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

**Water Quality Resources
Study Plan Section 5 Introduction**

Final Study Plan

Alaska Energy Authority



July 2013

5 WATER QUALITY

5.1 Introduction

Construction and operation of the Susitna-Watana Project (Project) will change the Susitna River reach inundated by the Project reservoir, as well as portions of the drainage down-gradient. Changes will include flow, water depth, surface water elevation, water chemistry, channel characteristics, and sediment deposition. The potential effects of the Project need to be carefully evaluated as part of the licensing process because changes to these parameters may adversely affect aquatic and riparian habitat quality, which can in turn affect fish populations, riparian-dependent species, and recreation opportunities along the river corridor.

This section of the Final Study Plan (FSP) describes the water quality studies that will be conducted to characterize and evaluate these effects. These studies will be subject to revision and refinements with input from licensing participants as part of the continuing study program identified in the Integrated Licensing Process (ILP). The impact assessments will inform development of any protection, mitigation, and enhancement measures to be presented in the draft and final License Applications, as appropriate.

Water quality studies each generate data that will be used to assess current conditions, calibrate a predictive water quality model, and assess presence and potential impact of toxics (e.g., mercury) on aquatic life. The three water quality studies are integrated by using products from each (e.g., water quality data, predicted water quality conditions under various operational scenarios, and evaluation of potential toxics effects on aquatic life) and then combined to assess potential for water quality impacts from an ecosystem perspective. Objectives described for Study Plan 5.5 (Baseline Water Quality Monitoring), Study Plan 5.6 (Water Quality Modeling), and Study Plan 5.7 (Mercury Assessment and Potential for Bioaccumulation) reflect the focus on establishing a baseline description of pre-dam water quality and evaluation of water quality conditions and impacts during a post-dam period.

5.2 Nexus Between Project Construction / Existence / Operations and Effects on Resources to be Studied

As discussed above, the Project will change elements of the physical environment, which in turn will affect other resources (riparian communities, biological resources, recreational opportunities). Having a clear understanding of Project effects on water quality allow a better analysis of impacts to the physical environment within the Susitna River corridor, which will be critical to the environmental analysis of the Project.

5.3 Resource Management Goals and Objectives

Water quality in Alaska is regulated by a number of state and federal regulations. This includes the federal Clean Water Act (CWA), and the State of Alaska Title 18, Chapter 70, of the Alaska Administrative Code (18 AAC 70). Aquatic resources including fish and their habitats, and wildlife resources, are generally protected by a variety of state and federal mandates. In addition, various land management agencies, local jurisdictions, and non-governmental interest groups

have specific goals related to their land management responsibilities or special interests. These goals are expressed in various statutes, plans, and directives.

In addition to providing information needed to characterize the potential Project effects, these water resources studies will inform the evaluation of possible conditions for inclusion in the Project license. These studies are designed to meet Federal Energy Regulatory Commission (FERC) licensing requirements and also to be relevant to recent, ongoing, and/or planned resource management activities by other agencies.

5.4 Summary of Consultation with Agencies, Alaska Native Entities, and Other Licensing Participants Regarding Revised Study Plan Development

These study plans have been modified in response to comments from various agency reviewers, including the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); the Alaska Department of Environmental Conservation (ADEC); and the U.S. Fish and Wildlife Service (USFWS). Consultation on the Revised Study Plan (RSP) occurred during licensing participant meetings on April 6, 2012, and during the June 14, 2012 Water Resources Technical Work Group (TWG) meeting. At the June 2012 TWG meeting, study requests and comments from the various licensing participants were presented and discussed, and refinements were determined to address agreed-upon modifications to the draft study plans. Additional comments were received during the August 17 and October 23, 2012 TWG meetings.

Summary tables of comments and responses from formal comment letters filed with FERC through November 14, 2012, were provided in RSP Appendix 1 filed December 14, 2012. Copies of the formal FERC-filed comment letters were included in RSP Appendix 2. In addition, a single comprehensive summary table of comments and responses from consultation, dated from Proposed Study Plan (PSP) filing (July 16, 2012) through release of Interim Draft RSPs, was provided in RSP Appendix 3. Copies of relevant informal consultation documentation were included in RSP Appendix 4, grouped by resource area.

Consultation subsequent to the filing of the Revised Study Plan (RSP) is described within each FSP.