

FEDERAL ENERGY REGULATORY COMMISSION

Washington, D.C. 20426

November 26, 2012

OFFICE OF ENERGY PROJECTS

Project No. 13563-001--Alaska  
Sweetheart Lake Hydroelectric Project  
Juneau Hydropower, Inc.

Mr. Duff Mitchell  
Juneau Hydropower, Inc.  
P.O. Box 22775  
Juneau, AK 99802

**Subject: Comments on Draft License Application for the Sweetheart Lake Hydroelectric Project**

Dear Mr. Mitchell:

Thank you for providing us with a copy of the draft license application (DLA) and applicant prepared environmental assessment (APEA) for the Sweetheart Lake Hydroelectric Project. We reviewed the application relative to the Alternative Licensing Process (ALP) regulations in 18 CFR § 4.34 and the contents of the license application as outlined in 18 CFR § 4.41.

Your draft license application includes most of the applicable exhibits; however, we find that some deficiencies (Attachment A) would need to be addressed in your final license application and applicant-prepared environmental assessment (APEA), and additional analysis and information is needed in the APEA to analyze the environmental effects of your proposed project (Attachment B).<sup>1</sup>

As you are aware, the ALP was designed to provide license applicants and stakeholders with considerable flexibility in the process for developing a license application. However, that flexibility is founded in the spirit of collaboration and cooperation among all the participants. The Communications Protocol, filed with the

---

<sup>1</sup> We also note that your draft APEA did not follow the Commission's format. For guidance on how to finalize your APEA, including the structure for your affected environment and environmental analysis sections, please refer to the FERC guidance document titled *Preparing Environmental Documents, Guidelines for Applicants, Contractors, and Staff* available on the Commission's webpage at: <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/eaguide.pdf>.

Project No. 13563-001

Notice of Intent and Preliminary Application Document on July 28, 2010, stated that the draft study plans would be provided to agencies and other interested stakeholders in July 2010. However, the following study plans were filed later than the specified date: (1) Draft Cultural Study Plan, May 31, 2011; (2) Draft Terrestrial and Wetland Delineation Study Plan, July 21, 2011; (3) Recreation Resources Study Plan, January 13, 2012; and (4) the Draft Aquatic Resources Study Plan, April 5, 2012. Draft and final study reports were filed either concurrent with, or after the draft license application, and in some cases data available in the study reports were not integrated into the APEA. In addition, while it appears as though the study plans were filed in the project record to facilitate agency review as set forth in the Communications Protocol, it does not appear as though agency comments that were filed in response to your draft study plans were incorporated into final study plans prior to study implementation.

For example, on April 5, 2012, you filed a Draft Aquatic Resources Study Plan/Scope of Work, and on May 17, 2012, the National Marine Fisheries Service filed detailed comments on your draft study plan. In your preliminary permit and ALP progress reports filed on June 1, 2012, and August 22, 2012, respectively, you note that you will finalize and complete the aquatic study plans in consultation with the Alaska Department of Fish and Game and National Marine Fisheries Service. However, it does not appear as though any final aquatics study plans were developed, and instead, it appears as though the studies that you implemented were based on the April 5, 2012, Draft Aquatic Resources Study Plan/Scope of Work.

To ensure that future data collection satisfies the needs of the Commission and addresses the comments of the licensing participants, please file within 60 days of the date of this letter, a plan and schedule for a study plan meeting with all interested licensing participants to discuss the study plans and study reports filed to date, and any additional data needs that will need to be addressed before the next study season commences. In addition, the next steps before the preparation of your final license application should be discussed. Commission staff will participate in the study plan meeting via teleconference.

Project No. 13563-001

If you have any questions regarding these comments, please contact Jennifer Harper at (202) 502-6136 or [jennifer.harper@ferc.gov](mailto:jennifer.harper@ferc.gov).

Sincerely,

Jennifer Hill, Chief  
Northwest Branch  
Division of Hydropower Licensing

Enclosure: Attachment A  
Attachment B

cc: Mailing List

## **Attachment A**

### **Deficiencies of License Application and APEA**

#### Exhibit A

Dimensions and detailed descriptions for project features shown in Exhibit F or referenced in the APEA need to be provided for the following: the project intake (dimensions, elevation of intake, screen description); access road from the dam to the upper reservoir (length, width); and the fish collection system (dimensions, location) [18 CFR 4.41(b)(1)].

Access trails are referenced in Exhibit D and the APEA; however, no trails are described in Exhibit A. Please provide a description of any recreational trails that are proposed for construction [18 CFR 4.41(b)(1)].

The DLA states that the dam design is not sufficient to pass the probable maximum flood (PMF) calculated for this project through the spillway. The project design will need to be modified to include a dam design sufficient to pass the PMF without overtopping, or you will need to provide an analysis that would indicate that the dam could withstand over five feet of overtopping. Therefore, please modify your project design to accommodate passage of the PMF, or provide additional details in your supporting design report that supports your current dam design. As this is a new project with a 105-foot-high dam, there would be a requirement for a FERC Board of Consultants to be assembled for the final design and construction phases of any project that receives a license from the Commission.

#### Exhibit B

Please provide monthly flow duration curves for Sweetheart Creek and include the period of record and the gauging station that was used to generate the curves [18 CFR 4.41(c)(4)(i)].

Please provide the minimum and maximum hydraulic capacity for the project [18 CFR 4.41(c)(4)(i)].

#### Exhibit C

Please update the detailed construction schedule to include a narrative summary that describes what time of year you anticipate construction activities at the site, as well as any periods when construction would be purposely limited to protect natural or social resources (e.g., wet weather closures to avoid erosion and

sedimentation, or impacts on salmon migration) as required by the regulations [18 CFR (d)(1) through (3)].

Exhibit D

Exhibit D provides an estimate of the cost for licensing and permitting based on a percentage of the direct construction cost. Please provide the actual cost spent in preparation of the license application as of the filing of the final license application [18 CFR 4.41(e)(9)]. Also, please provide a breakdown of the estimated costs for all anticipated fees.

Exhibit F

Please include the calculations used to determine the cfs outflows for the 100-year rainfall event, the probable maximum flood, the probable maximum precipitation with the probable maximum snowmelt, and the 100-year precipitation with the probable maximum snowmelt in the supporting design report [18 CFR 4.41(g)(3)(i) through (v)].

Exhibit G

Please revise your Exhibit G drawings to include any proposed new recreation trails discussed on page 26 of the APEA [18 CFR 4.41(h)(1) and (2)].

## **Attachment B**

### **Comments on DLA, APEA, and Additional Information Needs**

#### **Draft License Application**

##### **Initial Statement**

Page 8: Section 7 of the Initial Statement states that the proposed transmission line would be 45,900 feet long, consisting of 25,700 feet of submarine cable, 15,400 feet of overhead line, and 4,400 feet of buried line. The sum of these distances is 45,500 feet. Exhibit A, however, states that there would also be a 400-foot-long segment of buried line on the north shore of Port Snettisham. Therefore, please revise the Initial Statement to indicate that there would be 4,800 feet of buried line.

Pages 8-9: Please indicate the anticipated acreage of the submerged federal lands and the above-water federal lands within the project boundary after the completion of the proposed project reservoir.

##### **Exhibit A**

Pages 17-18: You state that the spillway can pass the 100-year flood (7,007 cubic feet), without using other outlet works, but cannot pass the peak outflow during the probable maximum flood of 24,322 cfs. What is the maximum hydraulic capacity of the spillway, of the project intake, and of the reservoir outlet works?

Page 20: In Exhibit A, you list the impoundment elevation at the PMF as 646 feet; however, in the supporting design report, you list it as 650.4 feet. Please clarify which elevation is correct and provide verifying calculations for the PMF in the supporting design report.

Page 21: In Exhibit A, Accessory Mechanical and Electrical Equipment, the project is misidentified as “Soule.” Please replace “Soule” with “Sweetheart Lake.”

##### **Exhibit B**

Page 27: Exhibit B, Alternative Access Road Alignments (page B-5) states, “The Applicant would bury a portion or all of the transmission line from the powerhouse to the dock area.” Please revise this statement to clarify how much of that segment of the transmission line would be buried.

Pages 28, 31, 38 to 43: The figures on pages B-5, B-8, B-15 through B-20 do not fit on the pages. Please revise so that the figures are fully visible.

Page 32: Please provide a clear explanation of how the project would be operated. For example, would the project be operated by remote computer operations? Who would operate it? From where would it be operated? Would the remote operation be manned 24-hours? What are the emergency procedures when the project is unmanned?

Page 32: 18 CFR 4.41(c)(3) states that the applicant must provide a statement of how the project would be operated during adverse, mean, and high water years. You state: “The project will be operated to provide firm power according to a schedule determined by the power offtakers and in accordance with the water release agreements.....This schedule assumes steady operation during all months and allowing the reservoir to fill from spring/summer run off.” These statements do not fully explain how the project is expected to operate.

Page 34: You state that during average water years, the average monthly predicted flow into the reservoir would be 332 cfs. On page 36, you state that during normal operations the plant would operate two turbines (6.6 MW each) at near peak efficiency (300 cfs to 325 cfs). The predicted average annual generation provided on page 34 (111 GWh/year) is equivalent to generating approximately 12.7 MW per hour for the entire year (approximately 96% efficiency). However, no discussion is provided of how generation would be affected for years where the average flow is less than 332 cfs.

Please provide a discussion of how water availability would affect the project generation, including a discussion of any constraints for adverse or high water years.

Page 32: Please provide a description of the protocols for releasing flows in excess of the project’s hydraulic capacity from the reservoir (i.e., would flows be released from the reservoir outlet works up to its capacity then any excess above that through the spillway, or would the excess flows be released through the spillway up to the spillway capacity then excess released through the outlet works)? At what inflow and/or reservoir elevation would these protocols be enacted to prevent dam overflow?

Pages 34: The dependable capacity listed in Table B-1 varies from 12 to 12.4 MW; however, the flow required to generate this dependable capacity is not provided. Please include a description of what minimum flows are required to generate this dependable capacity. Also include a discussion of how the dependable capacity would be met during adverse water years. Please include a

discussion of the protocols that would be implemented if the reservoir elevation drops below the project's normal lower limit of 576 feet.

### Exhibit C

Page 45: The schedule provided in Exhibit C is based on a license issuance date of summer 2013. Because this schedule does not appear to be feasible, please include a revised schedule with your final license application.

Page 45: Please include a description of any construction work window restrictions such as weather accessibility, or other factors that would affect the project construction schedule in Exhibit C.

### Exhibit D

Page 46: Are the measures in Table D-5 included in the \$134,873,193 cost of constructing the project listed on page 46?

Pages 46-49: Please put all costs in a single dollar-year (2013 dollars for example).

Page 48: You provide an amount of \$326,392,000 per year; however, it is unclear what this number represents or how it was calculated. Please provide additional details for this number.

Page 49: The operating cost of \$3,071,000 per year appears to be higher than the sum of the estimated bulleted annual operating costs listed. Please provide an itemized list, in dollar amounts as opposed to percentages, of the annual operating costs for the proposed project.

Page 50: Table D-1 provides a \$780,000 cost for burying the transmission line from the powerhouse to the shore of Gilbert Bay and a \$1,000,000 cost for utilizing Avian Power Line Interaction Committee (APLIC) best management practices for the 15,400-foot-long overhead segment of the transmission line. The likelihood of avian electrocution by a 138-kilovolt transmission line, such as you propose, is low because such a structure's typical phase-to-phase and phase-to-ground separation is greater than 60 inches (i.e., the distance APLIC states will allow an eagle to safely perch). Therefore, no additional features of the project transmission line would be needed to prevent avian electrocution, and no additional costs would be expected. Measures to prevent avian collision, such as marker balls, would be expected to add little to the transmission line cost. Therefore, please provide an explanation of the \$1,000,000 cost of building the overhead line to raptor-proof standards.

Pages 50-51: Table D-1 and Table D-2 do not include all of the proposed environmental measures that are referenced in various sections of your APEA. Please revise Exhibit D to include all of your proposed environmental measures. The revised Exhibit D must include both the capital and operation and maintenance costs of all proposed measures, and should be consistent with the measures and costs included in section 4.3 of the APEA.

### **Applicant Prepared Environmental Assessment**

#### General Comments

The term “new license” is used in several places in the document. Please replace with the term “original license”.

The List of Tables (page v) and some tables included in the text are not consistently described and numbered. For example, the List of Tables shows that Table 27 is titled *Project Effects on Lake Botanical Life*. However, in section 3.3.3, Table 27 is titled *Project Potential Effects on Botanicals*. Please ensure consistency between the List of Tables and the tables in the body of the APEA.

For all resources evaluated in section 3.3, *Proposed Action and Action Alternatives*, you must describe, by resource, the affected environment and your analysis of the proposed action and any environmental measures. Please revise section 3.3 in the APEA to clearly describe the affected environment for each resource area, and include an analysis of how your proposed project construction and operation and any proposed environmental measures would affect environmental resources of the project area. For additional guidance on how to structure your affected environment and environmental analysis, please refer to section 3.3 of the FERC guidance document titled *Preparing Environmental Documents, Guidelines for Applicants, Contractors, and Staff* available on the Commission’s webpage.

Several project safety plans and environmental resource protection plans are listed as part of you proposed action throughout the APEA. However, many of these plans (e.g., Water Management Plan, Vegetation Management Plan, and Erosion and Sediment Control Plan) were not included in the DLA or filed in the project record. Implementation of these plans would affect project operations and environmental resources of the project area. We will need to assess these plans, including benefits and costs, as part of our environmental analysis. Therefore, please develop the plans, including determining any costs associated with the development and implementation of these plans, and file them with your final license application. The costs of developing the plans should be included in your calculation of the costs to develop the license application in Exhibit D of your

final license application [18 CFR 4.41(e)(9)], and the costs of implementing the plans should be included in section 4.3, *Cost of Environmental Measures* (Table 38). In addition, the specific measures included in the plans should be identified and analyzed for their effects on environmental resources in all applicable resource areas of the APEA.

Please ensure that all proposed environmental measures listed in various sections of your APEA are consistently described throughout the document. For example, the measures you propose to protect geologic and soils resources are not consistent throughout the APEA. Section 2.2.4 lists one measure (i.e., developing and implementing an Erosion and Sediment Control Plan); section 3.3.1 lists eight measures (i.e., placing unused excavated rock in a designated waste excavation area; revegetating borrow areas, soil and rock disposal area, and disturbed areas; installing erosion and sediment control features around borrow and waste areas; installing turbidity curtains; developing and implementing an Erosion and Sediment Control Plan; limiting construction to a small footprint; installing vegetation buffers; and testing for acid mine drainage); and section 4 lists five measures (i.e., implementing best management practices; developing and implementing an Erosion and Sediment Control Plan; Hazardous Materials Containment Plan; Spill Prevention, Control, and Containment Plan; and restoring the temporary access route).

You stated that you would provide a consultation record as part of your final license application; however, we note that a draft consultation record was not provided in your DLA. While not required under the ALP regulations, we do encourage you to provide a record of consultation regarding the development of study plans and proposed environmental measures.

Not all of the information presented in the study reports was integrated into the DLA and APEA. For example, the discussion on electromagnetic fields presented in the 2012 Tidewater Study, filed on October 30, 2012, was not included in the APEA. All relevant environmental information included in the project record should be summarized in your description of the affected environment for each resource area, and should be used in the analysis of environmental effects.

#### Statutory and Regulatory Requirements

Page 14: Section 1.3.1.2 states that the U.S. Forest Service (Forest Service) has not yet filed 4(e) conditions. The project would be located within the Tongass National Forest, managed by the Forest Service. Please include a list of Forest Service Standards and Guidelines that need to be addressed for all project

resources to evaluate the project's consistency with the Tongass National Forest Land and Resource Management Plan.

Page 15: Actions that may affect marine mammals are subject to the Marine Mammal Protection Act (MMPA). For this reason, MMPA should be added to table 2 of the APEA.

Pages 15 to 18: Section 1.3 should include a paragraph describing the MMPA, summarizing project effects on marine mammals, and referring the reader to additional details in later sections.

Page 16: The APEA does not adequately summarize the consultation process used to address project effects on federally listed or proposed species or critical habitat in the project vicinity, nor does it cite to the most recent species lists received from the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS), or provide the determination of effect for each listed species. Please update this information in the APEA. For a complete description of the information that should be included in this section, please refer to section 1.3.3 of the FERC guidance document titled *Preparing Environmental Documents, Guidelines for Applicants, Contractors, and Staff* available on the Commission's webpage.

Page 16: You state that you provide your analysis of project impacts in section 3.9, *Threatened, Endangered and Species of Concern*; however, endangered, threatened, and species of concern are covered in section 3.3.4. You also state that your recommendations are included in section 5.1, *Recommended Alternative*; however, the section 5.1 on page 227 is titled *Comparison of Effects of Proposed Action and Alternatives*, and does not include any recommendations for threatened and endangered species. Please ensure that all cross-references listed in the document are accurate.

Page 19-20: The interveners listed are interveners for the permit process and not the license process under the ALP. Intervenors will be solicited for the license proceeding once the final license application has been filed and accepted by the Commission. Therefore, the listed interveners should be deleted.

#### Proposed Action and Action Alternatives

Pages 21 to 28: Section 2 describes the various project features but does not provide enough information about how the project would be operated and maintained to support an analysis of the potential effects of disturbance on aquatic or terrestrial resources. Please expand section 2 to describe: (1) the types of equipment and techniques that would be used to construct the project (e.g., timber harvest, blasting, laying of submarine cable); and (2) the construction sequence,

including the timing and duration of various construction activities. Please also describe the construction camp (e.g., type of housing, number of houses, infrastructure to support the camp) and include an estimate of the number of people who would be employed and housed at the camp. We understand the project would be operated remotely, but section 2 should also address the types and frequency of long-term operation and maintenance activities that could result in noise or other disturbance to wildlife. This information is needed to fully analyze project effects on terrestrial wildlife species and marine mammals.

Page 21: You state that the project boundary will be to elevation 650 around the reservoir. On page 7 of Exhibit F, you state that the elevation at the probable maximum flood would be 650.4 feet. Section 4.41(f)(7)(iii) requires sufficient width to allow public access to project lands and waters and to protect the scenic, public, recreational, cultural, and other environmental values of the reservoir shoreline. Please explain the rationale for, and adequacy of, the proposed buffer in terms of project operations, as well as meeting the objectives for managing lands that are adjacent to the project and have a Semi-Remote Recreation land-use designation.

Additionally, section 4.41(h)(2) requires the project boundary include all lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources. If you propose a different project boundary in your license application, you must adjust all descriptions of, references to, and maps of the project boundary accordingly.

Page 21: The text refers to the “Tracy Arms Wilderness.” This should be corrected to “Tracy Arm-Fords Terror Wilderness.”

Pages 21 to 24: Please incorporate the requested changes to Exhibit A, including the dimensions of all project features, the hydraulic capacity of the spillway, the reservoir elevation during the PMF, and any design changes to the project to accommodate the PMF, in section 2.2.1 of the APEA.

Page 25: Consultation between staff and the applicant during the preparation of SD1 resulted in staff listing a Terrestrial Connectivity Plan for wildlife habitat as part of the applicant’s proposed environmental measures in the SD1 and SD2. The APEA does not mention this plan. Please clarify whether this plan is still proposed.

Page 25: Please incorporate the requested changes to Exhibit B, including the proposed project operation, flows required for generation of the dependable

capacity, and project operation modifications during adverse and mean water years, in section 2.2.3 of the APEA.

Page 34: As you note in section 3.2, *Scope of Cumulative Effects Analysis*, SD2 did not identify any resources that would be cumulatively affected by the project. However, in section 3.2 you identify a temporal and geographic scope for cumulative effects analysis. Because you do not identify any resources that could be cumulatively affected by the project, there is no reason to include a discussion of the temporal and geographic scope. Please delete the discussion of the temporal and geographic scope for cumulative effects.

Page 35: Section 3.3, *Proposed Action and Action Alternatives*, states that you have not identified any substantive issues related to cultural and archeological resources, botanical resources, or wildlife resources. However, SD2 identifies these resources as resources that could be affected by your proposed project, and the APEA includes an analysis of project effects on these resources. Therefore, please delete this statement.

### Geologic and Soils

Page 41: Section 3.3.1 refers to development of an Erosion and Sediment Control Plan; however, the specific measures to be included in the plan are not described in the APEA. Please develop and file the Erosion and Sediment Control Plan with your final license application and update section 3.3.1 of the APEA to clearly describe the proposed action for project construction and operation, and how the measures included in the plan would protect geologic and soils resources of the project area. Any additional measures that you propose to protect geological and soils resources that are not included in the plan should also be described and evaluated.

Page 41: The effects of avalanches on the geomorphology and vegetation of Sweetheart Lake are discussed throughout sections 3.3.3, *Terrestrial Resources*; however, there is no analysis of the potential effects of avalanches on project roads, facilities, or geologic and soils resources. Section 3.3.1 should be updated to include a discussion of the anticipated effects of avalanches on project roads, facilities, and erosion and slope stability around the project reservoir.

Page 42: You state that there is a low potential for shoreline erosion from fluctuating water levels in Sweetheart Lake in part due to the existing vegetation that stabilizes the soils around the lake. On page 78, however, you state that during construction some timber would be submerged due to new lake elevations and would need to be removed from the boundary areas.

Your APEA lacks sufficient detail on proposed project operations to validate the statement that the project would result in a low potential for shoreline erosion. Section 3.3.3 of your APEA should include a complete description of your proposed operations, including how operations would affect the existing lake levels and any seasonal fluctuations. Section 3.3.3 should also include a description of how proposed lake level fluctuations would affect the vegetation community around the lake. The analysis should quantify the existing vegetation resources within the lake fluctuation zone and evaluate the potential effects of the project on the health of the vegetation community and also consider any tree or vegetation removal that you propose as part of your proposed action. The analysis in section 3.3.3 should be cross-referenced to section 3.3.1 to describe how the affected vegetation community would or would not contribute to the potential for shoreline erosion in Lower Sweetheart Lake.

Page 43: Excavation spoils are being proposed for use as road aggregate, structural foundations, and visual berms. Rock not suitable for these uses would be placed in designated waste excavation disposal areas. Please provide additional information regarding the geotechnical properties of excavation spoils, their suitability for the proposed uses, and specifications for excavation spoils that would be used for different applications.

Page 43: You state that erosion and sediment control features would be installed on the down slope side of borrow and waste areas. Please describe the erosion control measures that would be implemented around these areas. In addition, please include a map showing the proposed locations of the designated waste disposal areas.

### Aquatic Resources

Page 45: Your APEA does not describe your proposed project operations in sufficient detail for us to conduct the required analysis of project effects on water quality, instream flow, aquatic habitat, and aquatic resources in Lower Sweetheart Lake, Sweetheart Creek, and Gilbert Bay. Your APEA should clearly describe your proposed project construction and operation, the affected environment for all water and aquatic resources, and provide an evaluation of how project construction and operation would affect these resources.

For example, the APEA does not include a description of any proposed powerhouse operations and associated instream flow releases in the bypassed reach or at the powerhouse location, nor does it provide an evaluation of your proposed flow releases on aquatic habitat. The APEA indicates that you are conducting a PHABSIM study to provide instream flow recommendations, but also indicates that you have not completed the PHABSIM study. Your APEA

should include the results of your completed PHABSIM study. This would typically include an evaluation of the relationship between proposed flow releases and aquatic habitat for target fish species and life stages.

PHABSIM studies implemented for hydroelectric licensing cases typically follow the sequence of steps identified below. Each step in study implementation is typically carried out after consultation with resource agencies. The remainder of your study should be implemented in consultation with the Alaska Department of Fish and Game (Alaska DF&G), NMFS, FWS, and Forest Service.

- (1) selection of the number and location of transects, aquatic mesohabitats each transect represents, and the specific location of each transect in the stream;
- (2) selection of target flows (i.e., low, medium, and high flows) for conducting field measurements to develop the hydraulic model;
- (3) opportunities for agencies to review the field data and offer comments on the hydraulic model process, including the upper and lower limits of flow extrapolation based on the field data collected;
- (4) opportunities for agencies to review the field notes, basic computer input files, and summaries of measured versus simulated cell velocities; and
- (5) selection of target species and life stages and habitat suitability criteria.

Pages 45 to 78: The APEA does not include an analysis of the effects of the project on resident fish species in Lower Sweetheart Lake including the potential for fish entrainment into the powerhouse intake. The APEA should be updated to provide an analysis of the potential for fish entrainment and mortality.

Pages 45 to 78: The APEA does not adequately describe the effects of submarine cable construction on aquatic resources in Gilbert Bay. Please provide additional information and analyses regarding construction of the submarine cable, including the extent to which it would be buried, the area disturbed as a result of construction, methods of construction and spoil containment, and the potential effects of these actions.

Pages 45 to 78: The APEA does not provide an assessment of electromagnetic frequency from submerged transmission lines on aquatic resources in Gilbert Bay as identified in SD2. Please compile and review existing information about electromagnetic frequency, and together with a description of the specifications of the submarine cable you plan to install and the species likely to be found in Gilbert Bay, provide an analysis of the potential for electromagnetic frequency effects on aquatic resources.

Pages 45 to 78: Your proposed project includes a dock and landing site, located on the east shore of Gilbert Bay, for boat, seaplane, and helicopter access.

You mention that the dock and landing site will be constructed over intertidal and subtidal habitats. The APEA does not address the anticipated effects of the dock and landing site on aquatic resources in Gilbert Bay. To better understand the potential project impacts on aquatic resources in Gilbert Bay, please provide a specific description of the design, location, and layout of the proposed dock and landing site, the timing of construction activities, a description of the discharge or storage areas, a description of any long-term operation and maintenance activities affecting aquatic resources, and any best management practices you propose to minimize adverse effects during construction and long-term maintenance of these facilities.

Page 47: You state that you installed a stream gage on Sweetheart Creek at the same location as the decommissioned U. S. Geological Survey gaging station. However, table 6 only includes four months of mean monthly streamflow data that were collected in 2011 and 2012. Please specify the duration that the new gage was installed and provide any additional streamflow data that are available from your stream gage.

Pages 50 to 56: The APEA does not assess potential project effects on water quality via accidental releases of fuels, lubricants, and other wastes from construction equipment, machinery, and operations as identified in SD2. Your APEA should include a description of the measures included in your Hazardous Substance Plan and any other measures that you would implement to minimize the potential for accidental spills. The APEA should also include an analysis of the potential effects of accidental spills on water quality and aquatic resources in Lower Sweetheart Lake, Sweetheart Creek, and Gilbert Bay.

Pages 50 to 56: The APEA does not adequately evaluate potential project effects on water quality resulting from erosion, sedimentation, and rock leachate in Lower Sweetheart Lake, Sweetheart Creek, and Gilbert Bay. Your APEA should include a description of the measures included in your Sediment and Erosion Control Plan and any other measures that you would implement to minimize the effects of the project on soil erosion, sedimentation, and associated effects on water quality.

Pages 50 to 56: SD2 identifies nutrients, temperature, dissolved oxygen, dissolved gas, and turbidity as water quality parameters that could be affected by the proposed project. The water quality data provided in the APEA is not sufficient to characterize the affected environment for the water quality parameters identified in the SD2, and support the analysis of project effects on water quality resources of Lower Sweetheart Lake, Sweetheart Creek, and Gilbert Bay. A site-specific water quality study plan that provides a detailed description of sampling methods, locations, frequency, duration, and data assessment and

reporting procedures, should be developed in consultation with the Alaska Department of Environmental Conservation, Alaska DF&G, NMFS, FWS, and Forest Service. A summary of the results of your water quality sampling study should be included in your affected environment. In addition, the APEA should include a complete analysis of project construction, operation, and maintenance on nutrients, temperature, dissolved oxygen, dissolved gas, and turbidity in Lower Sweetheart Lake, Sweetheart Creek, and Gilbert Bay.

Pages 50 to 56: The APEA does not provide a description of how baseline water quality conditions compare to state water quality standards for each water quality parameter of concern. The water quality affected environment should be updated to provide a comparison of baseline water quality conditions for each water quality parameter identified in SD2 and a description of whether baseline water quality conditions meet state water quality standards.

Page 59: In your description of the fish community inhabiting Sweetheart Creek you state “the falls elevating over a relative short distance and lack of intermittent pools could create an inhospitable habitat for the presence of pink and chum salmon.” However, in your discussion of habitat surveys on page 77 of your APEA, you mention that 32 habitat measurements were obtained for pink salmon engaged in spawning activity in Sweetheart Creek on August 16 and 17, 2012. Please provide additional information regarding fish habitat in the accessible reach of Sweetheart Creek below the barrier falls and any additional documentation supporting the conclusion that habitat conditions in Sweetheart Creek would be inhospitable to pink salmon and chum salmon.

Page 61: Under existing conditions, 500,000 juvenile anadromous sockeye salmon are annually stocked by Douglas Island Pink and Chum, Inc. (DIPAC) into Sweetheart Lake. The juvenile sockeye salmon annually emigrate through the existing lake outlet to Sweetheart Creek where they migrate about 2 miles down Sweetheart Creek to access the marine environment for growth into the adult life stage. The returning adults cannot migrate back upstream to Sweetheart Lake because of natural passage barriers in Sweetheart Creek, but they do support a personal use fishery in Gilbert Bay at the mouth of Sweetheart Creek.

Because the dam would block the downstream migration path for juvenile sockeye salmon through the existing lake outlet, the project has the potential to alter the existing fish passage and survival rates for the hatchery sockeye salmon population in Sweetheart Lake. To protect the existing sockeye salmon personal use fishery in Gilbert Bay, you propose to modify the sockeye salmon hatchery program in Sweetheart Lake to make it similar to other lake-system hatchery outmigration programs in Alaska such as those implemented at Deer Lake and Spiridon Lake. You provide an internet link to access an online summary of the

system implemented at Deer Lake; however, you provide no additional specific information on your proposed changes to the sockeye salmon hatchery program, nor do you provide any further detailed information on your proposed fish collection and downstream passage system.

It is unclear how the Deer Lake or Spiridion Lake hatchery programs are related to the proposed project, and the information provided is insufficient to support an analysis of the potential effects of the project on the hatchery sockeye salmon program in Sweetheart Lake and its associated personal use fishery in Gilbert Bay. Therefore, please revise your APEA to include the following additional information:

(1) your specific proposal for modifying the existing hatchery program to facilitate rearing and downstream passage of juvenile sockeye salmon under proposed project operations (e.g., number and type of net pens that would be deployed, the proposed timeframe for net pen deployment, a description of how the net pens would be operated to accommodate an annual reservoir fluctuation of up to 60 feet, and a description of how the net pens would be operated during the winter ice-cover period);

(2) a specific description of the facilities that would be used to capture juvenile sockeye salmon reared in the net pens and release them into the marine environment; and

(3) a description of whether the lake would continue to be used for juvenile sockeye salmon rearing, and if so, a discussion of how any lake reared sockeye would be collected for downstream transport.

Your APEA should include a description of the collection efficiency and survival criteria for your proposed fish passage facilities that are developed after consultation with DIPAC, Alaska DF&G, NMFS, FWS, and the Forest Service. In addition, any proposed fish hatchery, collection, and passage facilities should also be described in detail in your description of project facilities in section 2.2.1 of your APEA as well as all applicable exhibits of your final license application.

Page 62: You state that marine areas of Gilbert Bay “support a diverse community of fish species including salmon and several species of ground fish along with shellfish.” You mention that personal use fishers target pink salmon and sockeye salmon and that a Dungeness crab fishery, and possibly shrimp harvesting, occur in Gilbert Bay. In the affected environment section, please provide a complete description of the aquatic biota, including all species of finfish and shellfish that have been documented to occur in Gilbert Bay and have the potential to be affected by the project.

Page 73 to 75: The APEA does not adequately characterize reservoir fluctuations and the potential effects of these fluctuations on aquatic habitat and fish populations in Lower Sweetheart Lake and tributaries draining into Lower Sweetheart Lake. Please provide a clear description of your proposed reservoir operations and additional analysis on the frequency, timing, and duration of reservoir fluctuations; the areas dewatered under daily and seasonal cycles; the likely effects on resident fish spawning and rearing habitat; and the potential for fish stranding and redd dewatering.

### Terrestrial Resources

Page 90: SD2 identified the issue of the effects of project construction and operation (lake level fluctuations) on Lower Sweetheart Lake (including at Upper Sweetheart Lake Creek) and Sweetheart Creek shoreline vegetation and/or habitats used by wildlife species. You state in section 3.3.3 “Analysis to be presented in the Final License Application and the Draft Environmental Assessment will depict the seasonality of the wetland inundation and conversion of wetlands that occurs based on operation regimens of the reservoir.” The APEA must include this analysis, and must also include an analysis of lake level fluctuations on non-wetland vegetation resources in the reservoir fluctuation zone. In addition, please describe if the site where the rare sedge *Carex bicolor* was identified would be inundated by the proposed reservoir.

Page 99: You state that the proposed 85-foot seasonal increase in lake elevation would affect 34.83 acres of wetlands, and Table 21 is a tabulation of wetland types affected by other project facilities. However, Table 21 does not include a total acreage. Please provide the total wetland acreage affected by the powerhouse, tunnel entrance, tailrace, coastal route access road, dock, and west side transmission corridor, and the total wetland acreage affected by the project.

Page 99: Table 21 of your APEA duplicates Table 3 of your wetland delineation report filed on September 18, 2012, except for the last two rows. Please add the missing two rows to Table 21 in your APEA. In addition, please footnote the first use of the abbreviations used in Table 21 (JD [Jurisdictional Determination], TNW [Traditional Navigable Water], and RPM [Relatively Permanent Waters]) and provide their definitions at the bottom of the table.

Page 100: Please delete all the text in the sections titled “Aquatic Resource Issues” and “Aquatic Resource Solutions” on pages 100-101 except for the last paragraph that begins “Wetland impacts,” which should be moved to the analysis section. The aquatics discussion presented there is not relevant to terrestrial resources. Table 38, *Estimated Cost of Environmental and Aesthetic Investments*

(page 226), lists a wetland measure described as “creation, restoration and perhaps payments in lieu of mitigation.” This proposal is not discussed in section 3.3.3, *Terrestrial Resources*. Please revise your analysis in section 3.3.3 to include this proposed measure.

Page 101: SD2 identified the issue of the effects of habitat loss and alteration (broken out by habitat type) from construction of the dam, power tunnel, penstock, powerhouse, switchyard, transmission line, access roads, and appurtenant facilities on wildlife and plant species, with particular emphasis on Forest Service sensitive species and state-listed species. Please include in the terrestrial resources analysis a table broken out by habitat type that shows the acres of temporary construction disturbance and permanent habitat loss and alteration from construction of the dam, power tunnel, penstock, powerhouse, switchyard, transmission line, access roads, and appurtenant facilities, including all staging areas and quarries. Include in the table disturbance caused by the “permanent access road” about 400 feet long extending from the right abutment of the dam and the construction staging area on the west shore of Lower Sweetheart Lake. Also include in the terrestrial resources analysis a drawing showing all staging areas, quarries, and any other area that would be temporarily used for project construction.

Page 101-102: Please move the first paragraph of section 3.3.3.2, *Wildlife Resources*, which addresses threatened and endangered species under the jurisdiction of the FWS, to section 3.3.4, *Threatened, Endangered, Species of Concern*. Delete the “Habitat Description” section because it duplicates information already presented. Delete the first, third, and fourth paragraphs of “Survey Objectives and Methodology” section because this information is not needed in the APEA.

Page 104: Please identify Unit 1C as “ADF&G Game Management Unit 1C” the first time it is mentioned.

Page 108: SD2 identified the issue of the effects of noise, improved access from project access roads, and increased human presence on wildlife, with particular emphasis on Forest Service sensitive species and state-listed species. You state that high-value mountain goat winter range exists around Sweetheart Lake, and that mountain goats are sensitive to disturbance by aircraft, especially helicopters. Helicopters would be used during project construction, operation, and maintenance, and for sockeye smolt transport below the barrier falls (page 61). Please include in your terrestrial resources analysis of the effects of noise and human presence, a description of helicopter use at the project, including the number of flights in and out per day and the expected flight path.

Page 108: Section 2.2.4, *Proposed Environmental Measures* (page 26), states that if nests of goshawk or other raptors are found in the project area in the future, you would adopt goshawk/raptor nesting protocols around all nests to minimize disturbance of nesting pairs and their young. Please include in your analysis of terrestrial resources in section 3.3.3, a detailed description of the nesting protocols you would adopt, including the size of any buffer zones around nests you would establish.

Page 110: Please revise the sentence fragment, “In the spring.”

Page 112: Please revise the sentence, “Because of the low potential for this project to impact the salmon food source for bears, and because the Applicant proposes to improve and/or enlarge habitat within the creek at the tailrace is limited as it is likely that with the project, both naturally occurring salmonids and hatchery sockeye salmon are expected to will increase over time.”

Page 112: Please revise the sentence, “In addition, using a power tunnel rather than a surface penstock significantly reduces impacts to the forest, eliminating surface disturbance and eliminates bear habitat connectivity that may affect bear habitat,” or explain why eliminating bear habitat connectivity would benefit the species.

Page 120: SD2 identified the issue of the effects of the new substation and transmission line on the potential for raptor and other bird electrocutions and collisions. You propose to implement Avian Power Line Interaction Committee protocols for the overhead transmission line segment (page 120). Please include in your terrestrial resources analysis, drawings of your proposed transmission-line pole designs, showing the proposed avian protection features. The project transmission line is discussed on pages 170-172 of section 3.3.5, *Recreation and Land Use*. Please move the discussion of transmission line effects on birds and proposed mitigation measures to section 3.3.3, *Terrestrial Resources*. On page 172, you refer to an Avian Protection Plan. If you intend to prepare an Avian Protection Plan, please file the plan with your final license application and describe the specific measures that are included in the plan in your terrestrial resources analysis in section 3.3.3.

Page 120: In the third bullet, you propose to document transmission-line bird mortalities, problem poles and lines, and problem nests. Such documentation would require periodic monitoring of the overhead segment of transmission line. Please provide in your terrestrial resources analysis, a description of any monitoring you would conduct. Please note that because all project transmission facilities would be new, it is incorrect to say you would retrofit the poles in the fifth bullet.

Page 121: SD2 identified the issue of the effects of project construction, operation, and maintenance on migratory and shore birds in and adjacent to the project area. Please include in your terrestrial resources analysis a description of habitat loss for migratory and shore birds caused by vegetation clearing for project facilities, and the permanent increase and seasonal fluctuations in lake levels due to project operations.

Pages 121, 139, 200, 208: Please clarify if the tailrace would extend to Sweetheart Creek or, as page 23 states, “to a small tributary to Sweetheart Creek.”

Page 124: Your discussion of wildlife in the project area frequently cites the importance of old-growth habitat to wildlife, and you state that there are stands of old-growth forest in the area. However, the only indication of the location of old-growth stands with relation to project facilities is on page 176, where you state that the transmission line would extend through 400 feet of old growth before interconnecting with an existing line. Please describe the location of old-growth stands in the project area in your affected environment for vegetation types, and discuss the effects of loss or alteration of old-growth forest in your analysis of project effects on terrestrial resources.

Page 125: Please add the “Ornithological Summary” on page 125 to the “Waterfowl and Shorebirds” discussion on page 121.

Page 129: Please delete the habitat types in the third paragraph of section 3.3.3.2 that do not occur in the project area (i.e., the habitats that are not underlined). The second paragraph of section 3.3.3.2 and figure 49 indicate that alpine habitat occurs in the project area; however, the third paragraph indicates that alpine habitat does not occur (i.e., “alpine” was not underlined). Please revise the text and figure as necessary to resolve this inconsistency.

Page 136: Survey Results list four bulleted actions to be taken during the 2012 field season. If these actions have been taken, please delete this bulleted list.

Pages 137 to 140: SD2 identified the issue of the effects of project construction, operation, and maintenance on Endangered Species Act candidate species, sensitive species, state-listed species, and species of interest to agencies. Table 27, *Project Potential Effects on Botanicals*, shows that construction and operation of the project would result in the loss of habitat for a number of rare or sensitive plant species, although none of these plant species were identified in surveys. Please describe the habitat loss in narrative form in your analysis of the project’s effects on terrestrial resources.

Page 143: Please move the discussion of rare and sensitive plants species from section 3.3.4, *Threatened, Endangered, Species of Concern*, into section 3.3.3, *Terrestrial Resources*.

Page 143: SD2 identified the issue of the effects of project construction and operation (e.g., lake level fluctuations, project roads and facilities) on distribution and abundance of invasive plant species. On page 143, you propose monitoring the Gilbert Bay shoreline for the invasive sow thistle. Please describe your proposed sow thistle monitoring measures in your terrestrial resources analysis and clarify if the proposed monitoring for sow thistle would be part of the Vegetation Management Plan. In addition, please include in your analysis a description of the area of the shoreline to be monitored, the time of year in which monitoring would occur, the number of years of monitoring, monitoring methods, and the schedule for filing monitoring reports.

Page 143: Table 38, *Estimated Cost of Environmental and Aesthetic Investments* (page 226), characterizes the proposed Vegetation Management Plan as restoration of any disturbed areas and weed/invasive species management. However, the plan is not discussed in section 3.3.3, *Terrestrial Resources*. Please include in your terrestrial resources analysis a description of the plan and how its implementation would protect or enhance the affected environment for vegetation resources of the project area.

Page 144: Please move the discussion of Kittlitz's murrelet, yellow-billed loon, and Queen Charlotte's goshawk into the sensitive species affected environment discussion of section 3.3.3, *Terrestrial Resources*, and note that the murrelet and loon are also candidate species. In addition, the discussion of Kittlitz's murrelet appears to be copied from another document, possibly written by the FWS or the Forest Service; please cite the author and define Factor A on page 150. In Table 30, *TES Species Listed by USFS—Animals*, change the Queen Charlotte goshawk status from E (endangered) to S (sensitive) because only the British Columbia distinct population segment is listed as endangered.

Page 144: You cite an August 28, 2012, email from the FWS stating that there are no threatened or endangered species under the FWS' jurisdiction that would be affected by the proposed project. Therefore, please delete the discussion of the endangered Aleutian shield fern, which is known to occur only in the Aleutian Islands, from pages 131.

Pages 155 to 160: Please move the discussion of Forest Service sensitive plant species from section 3.3.4, *Threatened, Endangered, Species of Concern*, to section 3.3.3, *Terrestrial Resources*. You include the sensitive lichen *Lobaria amplissima* as a plant species not suspected in the area on page 158, but on pages

159-160 you discuss its biology and likelihood of occurring in the project area. If *Lobaria amplissima* is not likely to occur in the project area, then you should delete the discussion of the species.

Page 160: Table 34, *Forest Service Rare Plants of Concern for the Project Area*, appears to be identical to Table 23, *Tongass National Forest, 2009, Rare Plant List*. Similarly, the “Field Survey for Rare Plants” section on pages 161-162 appears to be identical to text on pages 133-134. The topic of Forest Service Rare Plants of Concern is more appropriate for section 3.3.3, *Terrestrial Resources*, because these are not protected under the Endangered Species Act. Therefore, please delete the text addressing these species in section 3.3.4, *Threatened, Endangered, Species of Concern*. In addition, please revise the text to identify the geology maps that show the occurrence of habitats underlain by ultra-mafic rock and carbonates mixed with gneiss. Please include in the rare plants discussion in section 3.3.3, the information on page 162 that a rare sedge, *Carex bicolor*, was identified at the Boulderfield Creek mouth.

Page 163: Please delete the statement that “The botanical and wetland surveys will be important to determine what impacts the project could have. These surveys have not yet been released by the contractor,” and add the survey results to section 3.3.3, *Terrestrial Resources*.

### Recreation and Land Use

Page 168: The APEA briefly addresses the issue of whether existing recreation facilities and public access are adequate to meet current and future demand. Although survey information was provided indicating the preferences of users, no quantitative data or analysis was provided to describe existing or future demand for recreation facilities in the project area. Please include this information in your final license application.

Page 170: The APEA states, “The semi-remote recreation status and implications are detailed above in Figure 57.” However, Figure 57 illustrates survey results. Please correct this and clarify what the term “implications” is referring to.

Page 170: The APEA claims that effects on semi-remote recreation opportunities would be “negligible,” although there is insufficient analysis to support this claim. Each recreational activity should be evaluated for potential effects. For example, how will the proposed beach road and trail improvements alter present access to the areas used for fishing or viewing wildlife and waterfalls? How will the availability of a new public dock affect the use of upland areas along the beach and creek, such as bear viewing or stream fishing? Is such

use expected to increase? Who will manage and maintain the dock and the improved trails? Will drawdown of the lake affect float plane access?

Page 170: Please clarify any recreation enhancements you are proposing (and not just considering). Is a public use dock being proposed? There is mention of possibly constructing a new recreation cabin in the area, but no specific proposal is offered. SD2 indicated that, in addition to trails, “Other enhancements may also be considered through consultation with the Forest Service.” Please provide a summary of that consultation and whether a dock, cabin, or other features are specifically proposed as recreation enhancements for the project.

Page 175: You acknowledge temporary construction impacts could affect hunting and trapping. You should also address how construction activities, including use of the dock and staging areas, would affect other recreational use in the project area, such as fishing on Sweetheart Creek and boating in Gilbert Bay.

Page 175: Noise impacts from heavy construction, blasting, and helicopter use should be evaluated, together with appropriate measures to reduce impacts. Please indicate whether noise from helicopter use or other construction activities would be audible from Tracy Arm and the adjacent wilderness area.

Page 176: The APEA states that interviews included six air charter companies. Please include a summary of those interview results and any information that may be available regarding the use of float planes to access Lower Sweetheart Lake.

### Aesthetic Resources

Page 214: The APEA states that the dam will not be visible from Gilbert Bay. However, the table on page 211 indicates a “Weak” visual contrast associated with the dam as viewed from the bay. Please clarify this apparent inconsistency.

Page 214: The APEA does not provide an adequate analysis of visual effects on the waterfalls. SD2 identified the need to evaluate the effect of the flow diversion on the scenic quality of the barrier falls. Please include descriptions and photos of the lower falls and barrier falls depicting a range of pre- and post development flow conditions likely to be experienced by visitors. Please also describe if any of the existing trails lead to these falls.

### Socioeconomics

Page 215: You reference revenues from a 30-MW project; however, the project as now proposed is 19.8 MW. Please adjust any affected socioeconomic benefits to reflect the change in the project capacity.

### Developmental Analysis

Page 216: Section 4, *Developmental Analysis*, should provide a summary of the information provided in Exhibit D of a license application. The purpose of the developmental analysis is to provide the reader with a cost-based comparison of the project with the no-action alternative, and, for an APEA, the cost of the project as proposed by the applicant. Please include in the power needs section the following information consistent with your Exhibit D: (1) the cost of all proposed measures identified in the APEA for the protection, mitigation, and enhancement of environmental resources affected by the project; (2) the cost of alternative power (which, for the Juneau area, may be the cost of diesel generation); and (3) the total project cost (i.e., for construction, operation, maintenance, and environmental measures).

Page 218: You included a section titled “Alternate Designs and Operations” in the APEA. In your APEA, please clarify why you have included an analysis of these alternative project locations and configurations.

Page 226: As we’ve previously stated, all proposed environmental resource protection plans referenced throughout the APEA (e.g., Avian Protection Plan, Sediment and Erosion Control Plan, Vegetation Management Plan) should be filed with your final license application. The costs for developing the plans should be included in your costs for developing the license application in Exhibit D of the final license application. The costs for implementing the plans and any other proposed environmental measures should be included in section 4.3, *Cost of Environmental Measures*. The costs included in section 4.3 should be broken out into capital costs and annual costs. For additional guidance on how to describe the costs for your proposed environmental measures see: *Preparing Environmental Documents, Guidelines for Applicants, Contractors, and Staff* on the Commission’s webpage.

### Conclusions and Recommendations

Page 227: In the conclusions section, please only reference the proposed action and the no-action alternative. The differences between the environmental effects of these two alternatives should be presented in a summary table as shown in section 5.1 of the FERC guidance document titled *Preparing Environmental*

*Documents, Guidelines for Applicants, Contractors, and Staff* available on the Commission's webpage.

Consistency with Comprehensive Plans

Page 229: Section 10(a)(2)(A) of the Federal Power Act requires the Commission to consider the extent to which a project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. In order for a plan to be considered under section 10(a)(2)(A) of the FPA, the plan must be filed with the Commission with a request that it be considered a comprehensive plan. The comprehensive plans you've listed are not consistent with the list of comprehensive plans that have been approved by the Commission for consideration as qualifying comprehensive plans. Please review the list of comprehensive plans available on the Commission's webpage at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf> to ensure that all applicable plans have been addressed and that all are correctly referenced in the document.