–2014 Revised Study Plan – September 24, 2012

Final Technical Memorandum – November 9, 2012
A technical memoranda summarizing the 2012 results will be presented to resource agency personnel and other licensing participants, along with spatial data products..

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