

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426  
July 24, 2012

OFFICE OF ENERGY PROJECTS

Project No. 14110-001 - Washington  
Black Canyon Hydroelectric Project  
Black Canyon Hydro, LLC

Chris Spens  
Licensing Manager  
Black Canyon Hydro, LLC  
3633 Alderwood Avenue  
Bellingham, WA 98225

**Reference: Request for Studies and Additional Information**

Dear Mr. Spens:

After reviewing the Black Canyon Hydroelectric Project Pre-Application Document and participating in the June 19, 2012, scoping meetings, Commission staff has additional information needs (enclosed in Schedule A) and study requests (enclosed in Schedule B). Please provide the additional information when you file your proposed study plan (due September 7, 2012). Staff may determine a need for additional studies or information upon receipt and review of scoping comments, study requests, and your proposed study plan.

Please include in your proposed study plan a master schedule that includes the estimated start and completion date of all field studies, when progress reports will be filed, who will receive the reports and in what format, and the filing date of the initial study report. Finally, if you are likely to propose any plans for measures to mitigate project impacts, drafts of those plans should be filed, if possible, with the study report.

If you have any questions, please contact Brandon Cherry at (202) 502-8328 or [brandon.cherry@ferc.gov](mailto:brandon.cherry@ferc.gov).

Sincerely,

Bob Easton, Chief  
New England Branch  
Division of Hydropower Licensing

Enclosures: Schedule A and B

cc: Mailing list  
Public Files

## ADDITIONAL INFORMATION

### Water Resources

FERC 1 1. Section 5.2.1.3 of the Pre-Application Document (PAD) states that United States Geologic Survey (USGS) gage number 12142000 located above the proposed project intake site was used to develop the annual flow duration curve shown in Figure 6. USGS gage number 12142000 is located about 4.0 miles upstream of the proposed project intake site. The PAD does not discuss, and Figure 6 does not show, whether the annual flow duration curve was adjusted for the difference in drainage areas at the gage site and at the project intake site. Please describe how the annual flow duration curve presented in Figure 6 was adjusted for the larger drainage area at the project intake site. If the flow duration curve in Figure 6 was not adjusted for the different size drainage areas, please provide a revised annual flow duration curve for the proposed project and a description of how the revised flow duration curve was calculated.

FERC 2 2. Sections 5.2.3.4, 5.2.3.5, and 5.2.3.6 of the PAD describe dissolved oxygen, pH, nitrogen, and phosphorous measurements collected in the North Fork Snoqualmie River by the King County Department of Transportation (King County Roads Maintenance Section) and the Washington Department of Ecology. This data, however, is not provided in the PAD. Please provide a copy of this data.

### FERC 3 Land Use

3. Figures 20 and 21 in the PAD show the general location of Hancock Forest Management (HFM) property and some HFM recreational access sites in relation to the proposed project location. However, due to the scale of the map, the exact location of HFM property and recreation areas in relation to the proposed project features is unclear. Further, the PAD does not include any maps depicting boundary lines for other private properties, conservation easements, or other land use designations (e.g., Mt. Si Natural Resources Conservation Area) located in the proposed project area.

Please provide figures that clearly delineate the boundaries of each private property, conservation easement, conservation area, recreation area, and other known land use designation in the proposed project vicinity. The figures should also clearly depict the location of each recreational access site, including the routes of known foot paths, trails, and river access points in relation to the proposed project features (including the proposed transmission line and extension of two existing logging roads). The figures and their corresponding legends should also include a scale and contrasting symbols that clearly distinguish between public and private areas and identify any relevant managing authorities (e.g., Washington State Department of Natural Resources).

## STUDY REQUESTS

FERC 4

### 1) Hydropower Potential and Project Economics Study

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to evaluate project economics and the hydropower potential of the site. The specific objectives of this study are to:

- Determine whether the hydraulic capacity of the two proposed turbine generating units (or turbine generating units with a different hydraulic capacity) would best utilize the available river flow and any instream flow releases to the bypassed reach; and
- Compare the cost of the proposed project (i.e., capital and annual operation and maintenance (O&M) costs) and the likely cost of alternative power in the region.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act (FPA) require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Therefore, the Commission must have sufficient information describing project economics and the hydropower potential of the site to make a public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The Pre-Application Document (PAD) describes the proposed project, including one 16.5-megawatt Francis turbine generating unit and one 8.5-megawatt Francis turbine generating unit, for a total installed capacity of 25 megawatts. Some information relevant to generation at the proposed project is unknown (e.g., any releases to the bypassed reach) or requires additional explanation and analysis (e.g., flow duration curves at the

proposed intake location; see additional information request in Schedule A).

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

In determining whether to issue a license for this project, the Commission considers a number of public interest factors, including project economics. The Commission must ensure that any license issued be best adapted to a comprehensive plan for improving or developing a waterway. Therefore, the Commission must have sufficient information on project costs and the hydropower potential of the site to evaluate the potential benefits of the project and develop any license requirements.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Staff does not propose any specific study methodology. To calculate estimated annual generation of the proposed project, however, the study should consider a number of parameters, including gross and net project head, monthly flow duration curves at the project intake, maximum and minimum hydraulic capacity of the turbines, and turbine unit efficiency. The economic analysis of the proposed project should include the estimated: (1) capital cost of constructing the dam, intake, penstock sections, powerhouse, turbine generating units, tailrace, transmission line, and extending existing logging roads; and (2) annual O&M costs of the project facilities, including all proposed protection, mitigation, and enhancement (PME) measures. The study should also incorporate an appropriate discount rate (cost of money), depreciation, and annual fees and taxes. All of the above parameters, assumptions, and associated computations should be described in the study plan.

The study analysis should account for lost generation associated with flow release alternatives being considered in other aquatic and recreational studies (i.e., Bypassed Reach Flow Study and Recreational Boating and River Access Study) and the study results should report monthly generation for each flow release alternative.

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated study cost is between \$10,000 and \$15,000.

FERC 5

## 2) Bypassed Reach Flow Study

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goals of the flow study are to provide information necessary to evaluate the effects of project construction and operation on aquatic habitat in the proposed bypassed reach and to determine any flow release that may be necessary to protect aquatic habitat and water quality in the bypassed reach. The study plan should be developed in consultation with the U.S. Fish and Wildlife Service (FWS), the Washington State Department of Ecology, and the Washington State Department of Fish and Wildlife.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Describing the project effects on aquatic habitat and water quality in the bypassed reach is necessary to fulfill the Commission's responsibilities under the National Environmental Policy Act (NEPA). Ensuring that potential environmental measures associated with aquatic resources are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD contains no detailed information on aquatic habitat in the bypassed reach

or the relationship between this habitat and flow. Descriptions of aquatic habitat in the bypassed reach over a range of flows will be needed to complete our analysis of any proposed, recommended, or required flow measures for the bypassed reach.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

The proposed project would bypass approximately 2.6 miles of the North Fork Snoqualmie River by diverting water from the intake to the powerhouse for generation. A habitat-based flow study of the bypassed reach is necessary to determine the effects of the proposed project on aquatic communities and aquatic habitat in the bypassed reach. The study results would be used to evaluate environmental measures to protect aquatic resources in the bypassed reach and would aid in the development of any necessary license articles.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Several types or combinations of methodologies may provide the necessary information; however, quantitative methods are preferred because they are more useful data for defining specific effects and comparing various flow regimes. Whichever method is used, the results must characterize the changes in habitat quantity and value, over a range of flows for the primary aquatic species being managed in the bypassed reach (e.g., cutthroat trout, rainbow trout, and brook trout). Specific methodologies and scope can be refined during the study plan meeting(s).

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

Two weeks should be sufficient to perform the study, followed by one month of data analysis and report writing. The study cost would depend on the specific methodology chosen; however, if the Instream Flow Incremental Methodology (IFIM) with Physical Habitat Simulation (PHABSIM) is used, the estimated cost is \$100,000.

FERC 6

### 3) Groundwater Resources Assessment

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of the groundwater resources assessment is to provide information necessary to evaluate the effects of project construction and operation on groundwater resources and associated municipal water supplies in the project area.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Describing the project effects on groundwater resources is necessary to fulfill the Commission's responsibilities under NEPA. Considering effects on groundwater resources and ensuring that associated environmental measures are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

Section 5.2.2 and 5.2.4.1 in the PAD describe water rights in the project area. However, there is insufficient information to accurately describe groundwater resources in the basin and how project construction and operation may affect groundwater and associated municipal water supplies.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

The proposed project would bypass approximately 2.6 miles of the North Fork Snoqualmie River. Reducing flows in the bypassed reach could potentially alter groundwater resources in the project area. If effects on groundwater resources are identified, this study results would be used to evaluate potential environmental measures to protect groundwater resources and would aid in the development of any necessary license articles.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Existing hydrogeologic data and information (such as existing groundwater hydraulic models, well construction logs and lithologic data, and water level records, etc.) relevant to the project area that are available in current published reports, literature, and maps should be reviewed. The literature review should include information from established agency sources such as the U.S. Geological Survey, the Washington State Department of Natural Resources, and other sources. If deficiencies in groundwater data exist, Black Canyon Hydro, LLC, may need to collect additional field data to characterize the potential effects on groundwater resources. Specific methodologies and scope can be refined during the study plan meeting(s).

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

If existing data are sufficient to describe and analyze groundwater resources, then the estimated study cost is \$25,000. The cost would be greater if further field investigation is necessary. The proposed study could be completed in three months, if adequate groundwater data exists; and 15 months, if additional data collection is needed.

FERC 7

#### **4) Fish Community Survey**

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of the study is to obtain current information on the fish community and fish habitat in the potentially affected reach of the North Fork Snoqualmie River, from

about one quarter mile upstream of the proposed intake site to about 200 yards downstream of the proposed powerhouse site. The study plan should be developed in consultation with the FWS, the Washington State Department of Ecology, and the Washington State Department of Fish and Wildlife.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Describing the effects of project construction and operation on aquatic habitat is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that potential environmental measures associated with aquatic resources are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD summarizes fisheries data from the general project area within the Upper Snoqualmie River Basin, but much of the data is outdated or collected from locations outside the potentially affected reach of the North Fork Snoqualmie River. This study is necessary to describe the existing aquatic resources in the project area and define the current baseline against which proposed, recommended, or required measures will be evaluated.

Information to be collected should include, at a minimum, relative abundance data for all collected fish species, length frequencies and condition factors for common or managed (e.g., rainbow trout) fish species, and general descriptions of habitat types and associated fish species within the potentially affected reach of the North Fork Snoqualmie River. To the extent possible, the study should also include a comparison of this data with other similar stream reaches in the region.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could affect aquatic communities in the project area by modifying streamflows and habitat. Information describing the existing fish community is needed to evaluate potential effects of construction and operation of the proposed project and to serve as the baseline against which proposed, recommended, or required measures will be evaluated.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Techniques that could be employed for fish collection include electrofishing, seining, trapping, and/or hook and line sampling. All sampling effort should be recorded and conducted in a repeatable and quantifiable manner. Descriptions of habitat types should use a meso-habitat scale (i.e., riffle, pool, run, etc.) and be based on accepted definitions of each habitat type. Specific sampling methods and scope can be refined during the study plan meeting(s).

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

Approximately one week of field work should be sufficient to perform the study followed by one month of data analysis and report writing. The estimated cost of this study is \$50,000.

FERC 8

## **5) Terrestrial Habitat Resources Study**

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of the study is to identify plant and wildlife habitat that may be affected by the construction and operation of the proposed project and measures that could be

implemented to mitigate impacts. The specific objectives of this study are to:

- Compile an inventory of plant and wildlife habitat in the vicinity of the project, including wetlands;
- Evaluate the potential effects of project construction and operation on the identified habitats;
- Identify appropriate PME measures that could be applied or implemented; and
- Develop a habitat management plan to be implemented for the project if a license is issued.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Terrestrial habitats occur in the project vicinity, which could be affected by construction and operation of the proposed project. Describing the effects on these resources is necessary to fulfill the Commission's responsibilities under the NEPA. Ensuring that potential environmental measures associated with terrestrial resources are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD provides a general overview of terrestrial plant and animal habitat and a summary of plant and animal species found in the general project area. In order to complete our review of the proposed project, however, a more comprehensive and systematic assessment is needed to address all terrestrial resources and potential effects on habitat from project construction and operation.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect,*

*and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could affect terrestrial habitat through vegetation removal and soil disturbance resulting from construction of the road extensions and transmission line;<sup>1</sup> excavation of the tunnel for the proposed penstock sections; and construction of the dam, intake, and powerhouse. Reducing flows in the bypassed reach and altering flows at the proposed tailrace area could also affect riparian habitat. The study will help to determine project effects on terrestrial habitat and wetlands and provide a basis for the development of any necessary habitat management plans.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Study methods may include the following:

- Conduct field surveys (by ground and/or air), review existing plans, maps and reports, and consult with area land managers and wildlife agencies to compile a complete inventory of habitat types in the project area. Provide mapped locations of planned facilities and areas to be used during construction and describe terrestrial habitat in these areas;
- Review any existing studies describing wetlands, water quality and quantity, and seasonal changes in wildlife habitat use in the project area. Integrate the results of those studies into the habitat study, as necessary to evaluate the effects of altered flows in the bypassed reach on riparian habitat; and
- Based on the results of the studies, prepare a habitat management plan that addresses potential project effects on terrestrial resources.

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

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<sup>1</sup> In the June 19, 2012, virtual site review meeting, Black Canyon Hydro, LLC stated that it is considering burying the proposed transmission line.

The estimated study cost is \$75,000, but this could vary depending upon the level of information obtained from existing sources. Two or three technicians would be expected to review existing data sources, survey sites in the field, develop the inventory, evaluate potential effects of the project on habitat resources, and draft and finalize maps and reports.

FERC 9

## 6) Recreational Boating and River Access Study

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to evaluate recreational boating activity on the North Fork Snoqualmie River, including boat access, which may be affected by the construction and operation of the proposed project. The potential effects of altered flows and geomorphology of the river would also be addressed. The specific objectives of the study are to:

- Identify recreational boating activity, including put-in and take-out sites, on the North Fork Snoqualmie River;
- Estimate current and future use of the river by boaters;
- Evaluate the effects of project construction and operation on boating opportunities on the North Fork Snoqualmie River;
- Determine acceptable or optimal recreation flows by equipment type (e.g., kayak, canoe, raft, etc.);
- Describe the effects of the proposed dam and altered river flows and geomorphology on existing and potential boating activity, including boat access, within the project area; and
- Describe any new boating opportunities that may be created by the project.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing

a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

The proposed dam, intake, and approximately 2.6-mile-long bypassed reach would be located in the middle of an approximately 6.5-mile-long advanced whitewater paddling run known as Ernie's Gorge. Recreational boating activities and river access could be affected by development of the project. Describing the effects on these resources is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that potential measures associated with these resources are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD provides a general overview of boating activity in the project area, a description of Ernie's Gorge, and a brief description of potential project effects on recreational boating. A systematic assessment of boating activity, river access, pre- and post-development flows, and potential effects is needed to complete our environmental review.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could adversely affect recreational boating activity in the vicinity of the project through disruption or displacement of activities or access or changes to the boating experience (e.g., decreased enjoyment from altered flows and changes in the availability of certain class whitewater boating). The results of the study will help define the effects of the project, including the relationship between flows and boating suitability, and will inform the need to modify the proposed operating regime to avoid or mitigate impacts.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Study methods may include the following:

- Consult with boaters, land and resource managers, guides, user groups, and others to determine the types and locations of boating activity occurring on the North Fork Snoqualmie River;
- Through consultation, direct observation and other means, conduct an assessment of boating activity occurring in the project area, including trip purpose (e.g., whitewater runs, fishing), trip length (if known), and seasonal considerations;
- Identify, map, and describe existing and potential sites for recreational boating access along the river corridor;
- Conduct interviews with experienced boaters and other experts to determine a range of conditions generally acceptable to various types of watercraft and skill levels;
- Conduct expert evaluations and an assessment of a range of flows to determine boating suitability for the types of watercraft likely to use various river reaches. Correlate acceptable or optimal flows with pre- and post-development flow conditions for a range of operational alternatives. (For additional guidance, consult *Flows and Recreation: A Guide to Studies for River Professionals*, by Whitaker, Shelby and Gangemi, 2005);
- For each cohesive river reach (as defined in the study), briefly describe the river environment and existing and potential boating activity that could occur at a range of flows for both pre- and post-development. Identify put-in and take-out sites and related needs (e.g., fishing and remote camping) that may be appropriate to a particular reach. To the extent practical, estimate current and future use that might be expected for each month of the year; and
- Develop recommendations for acceptable or optimum recreation flows, where practical, as well as measures addressing boating opportunities within the river corridor. Measures would be included in a Recreation Management Plan (RMP).

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated cost of this work is approximately \$50,000, depending upon the extent of flow analysis, fieldwork conducted, and the level of information that might be obtained from existing sources.

One or two technicians would be expected to review existing data sources; interview knowledgeable boaters; survey river reaches and boating access areas in the field; develop an inventory of access locations or other sites of interest to boaters; evaluate current and future use and the need for additional facilities; evaluate a range of

flows and potential effects of the project on boating opportunities; and draft and finalize maps and reports. Depending on the degree of success in conducting multiple-flow assessments utilizing natural flows, it is possible that additional follow-up studies will be needed to complete the evaluation of potential effects.

FERC 10 **7) Recreation Resources Study**

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to identify recreation resources and activities that may be affected by the construction and operation of the proposed project, as well as measures that could be implemented to mitigate impacts. The specific objectives of the study are to:

- Compile an inventory of outdoor recreation resources, facilities, and activities that support both commercial and non-commercial recreation and tourism in the project area;
- Quantify current recreational use, tourism, and future trends based on recent or newly conducted surveys and interviews, consultation with stakeholders, regional and statewide plans, and other available data;
- Evaluate the potential effects of project construction and operation on the resources and activities identified;
- Identify and evaluate new recreation opportunities that may be created by the project;
- Identify a range of PME measures that could be applied or implemented to mitigate impacts; and
- Develop a detailed RMP to be implemented for this project if a license is issued.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing

a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Diverse recreational opportunities occur in the project vicinity, which could be affected by the construction and operation of the project. Describing the effects on these resources is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that potential measures associated with these resources are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD provides a general overview of recreation activities, as well as a brief description of recreational access restrictions and limitations in the project area (e.g., private property, Hancock Forest Management permit system). In order to complete our review of the proposed project, however, a more comprehensive and systematic assessment is needed to address all recreation resources, existing and future use, needs and opportunities, and potential project effects in the vicinity of the project.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could affect recreational resources in the vicinity through disruption or displacement of activities, changes to the recreational experience, increased use, limitations on public access, recreational user and property owner conflicts, changes in the types of recreation activities in the area, or by other means. The results of the study will identify existing types and locations of recreation resources, facilities, and activities that occur in the project area, as well as current use patterns and the potential demand for new recreation facilities, or potential user conflicts, if the project is constructed. The study will help to determine the capacity of the project to meet this potential demand or conflicts and will provide a basis for development of an RMP for the project that meets those demands or conflicts considering other environmental constraints.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal*

*values and knowledge.*

Study methods may include the following:

- Conduct field surveys (each season, by ground and/or air), review existing plans, maps and reports, and consult with area land managers and recreation providers to compile a complete inventory of recreation resources available in the project area (including sites, use areas, and facilities that support outdoor recreation and tourism). Recreation activities to be assessed include, but are not limited to, fishing, hunting, guiding, camping, hiking, wildlife viewing, sightseeing from land and air, bicycling, off-road vehicle use, and winter recreation. The seasonality of each activity should also be described. Provide mapped locations of existing or planned facilities and use areas, including dispersed recreational use;
- Through user and public surveys (based on accepted protocols), personal interviews, and analysis of available data, quantify and describe current and future use and participation levels in outdoor recreation activities for both commercial (i.e., outfitter/guide) and non-commercial uses. Include numbers and types of users (e.g., age group, resident/visitor, guided/independent, activity type, etc.), means of access, time of visit (i.e., weekend/weekday, months, seasons), and preferences for any new recreation opportunities that would be available through the development of this project;
- Review relevant studies addressing flows and river geomorphology and integrate the results into the recreation study to define how project-related changes in flows may affect non-boating recreation resources along the river corridor;
- Review available data and consult with the Washington Department of Fish and Wildlife, recreational fishing and hunting guides, or other experts to determine existing levels of recreational fishing and hunting in the project area and the potential effects of project construction and operation on those activities. If localized data are unavailable, broader regional data should be extrapolated (to the extent practical) to provide an overview of hunting and fishing activity occurring in the project area; and
- Prepare an RMP that addresses potential project effects as well as future recreation needs and opportunities, based on the results of the studies.

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated cost of this study is \$75,000, depending upon the level of information that might be obtained from existing sources. Two or three technicians

would be expected to review existing data sources, survey sites in the field, develop the inventory, evaluate current and future use and the need for additional facilities, evaluate potential effects of the project on area recreation resources, and draft and finalize maps and reports.

FERC 11

## 8) Noise Assessment

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of the noise assessment is to determine whether noise from the construction and operation of the project, including project facilities and transport and staging areas, might affect area residents, private property owners, or recreational users in the vicinity of project. The specific objectives of the study are to:

- Characterize existing ambient noise levels in the vicinity of the project;
- Estimate noise levels that would be generated by construction activities (e.g., transport of equipment, materials, and personnel; blasting; use of heavy equipment);
- Determine if construction activities and operation of the project would be audible to area residents, recreation users, or others in the vicinity of the project; and
- Propose measures, as needed, to avoid or mitigate noise impacts.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Although the project would be located several miles from the nearest city (North Bend), the scale of the project and the need for extensive tunnel excavation and material

hauling could have potential noise effects on residents of Ernie's Grove (an unincorporated community located in the immediate project vicinity), nearby private property owners, and recreation users. Describing these effects is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that associated measures are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD only contains a brief statement that potential noise effects could occur during construction and operation of the project. A systematic assessment of noise impacts is needed to complete our review of the proposed project.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could adversely affect area residents, private property owners, and recreational users in the vicinity of the project and associated staging and construction areas. The results of the study will help define the effects of the project and will inform the potential need to reduce or mitigate noise impacts (e.g., facility locations, soundproofing, natural buffers, construction scheduling, etc.).

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Study methods may include the following:

- Identify and describe the sources and frequency of noise and noise levels that will be generated by construction and operation of the project;
- Estimate decibel levels at select, representative sites and compare projected noise levels with existing noise levels at the selected locations during each season (e.g., winter, spring, summer, and fall);
- Using the System for the Prediction of Acoustic Detectability (SPreAd) model for a geographic information system (GIS) environment, estimate existing soundscapes based on the site layout for construction and operation phases, including

anticipated changes in concentration of motorized vehicles and excavation equipment. Compare and graphically represent projected noise levels with existing noise at the selected locations to determine the extent and significance of any impacts;

- Determine relative effects of noise based on distance from project features, landscape conditions, existing ambient noise, and other factors on the nearby area; and
- Propose measures to reduce, avoid, or mitigate noise impacts (e.g., facility locations, soundproofing, natural buffers, construction scheduling, etc.).

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated cost of the noise assessment is approximately \$40,000, depending on the extent of the impact area and the number of sites studies. One or two technicians would be expected to conduct the assessment, evaluate impacts, propose measures, and draft and finalize maps and reports.

## FERC 12 **9) Aesthetic Resource Assessment**

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to identify effects of the proposed project on aesthetic (i.e., visual) resources in the project area. The specific objectives of the study are to:

- Summarize aesthetic resources in the vicinity of the project;
- Identify key observation points (KOPs) and informal recreation sites that are within view of each major element of the project (e.g., dam, intake, powerhouse, transmission line, access roads, etc.);
- Conduct a detailed analysis of likely effects of the project on aesthetic resources as viewed from the KOPs; and
- Propose measures, as needed, to avoid or mitigate effects on aesthetic resources.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

The project would be located in an area with numerous recreational opportunities and scenic characteristics (e.g., Mt. Si Natural Resources Conservation Area, Fantastic Falls). Alteration of the existing landscape, terrain, and river from project construction and operation could adversely affect aesthetic resources. Describing these effects is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that associated measures are analyzed is relevant to the Commission's public interest determination.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD contains limited information on the potential effects construction and operation of the project could have on aesthetic resources. A systematic assessment of visual impacts is needed to complete our review of the proposed project.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Construction and operation of the proposed project could adversely affect aesthetic resources in the vicinity of the project and associated staging and construction areas. The results of the study will help clarify the effects of the project and will inform the need to possibly modify the proposal or mitigate impacts through the development of license articles.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Study methods may include the following:

- Summarize aesthetic resources in the vicinity of the project, including views of the project from private properties; natural areas accessible to the public; and existing or proposed parks, trails, or other formal or informal recreation sites;
- Identify KOPs within the surrounding area, including possible formal and informal recreation areas that may be within view of the project;
- Compile photo renderings that illustrate the view from each KOP currently and how that view would change with development of the project. Illustrations should include views during various times of the year; and
- Conduct a detailed analysis of likely visual impacts of the project as viewed from the KOPs.

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated cost of this work is approximately \$25,000, depending upon the number of KOPs studied. One or two technicians would be expected to identify KOPs, visit and photograph those sites, prepare digital renditions of the view of the project from each KOP, evaluate the potential effects of the project on views from each KOP, evaluate view impacts from water and air, and draft and finalize maps and reports.

FERC 13

## **10) Cultural Resources Assessment**

*§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to determine the potential effects of project construction and operation on archaeological and historic resources that are included in or eligible for the National Register of Historic Places (National Register or historic properties). The survey and study report, including identification of the area of potential effects (APE)<sup>2</sup>

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<sup>2</sup> The APE should, at a minimum, include the lands enclosed by the proposed project boundary including both in-water and on-shore project lands and facilities, and lands or properties outside the project boundary where project construction and operation or other project-related activities may cause changes in the character or use of historic properties, if any historic properties exist.

should be developed in consultation with the Washington State Historic Preservation Officer (SHPO), the Snoqualmie and Tulalip Tribes, and other interested parties. The specific objectives of the survey and subsequent report are to:

- a) Identify the project site's APE;<sup>3</sup>
- b) Conduct a pedestrian field inventory within the APE to locate any historic or archeological resources;
- c) Conduct an ethnographic inventory in cooperation with the Snoqualmie and Tulalip Tribes to locate any property of cultural or religious significance within the APE;
- d) Assess the National Register eligibility of historic, archaeological resources, or other cultural resources of religious or cultural significance within the APE, including considering whether they may contribute to a larger district;
- e) Evaluate the potential effects on historic properties from construction or proposed operation of the project or from project-related activities; and
- f) Prepare a draft historic properties management plan (HPMP) to be filed with the preliminary licensing proposal and a final HPMP to be filed with the license application, if historic properties are identified and would be adversely affected by construction or proposed operation of the project or from project-related activities.

*§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

Not applicable.

*§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the FPA require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power generation and other developmental values.

Cultural resources are resources of particular interests to the public, including Native Americans. Preserving and protecting cultural resources provides a venue for understanding our Nation's past and respecting the various cultures of this country.

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<sup>3</sup> The APE should be defined and provided to the Washington SHPO for concurrence prior to conducting the field and ethnographic inventories within the APE.

Describing the effects on these resources is necessary to fulfill the Commission's responsibilities under NEPA. Ensuring that potential measures associated with cultural resources are analyzed is relevant to the Commission's public interest determination.

Furthermore, pursuant to section 106 of the National Historic Preservation Act (section 106), the licensing of the proposed project would be a federal undertaking and a license issued by the Commission would permit activities that may "...cause changes in the character or use of historic properties, if any such historic properties exist..." (see 36 CFR part 800.16(d) of the regulations implementing section 106). The Commission must, therefore, comply with section 106, which requires the head of any federal department or independent agency having authority to license an undertaking to take into account the effect of the undertaking on historic properties. In the case of this proposed project, assessment of historic properties would be conducted in continuous consultation with the Commission, Washington SHPO, Snoqualmie and Tulalip Tribes, and the public.

Native American interests and historic properties exist throughout the region and the Snoqualmie and Tulalip Tribes have indicated concerns about project effects on stream flow in the North Fork Snoqualmie River and related waterways; however, sufficient cultural resource identification has not been completed. Project construction, operation, and maintenance may affect the value and integrity of National Register-eligible cultural resources in the vicinity of the project.

*§5.9(b)(4) – Describe the existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD provides information on known archaeological and historic resources within the project vicinity. The PAD, however, provides no information regarding the extent to which the project area has been previously surveyed for cultural resources. Black Canyon Hydro, LLC proposes to consult with the Washington SHPO and develop a HPMP for the project; however, it does not propose to conduct any historic or archaeological surveys to accurately determine if cultural resources are present in the project area. Due to the potential for significant cultural resources, a survey of the project APE is needed. If any historic properties are identified, the nature and extent of potential effects and measures to avoid, lesson, or mitigate adverse effects, can be properly determined.

*§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Section 106 of the National Historic Preservation Act requires that federal agencies, licensees, and those receiving federal assistance take into account the effect of proposed undertakings on any district, site, building, structure, or object that is included in or eligible for the National Register. Construction, operation, and maintenance of the dam, impoundment, intake, powerhouse, penstock sections, transmission line, access roads, and any potential staging areas could adversely affect historic properties through ground-disturbing activities and cause other indirect adverse effects associated with noise, vibration, and other interferences on historic properties of religious and cultural significance to the Snoqualmie and Tulalip Tribes.

The cultural resources survey would provide information on potential cultural resources located within the APE. The subsequent report would provide information on cultural resources that would be potentially eligible for the National Register and any potential effects on historic properties. If there would be an adverse effect on historic properties, an applicant-prepared HPMP, developed in consultation with the Commission, the Washington SHPO, the Snoqualmie and Tulalip Tribes, and other interested parties, would be necessary to avoid, lessen, or mitigate for adverse effects. If an HPMP is needed, the draft and final HPMP should be filed with the preliminary licensing proposal and the final license application, respectively and implementation of the HPMP would be a requirement of any license issued for the proposed project.

*§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

The study should include a literature review and field inventory. The systematic pedestrian field inventory for direct effects should be conducted within the project APE and the APE should consist of lands within 100 feet of the entire proposed project boundary and any additional construction staging areas and borrow areas, and 150 feet on either side of the proposed transmission line route and access roads.<sup>4</sup> The ethnographic inventory<sup>5</sup> for indirect effects should incorporate at least a 0.5-mile radius around the

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<sup>4</sup> The 100- and 150-foot margins around various aspects of the project footprint are considered minimal buffer zones, and the applicant is encouraged to expand the APE in certain areas to cover any possible alternative locations (if they exist) of the dam, intake, penstock sections, powerhouse, and transmission line corridor.

<sup>5</sup> Methods for the ethnographic inventory need to include the expertise of a

proposed project facilities.<sup>6</sup> Prior to conducting the survey and completing a survey report, the applicant should consult with the Washington SHPO, Snoqualmie Tribe, and Tulalip Tribes on: (a) appropriateness of the APE; (b) methods and techniques on how the survey (both systematic pedestrian and ethnographic) should be conducted; (c) anticipated effects (direct and indirect) on cultural resources; (d) what properties are and are not considered eligible for the National Register; and (e) any other relevant details involving the surveys and report.

A preliminary report identifying any discovered cultural resources should be completed after the field inventory phase. At a minimum, this report should be reviewed by the Washington SHPO, Snoqualmie and Tulalip Tribes, and the Commission. Black Canyon Hydro, LLC should seek concurrence with the Washington SHPO on its determination of what properties are or are not considered eligible for the National Register. Black Canyon Hydro, LLC should seek concurrence with the Washington SHPO on what, if any, effects may occur on historic properties. Based on review and comments from the involved parties regarding the preliminary report, the applicant should prepare a final report that addresses each comment of the involved parties or describes why the comments have not been addressed.

The evaluation of project effects, both direct and indirect, on cultural resources should include both site-specific effects (e.g., construction, vehicular traffic, visual, etc.) and all potential future effects. The report should also be kept confidential, and filed with the Commission and other consulting parties as a non-public document. On their own or upon request from the public, the applicant can issue an abridged report for public review.

The report should include all the information necessary to satisfy the objectives listed under *Criterion (1)* (i.e., under §5.9(b)(1) above), with the exception of item f. The evaluation of project effects on cultural resources should include both site-specific effects such as project construction, operation, and maintenance; all potential future effects, such as new recreational facilities; and potential cumulative effects.

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qualified, locally experienced ethnographer, who would conduct individual interviews with knowledgeable tribal informants that could include field visits to areas of religious and cultural significance within or near the APE.

<sup>6</sup> The dimension or extent of the zone involving ethnographic investigations could extend beyond 0.5-mile in some areas, especially in determining visual effects of the proposed project, and such considerations should be based on consultations with the Washington SHPO, Snoqualmie Tribe, and Tulalip Tribes.

If historic properties are identified and would be adversely affected by construction or proposed operation of the project or from project-related activities, then an HPMP should be developed after consultation with the Washington SHPO, Snoqualmie and Tulalip Tribes, and other interested parties. When developing an HPMP the generally acceptable practice is to use the “Archeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines” (*Federal Register*, September 29, 1983, Vol. 48, No. 190, Part IV, pp. 44716-44740) and the Advisory Council on Historic Preservation and Commission’s “Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects”<sup>7</sup> (issued May 20, 2002), and consider and/or address the following items:

- a) Completion, if necessary, of identification of historic properties, within the project’s APE;
- b) Continued use and maintenance of historic properties;
- c) Maintenance and operation of the hydroelectric projects according to the Secretary of Interior’s “Standards for the Treatment of Historic Properties” (36 C.F.R. Part 68) and applicable National Park Service Preservation Briefs;<sup>8</sup>
- d) Treatment of historic properties threatened by project-induced shoreline erosion,<sup>9</sup> other project-related ground-disturbing activities, and vandalism;
- e) Identification and evaluation of historic properties, determination of effects, and ways to avoid, minimize, or mitigate adverse effects;
- f) Consideration and implementation of appropriate treatment that would minimize or mitigate unavoidable adverse effects on historic properties;
- g) Treatment and disposition of any human remains that may be discovered, taking into account any applicable state laws and the Advisory Council on Historic Preservation’s “Policy Statement Regarding Treatment of Human Remains and Grave Goods” (September 27, 1988, Gallup, NM);

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<sup>7</sup> This document was issued jointly by the Commission and the Advisory Council on Historic Preservation on May 20, 2002. The document is available at <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/hpmp.pdf>.

<sup>8</sup> This portion of the HPMP is necessary if the project is determined to be eligible for the National Register and would be adversely affected by the proposed project operations.

<sup>9</sup> Project-induced shoreline erosion does not include shoreline erosion attributable to flood flows or phenomena, such as wind driven wave action, erodible soils, and loss of vegetation due to natural causes.

- h) Compliance with the Native American Graves Protection and Repatriation Act (25 U.S.C. Section 3001), if federal lands are within the project boundary;
- i) Discovery of previously unidentified properties during project operations;
- j) Public interpretation of the historic and archaeological values of the project;
- k) List of activities (i.e., routine repair, maintenance, and replacement in kind at the project) not requiring consultation with the Washington SHPO; since these activities would have little or no potential to affect historic properties;
- l) Procedures to address effects during project emergencies; and
- m) Coordination with the Washington SHPO, Snoqualmie and Tulalip Tribes, and any other identified parties during implementation of the HPMP.

*§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The estimated cost is between \$30,000 and \$35,000 for the systematic pedestrian survey, and \$15,000 and \$20,000 for the ethnographic survey, depending on the scope and intensity of the surveys. A technical crew ranging from two to eight members would be expected to spend 20 hours a week, for approximately one to two weeks to conduct field work. Report preparation should take a qualified project archeologist and ethnographer about four to eight weeks to complete.



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office  
510 Desmond Dr. SE, Suite 102  
Lacey, Washington 98503

JUL - 9 2012

Honorable Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington D.C. 20426

**Subject:** Review of Notice of Intent to File License Application, Filing of Pre-Application Document, Commencement of Pre-Filing Process and Scoping; Request for Comments on the PAD and Scoping Document; and Identification of Issues and Associated Study Requests for the Black Canyon Hydroelectric Project, FERC Project No. 14110

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the Federal Energy Regulatory Commission's (Commission or FERC) Notice of Intent to File License Application, Filing of Pre-Application Document (PAD), Commencement of Pre-Filing Process and Scoping; Request for Comments on the PAD and Scoping Document (SD1); and Identification of Issues and Associated Study Requests for the Black Canyon Hydroelectric Project, FERC Project No. 14110 submitted by Black Canyon Hydro, LLC (Applicant). We also participated in and provided initial comments during the public meeting for Black Canyon Hydroelectric Project, held on June 19, 2012 at the Cedar River Watershed Environmental Center, Cedar Falls, Washington.

The following comments herein are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*), the Federal Power Act (FPA), (16 U.S.C. 791 *et seq.*), the Endangered Species Act (ESA), 16 U.S.C. §1531 *et seq.*, the Migratory Bird Treaty Act (16 U.S.C. 702-711), and the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*).

The Black Canyon Hydroelectric Project (Project) would be located on private lands adjacent to the North Fork Snoqualmie River, approximately 4 miles northeast of North Bend in King County, Washington. The Project would consist of the following new facilities: (1) a 7-foot-high, 156-foot-long dam with a fish ladder, and an intake structure equipped with Coanda screens; (2) a 4.2-acre impoundment with a normal water surface elevation of 958 feet above mean sea level; (3) an 8,175-foot-long buried penstock that includes a 6,990-foot-long, 14-foot-diameter section that connects the intake structure to a 1,185-foot-long, 17-foot-diameter section; (4) a 60-foot-long, 100-foot-wide powerhouse containing two Francis turbine generating units, one 16.5-MW unit and one 8.5-MW unit, for a total installed capacity of 25 MW; (5) a 150-foot-

long, 40-foot-wide tailrace; (6) a 4.2-mile-long, 115-kilovolt overhead transmission line that transmits project power to the regional grid; (7) a 0.75-mile-long and a 0.5-mile-long extension of two existing logging roads that lead to the project facilities; and (8) appurtenant facilities.

Water would be diverted from the North Fork Snoqualmie River to an intake structure located approximately at river mile (RM) 5.1. The intake structure would connect to a horizontal tunnel that would convey diverted water approximately 6,990 feet before reaching a vertical shaft. The vertical shaft would descend to a second horizontal tunnel and penstock approximately 1,185 feet in length, which would supply water to the powerhouse facility. The tunnel will be drilled and /or drilled and blasted through bedrock; no surface disturbance is anticipated except at the entrance and exit points. Disposal of tunnel waste has not been determined.

The powerhouse would be located approximately at RM 2.5, slightly upstream from the rural community of Ernie's Grove. Water flowing through the powerhouse would return to the North Fork via a 150-ft-long tailrace. The proposed project would require extensions to one or more existing logging roads to allow access to the intake structure as well as the powerhouse. The primary transmission line segment connecting the Project powerhouse to the nearest interconnection point would be roughly 4.2 miles long. A short segment, less than half a mile, of new transmission (buried or on poles) would need to be constructed. The remaining 3.7 miles of transmission would consist mostly of an existing overhead 115-kilovolt ("kV") transmission line owned by Puget Sound Energy. The existing transmission line would be overbuilt by the Applicant to accommodate energy from the project.

The Project would have an estimated average annual generation of 104,720 megawatt-hours. According to the Applicant, the Project would operate in a run-of-river mode. The combined maximum hydraulic capacity of the two project turbines would be 900 cubic feet per second (cfs) with one turbine being twice the size of the other. The Project would bypass a 2.6 mile-long section of the North Fork Snoqualmie River. No minimum flow release to the bypassed reach is proposed.

### **Fish and Wildlife Resources**

Pacific trout species known to inhabit the Snoqualmie River above Snoqualmie Falls include coastal cutthroat trout (*Oncorhynchus clarki clarki*), rainbow trout (*O. mykiss*), westslope cutthroat trout (*O. clarki lewisi*), and hybrids of these species. Other fish species include largescale sucker (*Catostomus macrocheilus*), longnose dace (*Rhinichthys cataractae*), western brook lamprey (*Lampetra richardsoni*), eastern brook trout (*Salvelinus fontinalis*), and mountain whitefish (*Prosopium williamsoni*). Sculpin species include shorthead (*Cottus confuses*), mottled (*C. bairdi*), torrent (*C. rhotheus*), Pauite (*C. beldingii*), and reticulate (*C. perplexus*) (WDFW 2011). Cutthroat trout have always been known to be abundant and, along with mountain whitefish, are likely native to the North Fork. Rainbow trout may be native above Snoqualmie Falls, but, as with eastern brook trout, they have also been supplemented through planting of hatchery fish. Hybrid characteristics between cutthroat trout and rainbow trout have been observed, but not quantified. There is a long history of stocking all three trout species and detailed records beginning in 1933 are available in the WDFW hatchery release database. These records indicate that cutthroat trout were last planted in the North Fork in 1980, that rainbow

trout were last planted in the North Fork in 1982, and that eastern brook trout were last planted in the North Fork in 1959.

The upper Snoqualmie River is an important fishery resource, especially for King County anglers, who recently provided 80% of the total completed surveys in a study conducted by Washington Department of Fish and Wildlife (WDFW 2011). The population in King County has grown significantly since the last creel survey in the 1980s, and with the growing popularity of trout fishing, WDFW expects the amount of anglers fishing the upper Snoqualmie to increase.

In the PAD, the Applicant assumed that wildlife species in the vicinity of the Project would be similar to the list of wildlife species assembled for the Hancock Hydroelectric Project. This is a fair assumption, as the Hancock Project is only a few miles upstream on a tributary to the North Fork Snoqualmie. Site-specific surveys for wildlife species and their habitats may be appropriate at the intake, the powerhouse, and transmission lines prior to the final license application as these would be the sites where a majority of the construction activities would occur.

### **Threatened and Endangered Species**

The E-Government Act of 2002 strives to enhance services and increase business efficiencies with technology. As such, the Service recently developed a website where the Applicant can obtain a list of threatened and endangered species electronically that could be near the Project area. The address for this website is at [www.fws.gov/wafwo/species\\_new.html#SpeciesLists](http://www.fws.gov/wafwo/species_new.html#SpeciesLists).

To assist you in evaluating the effects of your project, site-specific information of listed species may be obtained from the Washington Department of Fish and Wildlife's Priority and Species Program at 360-902-2534 or their website [www.habitatprogram@dfw.wa.gov](http://www.habitatprogram@dfw.wa.gov) and from the Washington Department of Natural Resources' Natural Heritage Program at 360-902-1667 or their website [www.dnr.wa.gov/ResearchScience/Topics/NaturalHeritage/Pages/amp\\_nh.aspx](http://www.dnr.wa.gov/ResearchScience/Topics/NaturalHeritage/Pages/amp_nh.aspx).

When you submit a request for section 7 consultation, we request that you include your downloaded species list and the date it was downloaded, as an attachment. This will document your compliance with 50 CFR 402.12(c).

### **Flows in the Bypass Reach**

As currently configured, the proposed Project does not provide for either guaranteed minimum instream flows or process flows in the 2.6-mile by-pass reach. Under the proposed withdrawal scenario of up to 900 cfs, the Service suggests that there could be significant times throughout the year when flows in the bypass reach will be extremely low or absent. During extended periods of low or no flow, especially during the summer, fish and other aquatic organisms can be stranded in the small pools and perish due to high water temperatures, lack of oxygen, or predation. It also appears from maps of the area, the proposed by-pass reach does not benefit from any significant amount of tributary flow, compounding the consequences of not providing minimum instream flows. Some level of flow will also be necessary to operate the proposed fishway, which would provide some flow to the by-pass reach.

In addition to maintaining adequate, year-round, instream flows in the bypass reach, the proposed Project should also make allowances for periodic process flows. Overtime, the channel in the by-pass reach could begin to adjust to the new, lower, flow regime and could become overgrown with woody vegetation, narrowed, and hardened. This, in turn, could reduce the amount of habitat available in the by-pass reach over the license term negatively affecting aquatic organisms. A process flow regime should include high flow pulses for fish migration (upstream and downstream) and channel flushing; channel maintenance flows for creating and maintaining physical habitat in the channel; and channel forming flows for changing channel patterns and activating riparian and floodplain processes (Wald 2009). Since the Applicant describes this as a run-of-the-river project, some of these process flows could fit within the Applicant's proposal. To better understand the effects of the Applicant's proposal on the North Fork Snoqualmie hydrograph, the Service requests a more complete analysis and description of the flow regime in the North Fork Snoqualmie post-Project.

### **Dam, Screens, and Fishway**

The North Fork Snoqualmie River is currently a free flowing river approximately 28 miles long from its origins in the Alpine Lakes Wilderness in the Cascade Mountains to its confluence with the Middle Fork Snoqualmie River. The Applicant is proposing to construct a dam with an inflatable bladder, a fishway, and an intake structure with Coanda screens at RM 5.1. The dam will be approximately 7-feet high and 156-feet long. As currently configured, the screens will be on the right ascending bank and the fishway will be on the opposite bank. The proposed infrastructure could be subject to significant bedload and debris that that could cause uneven flow over the structures, blockage of all or some of the structures, and wear on the screens that could lead to fish injury or mortality. It is not clear from the PAD what steps the Applicant is proposing take to ensure that bedload and debris transiting the site does not affect the operation of the dam, fishway, or screened intake to the degree that it injures or kills fish or significantly delays their migration.

### **Downramping**

Unregulated rivers rarely experience rapid decreases except during or immediately following floods (Hunter 1992). Rapid and unnatural reductions in flows downstream of regulating structures, such as hydropower facilities, have a well-documented history of causing direct and indirect mortality to juvenile fish. This artificial manipulation of flows is referred to as ramping. Hunter (1992) reviewed the available literature on the effects of hydroelectric project flow fluctuations on salmon and steelhead and found that severe mortality can be inflicted by these flow fluctuations. Down ramping can rapidly expose gravel bars and isolate pools causing juvenile fish to become stranded. Stranding may cause immediate mortality to salmonid fry and juveniles, and desiccate or freeze eggs and alevins (Graybill *et al.* 1979; Reiser and White 1983). Stranding also exposes juvenile fish and eggs to predation by birds and other scavengers. Down ramping regulation and minimization of flow-fluctuation amplitude can avoid and minimize the resultant mortality and loss to the public fishery resource. It is not clear from the PAD whether the Applicant has considered the effects of downramping from the proposed Project and the steps the Applicant is proposing to take to minimize downramping, if it is determined to be an issue.

## **Section 18 of the FPA**

As currently described, the proposed Project does not provide the Service with sufficient detail to assess the effectiveness of the proposed fishway. The design of the fishway and screens will need to provide safe, timely, and effective fish passage and minimize impacts to all species of fish known to occur at the location of the proposed structures. We would expect any proposed fish passage facility or associated screening to meet the standards in the National Marine Fisheries Service's Anadromous Salmonid Passage Facility Design manual. Biological testing of the screens and fishway will be needed to demonstrate fish survival and to evaluate direct and indirect effects to fish. Periodic monitoring over the license term will also be necessary to insure all components are operating as designed.

Section 18 of the FPA expressly grants to the Department of Interior and the Department of the Commerce (Departments) exclusive authority to prescribe fishways. Section 18 states that the Commission must require construction, maintenance, and operation by a licensee at its own expense of such fishways as may be prescribed by the Secretary of Interior or the Secretary of the Commerce. Fishways prescribed under Section 18 by the Departments are mandatory upon the Commission. Within the Department of the Interior, the authority to prescribe fishways is delegated from the Secretary of the Interior to the FWS Regional Directors. Therefore, at this time, the Service, on behalf of the Department of the Interior, reserves its authority pursuant to Section 18 of the FPA, as amended, to prescribe the construction, operation, and maintenance of fishways over the term of the project license. Accordingly, any license issued by the Commission must contain the following reservation of authority:

“Authority is hereby reserved to the Commission to require such fishways as may be prescribed during the term of the license by the Secretary of the Interior pursuant to his authority under Section 18 of the FPA.”

## **Section 10(j) of the FPA**

Under section 10(j) of the FPA, licenses for hydroelectric projects must include conditions to protect, mitigate damages to, and enhance fish and wildlife resources, including related spawning grounds and habitat. These conditions are to be based on recommendations received from federal and state fish and wildlife agencies. Service conditions will be developed during the Integrated Licensing Process and submitted with our response to the Final License Application. The Commission is required to include such recommendations unless it finds that they are inconsistent with Part I of the FPA or other applicable law, and that alternative conditions will adequately address fish and wildlife issues.

Before rejecting an agency recommendation, the Commission and the agencies must attempt to resolve the inconsistency, giving due weight to the agencies' recommendations, expertise, and statutory authority. If the Commission does not adopt a 10(j) recommendation, in whole or in part, it must publish findings that adoption of the recommendation is inconsistent with the purposes and requirements of Part 1 of the FPA or other applicable provisions of law, and that conditions selected by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife, including related spawning grounds and habitat.

## Proposed Studies

In the SD1 for the Project, the Applicant proposes several studies to investigate geologic and soil resources, aquatic resources, terrestrial resources, threatened and endangered species, and recreational and land uses. The types of studies listed by the Applicant are the types of studies that any applicant for a hydropower license would be expected to conduct during the Integrated Licensing Process, but without additional information about these studies it is difficult to assess whether or not the proposed study plans would satisfy our information needs for the Project. It is the intent of the Service to work closely with the Applicant and other interested parties to discuss and develop the necessary details for each of the Applicant's study plan proposals as well as additional study plans proposed by us and other resource agencies that would be required in order to insure that the information needs of the resource agencies are met during the Integrated Licensing Process. Once these studies are completed, the Service will be in a better position to make informed decisions and develop meaningful comments, recommendations, terms and conditions, and fishway prescriptions for this Project. In addition to the Applicant's proposed studies, the Service, for reason described previously, is recommending the Applicant and the Commission include the following study plan proposals.

- |             |  |
|-------------|--|
| U.S. F&W 4  | 1. Evaluation of the need for minimum instream flows and process flows for the by-pass reach and the amounts of water needed to satisfy these flow conditions at the proposed Project location.  |
| U.S. F&W 5  | 2. Evaluation of the effectiveness of Coanda screens to clear debris loads and to prevent entrainment of all fish expected to occur at the site under all flows at the proposed Project location.  |
| U.S. F&W 6  | 3. Evaluation of fish passage needs for the proposed facility location and investigation of the type of fish passage facility necessary to provide safe, timely, and effective passage for all flows and all fish species known to occur in the by-pass reach. |
| U.S. F&W 7  | 4. Investigation of alternatives that to do not require a channel-spanning, permanent structure at the proposed Project location.  |
| U.S. F&W 8  | 5. Conduct spawner and juvenile surveys for resident salmonids in the reaches affected by the dam and flow diversion.  |
| U.S. F&W 9  | 6. Evaluation of the need for downramping criteria for the by-pass reach and whether or not this can be accomplished with the current dam design.  |
| U.S. F&W 10 | 7. Conduct surveys for wildlife including any threatened or endangered species in the vicinity of the intake, powerhouse, and transmission lines.  |

Thank you for the opportunity to comment on this project during the early stages of development. We look forward to working with your staff on this project during the Integrated Licensing Process. If you have any questions regarding our letter, please contact Mr. Tim Romanski, of my staff, at U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Dr. SE, Suite 102, Lacey, Washington 98503; Telephone (360) 753-5823.

Sincerely,

A handwritten signature in black ink that reads "Mark G. Miller". The signature is written in a cursive style with a large, prominent "M" and "G".

*for* Ken S. Berg, Manager  
Washington Fish and Wildlife Office

## Literature Cited

Wald, A. 2009. Report of investigation in instream flows: high flows for fish and wildlife in Washington. Washington Department of Fish and Wildlife, Olympia, WA. 29 pp.

Washington Department of Fish and Wildlife. 2011. Snoqualmie River game fish enhancement plan: final report on research. Submitted to Puget Sound Energy. Washington Department of Fish and Wildlife, Region 4, Mill Creek, WA



# United States Department of the Interior

NATIONAL PARK SERVICE  
Pacific West Region  
909 First Avenue, Fifth Floor  
Seattle, Washington 98104-1060



IN REPLY REFER TO:

ER12/0397

July 17, 2012

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426.

Subject: Black Canyon Hydroelectric Project (P-14119), North Fork Snoqualmie River, King County, Washington

Dear Ms. Bose:

Thank you for the opportunity to provide comments on this project. The National Park Service (NPS), Pacific West Region offers the following comments and study requests in response to the Federal Energy Regulatory Commission's Notice of Soliciting Comments on the Pre-Application Document (PAD) and Scoping Document 1 (SD1), as well as study requests for the Black Canyon Hydroelectric Project, dated May 25th, 2012. The NPS has reviewed the PAD and SD1 and also participated in and provided initial comments at the scoping meeting held on June 19th in North Bend.

The NPS Hydropower Recreation Assistance program provides technical assistance for public recreational resources during the Federal Energy Regulatory Commission (FERC) licensing process. The program draws its authority from the Federal Power Act and technical assistance provisions of the Outdoor Recreation Act of 1962, the Wild and Scenic Rivers Act of 1968, and the National Trails System Act of 1968.

The proposed project would consist of the following features: (1) an approximately 35-foot-wide, 7-foot-tall inflatable dam; (2) a 90-foot-wide, 7-foot-tall diversion intake structure; (3) a 9-foot-wide, 7-foot-tall fish ladder; (4) a 6,990-foot-long, 14-foot-diameter horizontal upper tunnel (5) a 1,185-foot-long, 17-foot-diameter horizontal powerhouse tunnel and penstock; (6) a 60-foot-long, 100-foot-wide metal powerhouse with two Francis turbine units, one rated at 16 megawatts (MW) and the other rated at 9 MW; (7) a 150-foot-long, 40-foot-wide tailrace; (8) a 0.75-mile and 0.5 extension of two existing logging road; (9) a 4.2-mile-long, 115-kilovolt transmission line; and (10) appurtenant facilities.

### Comments and Additional Information Needs

NPS is concerned about the potential impacts of the project on recreation, aesthetic and fishery resources. The project would divert up to 900 cfs from the river and create a 2.6 mile bypass reach. NPS offers the following comments and information requests. NPS also supports the United States Fish and Wildlife Service's recommended studies for fishery resources.

### Hydrology Information and Gauges

The PAD lacks detail on the hydrology of the area and how the project would affects this. More information is needed to understand both the baseline hydrology and then to evaluate how the project

NPS 1



would modify the flows, particularly in the bypass reach. It is our understanding that there is a gauge upstream of the project area, but that the gauge downstream of the proposed project facilities is no longer operable. It is also our understanding that Black Canyon Hydro, LLC will be installing gauges along this stretch of the river over the summer of 2012 to get a better understanding of the hydrology. NPS would like to request that more information be provided on the hydrology and the relationship between existing gauges and the flows in the proposed project area.

### **Comprehensive Plans Assessment**

NPS 2

The North Fork Snoqualmie River is listed on the Nationwide Rivers Inventory (NRI) maintained by the NPS. The NRI is a comprehensive plan with FERC under section 10(a)(2)(a) of the Federal Power Act. This section directs FERC to address whether a proposed hydropower project is consistent with a comprehensive plan(s) which informs the public interest decision by the Commission.

The NRI provides a register of river segments that potentially qualify for wild and scenic river (WSR) designation. In order to be eligible for WSR designation a river must be free-flowing and contain at least one outstandingly remarkable value (ORV) or a river related resource that is unique, rare, or exemplary on a regional or national scale. The North Fork Snoqualmie River was found to contain two ORVs fishery and recreation, specifically it was found to be important for resident cutthroat trout and high quality advanced kayaking opportunities. A 1979 presidential directive and related Council of Environmental Quality procedures requires federal agencies to seek to avoid or mitigate adverse effects on rivers identified in the NRI.

In addition to being on the NRI, the North Fork Snoqualmie was also found to be both eligible and suitable for WSR designation by the USFS in the Mt. Baker-Snoqualmie Forest Plan. This plan is also a comprehensive plan filed with Commission.

Further, in addition to the two comprehensive plans listed above associated with the WSR System, there are a number of other protections in place for this river and comprehensive plans to be considered under section 10(a)(2) including:

- The project is located in an area protected from hydropower through the Northwest Power and Conservation Council. This plan is also a comprehensive plan filed with FERC.
- The project is adjacent to the Mt. Si Natural Resources Conservation Area. This is a very popular recreation area and the viewshed from this area could be affected by the project. This project was funded with assistance from the Stateside Land and Water Conservation Fund (LWCF), which is administered by the Washington Recreation and Conservation Office (RCO) on behalf of the NPS. This site is protected under section 6(f)3 of the LWCF Act, which prohibits conversion of protected resources to other than outdoor recreation, or significant contravention of the purposes for which the resource was protected, without NPS approval of suitable mitigation.
- The project is within conservation easements held by King County.

The project appears to be inconsistent with a number of these comprehensive plans and we would like to request additional information and analysis of the purpose and goals of these plans and the consistency of the proposed project with these plans. We understand that FERC typically does this type of investigation during the environmental document preparation, but we believe this information will help inform the process and should be done at an earlier stage to more efficiently evaluate the project and ensure resources of all parties involved are expended effectively.

### **Study Requests**

The NPS request that the scope of the recreation and aesthetic resources be expanded to include a comprehensive study of these resources as described below.

NPS 3

**Recreation and Aesthetic Resource Study**

We request the licensee conduct a comprehensive recreation resource study. A comprehensive recreation resource study is needed to inform the license decision and for the development of a recreation resource management plan (RRMP) as required by FERC (18 CFR 4.51(f)(5)). The study is required because existing information about the current and projected recreation resources, use characteristics, and needs is insufficient. As previously stated, FERC requires studies relative to recreation resources including the development of an RRMP. Existing information does not produce the recreation flow needs, social science data, and analyses needed by the resource agencies and the applicant to develop a comprehensive RRMP. Nor would it serve to inform FERC's equal consideration of the power and non-power values of the North Fork, Snoqualmie River in its licensing decision, or help identify measures needed to protect, mitigate and enhance recreational resources.

In addition, the project will modify the landscape through construction of the dam, access road, transmission line, and powerhouse. The project effects on the visual and auditory resources need to be defined and minimized.

**1.1 Study Description and Objectives (§5.9(b)(1))**

The purpose of this study is to evaluate the impacts of the proposed hydropower project on existing and potential recreation use and quality of recreational experience provided, and to determine potential recreation mitigation, use, demand, and needs over the term of the license.

The components of the study should include: (1) recreation flow study on impacts to boating experiences; (2) current and projected recreation visitor use; (3) recreation inventory of existing recreation opportunities and facilities; (4) future and potential recreation needs assessment and analysis; and (5) recreation carrying capacity.

In addition, the study should include the effects of the proposed project facilities and operation on aesthetics including visual and auditory impacts.

**1.2 Resource Management Goals (§5.9(b)(2)) and Nexus to Project (§5.9(b)(5))**

A clear nexus exists between project operations and recreational opportunities on the river. The proposed project would remove flows from the river creating a 2.6 mile bypass reach, and consequently modify and control the river flows downstream of the dam site. This significantly affects the recreational opportunities in the project area. In addition, construction project facilities will directly affect the aesthetics of the project area. All of these effects should be evaluated. As part of the licensing effort, a comprehensive look at recreation needs should be conducted per FERC guidance to evaluate existing and potential future recreation needs (18 CFR 4.51).

The NPS has authority to consult with the FERC and applicants concerning a proposed project's effects on outdoor recreation resources under the Federal Power Act (18 C.F.R. §§ 4.38(a), 5.41(f)(4)-(6), and 16.8(a)); the Outdoor Recreation Act (P.L. 88-29) and the NPS Organic Act (16 U.S.C. et seq.). It is the policy of the NPS to represent the national interest regarding recreation and to assure that hydroelectric projects subject to licensing recognize the full potential for meeting present and future public outdoor recreation demands, while maintaining and enhancing a quality environmental setting for those projects. FERC guidelines and the Federal Power Act, also provide direction to give equal consideration to other non-hydropower resources. As federal agencies operating in the public interest, both NPS and FERC are charged with making resource management decisions based on sound information about public needs and interests, including interests in recreation and aesthetics. In addition, this river segment is on the Nationwide Rivers Inventory, a comprehensive plan filed with FERC, and one of the outstandingly remarkable values is advanced whitewater boating. This project would modify the river flows which would affect whitewater boating opportunities, this study will evaluate what these effects would be.

### 1.3 **Relevant Public Interest** (§5.9(b)(3))

Evaluating recreation and aesthetic impacts and opportunities of a new dam site is in the public interest. If the proposed project is constructed, existing flow-dependent recreation opportunities including boating would be lost. The landscape will change with the addition of project features and these needs to be analyzed. FERC guidelines direct licensees to provide for recreation at projects and the needs and opportunities for recreation need to be defined. It is in the public interest to analyze impacts and trade-offs, provide mitigation to these impacts and evaluate opportunities for recreation in the future.

FERC requires hydroelectric projects license applications to evaluate if their project would be consistent with comprehensive plans including the Nationwide Rivers Inventory. The North Fork Snoqualmie River is on the Nationwide Rivers Inventory because of its potential outstandingly remarkable values of recreation (advanced boating) and fishery (cutthroat trout). This study would help inform effects on boating and other studies would help inform effects on fisheries.

### 1.4 **Existing Information** (§5.9(b)(4))

The PAD provides limited information on recreation activities in the area (hunting, camping, hiking, boating), but it lacks specificity on the amount of use, quality of experiences, and the project effects on these resources. In addition to the PAD, the Nationwide Rivers Inventory and the Mt. Baker Snoqualmie Forest Plan both describe the regional and nationally importance of recreational opportunities in this reach, in particular advanced whitewater boating opportunities, which was found to be an outstandingly remarkable value. American Whitewater's website describes the whitewater boating opportunity on this reach and provides an approximate flow range. A flow study is needed to precisely define the optimum flow ranges for this opportunity to evaluate the project effects on this experience. Future recreation needs and opportunities need to be evaluated as well to be able to develop a RRMP. Information on aesthetics is limited; a study is needed to determine the effects of this project on aesthetics.

### 1.5 **Study Methodology** (§5.9(b)(6))

This comprehensive study request covers many study elements that are mentioned in Section 1.1 above. Different study methodologies would be needed to assess the various elements. We recommend the following:

(1) Recreation flow study. A recreation instream flow study is needed to determine the optimum and acceptable instream flows needed for non-motorized river boating. The recommended study methodology is to follow an integrated progression approach as summarized in "Flows and Recreation: A Guide to Studies for River Professionals" (Whittaker, Shelby and Gangemi 2005). The report outlines three "levels" of studies: (1) Level 1 - desktop analysis, (2) Level 2 - limited reconnaissance, and (3) Level 3 - intensive studies. Given the quality of this recreation opportunity, level of public interest, and the direct impacts that the project will have on this opportunity through the creation of a bypass reach, we believe a level 3 or intensive study is needed. We recommend a phased approach as described in the guide mentioned above with key components summarized below.

#### a. Phase 1 Assessment

Step 1 - Summarize Existing River Recreation Information on the Study Reach.

Gather all readily available existing information on river boating and other recreational activities (e.g. public access locations, and constraints to public access) on the river reach. This will include a review of guidebooks, videos, discussions with boaters that have run this particular reach, and field reconnaissance. The objective of this information gathering work will be to identify, document and describe the river boating within this reach.

Step 2 - Summarize the Existing Hydrology and Operational Constraints.

Summarize hydrology for the reach and the hydrologic relationship between the upstream gauge and the river flows of this reach. Hydrologic summaries by month and water year type (e.g. normal, wet, and dry)

are recommended. This summary of information may also include interviews with people knowledgeable about the river system and the gauges on the river.

Step. 3. Flow Comparison Surveys of Experience Users.

Conduct surveys with experienced boaters and stakeholders, to gather information on the optimal and acceptable flow ranges and access to the reach. This information would then be used to help inform the best flow range to conduct the phase II on-water river assessments.

At the end of phase one this information should be summarized in a report and shared with stakeholders for review and input. A final list of flows or flow ranges should be determined with stakeholder input. In addition to flow and hydrology information, this report will also summarize the current access, put-in, and take-out locations and any current or project issues with public access.

b. Phase II Multiple Flow Instream Assessment and Project Effects

Step 1. Level 3 Flow Assessment. A level three intensive study assessment is needed. Since the reach is free flowing a controlled flow study is not applicable. However, a multiple flow instream assessment or potentially other suitable level 3 study should be conducted. The results should include the acceptable and optimum flows for river boating, length of trip, and quality of experiences.

Step 2. Assessing Project Impacts. This step would involve defining how the project would be operated and using this and the hydrologic record to assess what the proposed flows in the bypass reach. It would also include evaluating the effects the proposed flows would have the recreational experiences in this reach.

(2) Recreation Demand. This analysis involves both assessing current demand for various recreation activities by counting use, as well as assessing the quality of the visitor's experience through visitor surveys. In addition, we recommend holding resident/community focus groups and visioning workshops, particularly in order to tailor possible mitigation measures and solutions to the community's vision for recreation in the future. The parameters of the visitor survey, user group interviews, and community visioning meetings should be developed in collaboration with interested stakeholders. The proposed survey methods used should be also reviewed by stakeholders.

(3) Recreation Opportunities Inventory and Assessment. All existing developed and dispersed recreation sites should be inventoried, including land trails, small access sites, access roads, etc. The inventory should identify current use, current conditions, and any impacts that the proposed project might have on these. In addition, this assessment should identify any proposed additional access to the project area. We recommend that stakeholders be consulted in the development of the survey instruments and protocol.

(4) Future and Potential Recreation Needs Assessment and Analysis. This study element involves assessing what the potential and future recreation needs are. This would involve looking at the WA SCORP, other literature reviews of local recreation plans, Nationwide Rivers Inventory, and site-specific information collected from the study elements outlined above. This needs analysis would compile all the information including stakeholder input and make recommendations on recreation mitigation measures for the project. This assessment should also consider trade-offs of losing the existing primitive and flow dependent river opportunities.

(5) Recreation carrying capacity. This component would assess the suitability or capacity for various recreation opportunities at the project area to receive visitors without degrading recreational experiences or other resources. This assessment should also integrate the results of other biophysical study results. Various methods could be used including "Limits of Acceptable Change" or "Recreation Opportunity Spectrum." These estimates can then be used in development of the RRMP.

(6) Aesthetics. This component would include collecting baseline information on aesthetics in the area and also assessing the impacts of the proposed project on this resource. Focus groups of users and

residents should be held to assess the impacts of the project. Mitigation measures that would minimize these impacts and potentially provide visual enhancements (e.g., overlooks) should also be evaluated. Stakeholders should be involved in defining the focus groups. In addition to assessing the visual impacts, potential impacts to night skies and auditory impacts of the project should also be assessed.

#### 1.7 Final Product

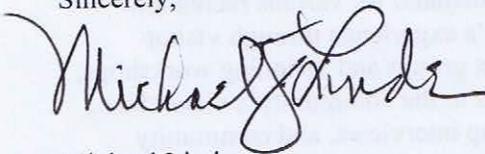
The final product should include an interim, draft, and final report with opportunities for comment and input by stakeholders. All of the recreation components should be used to develop the RRMP.

#### 1.8 Level of Effort and Cost (§5.9(b)(7))

This study covers field work, interviews/surveys, community workshops and outreach, and professional assessment. An overview of the level of effort for each component is outlined under the study methodology section. The cost will depend on what is readily available and what requires additional work, it is roughly estimated at approximately \$100,000 to \$150,000.

Thank you for the opportunity to comment on this Environmental Assessment. If you have any questions, please contact Susan Rosebrough, NPS Northwest Hydropower Coordinator, at [susan\\_rosebrough@nps.gov](mailto:susan_rosebrough@nps.gov) or (206) 220-4121.

Sincerely,



Michael Linde  
Leader, Community Assistance Programs

cc: Susan Rosebrough, NPS, PWR, [susan\\_rosebrough@nps.gov](mailto:susan_rosebrough@nps.gov)  
Heather Ramsay, NPS, PWR, [heather\\_ramsay@nps.gov](mailto:heather_ramsay@nps.gov)  
Tim Romanski, FWS, [tim.romanski@fws.gov](mailto:tim.romanski@fws.gov)  
Allison O'Brien, REO, OEPC, [Allison\\_O'Brien@ios.doi.gov](mailto:Allison_O'Brien@ios.doi.gov)  
Mandy Stanford, REO, OEPC, [Mandy\\_Lawrence@ios.doi.gov](mailto:Mandy_Lawrence@ios.doi.gov)  
Alan Schmierer, NPS, PWR, [alan\\_schmierer@nps.gov](mailto:alan_schmierer@nps.gov)  
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Document Content(s)

PADresponse.PDF.....1-6



State of Washington

**Department of Fish and Wildlife**

Energy and Major Project Section

16018 Mill Creek Boulevard, Mill Creek, Washington 98012-1541

July 24, 2012

**FILED ELECTRONICALLY**

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE,  
Washington, DC 20426

**RE: MAY 25, 2012 NOTICE OF INTENT TO FILE LICENSE APPLICATION, FILING OF PRE-APPLICATION DOCUMENT (PAD), COMMENCEMENT OF PRE-FILING PROCESS AND SCOPING; REQUEST FOR COMMENTS ON THE PAD AND SCOPING DOCUMENT, AND IDENTIFICATION OF ISSUES AND ASSOCIATED STUDY REQUESTS FOR THE BLACK CANYON HYDROELECTRIC PROJECT NUMBER 14110-001 IN KING COUNTY, WASHINGTON**

Dear Ms. Bose:

Enclosed for filing in the above-referenced proceedings are the recommendations for study requests and comments on the Pre-Application Document (PAD) and Scoping Document 1 (SD1) from the Washington State Department of Fish and Wildlife (WDFW), filed pursuant to section 10(j) of the Federal Power Act (FPA), 16 U.S.C. § 803, as amended, and the Fish and Wildlife Coordination Act (FWCA), 16 U.S.C. § 661 *et seq.* WDFW is an agency of the State of Washington with jurisdiction over state fish, shellfish, and wildlife resources, and is charged with the duty of protecting, conserving,

managing, and enhancing those resources, RCW 77.04.012. The construction and operation of the Black Canyon Hydroelectric Project (Project) may adversely impact the fish and wildlife resources of the State. WDFW therefore recommends that the Federal Energy Regulatory Commission (FERC) include the following study requests and recommendations in the Project license to protect, mitigate, and enhance fish and wildlife resources affected by the construction and operation of the Project.

If constructed, the Black Canyon Hydroelectric Project (FERC No. 14110-001) will reside on the North Fork of the Snoqualmie River, approximately 4 miles northeast of North Bend in King County, Washington. Black Canyon Hydro LLC (BCH) has filed the PAD with FERC. With this Notice to Intent to File a Final License Application, the FERC has initiated informal consultation with the U.S. Fish and Wildlife Service and/or National Oceanic and Atmospheric Administration (NOAA) Fisheries under Section 7 of the Endangered Species Act and the joint agency regulations there under at 50 CFR, Part 402.

The enclosed request for studies and comments on the PAD and SD1 reflect the extensive discussions and communication with the other resource entities and BCH, site visits that occurred, and review of BCH information available through this stage of the pre-licensing

process. I would be happy to answer questions or provide additional information, please do not hesitate to call me at (425) 775-1311 x310.

Sincerely,

A handwritten signature in black ink that reads "Brock A. Applegate". The signature is written in a cursive, flowing style.

Brock Applegate

Fish and Wildlife Biologist

Cc: Chris Anderson, Mill Creek  
Hal Beecher, WDFW Olympia  
David Brock, WDFW Mill Creek  
Bob Everitt, WDFW Mill Creek  
Bill Frymire, ATG Olympia  
Annette Hoffmann, WDFW Mill Creek  
Janne Kaje, King County DNR and Parks Seattle  
Monika Kannadaguli, WDOE Bellevue  
Russell Link, WDFW Mill Creek

Ms. Kimberly D. Bose

July 24, 2012

Page 4 of 23

Chris Maynard, WDOE Bellevue

Travis Nelson, WDFW Olympia

Stewart Reinbold, WDFW Issaquah

Jamie Thompson, WDFW Mill Creek

Jennifer Whitney, WDFW Mill Creek

**ENCLOSURE**

Washington Department of Fish and Wildlife

**STUDY REQUESTS AND COMMENTS ON PAD AND SD1,**

For Black Canyon Hydroelectric Project (FERC No. 14110-001)

July 24, 2012

Pursuant to Section 10(j) of the Federal Power Act (16 U.S.C. §§ 791 *et seq.*) and to carry out the purposes of the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661 *et seq.*), Washington Department of Fish and Wildlife (WDFW) recommends that the Federal Energy Regulatory Commission (FERC or Commission) adopts and incorporates the following study requests to quantify and qualify measure to protect, mitigate damages to, and enhance fish and wildlife resources in the construction and operation of the Black Canyon Hydroelectric Project (FERC No. 14110-001).

WDFW reserves the right to change or amend these recommendations or to supplement the administrative record in support of its recommendations based on new information, or information and conclusions developed during the Commission's environmental analysis.

WDFW recommend BCH conducts the following studies to qualify and quantify impacts by the Project and that FERC includes our recommendations as license terms.

**STUDY REQUESTS.** WDFW recommends the following study requests:

WDFW 1

- I. **Large Woody Debris and Bedload Passage.** BCH should demonstrate through a study, if the inflatable dam will interrupt the natural flow of sediment and woody debris. Active transport of debris and sediment is important to maintain fish spawning and rearing habitat. The project should have active transport of gravels and woody debris through the bypass reach. If BCH only drops the inflatable weir during low flows, active transport of debris and gravel may not occur. A study could determine the details of when, how long, and how much. A study could also inform the design of the intake, which should avoid clogging by debris and sediment. BCH may have to drop the inflatable weir to maintain the integrity of spawning and rearing fish habitat in the areas below the diversion.

North Fork of the Snoqualmie River has documented fish use. The Northwest Power Planning Council (NPPC) has designated the North Fork from Hancock Creek to Tate Creek as a “protected area.” Washington Department of Wildlife (WDW) petitioned for the “protected status” citing a high priority resident fish habitat. Specifically, WDW described the reach as “...among the top 2% within the state for resident fish value.” WDFW would like to maintain the same quality, quantity, and type of fish habitat intact in the North Fork.

BCH should discuss mitigation measures if the diversion structure will act as a sediment and debris trap. If the diversion becomes a trap, even lowering the inflatable weir may not transport the sediment and debris because of the amount already collected behind the diversion. The weir structure would directly affect sediment and debris flow and indirectly affect fish through the changing or reduction in quality and/or quantity of habitat. The addition of proposed hydroprojects like Hancock Creek and Calligan Creek Hydroprojects may reduce sediment and debris further. The existing Black Creek Hydroproject may contribute to reduction already. BCH should do a cumulative effects analysis on all the existing and proposed hydroprojects on the North Fork of the Snoqualmie River and its tributaries. WDFW recommends following our Hydroelectric Project Assessment Guidelines (1995) for Bed Load Studies for general methodology of a study.

WDFW 2

**Wildlife Surveys.** BCH should survey for any threatened, endangered or Washington State Priority Species exist in the project area, including those species that could live outside the project area, but may have indirect impacts from disturbance, noise, or loss of habitat conductivity. We recommend that BCH conduct surveys or assume presence while taking the correct mitigation measures or avoiding impacts.

BCH may not only affect riparian habitat species along the river and in the project area, but all areas in and around the powerhouse, intake structure, fish screens, penstock exit and entrance holes, powerlines, and new roads, including the use of new and old roads by construction and operations personnel.

BCH should protect listed and Washington Priority Habitat and Species (PHS) or mitigate for the loss of them. WDFW has the largest concern of the disturbance and impacts to raptors. Peregrine falcon (*Falco peregrinus*) could have an eyrie on a canyon wall of the North Fork and do have an active eyrie exists on the west side of Mount Si. WDFW recommends that BCH find the Mount Si eyrie or the closest area to the project that could contain an eyrie and give the correct distance buffer during construction or construct out of breeding season. Construction, maintenance, and other project noise could prohibit nesting on an established eyrie or cause the falcons to abandon an occupied eyrie.

WDFW also directed Black Canyon Hydro to the WDFW website to retrieve PHS data for observations and special habitat areas from WDFW database in Olympia.

Additionally, we recommend FERC add [Priority Habitats and Species \(PHS\), Species and Habitat Management Recommendations](#), as an additional relevant Resource Management and Comprehensive Plan.

Please conduct habitat surveys first including those habitats listed under Priority Habitats. BCH can find the species that need surveys through conducting habitat surveys. Listed species should include federally listed and those on the Washington PHS list. Beyond raptors, please look at habitat surveys or map searches for: Yuma bat (*Myotis yumanensis*), little brown bat (*Myotis lucifugus*), California bat (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), Marten (*Martes americana*), Fisher (*Martes pennanti*), Canadian lynx (*Lynx Canadensis*), Roosevelt elk (*Cervus canadensis roosevelti*), black-tailed deer (*Odocoileus hemionus columbianus*), cavity nesting ducks, blue grouse (*Dendragapus obscurus*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), northern spotted owl (*Strix occidentalis*), northern goshawk (*Accipiter gentilis*), Vaux's swift (*Chaetura vauxi*), pileated woodpecker (*Dryocopus pileatus*), black-backed woodpecker (*Picoides articus*), tailed frog (*Ascaphus truei*), western toad (*Bufo boreas*), Larch Mountain salamander (*Plethodon larselli*), and spotted frog (*Rana pretiosa*). BCH may rule out the possibility of some of these species because of lack of habitat. Please consider surveys for those species impacted by indirect effects like disturbance and survey with disturbance buffers in mind (IE surveys may reside outside the project area, but within the indirect effects area of the project). WDFW may add species as additional habitat features and microclimates become known, particularly the

extent of the old-growth in the Mount Si Conservation Area and in the riparian areas.

The WDFW is responsible for the making of PHS lists and the maintaining the management recommendations. BCH should conduct additional habitat and species surveys because much of the information in the PAD remains 20 years-old and surveyors have not recently looked at habitat. BCH used much of their information from the Hancock Creek Hydroproject PAD, which resides higher in elevation and contains different habitat partially due to the size of the river. A wildlife study could affect construction area, construction timing, application of best manage practices, and avoidance areas. Study methodology would start general with maps searches and ground-truthing of habitat to a number of possible protocols and best available survey methodology for individual species. Species like marbled murrelet, spotted owls and northern goshawks require more than one year of protocol surveys, so WDFW would recommend that BCH determine the amount of old-growth habitat and the possible associated species early in the process.

WDFW 3

**Instream Flows and (Down) Ramping Rates Studies.** The Instream Resources Protection Program has already set the minimum instream flows under Chapter

173-507 under the Washington Administrative Code (WAC). BCH, Washington Department of Ecology (WDOE), and WDFW may determine higher flows according to the needs of habitat and water quality. All projects must provide instream flows to protect spawning, incubation, and rearing habitat during operation. Please refer to the (Appendix VI) of our Hydroelectric Project Assessment Guidelines (1995) which outline agency standards for conducting instream flow studies. WDFW would like to develop instream flows that prevent any adverse impact to fish resulting from diversion. Although other biologists have completed some instream flows studies in the past, WDFW would recommend re-running the existing habitat work with updated preference curves, particularly for rainbow trout (*Oncorhynchus mykiss*). Flows directly affect the different habitats of fish.

High down ramping rates can cause major fish mortality. Please use ramping rates criteria developed in Hunter (1992). WDFW recommends finding the worst-case sites for stranding during the Instream Flow Incremental Methodology (IFIM) scoping and development of rating curves to set interim rates. We recommend determining final ramping rates before the start of operation.

WDFW 4

**Fish Studies.** WDFW recommends conducting barrier, physical stream, spawner, and juvenile salmonid surveys to create a baseline of fish habitat and population.

WDFW recommends following the Hydroelectric Project Assessment Guidelines (1995) for methodology. We recommend these surveys so that BCH can gather information and then create mitigation measures so that the project does not adversely impacting fish.

For some of the methodology, WDFW recommend that BCH monitor and snorkel the Black Canyon (Canyon), which did not receive monitoring in the Snoqualmie River Game Fish Enhancement Plan: Final Report of Research (Thompson et al. 2011) because of time restraints. Biologists have monitored the Canyon through time intensive snorkeling surveys for fish in the 80's. WDFW would recommend collecting data for other studies mentioned in our Hydroelectric Project Assessment Guidelines (1995) through conducting fish surveys and snorkeling.

Fish congregate at the base of the Black Canyon during summer low flows (Thompson et al. 2011) and diminished production and conveyance could have detrimental effects on growth, survival, and production. WDFW recommends collecting baseline food web, trout growth, survival, and distribution information prior and subsequent to project construction so that we can monitor project impacts to game fish resources in the North Fork and Mainstem Snoqualmie above Snoqualmie Falls and recommend adaptive management if necessary.

WDFW 5

**Fish Screen(s) Study.** WDFW desires to protect all stage of fish life from entrainment and impingement at the project intake. BCH has proposed to use horizontal fish screens at their intake. WDFW considers that horizontal screens, like the coanda screens, experimental and at a higher risk of causing fish injury and mortality. The screens may also exceed the recommended approach velocity for fish. WDFW recommends more vertical, bank-angled fish screens setup with airburst cleaning system. The coanda screens proposed by BCH may severely injure fish, particularly small fish, and may not prove durable due to wear. If BCH desires to use the coanda or any other fish screens, WDFW recommends that you meet the guidelines in the “Anadromous Salmonid Passage Facility Design, National Marine Fisheries Service, Northwest Region” (July 2011). We would recommend intensive and very rigorous studies to establish whether experimental and untested screens would meet the guidelines established by WDFW.

WDFW 6

**Water Temperature, Ground Water, and Macroinvertebrates Studies.**

WDFW has concerns about the diverted water having temperature changes between entering the intake and exiting the powerhouse. We also have temperature concerns of the remaining, reduced flow in the bypass reach. We know the North Fork acts as a temperature buffer for the mainstem above and below Snoqualmie Falls, as well where we have federally listed Chinook salmon (*Oncorhynchus tshawytscha*). The Snoqualmie River below the falls has violated

temperature limits in the past and can become dangerously hot for some salmonids in low flow, summer conditions. We do not want to compound the problem in the mainstem by decreasing the buffer on the North Fork. WDFW recommends a study that includes the bypass reach, a reach above the diversion, a reach below the powerhouse to the Forks, and a reach below Snoqualmie Falls.

Seasonal water temperatures in the lower Middle Fork and the Mainstem Snoqualmie have breached Total Daily Maximum Load (TMDL) standards (WDOE 2011). The lower North Fork Snoqualmie serves as a water temperature buffer to the Mainstem Snoqualmie River during these periods (Thompson et al. 2011). Thompson et al. (2011) provide evidence that geo-hydrologic characteristics that compose the Black Canyon drive a mechanistic buffering system against extreme water temperatures during annual climatic conditions. Based on channel morphology, we would assume relatively low width-to-width ratio during the summer low flow period throughout the Black Canyon. The low width-to-width ratio diminishes the impacts of solar and air temperature inputs during the warmest and coldest periods of the year. WDFW recommends conducting continuous habitat surveys (*sensu* Thompson et al. 2011) throughout the bypass reach to set baseline conditions prior and subsequent to project construction.

Hyporheic (ground-surface water) exchange within the Black Canyon may buffer water temperatures from climatic extremes and this potential buffering mechanism may diminish, as diverted flows do not recharge the corresponding hyporheic system. Groundwater exchange studies would inform us of the magnitude of this potentially important buffering mechanism throughout the Black Canyon.

As buffering mechanisms cannot interact on diverted water within the Black Canyon, water temperatures in the lower North Fork and downstream near the forks may closely resemble temperatures observed in the middle North Fork during annual extreme climatic conditions. The middle North Fork above Black Canyon experiences substantially higher temperatures during the summer and lower temperatures during the winter (*see* Figure 21 *in* Thompson et al. 2011).

Although diverted water will receive buffering from solar inputs as it travels through the bedrock tunnel, the water may become highly influenced by warmer water at the tailrace, which includes bypass reach water with a compromised natural buffering system because of small ground water flows. Water temperatures below the tailrace may exhibit compounded extreme temperatures that substantially raise or lower water temperatures downstream of the powerhouse. WFDW recommends that BCH monitor daily water temperatures

above the dam, within the bypass reach, downstream of the powerhouse outflow, and at the mouths of non-ephemeral tributaries, and floodplain channels near the project. BCH should assess dissolved oxygen and nutrient loading seasonally, as practical, within and downstream of the bypass.

Water temperatures throughout the bypass reach will have direct effects on aquatic organisms, including game fishes and aquatic macroinvertebrates, within the Black Canyon. WDFW would like to have no loss of fish productivity and habitat in the bypass reach and below. We propose BCH conducts studies as outlined in the WDFW Hydroelectric Project Assessment Guidelines (1995).

Fish congregate at the base of the Black Canyon during summer low flows (Thompson et al. 2011), and diminished production and conveyance could have detrimental effects on growth, survival, and production. WDFW recommends collecting baseline food web, trout growth, survival, and distribution information prior and subsequent to project construction so that we can monitor project impacts to game fish resources in the North Fork and Mainstem Snoqualmie above Snoqualmie Falls and recommend adaptive management if necessary.

## **II. COMMENTS ON PRE-APPLICATION DOCUMENT**

WDFW 7

**4.1 Project Facilities.** WDFW recommends horizontal directional drilling to create the power tunnel and penstock, particularly the section going underneath the North Fork. We also recommend a constant flow valve at the powerhouse as a bypass to the turbines to help with meeting ramping rates at the tailrace.

WDFW 8

**4.1.1 Diversion Intake Structure.** WDFW considers the horizontal screens, like the coanda screens, experimental and at a higher risk of causing fish injury and mortality. The screens may also exceed the recommended approach velocity for fish. WDFW recommends more vertical, bank-angled fish screens setup with airburst cleaning system. The coanda screens proposed by BCH may severely injure fish, particularly small fish, and may not prove durable due to wear.

WDFW has recommended placing the fish passage structure on the same side of the river as your intake. After a site visit with BCH, WDFW has recommended a fish bypass channel, but a roughened channel could provide water impoundment and fish passage with less construction impacts on the river, because of the lack of need for a full river-spanning weir structure.

WDFW 9

**4.1.3 Transmission.** WDFW recommends that BCH design new transmission lines or any electrical infrastructure to the newest Avian Power Line Interaction Committee Guidelines to reduce avian collisions and electrocutions.

WDFW 10

**5 Description of Existing Environment.** WDFW recommends updating surveys and fish and wildlife information over 5 years old.

Previous potential licensees generated much of the information and data from Hancock Creek and Calligan Creek Hydroprojects in the early 1990's. WDFW particularly recommends updating the vegetation and wildlife information in the area. Hancock and Calligan Creeks also reside at higher elevations in smaller creek systems. BCH should update fish and wildlife information for the specific project area. Hancock and Calligan Creeks do not reside in the protected area. The Northwest Power Planning Council has designated the North Fork from Hancock Creek to Tate Creek as a "protected area." Washington Department of Wildlife (WDW) petitioned for the "protected status" citing winter deer range and high priority resident fish habitat. Specifically, WDW described the reach as "...among the top 2% within the state for resident fish value."

WDFW 11

**4.3.3.6 Proposed Study Plans.** BCH should conduct spawner and juvenile salmonid surveys and the lack of anadromous fish should not matter. Resident rainbow trout and cutthroat trout (*Oncorhynchus clarkia*) remain important to the ecosystem and the recreation created by their presence. Biologists have conducted snorkel and other fish surveys in the 1980's, but not in the latest effort during the

monitoring conducted in the “Snoqualmie River Game Fish Enhancement Plan, Final Report of Research,” (Thompson et al. 2011).

WDFW 12

**5.4.3.1 Issues Related to Project Construction, Operation, and Maintenance.**

WDFW recommends some caveats to the statement, “However, adjacent habitat will continue to support wildlife as it did before construction.” If the construction displaces wildlife during construction, the wildlife may or may not return to the habitat because of the changes to the adjacent habitat. A small habitat fragment or island may become too small to support the same species. The construction may also bring additional disturbance like traffic and operation personnel therefore making the surrounding habitat unsuitable. Some species do not tolerate humans, development, disturbance, or the invasive species that accompany humans very well. Sometimes the adjacent habitat serves as habitat for another life function of the species, sometimes even just for migrating. For example, erecting a wind turbine between golden eagle nesting habitat and foraging habitat may render the home territory unusable.

WDFW 13

**5.5 Riparian, Wetland, and Littoral Habitat.** BCH will construct the intake, diversion weir, and powerhouse tailrace within the water and will probably use a cofferdam. Much of the project area will reside within the floodplain of the North Fork.

- WDFW 14            **5.5.2 Riparian Habitat.** BCH will reduce the amount of riparian area in the bypass reach by reducing flows. WDFW recommends that BCH calculates the amount of riparian area habitat lost, including temporal loss of habitat to calculate mitigation. WDFW recommends mitigating for Priority Habitats at a higher rate to encourage avoidance.
- WDFW 15            **5.6.1 Listed Species.** WDFW recommends BCH calculates the amount and type of habitat lost for each fish species, particular Washington Priority Species, cutthroat trout and rainbow trout. BCH should also evaluate open road densities, any loss of hiding cover, and loss of quality and quantity of forage for elk and black-tailed deer.
- WDFW 16            **5.7.2.2 Proposed Resource Protection and Mitigation Methods.** WDFW recommends all project lands remain open for hunting and fishing through non-motorized access, except those closed for safety and security reasons. BCH could also negotiate better hunting and fishing public access to their project lands by negotiating with Hancock Forest Lands.
- WDFW 17            **5.12.1 Washington Comprehensive Plans.** WDFW recommends our PHS Management Recommendations as a management plan for this project. We would

like the Priority Habitats and Species (PHS), Species and Habitat Management Recommendations, ([http://wdfw.wa.gov/conservation/phs/mgmt\\_recommendations/](http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/)) added to the list.

### III. Comments on Scoping Document 1

WDFW 18 **3.2.2 Proposed Environmental Measures, Terrestrial Resources.** WDFW would recommend compensatory mitigation for loss of habitat function, even loss of temporal habitat function.

WDFW 18 **3.2.2 Proposed Environmental Measures, Threatened and Endangered Species.** WDFW recommends habitat and species surveys before stating that we have no listed federal species in the project area.

WDFW 18 **3.2.2 Proposed Environmental Measures, Recreation and Land Use.** WDFW recommends securing access for non-motorized hunting and fishing on project lands.

WDFW 19 **4.1 Cumulative Effects.** WDFW recommends BCH consider the cumulative loss of macroinvertebrates and fish production and sediment and debris load with other existing and proposed hydroprojects on the tributaries of the North Fork (Black

Ms. Kimberly D. Bose

July 24, 2012

Page 22 of 23

Creek, proposed Hancock Creek, and proposed Calligan Creek Hydroprojects.

BCH should explain whether the project would have an adverse effect to fish and fish habitat.

### Literature Cited

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Hunter, Mark A., 1992. Hydropower Flow Fluctuations and Salmonids: A Review of the Biological Effects, Mechanical Causes, and Options for Mitigation. Washington Department of Fisheries Technical Report 119. 58pp.

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Washington Department of Fish and Wildlife, 1995. Draft Hydroelectric Project Assessment Guidelines 99pp.



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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July 19, 2012

Honorable Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington D.C. 20426

Study Requests and Comments on the Black Canyon Hydroelectric Project  
Preapplication Document, FERC no. P-14110-001

Dear Ms. Bose,

The Washington State Department of Ecology is providing comments after reviewing the Preliminary Application Document, FERC No. 14110, filed by Black Canyon Hydro LLC March 27, 2012 and Noticed by FERC May 25, 2012.

These comments are provided by The Washington State Department of Ecology under the Federal Power Act (16 U.S.C. 971 et seq.), National Environmental Policy Act (42 U.S.C. 4321 et seq.), The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), Minimum Flows and Levels Act 90.22, Revised Code of Washington; Water Resources Act 90.54, Revised Code of Washington; the Washington State Water Pollution Control Act 9048, Revised Code of Washington; and the Fishways, Flows, and Screening Act 77.57, Revised Code of Washington.

The Department of Ecology will need the appropriate studies in order to have enough information to determine if the project would meet Washington State Water Quality Standards and the other appropriate water-related laws and rules per section 401 of the Federal Clean Water Act. We encourage the applicant to consult when developing the detailed study plans so the studies provide the details we need to make water quality certification decisions.

**Water Quality Numeric Parameter Studies**

The goal of this study is to evaluate the effects of project construction, operation, maintenance and other related activities on numeric water quality parameters. Specific objectives of the study are to:

WA ECY 1



1. Determine the existing water quality conditions in the water bodies impacted by the construction and operation of Black Canyon Hydroelectric Project. Evaluate if the current numeric water quality standards (listed in WAC 173-201a) are being met or not.
2. Determine the background conditions for turbidity and natural conditions for temperature, DO, pH, total dissolved gas (TDG), phosphorus, pesticides, etc.)
3. Assess anticipated project impacts on the water quality of the associated water body
4. If needed, list possible mitigation measures.
5. Provide detailed monitoring plan for parameters of concern (e.g., dissolved oxygen, TDG, temperature etc.). Plan should include monitoring locations, frequencies, analysis protocols and QA/QC plan.
6. Provide inventory, storage location and handling plan for all hazardous materials, petroleum products and wastes.
7. Provide Spill Prevention, Control, and Countermeasure (SPCC) Plans

#### WA ECY 2 **Water Rights**

Water use as described in the Pre Application Document will require the applicant to obtain two water rights from the Washington Department of Ecology. A storage water right is required for anyone impounding ten acre feet or water more than ten feet deep (Washington Administrative Code (WAC) AC 508-12-260.) Another water right is required to produce power. Bypass flows for aquatic creatures will be required in order to obtain a water right. These often require special studies but in this case the studies would be the same as those required to determine flows for a Water Quality Certification under the Federal Pollution Control Act (CWA) so we will rely on the CWA and FERC process to establish the flows. Nevertheless, obtaining a water right can be a lengthy process so we encourage the applicant to begin conversations with our agency as soon as possible to begin the process with the goal of obtaining the necessary water rights before FERC has to make a decision about granting a license.

Existing surface and ground water right holders as well as those who previously applied for water rights will have priority. That is, hydropower use cannot diminish the use of prior water right holders or applicants. Therefore, the applicant will have to show how reducing flow in the bypass will impact existing surface and ground water right holders and prior applicants.

WA ECY 3 **Groundwater Studies:** Characterize the groundwater system and underlying geology to develop a conceptual model to show any impact that diverting water to a powerhouse has on the instream flows, senior water rights, and water right applicants. Also show the impact of an underground power tunnel on groundwater in terms of instream flows, senior water rights, and water right applications.

#### **Surface Flows and Flow-Related Habitat and Studies**

Hydropower is a beneficial use of the water as encoded in Washington water law. Washington water laws RCW 90.22 and 90.54 also guide and require the establishment of instream flows so

that other beneficial uses are protected when permitting a water use. Sufficient flows to protect fish and fish habitat will be required in a water quality certification for this project.

In order to evaluate flows and arrive at a balance that allows power use and provides for instream values, several studies are needed.

WA ECY 4



Old gage site near proposed intake

**Gages.** There are no North Fork Snoqualmie River flow gages in place that will provide sufficient information about flows in the proposed bypass reach. Install a continuous river level gauge near the proposed intake at the site of the old gage station. Place another gage just below the proposed powerhouse outfall in a suitable location to measure total river flow and compare inflow and outflow to measure water gain or loss in the proposed bypass reach. Install these gages as soon as possible in order to begin to have sufficient information to make decisions on flows needed in the proposed bypass reach.

WA ECY 5

**IFIM and Fish Studies.** Several fish studies and Instream Flow Incremental Methodology (IFIM) studies have been undertaken for the North Fork of the Snoqualmie River but they do not provide enough information about the proposed bypassed reach. Study the proposed bypass river habitat, flows, fish abundance, fish age classes, and seasonal fish use (including fish movement in and out of the bypass reach) in the proposed bypassed reach. Employ the Instream Flow Incremental Methodology and current HSI curves. Compare to existing IFIM and document the locations of the old IFIM transects.

WA ECY 6

**Fish Passage.** The diversion structure will have to pass fish up and downstream and safely exclude fish from the powerhouse tunnel intake and powerhouse tailrace. Determine fish passage and exclusion designs that will meet the Washington State Department of Fish and Wildlife requirements and recommendations.

WA ECY 7

**Gravel and Woody Debris Study.** Gravel and woody debris are important habitat for trout spawning and rearing as well as for benthic organisms on which fish feed. While much of the bypass reach seems to be bedrock, we do not know how much, where, or the quality of the gravel in this area. Provide measurements of gravel bars during low flow. Characterize the bathymetry, gravel size, gravel deposits, and elevations of gravel deposits relative to surface water elevations in the proposed bypass reach as well as  $\frac{1}{4}$  mile upstream and  $\frac{1}{2}$  mile downstream from the proposed project. Examine gravel movement at high flows and document scour, accretion, and recruitment. Show how the proposed design for a barrier (the proposed bladder wier) below the intake will affect gravel and woody debris recruitment into, throughout, and below the bypass reach.

WA ECY 8

**Benthic Organism Study.** Fish do not exist in isolation. One indicator of fish habitat suitability is the benthic community of aquatic insects, which rely on smaller food like periphyton. Monitor periphyton and benthic populations once each late August or early September for three years at six riffle sites. One above the intake in the vicinity of the old gage, one below the powerhouse, and four in the bypass reach. Also take temperatures at these sites.

WA ECY 9

**Recreation Study.** Recreation, specifically class five white-water boating is a use of the water that is important to Seattle area kayakers in the proposed bypass reach. The North Fork Snoqualmie River reach was documented in *River Recreation in Washington: an Initial Inventory and Assessment* as high recreation value and above average recreation value although this reach was not identified at the time this was written (1986). We rely on American Whitewater expertise in negotiating and establishing sufficient flows to support this use. We also refer to *Flows and Recreation: A Guide to Studies for River Professionals* by Whittaker et. al.

WA ECY 10

**Additional Request.** Make public on applicant's web site: meeting attendees; studies and past studies quoted in PAD as well as FERC redacted information. Though the FERC library is very good, having this information even more easily accessible would enhance communication between the applicant and interested parties and between agencies and we will be able to find information that is not accessible thru FERC.

Thank you for this opportunity to comment on the Preliminary Application Document. We look forward to working with FERC during this licensing process. If you have any questions, please contact Monnika Kanadaguli or me. Both of us are on your mail list for this project.

Sincerely,



Chris Maynard

Hydropower and Instream Flow  
Water Resources Program

Document Content(s)

PAD scoping comments and studies.PDF.....1-4

**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

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BLACK CANYON HYDROELECTRIC ) Project No. 14110-001  
PROJECT )  
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**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
COMMENTS ON SCOPING DOCUMENT 1 AND REQUESTS FOR STUDIES**

Intervenor State of Washington, Department of Natural Resources (WADNR) submits these comments on Scoping Document 1 for Black Canyon Hydroelectric Project, P-14110 issued May 25, 2012, and also submits specific study requests in conformance with the Study Plan Criteria set forth in Appendix A and pursuant to 18 C.F.R. § 5.9(b).

Comments on Scoping Document 1

The proposed Black Canyon Hydro project would contact or pass over three sites of the Snoqualmie River. Based on an analysis of available information, WADNR, responsible for the management of state-owned aquatic lands, asserts ownership over the portion of the Snoqualmie River at the proposed site of the transmission line interconnection point. A use authorization at this site would be required. WADNR does not assert ownership over the portion of the North Fork of the Snoqualmie River at the proposed sites of the powerhouse and intake structure; no use authorizations would be required at these sites. However, WADNR is generally interested in all impacts to the aquatic environment in the area.

Additionally, the State of Washington owns other lands managed by WADNR within the footprint of the proposed Black Canyon Hydro project and manages those lands and related resources under RCW 79.71 as Mount Si Natural Resources Conservation Area (NRCA). This project would impact those resources. The Mount Si NRCA is managed under the 1997 Mount Si NRCA Management Plan, which was developed following extensive input by the Mount Si NRCA Citizen’s Advisory Committee and completion of a related environmental review process under the Washington State Environmental Policy Act, Ch. 43.21 Revised Code of Washington (RCW) (SEPA). The “Management Philosophy” as stated in the plan is: “The Mount Si NRCA will be managed to protect ecological systems and encourage natural successional processes

while providing controlled opportunities for low impact public use, emphasizing environmental education.” The plan identifies several management units, and management of the North Fork Cliffs Unit, which includes the hydro project area, is stated as: “The main management focus for this unit should be on protecting resources while accommodating low levels of low-impact public use.” The map on the following page depicts the location of the Mount Si NRCA relative to the proposed project area.

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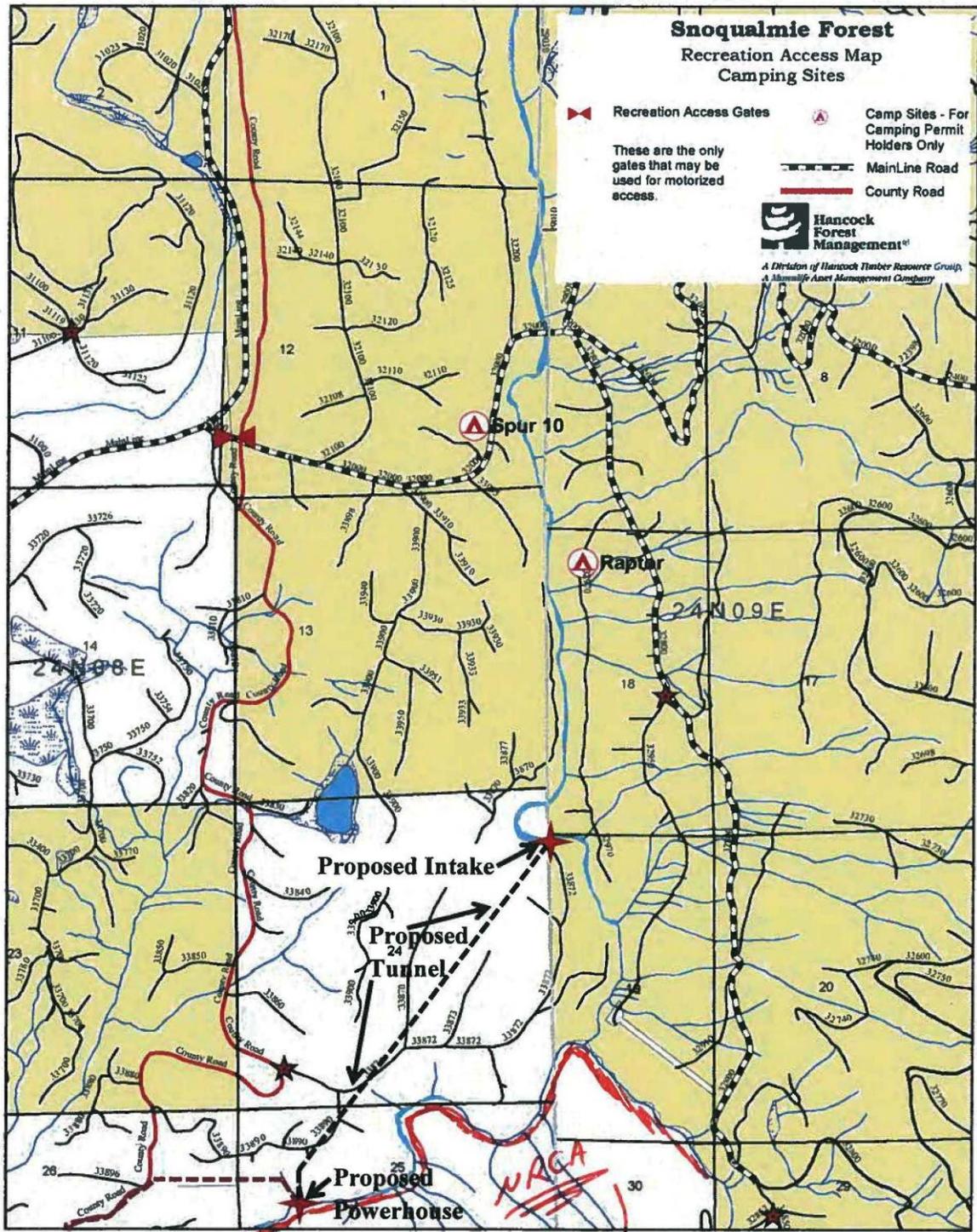


Figure 21. Hancock Forest Management Recreational Access Map and Camping Sites.

*Weyco to DNR transfer.*

In addition to the scope of cumulative effects and site-specific resource issue areas identified in Section 4.0 of Scoping Document 1, WADNR requests the following effects related to resource impacts be addressed in the environmental analysis:

- WA DNR 1 *Geologic and Soil Resources.* Describe how the proposed project will affect sedimentation and erosion within in-stream habitats in the bypass reach.
- WA DNR 2 *Aquatic Resources.* Describe how the proposed project will alter water flows in the bypass reach and the predicted effects on the diversity and abundance of aquatic organisms; Describe how proposed project will affect water temperatures within the bypass reach and how this will affect aquatic organisms; Describe how powerhouse and tailrace construction will affect in-stream habitat, including riverbanks and benthic habitat, at the powerhouse location (please provide an estimate of the footprint area in stream and on banks); Describe the potential for any contaminants from the powerhouse to enter the return flow into the river, including the risk of this occurring and the types of potential contaminants.
- WA DNR 3 *Terrestrial Resources, Recreation and Land Use.* Describe how predicted noise levels at the powerhouse location and construction-related noise will affect wildlife and recreationists in the NRCA (please include an estimate of noise level intensity, duration and how far this will travel. Also describe the potential for operation and construction noise to affect peregrine falcons during nesting season); Describe how the proposed project will affect aquatic recreational activities within the bypass reach, including alteration of scenic values as viewed from the river within the project area.

#### Study Requests

WADNR submits the following study requests to enable WADNR to understand the impacts of the proposal and to establish baseline habitat conditions and species variety and abundance in the project area:

- WA DNR 4 *Study Proposal Number 1: Field surveys for state-listed taxa*

**§5.9(b)(1) Describe the goals and objectives of each study proposal and the information to be obtained.**

The goal of this study is to assess the project area for occurrences of rare taxa, including invertebrates, birds, amphibians, reptiles, fish, vascular plants, lichens, bryophytes, and macrofungi and to evaluate the predicted effects of the project on these taxa. Specific objectives include:

- Survey the project area for taxa and document the location, size, and condition of any observed occurrences
- Determine the type and extent of potential effects of project-related actions on these taxa
- Identify measures that may be taken to protect or mitigate any adverse effects on these taxa

**§5.9(b)(2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The Mount Si Natural Resources Conservation Area and related resources are managed under the *Natural Resources Conservation Area Act* (RCW 79.71), the policies of the *State of Washington NRCA Statewide Management Plan*, and the *Mount Si NRCA Management Plan*. Among the primary potential uses and management of NRCAs defined in the *Natural Resources Conservation Area Act* are:

- To maintain, enhance or restore ecological systems – such as aquatic, coastal, riparian, montane and geological systems – whether or not they are typical or unique to the state
- To maintain exceptional scenic landscapes
- To maintain habitat for threatened, endangered, and sensitive species

The primary purpose of the NRCA program identified in *The State of Washington NRCA Statewide Management Plan* is to protect outstanding examples of native ecosystems, habitat for endangered, threatened, and sensitive plants and animals and scenic landscapes. The program also provides opportunities for environmental education and low-impact public uses where they do not adversely affect the resource values of the NRCA.

Management goals identified in the site-specific *Mount Si NRCA Management Plan* include:

- Maintain, enhance, and restore ecological systems
- Maintain or provide habitat for threatened, endangered, and sensitive species
- Maintain scenic landscapes
- Protect cultural resources
- Enhance opportunities for environmental education
- Provide opportunities for low-impact public use

**§5.9(b)(4) Describe existing information concerning the subject of the study proposal, and the need for additional information.**

The PAD summarizes existing information on fish in the area. However, except for trout related information, it appears there has not been any recent survey. The “Wildlife and Botanical Resources” section of the PAD cites information from previous projects in the general area, but no inventory has been conducted within the actual project area. The DNR Natural Areas Program and Natural Heritage Program have conducted inventory on portions of the Mount Si NRCA, but have no records of inventory in the project area.

**§5.9(b)(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Project-related construction, operation, and maintenance could adversely affect any existing populations of rare taxa and their existing or potential habitat through direct loss, habitat alterations, and/or disturbance. The study results would document the locations and conditions of any rare taxa and the habitats occupied, which would provide necessary information for assessing potential adverse effects.

**§5.9(b)(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

Proposed methods include:

- Using qualified biologists knowledgeable about the taxa being inventoried and the area ecology, conduct searches for taxa in areas of potentially suitable habitat within the construction footprint of the project and within aquatic and riparian habitats that will be affected by construction, operation, or maintenance activities. Also, cliff habitats in the Mount Si NRCA to the south of the project area should be surveyed for peregrine falcons.
- Record and map occurrences of any rare taxa encountered. Document the estimated population sizes and areal extent of any occurrences.
- Record the habitat characteristics of each occurrence, including vegetation types, hydrology, and substrate.
- For animal species, record the type of use observed, e.g. feeding, nesting, resting, etc.

- Prepare a report that includes the above observations, records and maps, and assesses the extent to which project-related actions and activities may affect the identified taxa and their habitats. The assessment should include effects of construction footprint, noise, and other disturbances; altered hydrologic and water quality conditions within the river during operation; and any access roads. The report should include an assessment of potential effects of construction and operation noise levels on any occurrences of peregrine falcons.

**§5.9(b)(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.**

One or two people would be expected to spend approximately three days reviewing existing aerial photos and maps and generating a list of potential rare taxa for the area. Field inventory would require approximately three days per taxa type, although this may vary between taxa types and some biologists may be able to inventory for more than one taxa type at the same time. Report and map preparation would require approximately 5 days. Based on these time estimates, the cost would be approximately \$30,000.

WA DNR 5 ***Study Proposal Number 2: Benthic macroinvertebrate and periphyton field sampling***

**§5.9(b)(1) Describe the goals and objectives of each study proposal and the information to be obtained.**

The goal of this study is to assess the project area for benthic macroinvertebrates and periphyton as indicators of aquatic habitat quality and to evaluate the predicted effects of the project on these taxa. Specific objectives include:

- Survey the bypass reach within the project area using existing Index of Biological Integrity (IBI) protocols
- Calculate an IBI for the reach
- Evaluate potential effects of the project on benthic macroinvertebrates and periphyton

**§5.9(b)(2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.**

The Mount Si Natural Resources Conservation Area and related resources are managed under the *Natural Resources Conservation Area Act* (RCW 79.71), the policies of the *State of Washington NRCA Statewide Management Plan*, and the site-specific *Mount Si NRCA*

*Management Plan.* Among the primary potential uses and management of NRCAs defined in the *Natural Resources Conservation Area Act* are:

- To maintain, enhance or restore ecological systems – such as aquatic, coastal, riparian, montane and geological systems – whether or not they are typical or unique to the state
- To maintain exceptional scenic landscapes
- To maintain habitat for threatened, endangered, and sensitive species

The primary purpose of the NRCA program identified in *The State of Washington NRCA Statewide Management Plan* is to protect outstanding examples of native ecosystems, habitat for endangered, threatened, and sensitive plants and animals and scenic landscapes. The program also provides opportunities for environmental education and low-impact public uses where they do not adversely affect the resource values of the NRCA.

Management goals identified in the site-specific *Mount Si NRCA Management Plan* include:

- Maintain, enhance, and restore ecological systems
- Maintain or provide habitat for threatened, endangered, and sensitive species
- Maintain scenic landscapes
- Protect cultural resources
- Enhance opportunities for environmental education
- Provide opportunities for low-impact public use

**§5.9(b)(4) Describe existing information concerning the subject of the study proposal, and the need for additional information.**

The Washington Department of Ecology (DOE) has conducted this type of sampling in a number of streams and rivers throughout the state, but there are no records for the project area.

**§5.9(b)(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

Project-related construction, operation, and maintenance will affect in-stream habitat through direct loss, hydrologic alterations, and/or other disturbances. The study results would

provide an indication of the current conditions of in-stream habitat within the reach based on the macroinvertebrate and periphyton assemblages. The study will document the composition of macroinvertebrates and periphyton in the reach, provide a synthesized measurement of habitat conditions via the IBI, and provide important information for assessing potential adverse effects.

**§5.9(b)(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

Proposed methods include:

- Using qualified biologists experienced in sampling benthic macroinvertebrates and periphyton, and knowledgeable about these organisms in area, conduct sampling according to protocols published by the Washington DOE.
- Generate a multi-metric Benthic Index of Biological Integrity, as described in Washington DOE publications.
- Record and map occurrences of any rare taxa encountered.
- Prepare a report that includes the sampling data and calculations of IBI, and comparisons to IBI's calculated for other stream and river reaches in the Cascade Mountains ecoregion. Assess the extent to which project-related actions and activities may affect benthic macroinvertebrates, periphyton, and their habitats. This should include effects of sedimentation during construction activities and altered hydrologic and water quality conditions within the river during operation.

**§5.9(b)(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.**

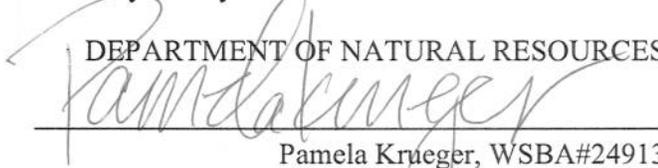
One or two people would be expected to spend approximately three days reviewing existing aerial photos and maps and determining appropriate location(s) for sampling. Field sampling would require approximately two or three days. Laboratory fees for identification are estimated at \$1,000. Report and map preparation would require approximately 5 days. Based on these estimates, the total cost would be approximately \$10,000-\$15,000.

Consistency with State Comprehensive Plans

With respect to ensuring the proposed project is consistent with state comprehensive plans, DNR respectfully requests FERC analyze the project for consistency with the following plans; Mt. Si NRCA Management Plan, dated June 1997; Mount Si NRCA Public Use Plan, June 1997; State of Washington Natural Resources Conservation Areas Statement Management Plan, September 1992; and Priority Marine Sites for Conservation in the Puget Sound, June 2006. Copies of each of these plans is attached hereto and filed herewith.

RESPECTFULLY SUBMITTED this 24<sup>th</sup> day of July 2012.

DEPARTMENT OF NATURAL RESOURCES



Pamela Krueger, WSBA#24913

Manager, Environmental & Legal Affairs  
Office of the Commissioner of Public Lands  
(360) 902-1424



## THE TULALIP TRIBES

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The Tulalip Tribes are the successors in interest to the Snohomish, Snoqualmie, and Skykomish tribes and other tribes and bands signatory to the Treaty of Point Elliot

July 24, 2012

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Subject: Black Canyon Hydro Project (P-14110-001): Comments on Pre-Application Document, Study Requests, and Comments on Scoping Document 1.

Dear Ms. Bose:

The Tulalip Tribes of Washington is a federally recognized Indian Tribes and is the political successor in interest and descendant of treaty signatories to the Treaty of Point Elliot negotiated between several northwest tribes and the United States. In the Treaty, the Tulalip Tribes reserved the right to fish at usual grounds and stations and are co-managers of the fishery resources as defined in *U.S. v. Washington* in 1974. [*U.S. v. Washington*, 459 F. Supp. 1020, 1038 (W.D. Wash. 1978); *U.S. v. Washington*, 626 F. Supp. 1405, 1527 (W.D. Wash. 1985), *Aff'd*, 841 F.2d 317 (9th Cir. 1988)] and also reserved the rights to hunt and gather on open and unclaimed lands. The Treaty also reserved the tribe's right to protect fish habitat as described in the *U.S. v. Washington Culvert Case Summary Judgment* in 2007 by the United States District Court, Western District of Washington. (*United States v. Washington*, 01-1, Culverts, Summary Judgment Order)

### **Project Proposal**

The proposed project would consist of the following new features: (1) an approximately 35-foot-wide, 7-foot-tall inflatable dam; (2) a 90-foot-wide, 7-foot-tall diversion intake structure; (3) a 9-foot-wide, 7-foot-tall fish ladder; (4) a 7,300-foot-long, 12-foot-diameter penstock; (5) a 60-foot-long, 100-foot-wide metal powerhouse with two Francis turbine units, one rated at 16 megawatts (MW) and the other rated at 9 MW; (6) a 150-foot-long, 40-foot-wide tailrace; (7) a 0.75-mile extension of the existing logging road; (8) a 4.2-mile-long, 115-kilovolt transmission line; and (9) appurtenant facilities. The estimated annual generation of the project would be 90,000 megawatt-hours.

### **Comprehensive Plans**

Tulalip 1

Development of the proposed hydro project would be in conflict with several adopted comprehensive plans covering the development site. Comprehensive plans must be considered by the FERC under section 10(a)(2)(a) of the Federal Power Act. The FERC must consider whether hydropower development is consistent with the intent of the comprehensive plans to help protect the public's interest.

### Protected Areas List

The Northwest Power and Conservation Council has adopted a Protected Areas List as a part of their Fish and Wildlife Program and the Northwest Conservation and Power Plan which has been filed with the FERC. The Protected Areas List prohibits the development of hydro-electric facilities in protected stream segments and was developed from the aftermath of the flood of proposed hydro-electric project applications that were filed during the 1980's. The intent of developing the list by the resource agencies and tribes that were involved was to protect natural resources of importance to the region and to reduce the amount of public and tribal resources used to participate in the permitting and licensing processes.

The Black Canyon Project is proposed for an area listed under this program to protect resident fish and wildlife resources. The FERC should make a final determination as to the eligibility of the project to move forward as early in the permitting and licensing process as possible.

### Nationwide Rivers Inventory

The North Fork Snoqualmie River has been listed on the Nationwide Rivers Inventory (NRI) maintained by the National Parks Service. This inventory meets the meaning of a comprehensive plan under the FERC's regulations.

The NRI provides a register of river segments that potentially qualify for Wild and Scenic River (WSR) designation under federal law. To qualify as a WSR a river must be free-flowing and contain at least one outstanding remarkable value or a river related resources that is unique, rare, or exemplary on a regional or national scale. The North Fork Snoqualmie has two outstanding remarkable values: one for its importance for resident cutthroat trout and the other is for the high quality advanced kayaking opportunities.

A 1979 presidential directive and related Council of Environmental Quality procedures requires federal agencies to seek to avoid or mitigate adverse effects on rivers identified in the NRI.

### Mt. Baker-Snoqualmie Forest Plan

The Mt. Baker-Snoqualmie Forest Plan also describes the N.F. Snoqualmie as being eligible and suitable for WSR designation. This is another federal comprehensive plan that must be taken under consideration by the FERC

### Mt. Si Natural Resources Conservation Area

This project is located adjacent to the Mt. Si Natural Resources Conservation Area funded with assistance from the Stateside Land and Water Conservation Fund administered by the Washington State Recreation and Conservation Office on behalf of the National Parks Service.

### King County Conservation Easements

King County has purchased conservation easements for the land encompassing much of the proposed project area including the intake structure. The purposes of the conservation easements are to help keep the land in long term forestry management and to protect environmental and recreation resources. These easements were purchased to help implement county comprehensive land-use plans developed for the public interests.

## Tulalip 2

### **Archeological/Cultural Sites**

Although there have not been any recorded archeological or tribal cultural use sites recorded in the State's database, the North Fork of the Snoqualmie river is and has been an important area for our Tribal members for thousands of years. A detailed archeological survey should be conducted for all areas where ground disturbing activities may occur.

The survey should look for any signs of archeological artifacts, burial sites, or signs of tribal cultural use activities that are protected under federal or state laws including: the Archeological Resource Protection Act of 1979, the Archeological and Historic preservation Act of 1974, the National Historic Preservation Act, the Native American Graves and Repatriation Act, the Abandoned and Historic Cemeteries and Historic Graves – Chapter 68.60 Revised Code of Washington (RCW), Archeological Sites and Resources – Chapter 27.53 RCW, and Washington State Executive Order 05-05.

## Tulalip 3 **Resident Fish**

The Tulalip Tribes treaty rights include the right to harvest resident fish and to protect their habitats. Hydro-Electric facilities may have a major impact to these resources. Neither the Pre-Application documents nor the Scoping Document 1 for the project provide much detail as to the types of studies that are being proposed by the applicant. Studies need to be conducted that can assess the short and long-term potential impacts of the proposed project from construction and operations on fisheries' resources including but not limited to: benthic macro-invertebrates production, debris and sediment transport effects on screens and fish passage facilities, down-ramping and up-ramping of stream flows affecting fish at all life stages, fish migration (upstream and downstream), fish spawning, gravel recruitment, large woody debris recruitment, pool-riffle ratios, side channel habitats, species diversity of fish and food sources, water quality, water temperature and wetlands. These study plans need to be developed and reviewed by the tribes and the resource agencies before the applicant begins work implementing the studies. These are concerns that can have a major impact to tribal and public resources caused by a private corporation with a proposed project of this nature.

## Tulalip 4 **Water Rights/In-stream Flows**

Besides the water rights holders listed in the PAD the Tulalip Tribes also have water rights necessary for the production of fish in the river and for other out of stream uses. The State of Washington also has water rights pertaining to their in-stream flow rules.

Tulalip 5 The lack of either a proposed in-stream flow regime or a process flow for the bypass reach causes the Tribes concern. Resident aquatic species have evolved to thrive in a natural or normative flow regime. Reducing flows under the proposed withdrawal scenario will leave the North Fork with very little water during the summer and early fall months. Periods of low flow contribute to reduced water quality and high temperatures, which will reduce the fitness of the biotic community. There do not seem to be any additional sources of water to the bypass reach, other than flow from upstream.

Process flows are habitat maintenance and channel forming flows of a sufficient magnitude, duration and frequency to maintain a properly functioning stream channel. Process flows maintain riparian dynamics, activate floodplain processes, scour gravel bars, recruit and move large woody debris, flush spawning gravels, cue fish migration and create and maintain aquatic habitats. The lack of a proposal regarding process flows may reflect the fact the project is a run of the river project; however a thorough analysis and study of the hydrograph and a plan for producing adequate process flows is necessary.

The Tulalip Tribes are concerned with effects of proposed project on in-stream flows and the possibility of complicating the City of North Bend's mitigation system which is tied to in-stream flows on the Snoqualmie River. The Tribes are concerned with effects of project construction and operation on the City of Snoqualmie Canyon Springs municipal supply. Flow at Canyon Springs appears to be tied to NF Snoqualmie flows.

The Tribes request a study on the effects of project construction on the City of Snoqualmie Canyon Springs water supply and any other water source that might be affected.

The Tribes recommend an analysis of current and past stream gages to gain an understanding of what flows are present in the bypass reach and project affected under normal flow conditions. This analysis will provide information necessary for setting in-stream and process flows as well as determining any impacts to the City of North Bend mitigation system.

The Washington Department of Ecology established minimum in-stream flows for the North Fork Snoqualmie River in Chapter 173-507 of the Washington Administrative Code (WAC). Minimum in-stream flows established for the North Fork are intended to eliminate impacts to fish and other aquatic communities, preserve high water quality, protect wildlife and preserve aesthetics (Washington Department of Ecology, 1979). Flow compliance is measured downstream of the proposed powerhouse; however, the flows are meant to be present and protected from diversion from the headwaters to the mouth of the North Fork (Chapter 173-507-020 WAC). Removing flow from the bypass reach and then adding it back in at the compliance point does not meet the intent of WAC Chapter 173-507-020. For certain streams, including the North Fork Snoqualmie River, a secondary set of flows have been provided, to apply to dry-year conditions. These critical year flows are a level of security which cannot be violated, except under unusually harsh conditions (Washington Department of Ecology, 1979). Diversions subject to the critical flows described in the in-stream flow rule cannot divert water from the stream.

### **Wildlife**

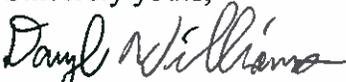
The Tulalip Tribes also co-manage hunting in the proposed project area and are concerned about potential impacts to our member's ability to hunt in this area and potential impacts to wildlife resources. The proponent should study the impacts of reduced flows including: reduced side channel habitat and wetland areas in the bypass reach on wildlife. They should also study the noise impacts on Wildlife species using the area.

### **Additional Study Requests**

The Tulalip Tribes also support the study plans requested by the National Park Service, the U.S. Fish and Wildlife Service, the Washington State Department of Ecology, Washington State Department of Fish and Wildlife, and the Washington State Department of Natural Resources. All of these study plans are necessary to develop the information needed to protect tribal and public resources.

Thank you for your consideration of these comments.

Sincerely yours,



Daryl Williams  
Environmental Liaison



Honorable Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington D.C. 20426

Subject: Review of Pre-Application Document (PAD), Scoping Document 1 (SD1), and Identification of Issues and Associated Study Requests for the Black Canyon Hydroelectric Project, FERC Project No. 14110

Dear Ms. Bose:

The Snoqualmie Tribe has reviewed the PAD and SD1, and attended and participated in the scoping meeting held on June 19<sup>th</sup> 2012 in North Bend, and provides the following comments and requests for additional studies:

It is our understanding that the proposed project would consist of the following features: (1) an approximately 35-foot-wide, 7-foot-tall inflatable dam; (2) a 90-foot-wide, 7-foot tall diversion intake structure; (3) a 9-foot-wide, 7-foot-tall fish ladder; (4) a 6,990-foot-long, 14-foot-diameter horizontal upper tunnel (5) a 1,185-foot-long, 17-foot diameter horizontal powerhouse tunnel and penstock; (6) a 60-foot-long, 100-foot-wide metal powerhouse with two Francis turbine units, one rated at 16 megawatts (MW) and the other rated at 9 MW; (7) a 150-foot-long, 40-foot-wide tailrace; (8) a 0.75-mile and 0.5 extension of two existing logging roads; (9) a 4.2-mile-long, 115-kilovolt transmission line; and (10) appurtenant facilities.

### **Aquatic Resources**

SD1 mentions the effects on aquatic habitat by the proposed project's reduction of flows in the 2.6-mile-long bypass reach, as well as effects of impingement and entrainment at the proposed intake on the resident fish community, and several other effects on aquatic habitat in its preliminary list of environmental issues. We would like to add to these:

- Cumulative effects on aquatic habitat.

The proponent operates a hydroelectric facility (P-6221) on Black Creek, a North Fork Snoqualmie River tributary. Snohomish PUD is finalizing plans to build hydroelectric plants on two other North Fork Snoqualmie tributaries, Hancock (P-13994) and Calligan (P-13948) Creeks. Other hydroelectric projects in the Upper Snoqualmie River watershed include Twin Falls (P-4885) and Weeks Falls (P-7563) on the South Fork Snoqualmie and Snoqualmie Falls (P-2493) on the mainstem. **What are the**

**cumulative effects of all these projects on aquatic habitat and the organisms that depend on that habitat?** We would like to note that although much emphasis has been placed on fish in this licensing process and in the licensing processes of similar projects, other phyla and classes of organisms use this same habitat and are affected by the construction and operation of hydroelectric projects. It is important that site-specific and cumulative effects of hydropower generation are investigated for all of these organisms and their habitat, including amphibians, mollusks, insects and others. Functioning ecosystems depend on the integrity of their full suite of physical and biological attributes. To ignore any piece of the puzzle is shortsighted folly.

- Site specific and cumulative effects on splash zone habitat.

Transitional habitat zones frequently have a disproportionately high richness and diversity of species, often including some rare or highly unusual species; the splash zone is such a habitat (ODFW 2006). By altering flows in the bypass reach, presumably this project will affect the splash zone in this reach of river. Other hydropower projects in the watershed have already affected the splash zone in their respective bypass reaches, but these effects have not been investigated or quantified. Are downramping criteria needed to protect splash zone habitat, and will they be effective? In order to sufficiently evaluate the effects of the proposed project on the splash zone and the organisms that use it, more information is needed.

- Effects on fish and wildlife.

In regard to effects specifically on fishery resources, we have reviewed the United States Fish and Wildlife Service's recommended studies for fishery resources (letter to FERC dated July 9, 2012) and support those recommendations and requests for information. Likewise, we support their recommendations for investigation of effects on wildlife. We would like to add some information and study requests to the USFWS' requests for evaluations of effects on fish and wildlife.

A recent genetic investigation (Thompson et al. 2011) indicated that cutthroat trout (*Oncorhynchus clarki*) lineages in the uppermost section of the North Fork Snoqualmie River sampled during the study grouped with pure Lake Whatcom hatchery coastal cutthroat. Additionally, the rainbow trout (*O. mykiss*) of the North Fork Snoqualmie that were sampled in this study were generally characterized as hatchery origin in lineage. It is generally thought that during the last period of glaciation in the Puget Sound Region, most, if not all, North Sound rivers were diverted south along the ice sheet margins, eventually collecting the Snoqualmie River and occupying the North Fork Snoqualmie valley at various points in time. Thompson et al. 2011 showed genetic differences between trout in the North Fork versus the other Snoqualmie forks, which raises the question of whether fish in the North Fork Snoqualmie might be genetic remnants of fish from the last glaciation. The fact that North Fork Snoqualmie cutthroat group with Lake Whatcom hatchery fish bolsters this theory. It could be that the North Fork Snoqualmie cutthroat and Lake Whatcom hatchery fish share a common ancestor, not that the former were derived from the latter. Could the "hatchery-lineage" *mykiss* in the North Fork share a similar origin? If so, these unique, distinct populations deserve protection. Will the proposed project have a negative effect on these populations, and if so, to what extent? To sufficiently answer, more genetic comparisons are needed.

In addition to further investigating the lineage of fish in the North Fork Snoqualmie, *O. clarki* and *O. mykiss* from various reaches of the lower Snoqualmie below the falls should be sampled for comparison. The old paradigm of thinking of resident and anadromous populations of the same fish species within the same system as being separate has been shown to be false through a number of recent studies that indicate that gene flow between these groups is bi-directional in many systems. Anadromous parents frequently produce resident offspring, and vice versa. That said, in the face of climate change and increasing climatic uncertainty, headwaters populations of these fish species can serve as genetic “reservoirs” during periods of low anadromous abundance (whatever the reason may be for that low abundance). A growing body of evidence supports the idea that gene flow between resident and anadromous populations of *O. mykiss* is bi-directional, and that resident rainbow trout are not genetically distinct from anadromous steelhead within the same systems (Christie et al. 2011, Olsen et al. 2006, McPhee et al. 2007, Quinn and Meyers 2005, Docker and Heath 2001, Moore et al. 2010). At least one study showed gene flow from resident rainbow trout above a barrier (not unlike Snoqualmie Falls) into the downstream steelhead population (Pearse et al. 2009). Given this research and the fact that much evidence points to increasing effects of climate change (with accompanying hardships for anadromous fish), headwaters populations of *O. mykiss* should be viewed as genetic reservoirs in uncertain times. As a likely part of the same genetic complex of a listed species (Puget Sound steelhead) found below the falls, native resident *mykiss* in the North Fork Snoqualmie deserve the same level of protection as the anadromous life history. And although to this date no research is available on similar interactions among coastal cutthroat trout (*O. clarki clarki*), it is likely that they function in the same way, with resident populations above barriers “seeding” the gene pool downstream, and providing a “cushion” during periods of low anadromous returns. While coastal cutthroat trout are not a federally listed species, they are listed by Washington State, and deserve protection throughout their range, including the resident life history. More information about the genetic and ecological relationships between resident fish in the upper watershed and anadromous and resident fish in the lower watershed is needed in order to effectively evaluate potential project impacts on these populations.

## **Cultural Resources**

The Snoqualmie Tribe’s Department of Archaeology & Historic Preservation would like to request a cultural resource survey be done on the proposed project locations in addition to the environmental, biological and hydro studies already proposed.

We are aware that a Cultural Resource Survey was conducted summer of 2011 by AMEC Earth & Environmental, Inc. for the Hancock Creek and Calligan Creek Hydroelectric Projects. However, at the time of that study the Tribe did not have the staffing to properly address concerns that we had. Also, as the Black Canyon project is proposed on the North Fork Snoqualmie River itself as opposed to a tributary, it raises more cultural concerns for us. Thus we feel that the previous studies done on Calligan Creek and Hancock Creek should not be used as a sole indicator of the potential for any cultural resources for the Black Canyon project.

The Snoqualmie people have prized the pristine and alpine environment of the project area for millennia. We hunted and gathered along the ridges of the Cascades and in the mountain prairies. It is probable that there are remains of a pre-contact or even post

contact summer camp or food-processing site near the proposed project area. We feel that the probability is higher at this location than either Calligan Creek or Hancock Creek since this project is on the main Snoqualmie River itself.

The main goal of a cultural Resource survey along the proposed project area would be to determine if there are any cultural resources present.

Of course FERC wants to comply with Section 106 of the National Historic Preservation Act (NHPA) and potentially the Native American Graves Protection and Repatriation Act (NAGPRA). The proposed project location has spiritual applications for the Snoqualmie People. The North Fork Snoqualmie was also used for ceremonial and religious practices. The project is adjacent to one of the Snoqualmie People's most sacred sites, Mt. Si, Q□albc in our native language; we feel this only adds to the potential of finding cultural resources.

### Proposed Studies

SD1 lists a number of proposed studies/areas of study for the project, all of which are rather typical of the types of studies that any hydropower licensing applicant would be expected to conduct during the Integrated Licensing Process (ILP). Without additional details about these studies we are not able to fully assess whether or not they meet our needs for information about the proposed project. We intend to continue to work closely with the applicant and other interested parties to discuss and develop the necessary details for each of the applicant's study plan proposals as well as additional study plans proposed by us and other resource agencies/entities/individuals that would be required in order to insure that all parties' informational needs are met during the ILP. In addition to the studies proposed in SD1, the Snoqualmie Tribe, for reasons described above, requests the applicant and the Commission include the following study plan proposals:

- Snoq. Tribe 1 1) Evaluation of cumulative effects on aquatic habitat, in addition to site-specific impacts, including habitats for insects, mollusks, and amphibians in addition to fish.
- Snoq. Tribe 2 2) Evaluation of cumulative and site-specific effects on splash zone habitat and the organisms that occupy this habitat.
- Snoq. Tribe 3 3) Evaluation of genetic lineages of North Fork Snoqualmie fish populations, specifically investigating if the North Fork Snoqualmie harbors unique, genetically distinct native populations and if the proposed project will affect those populations.
- Snoq. Tribe 4 4) Investigation of genetics of lower Snoqualmie River *O. mykiss* and *O. clarki*, comparison of same to North Fork Snoqualmie fish, and evaluation of potential past, present, and/or future contributions of upper river populations to those in the lower river with consideration of climatic uncertainty.
- Snoq. Tribe 5 5) Conduct a Cultural Resources Survey for the greater proposed project area.

Thank you for the opportunity to comment on this project. If you have any questions regarding this letter please contact Mr. Matt Baerwalde, Snoqualmie Tribe Water Quality Manager, PO Box 969, Snoqualmie WA 98065; 425-292-0249 ext. 2101.

Sincerely,

*s/ Andrea K. Rodgers Harris*

Andrea K. Rodgers Harris  
Attorney for Snoqualmie Tribe

Cc: Matthew Baerwalde, Snoqualmie Tribe Water Quality Manager

## Sources

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Document Content(s)

Black Canyon.ScopingLetter.July. 2012.PDF.....1-6

## STUDY REQUEST - FERC P-14110 Black Canyon Hydro

City Snoq. 1 **Investigation of hydrogeology of existing aquifer that supplies the City of Snoqualmie to ensure the Black Canyon Project does not impair either water quantity or quality.**

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

The goal of the study would be characterize the existing aquifer from which the City of Snoqualmie derives its Canyon Springs source. The hydrogeology of the aquifer is not well known but it is possible that the proposed Black Canyon project may impact the aquifer and impair the City's supply. The existing spring erupts from the side of canyon through which the North Fork of the Snoqualmie flows. A cursory look at possible hydrogeology reveals that the aquifer may be bounded on the west by exposed bedrock, on the south by the canyon walls from which it erupts, and on the east and north by the North Fork of the Snoqualmie River. The spring erupts from the hillside at estimated elevation of 680 feet MSL and is approximately 100 feet above the river where it erupts. The majority of the possible aquifer area has a surface elevation of approximately 1040 feet MSL. The river elevation at the northerly portions of the aquifer area are at an elevation of approximately 950 feet MSL.

A brief hydrological balance indicates that annual precipitation of 80 inches over the 300 acre area would produce approximately 2,000 acre-feet in the catchment area. This equates to 1,200 gallons per minute (gpm) for the entire basin for all springs, evapotranspiration for second growth forest, and any other water consideration. Since the existing spring produces at least 900 gpm historically and the area is heavily forested, it is likely that water is coming into the basin from a source additional to precipitation. Logically this source would be the North Fork of the Snoqualmie River.

Since there is little scientific information on the groundwater resources in the area, a thorough study is required. At minimum, the study needs to inventory the existing spring source, any other undeveloped springs, ponds, or relevant water features, and the site topography. Monitoring groundwater wells should be installed per a hydrogeologists recommendation in the area of the spring and the proposed project alignment to provide data to characterize the groundwater resource.

Historical records and study data could also be used to correlate precipitation and river level with spring flow and aquifer level in an attempt to assess the potential for the proposed project to have an impact on the City of Snoqualmie's water source.

Ultimately, the goal of such a study would be to ascertain if the proposed project would have an effect on the existing City source, whether in impairment of quantity or quality.

**2. If applicable, explain the relevant resource management goal of the agencies or Indian tribes with jurisdiction over the resource to be studied;**

The City of Snoqualmie wants to preserve the quantity and quality of its water supply.

**3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**

It is in the public interest of the City of Snoqualmie citizens to maintain a high quality source of drinking water. The existing Canyon Springs source is of exceptionally high quality as is provided by gravity to the City minimizing ongoing operations and maintenance costs. It is a resource of high importance to the City.

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information;**

There is limited hydrogeological information. Record drawings for the existing spring and historical spring withdrawal information is available from the City of Snoqualmie. All additional hydrogeological data will need to be included in a future study.

**5. Explain the nexus between the project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

The presence of the river intake and the underground penstock could adversely affect the City's spring source or the aquifer from which it receives water either in quantity or water quality.

**6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**

The study should be authored by a licensed hydrogeologist.

**7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

The study needs to quantify, as best as possible, the hydrological balance in the aquifer basin. In addition, it needs to include test and monitoring wells to characterize the formation. Monitoring wells should be included along the proposed project alignment and in other locations to characterize the aquifer. The final well locations should be selected by a hydrogeologist. Using the aquifer data from the test wells, the area of contribution can be determined to estimate if the river provides regeneration and the

likely location of that regeneration. The information determined from this study could then be used to ascertain possible detrimental effects of the river intake or the installation of the underground conveyance on the City's Canyon Springs source.

Document Content(s)

STUDY REQUEST.DOC.....1-3

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

BLACK CANYON HYDRO, LLC

Docket No. 14110-000

KING COUNTY'S COMMENTS ON THE PREAPPLICATION DOCUMENT (PAD)  
AND SCOPING DOCUMENT (SD1), AND IDENTIFICATION OF ISSUES AND  
ASSOCIATED STUDY REQUESTS

July 23, 2012  
Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426.

Dear Secretary Bose:

King County respectfully submits the following comments in response to the Pre-Application Document (PAD) and Scoping Document (SD1) for the proposed Black Canyon hydroelectric project on the North Fork Snoqualmie River, located in King County, Washington.

Attached are five study requests prepared according to the requirements set forth in 18 CFR § 5.9(b) pertaining to 1) geology and groundwater along the proposed power tunnel alignments, 2) flood risk assessment, 3) effects of the project on resident fish and flows in the bypassed reach, 4) presence of and impact to wetlands in the project area, and 5) presence of and impact to wildlife habitat conservation areas in the project area.

King County Easement

As noted on p.62 of the PAD, King County holds a conservation easement on two parcels that have been identified by the applicant as potential locations for project facilities, including the proposed intake structure. The applicant correctly notes that the easement allows hydroelectric facilities up to 12 MW capacity (subject to all other pertinent policies and regulations). King County Council Ordinance 14917 (2003) appropriated the funds for the easement and the Council described the purpose as follows:

*“The Snoqualmie Forest Conservation Easement project is intended to preserve the Snoqualmie Forest through conservation easements that will maintain the forestland forever in its present primarily undeveloped condition, to facilitate the continued use of the property as a working forest managed at a sustainable level of harvest. The goal of the project is to either conserve or enhance, fish and wildlife habitats, shoreline protection, open space, water quality and public recreational and education opportunities of the*

*forestland for present and future generations and to prevent any use of the forestland that will significantly impair or interfere with its conservation value.”*

The terms of the easement preclude the construction of the project as proposed due to the likely significant impacts of the project to fish and wildlife habitats, shorelines, water quality and public recreational opportunities. Thus, project elements should be located on parcels that are not protected by the easement, or the project should be modified to a capacity no greater than 12 MW.

### Shoreline Regulations

The water-dependent in-stream portion of a hydroelectric generation facility, including the upland supporting infrastructure, is allowed in Forestry Shorelines areas with a Shorelines Conditional Use Permit (SCUP), provided the project can demonstrate that it can provide for the protection and preservation of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas.

The criteria for the granting of an SCUP are quite extensive but generally require that certain unique and fragile areas be avoided, environmental impacts be minimized and that impacts be mitigated. We encourage the applicant to meet with King County’s Department of Development and Environmental Services early in the process to better understand the provisions under which a SCUP can be granted.

Hydroelectric facilities are prohibited in Natural or Conservancy shoreline designations [see King County Code (KCC) 21A.25.160]. While the exact footprints of the powerhouse and tailrace facilities are unknown, the PAD suggests that they would likely be located in a Natural shoreline designation and possibly within, or immediately adjacent to, Conservancy designated shorelines. An SCUP cannot be approved for a use that is specifically prohibited in the shoreline environment (see KCC 21A.44.100). Thus, for the project’s downstream components to move forward as planned, the applicant would need to seek either a change in shoreline designation or a change in the regulations that pertain to the suite of allowable uses in these designation categories. Any such changes would require approval from the King County Council and likely the Washington State Department of Ecology.

### Critical Area and Zoning Regulations

The proposed intake structure and dam, fish ladder, power tunnel, penstock, tailrace, and portions of the access road and transmission line will be located within aquatic areas and buffers and steep slopes and buffers. It is not known if wetlands or wildlife conservation areas are affected by the proposal. There are no mapped landslide hazard areas, wildlife conservation areas or severe channel migration areas within the project boundaries. The absence of mapped critical areas of a particular category does not mean that such critical areas are absent in the area.

Hydroelectric facilities may be allowed in critical areas subject to specific criteria (see King County Code 21A.24.045 for details). While all code provisions must be met, the following special condition provisions merit attention early in the project planning process. Under special

condition 66, hydroelectric facilities in wetlands or aquatic areas may be allowed only as follows (items in **bold** type are particularly relevant for the proposal):

- a. there is not another feasible location within the aquatic area with less adverse impact on the critical area and its buffer;
- b. the facility and corridor is not located over habitat used for salmonid rearing or spawning or by a species listed as endangered or threatened by the state or federal government unless the department determines that there is no other feasible location;**
- c. the facility is not located in Category I wetlands or Category II wetlands with a habitat score 30 points or greater
- d. the corridor width is minimized to the maximum extent practical;
- e. paralleling the channel or following a down-valley route within an aquatic area buffer is avoided to the maximum extent practical;
- f. the construction occurs during approved periods for instream work;
- g. the facility and corridor will not change or adversely impact the overall aquatic area flow peaks, duration or volume or the flood storage capacity;**
- h. The facility and corridor is not located within a severe channel migration hazard area;
- i. To the maximum extent practical, buildings will be located outside the buffer and away from the aquatic area or wetland;
- j. To the maximum extent practical, access for maintenance is at limited access points into the critical area buffer rather than by a parallel maintenance road. If a parallel maintenance road is necessary the following standards are met:
  1. to the maximum extent practical the width of the maintenance road is minimized and in no event greater than fifteen feet; and
  2. the location of the maintenance road is contiguous to the utility corridor on the side of the utility corridor farthest from the critical area;
- k. the facility does not pose an unreasonable threat to the public health, safety or welfare on or off the development proposal site and is consistent with the general purposes of this chapter and the public interest;** and
  1. the facility connects to or is an alteration to a public roadway, public trail, a utility corridor or utility facility or other infrastructure owned or operated by a public utility;

Regarding criterion 66(g), the PAD does not describe in adequate detail the proposed amount of water that is to be diverted from the river for purposes of power generation during different times of year. However, p.102 of the PAD provides an estimate of average monthly power generation. When compared to the available hydrologic data, we estimate that the proposed project intends to divert 60-80% of the river flow in most months of the year, with the exception of the lowest flow months of the year when diversion would be substantially less. We ask that the applicant describe in detail the likely changes to flow peaks (monthly and annual), flow duration (e.g., monthly flow exceedance curves), and volume (e.g., mean monthly discharge in dry, average and wet years) so that the hydrologic effects of the project can be evaluated properly.

We also call the applicant's attention to provisions in the Zoning code related to hydroelectric facilities in Forestry areas (KCC 21A.08.100). Hydroelectric facilities are allowed within the Forest zone with a zoning Conditional Use Permit (CUP). In order to qualify for a CUP, special condition 14(d) requires that "An exceedance flow of no greater than fifty percent in mainstream reach shall be maintained". Exceedance flow percentages refer to the percentage of the time, calculated in monthly increments, that the flow in a river exceeds a certain value. For example, the 70% exceedance flow level for October would be the monthly mean flow level that is exceeded in 7 out of 10 years, based on the available flow record. In other words, a high percentage value refers to a low flow level, and vice versa. The 50% exceedance flow is synonymous with the statistical median flow for a particular month, i.e., the average flow exceeds that level in half of all years. Thus, this provision of KCC 21A.08.100 means that flow can only be diverted for hydroelectric generation in the Forestry zone under a Conditional Use Permit if and when at least the statistical median flow is available to be left in the river to flow through the bypassed reach.

In addition, special condition 14(a) requires that new diversion structures not impound more than 3 surface acres of water at the normal maximum surface level. The PAD suggests that the proposed impoundment at the intake structure will be closer to 4.2 acres. If the applicant is unable to meet the provisions for obtaining a Conditional Use permit, either a code amendment or a Special Use permit would be required, both of which would require approval by the King County Council. All of the regulations cited are available on-line (see hyperlink in footnote<sup>1</sup>) and are incorporated herein by this reference. As noted earlier, we encourage the applicant to meet with King County's Department of Development and Environmental Services early in the process to better understand the options for meeting the County's shoreline, zoning and related development regulations.

#### Disruption of groundwater to City of Snoqualmie's municipal spring supply

King County is concerned by the potential impacts of the project on a primary municipal water supply of the City of Snoqualmie. The spring source is located near the north bank of the river along the proposed bypassed reach. The construction of the power tunnel as well as the dewatering of the bypassed reach may directly affect the quantity and quality of the groundwater that supports this active municipal source. Please refer to the attached study request for suggestions on how to assess the risk to the City's water supply.

#### Flooding in the event of facility failure

The Revised Code of Washington (RCW) 86.12.200 authorizes counties, in cooperation and consultation with cities and towns, to adopt a comprehensive plan for managing flooding within drainage basins and to coordinate these flood risk reduction activities of the state, counties, cities, towns, and special districts within those drainage basins. King County has adopted the 2006 King County Flood Hazard Management Plan as the County's plan for river and floodplain management under RCW 86.12.200. This Plan did not anticipate the impacts of a hydroelectric generating facility on the North Fork of the Snoqualmie River. The proposed project would impound approximately 16 acre-feet of water behind the diversion dam.

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<sup>1</sup> [http://www.kingcounty.gov/council/legislation/kc\\_code.aspx](http://www.kingcounty.gov/council/legislation/kc_code.aspx)

The residential community of Ernie's Grove is located in unincorporated King County just downstream of the proposed powerhouse location. King County requests that the applicant analyze in detail the potential effects of a catastrophic facility failure on flood risk to homes, properties, roads, bridges and any other vulnerable private or public infrastructure located downstream of the project intake on the North Fork Snoqualmie River. Please include description of any proposed mitigation actions, including automated warning systems, if any such systems are proposed. Please see the attached study request for additional details.

### Aquatic Resources

The North Fork Snoqualmie is home to populations of rainbow trout, cutthroat trout, mountain whitefish and various other resident fish species. Due to Snoqualmie Falls, no anadromous salmonids use this area. The bypassed reach is a fairly steep and rugged stretch of river that is unique in the watershed and difficult (but not impossible) to sample. Past studies show that it is extensively used by rainbow trout in particular. Snorkel surveys by Sweeney et al. (1981<sup>2</sup>) showed that the canyon reach is home to a disproportionately high number of large rainbow trout. The study enumerated over 80 rainbow trout per mile greater than 9-inches in length, while reaches above the canyon had only 2-42 large fish per mile. Thus, the canyon is unique not only in its geomorphic attributes but also appears to support uniquely preferential habitat for adult rainbow trout.

In the canyon environment, large trout likely rely on drifting insects as their primary food source. In addition to the direct effects of flow diversion, the screening and diversion of flow may have a significant impact on the food supply for fish that reside in the canyon reach. Detailed assessments of the food supply for native trout (e.g., stomach sampling and direct drifting prey sampling) in the canyon reach should be performed to assess potential impacts of the project.

Other impacts of the project on fish habitat stem from its effects on the flow of water, wood and sediment, as well as its effects on fish passage both upstream and downstream. Reduced river flows generally reduce the number and volume of pools that are used for rearing by both juvenile and adult trout. While major pools are largely controlled by the sill-height of their outlet, smaller pools along the margins of the channel may become entirely disconnected at lower flows. Smaller and fewer large pools reduce the number of fish that can rear successfully in the reach.

We are aware that studies linking flow to trout habitat were performed in the reach in the 1980's utilizing the Instream Flow Incremental Methodology (IFIM) and its component Physical Habitat Simulation model (PHABSIM). The nested models link incremental changes in flow to incremental changes in fish habitat for various species and life stages, based on presumed preferences for depth, velocity, substrate and sometimes distance to cover. The model then calculates 'optimum' flow levels that maximize theoretical usable habitat through the reach based on a number of representative transects where depth, velocity and substrate are measured. We are not confident that these older studies and their associated optimum flow estimates represent best available or even adequate information to define a quantitative relationship between flow and habitat in the canyon reach. Flow in turbulent cascades is exceedingly complex and the adequacy of a 1-dimensional hydraulic model to describe habitat conditions in

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<sup>2</sup> Sweeney, S.J., K.W. Kurko and T.C. Juelson. 1981. North Fork Snoqualmie River Basin Wildlife Study. Final Report of State of Washington, Department of Game. Under contract to U.S. Army Corps of Engineers, Seattle District. 239 p. and appendices.

this setting is highly questionable. We recommend that the applicants convene an inter-agency team of scientists (including state, federal, tribal and local biologists) to develop a comprehensive suite of studies to be performed in the canyon reach to assess the complex relationship between flow and habitat, with an emphasis on juvenile and adult trout.

Reduced flows can also impact riparian area health over time as higher flows become less common. This, in turn, can reduce food supply, shade and other riparian functions. Lower flows also raise stream temperature in summer months, an additional adverse effect on habitat for cold-water species like trout. The applicant should investigate the long-term effects of flow reduction on the quantity, quality and species composition of riparian habitat throughout the bypassed reach.

In a moderately steep river, such as the bypassed reach, gravel suitable for spawning is transported through the reach by high flows, but does not generally accumulate in large volumes before being remobilized, although deep pools will often retain gravel along the bottom. Even with periodic sluicing of gravel from behind the diversion dam, the natural pattern of gravel movement is disrupted as the flow pattern features many more low-flow days interrupted by occasional very-high flow events. This may lead to changes in the amount and distribution of gravel habitat throughout the reach. The distribution and movement of gravel under current conditions should be carefully assessed to better understand project impacts and to establish baseline data for monitoring and mitigation.

#### *Ramping rates*

Ramping refers to the rate of change in river flow that is a direct consequence of project operation. Reductions in flow can lead to desiccation of redds, disconnection of pools and subsequent stranding of fish. Most hydroelectric projects are required to limit ramping to seasonally specified rates, such as 1-inch per hour, measured as a change in the water-surface elevation at specified locations. King County defers to the Washington Department of Fish and Wildlife, Washington Department of Ecology and the US Fish and Wildlife Service to define appropriate studies to inform protective ramping rates for the project that recognize the unique habitat conditions in the bypassed reach.

#### King County policies regarding hydroelectric power generation

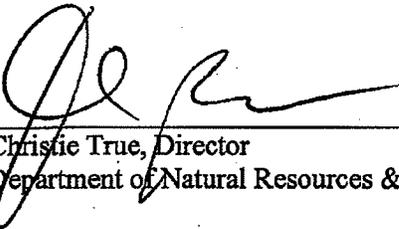
The proposed project faces substantial regulatory and policy hurdles for it to be permitted in King County. This does not mean that King County is opposed to hydroelectric power generation in general, or that no suitable sites could be found in the county. King County is committed to reducing greenhouse gas emissions and has taken significant steps to decrease its own ecological footprint on the natural resources that we all share.

Specific policies regarding hydroelectric power on forested lands can be found in Chapter 8 of the King County Comprehensive Plan. The proposed project is located on a major river rather than a minor tributary and thus has far greater potential impacts on fish, wildlife, water quality, public safety, scenic values and public recreation. While the project location is outside of the range of anadromous salmonids, it is still a major river corridor that is utilized by many species that are valuable components of the county's biodiversity and prized by the recreational fishing public. All of these factors weigh heavily against the proposed project configuration. Projects on smaller tributaries - with limited utilization by salmonids, little recreational use and smaller

hydrologic effects on major surface waters – would have a far higher likelihood of consistency with King County’s policies and regulations.

King County staff in the Department of Development and Environmental Services as well as the Department of Natural Resources and Parks are available to address any questions that the applicant or the Commission may have about these remarks or attached study requests.

Respectfully submitted,



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Christie True, Director  
Department of Natural Resources & Parks



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John Starbard, Director  
Department of Development &  
Environmental Services

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**KING COUNTY  
STUDY REQUEST – BLACK CANYON  
FERC 14110-000**

**Investigation of geology and hydrology along the power tunnel alignment to protect City of Snoqualmie’s water supply.**

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

King Co. 1

Based on existing geologic mapping there is bedrock exposed in the bed of the North Fork Snoqualmie approximately 4000 feet upstream of the intake and also at the discharge location. Gravelly glacial outwash overlies the bedrock and forms the prominent flat terrace surface that the proposed power tunnel and penstock will pass under. The pattern of bedrock exposure suggests that the river has locally down-cut through glacial deposits to bedrock. This contact between the porous outwash and bedrock is likely the location of a perched groundwater table. The geometry of the bedrock surface will substantially define the geometry and flow direction of the perched groundwater table. The City of Snoqualmie draws water from a spring located a short distance upstream from the proposed powerhouse and tailrace. This spring almost certainly flows from this perched groundwater table.

Given that the channel may be close to the bedrock/outwash contact at both the upstream and downstream ends of the project it is plausible that the power tunnel/penstock may also intercept or follow this contact for some or much of its length. If this is the case the penstock itself might change the flow pattern of water in this perched aquifer. Such a change might affect the City of Snoqualmie water supply. It might also change spring discharge patterns elsewhere along the right bank of the river, which might affect slope stability on the river banks and valley walls.

Investigations should be sufficient to characterize the local groundwater occurrence throughout the year in the vicinity of the project. An analysis should be performed to evaluate the effect of the power tunnel/penstock on the direction of groundwater flow, on changes in the location or quantity of nearby groundwater discharge with special attention to the City of Snoqualmie water supply. The effect of both construction and operation of the facility on groundwater quality should also be addressed.

- 2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;**
- 3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**
- 4. Describe existing information concerning the subject of the study proposal, and the need for additional information;**

There is existing geologic mapping that covers the project area (Booth, 1990). There are well logs for several wells in the general vicinity available on the Washington State Department of Ecology website. None of this information is sufficiently detailed or site specific to address the groundwater impacts of the proposed project.

- 5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

As described above the physical presence of the penstock could change nearby groundwater flow patterns.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**
- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

Characterizing the perched groundwater table will require installation of an array of monitoring wells which would likely be installed in conjunction with the geotechnical boring required for project design. The details of the required grid should be determined by a groundwater hydrologist, but should be sufficient to accurately characterize the thickness of the perched water table and the geometry of its phreatic surface. The wells will need to be monitored for a minimum of one year in order to characterize seasonal fluctuations. Pump or slug testing will likely also be appropriate in order to assess aquifer permeability. Tracer studies might be incorporated to further refine the understanding of groundwater flow directions and velocities. The groundwater investigation should also include a reconnaissance of the right (west) river bank and valley wall to locate areas of natural spring discharge.

**KING COUNTY  
STUDY REQUEST – BLACK CANYON  
FERC 14110-000**

King Co. 2 **Investigation of downstream flooding impacts associated with hydropower operations, including an evaluation of the likelihood and potential impacts associated with a dam breach of the proposed Black Canyon hydroelectric facility on the community of Ernie’s Grove and other areas of Unincorporated King County and the City of Snoqualmie.**

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

Based on the project proposal of impounding 16 acre feet of water at the Black Canyon hydroelectric facility we request that an in-depth evaluation be made of any downstream flooding impacts of hydropower operations, including evaluation of the likelihood and impacts of a dam breach at the proposed facility. The goals of the study would be to describe the additional risk imposed on local communities downstream by the hydroelectric facility with respect to inundation and swiftly moving waters associated with operations, and in particular with a potential failure of the facility, describe the possible mechanisms of failure and likelihood of said mechanisms, and document the proponents plans to mitigate for the hazard associated with a dam breach.

Information to be obtained by this study would include:

- Description of any potential downstream changes in flow regime and related flood impacts associated with routine operations of the facility
- Description of all possible mechanisms of failure of the facility
- Estimates of the likelihood of failure mechanisms.
- Mapping of depth and velocity zones downstream of the proposed facility under failure scenarios in accordance with the Washington State Department of Ecology Dam Safety Office protocols for Dam Failure Analysis.
- Evaluation of any changes in channel migration hazard to downstream areas resultant from dam-break scenario outflows, resulting flood wave, and sediment deposition and distribution.
- Specific descriptions of the proponent’s plans to mitigate for the increased hazard to downstream communities resulting from the proposed facility.

Investigations should be sufficient to characterize the impacts of operations, including of a potential failure of the facility on downstream residents, developed property, and public and private infrastructure.

- 2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;**

The King County Department of Natural Resources and Parks and the King County Flood Control District are charged to manage flood hazards within King County. King County operates to document and inform the public of relevant flood hazards and works to reduce flood hazards and risks countywide. As part of this responsibility, King County manages and maintains several flood protection facilities (levees and revetments) downstream of the facility, and operates a property buyout program to purchase high priority flood and channel migration risk properties. The King County Roads Services Division also maintains County roads in the downstream area which could be impacted by any increased flood hazard.

- 3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**

N/A

- 4. Describe existing information concerning the subject of the study proposal, and the need for additional information;**

Stream gages are present upstream of the proposed facility which can provide an estimate of river flows to be affected by the dam. Topography and aerial photos including structure locations for downstream hazard mapping are also available. Recent flood mapping is not available.

- 5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

Routine operations could alter hydrology, potentially changing the frequency or magnitude of downstream flood flows and flood extent. In addition, any failure of the hydroelectric facility could create a catastrophic release of any impounded waters, resulting in a short duration wave of high flow that would increase flooding hazards beyond anything previously experienced or reasonably foreseen in the area. Residents and public resource managers need to evaluate the proposal in terms of the impact it will have on downstream flood hazards, and the resulting impacts on residents, infrastructure, and public agency programs that manage flood and channel migration hazards.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**

The study should be conducted when possible in accordance with the Washington State Department of Ecology standards for Engineering Design Reports, particularly as they

relate to dam-break analyses. The River and Floodplain Management program within DNRP would be available to advise on developing a scope of work for this effort.

7. **Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

To our knowledge, no study has been completed to date on the North Fork Snoqualmie documenting the effects of a potential failure of a new hydroelectric facility of the character proposed. At this time, no cost estimate has been developed for this work effort.

**KING COUNTY  
STUDY REQUEST – BLACK CANYON  
FERC 14110-000**

**Comprehensive investigation of resident fish populations, instream flows, gravel and large wood in the proposed bypassed reach.**

King Co. 3

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

We encourage the applicant to convene a multi-agency technical committee to develop a comprehensive suite of studies to assess current condition and likely effects of the project on resident fish populations, instream flow, gravel supply and movement, as well as large wood supply and movement through the bypassed reach. The objectives of the suite of studies should be developed collaboratively to maximize efficiencies in study design. At a minimum, the study objectives should include:

- Quantitative assessment of fish species distribution, population abundance, and size distribution in the bypassed reach;
- Quantification of habitat types under low, medium and high flow conditions in the bypassed reach;
- Description of the current flow regime using a variety of standard and process-based metrics, such as the suite of indicators used in the Indicators of Hydrologic Alteration method;
- New evaluation of the flow-habitat relationship using the Instream Flow Incremental Methodology, with study design (e.g., selection of transects, habitat suitability curves, transect weighting and life-history weighting) developed by the committee;
- Quantification of gravel movement and storage through the bypassed reach and its relationship to specific flow metrics;
- Quantification of wood movement, storage and functions in the bypassed reach and its relationship to specific flow metrics;

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;**

As described in the letter above, the effects of the project on salmonid populations, surface water flow, wildlife and natural resources in general are directly pertinent to the resource management goals of King County as reflected in our Comprehensive Plan, King County Code, and the easements that affect two parcels within the proposed project footprint.

**3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**

N/A

**4. Describe existing information concerning the subject of the study proposal, and the need for additional information;**

Studies regarding fish populations and the relationship between fish and flow were performed over 20 years ago. The Sweeney et al.<sup>3</sup> study demonstrated the high proportion of large rainbow trout in the reach, compared to other portions of the North Fork, suggesting it is uniquely important for adult rearing. These study results should be updated to reflect any changes in the species and size composition of trout populations in the reach.

IFIM studies were similarly performed over 20 years ago. River reaches change over time, as does the science that is used to interpret the results of hydraulic modeling and habitat suitability for fish. The old studies are insufficient to guide the development of instream flow requirements for the reach.

We are not aware of any existing studies regarding the quantification of wood and gravel in the bypassed reach.

**5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

The proposed project will likely have significant effects on flow in the bypassed reach, which in turn will affect fish habitat, gravel deposition and movement and wood deposition and movement. Comprehensive fish and flow studies are critical to the development of a required instream flow regime that will minimize impacts to resident salmonids. Such studies are needed to inform County permit requirements.

Baseline information for gravel and wood abundance and movement in the reach is needed to guide process-based instream flow requirements (e.g., pulse flows, transport flows) and to establish suitable triggers for mitigation during the license period.

**6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**

The establishment of a multi-agency technical committee to develop a comprehensive aquatic resource study plan is consistent with common practice in hydroelectric licensing proceedings. It is an expeditious and productive way to develop a suite of studies that meets the needs of all relevant resource agencies while identifying key efficiencies to reduce costs for the applicant.

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<sup>3</sup> Sweeney, S.J., K.W. Kurko and T.C. Juelson. 1981. North Fork Snoqualmie River Basin Wildlife Study. Final Report of State of Washington, Department of Game. Under contract to U.S. Army Corps of Engineers, Seattle District. 239 p. and appendices.

**7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

The applicant has not proposed alternative studies with suitable specificity to evaluate whether they meet King County's information needs.

We believe the multi-agency approach is the most cost-effective path toward the development of a suitable suite of studies pertaining to aquatic resources in the bypassed reach.

**KING COUNTY  
STUDY REQUEST – BLACK CANYON  
FERC 14110-000**

King Co. 4

**Investigation of wetland and buffer impacts associated with hydropower operations, including direct impacts from construction of the intake, powerhouse, tailrace, access roads, new electrical transmission lines, and expansion of maintenance corridor of existing transmission lines. The investigation shall also include an evaluation of the potential impacts associated with reduced flows in the North Fork Snoqualmie River in the bypass reach.**

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

Based on the project proposal and lack of on-the-ground information regarding the presence of wetlands in the project area, we request that an in-depth evaluation be made of direct or indirect wetland impacts due to the construction and operation of the proposed hydropower facility. The goals of the study would be to identify and characterize the wetlands within the project area, evaluate direct and indirect impacts to wetlands from operation and maintenance of the facility, and describe compensatory mitigation measures for these adverse impacts.

Information to be obtained by this study would include:

- Description of all wetlands and buffers within the project area, including physical description and functional categorization.
- Description of direct and indirect adverse impacts to wetlands and buffers from the project construction and operation.
- Specific descriptions of the proponent's plans to mitigate for the adverse impact to wetlands and their buffers within the project area.
- Document how this project is consistent with Critical Areas Code criteria allowing hydroelectric generating facilities as found in King County Code 21A.24.045.D.66.

Investigations should be sufficient to characterize the impacts of construction and operation.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;**

The King County Department of Development and Environmental Services is responsible for protecting critical resource areas such as wetlands within unincorporated King County from adverse impacts due to construction and operation of developments including hydroelectric generating facilities.

3. **If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**

N/A

4. **Describe existing information concerning the subject of the study proposal, and the need for additional information;**

The national Wetland Inventory does not identify any wetlands in this vicinity. King County' IMAF geographic information system does identify wetlands in or near the western portion of the project area.

5. **Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

Routine operations could alter hydrology of wetlands within the bypass reach of the North Fork Snoqualmie River. The project could directly impact wetlands by construction of facilities within wetlands or their buffers, including the powerhouse, intake, tailrace, access roads, and new electrical transmission lines. Overbuilding a portion of the existing electrical transmission line might result in widening the utility corridor, permanently impacting wetland vegetation.

6. **Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**

The wetland study should be conducted during the growing season, in accordance with The US Army Corps of Engineers 1987 Wetland Delineation Manual, and the May 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. Wetlands should be categorized using the Washington Department of Ecology's 2004 Washington State Wetland Rating System for Western Washington. Compensatory mitigation should be consistent with the King County Critical Area Restoration and Enhancement guidelines. All of these documents are considered best available science for these purposes. The Environmental and Site Development Services Section of DDES is available to advise on developing a scope of work for this study request.

7. **Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

To our knowledge and as stated in the Preliminary Application Document, no study has been completed to date on the North Fork Snoqualmie identifying wetlands within the project area or documenting the adverse impacts of the proposal and compensatory mitigating measures. At this time, no cost estimate has been developed for this work effort.

**KING COUNTY  
STUDY REQUEST – BLACK CANYON  
FERC 14110-000**

**Investigation of the presence of wildlife habitat conservation areas in the project area, and evaluation of adverse impacts associated with hydropower operations, including direct impacts from construction of the intake, powerhouse, tailrace, access roads, new electrical transmission lines, and possible expansion of the maintenance corridor of existing transmission lines.**

King Co. 5

**1. Describe the goals and objectives of each study proposal and the information to be obtained;**

Based on the project proposal and lack of on-the-ground information regarding the presence of specific wildlife habitat conservation areas as regulated in King County Code 21A.24.382 in the project area, we request that an in-depth evaluation be made of direct or indirect impacts to protected wildlife due to the construction and operation of the proposed hydropower facility. The goals of the study would be to identify and characterize wildlife habitat and use within the project area, evaluate direct and indirect impacts to habitat and wildlife habitat conservation areas from operation and maintenance of the facility, and describe compensatory mitigation measures for these adverse impacts.

Information to be obtained by this study would include:

- Description of observed potential and active wildlife habitat and wildlife habitat conservation areas protected by the King County Comprehensive Plan and Critical Areas Code.
- Description of all possible adverse impacts to protected habitat or wildlife habitat conservation areas from construction or operation of the facility.
- Specific descriptions of the proponent’s plans to mitigate for the adverse impact to wetlands and their buffers within the project area.
- Document how this project is consistent with Critical Areas Code criteria allowing hydroelectric generating facilities as found in King County Code 21A.24.045.D.66

Investigations should be sufficient to characterize the impacts of project construction and operation.

**2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;**

The King County Department of Development and Environmental Services is responsible for protecting critical resource areas such as protected wildlife and associated wildlife habitat conservation areas within unincorporated King County from adverse impacts due to construction and operation of developments including hydroelectric generating facilities. Specific protection standards are found in the Critical Areas Code for certain protected species. For all other species identified as requiring protection by the King

County Comprehensive plan, the Code protects active breeding sites and surrounding habitat necessary to protect breeding areas for protected species, basing protection measures beyond the active breeding sites on Washington Department of Fish and Wildlife management guidelines, when available.

- 3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;**

N/A

- 4. Describe existing information concerning the subject of the study proposal, and the need for additional information;**

The Washington Department of Fish and Wildlife Priority Habitats and Species database is available with information about the presence of some wildlife habitat in this area. The general information in the Preliminary Application Document taken from other hydroelectric proposals at nearby locations may differ greatly from what is actually present at this project location.

- 5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;**

Project construction and routine operations could adversely affect protected wildlife, especially if built or operated within a specified wildlife habitat conservation area. Protection measures might result in changes to the proposal.

- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and**

The study should be conducted during the breeding and nesting season for protected avian species. In particular, field surveys should search for the presence, sign or habitats of County-protected wildlife species. Trees should be searched for the presence of large stick-type nests, snags, hollow trees, tree cavities, mature forested areas, and pileated woodpecker foraging sign. The Environmental and Site Development Services Section of DDES is available to advise on developing a scope of work for this study request.

- 7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.**

To our knowledge no on-the-ground study has been completed to date on the North Fork Snoqualmie identifying protected wildlife use of the site or the presence of wildlife habitat conservation areas within the project area. No evaluation has been done to document the adverse impacts of the proposal and provide compensatory mitigation. At this time, no cost estimate has been developed for this work effort.

Document Content(s)

KC Comments on Black Canyon Hydro.PDF.....1-19



**Electronic Filing**

July 24, 2012

Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: Comments on the Preliminary Application Document (PAD), Scoping Document 1 (SD1), and Study Requests for the Black Canyon Hydroelectric Project (FERC P-14110).**

Dear Secretary Bose:

Enclosed for filing in the above referenced proceeding are comments of Trout Unlimited in response to application by Black Canyon Hydro, L.L.C. for an original license to construct and operate a hydropower facility on the North Fork Snoqualmie River, King County, Washington. Copies of this filing have been served on all parties on the official service list compiled by the Secretary in this proceeding.

Thank you for your assistance. Please contact me if you have any questions or need additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kate Miller", is written above a horizontal line.

Kate Miller



UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Original License Application

Black Canyon Hydroelectric Project

Black Canyon Hydro, L.L.C.

FERC Project No. 14110-000

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COMMENTS AND STUDY REQUESTS OF TROUT UNLIMITED ON SCOPING  
DOCUMENT 1 AND PRE-APPLICATION DOCUMENT FOR THE BLACK  
CANYON HYDROELECTRIC PROJECT, FERC PROJECT No. 14110-000.

(Filed July 24, 2012)

**I. INTRODUCTION**

On June 1, 2012, the Federal Energy Regulatory Commission (FERC or the Commission) issued a Notice announcing receipt of Black Canyon Hydro L.L.C. (Black Canyon or Applicant)'s Notice of Intent to File a License Application, Filing of Pre-Application Document (PAD), Commencement of Pre-Filing Process and Scoping; Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests. In response to this notice, Trout Unlimited offers the following comments and requests for additional study.

**II. BACKGROUND**

Black Canyon Hydro, L.L.C. proposes to construct a new hydropower facility on the North Fork of the Snoqualmie River in King County, WA. The project would divert up to 900 cfs from the river, routing that water through a diversion pipe and powerhouse, returning the water to the Snoqualmie River some 2.6 miles downstream of the diversion point. The proposed project would include: (1) a 35-foot-wide, 7-foot-tall inflatable dam;

(2) a 90-foot wide, 7-foot-tall diversion intake structure; (3) a 9-foot-wide, 7-foot-tall fish ladder; (4) a 6,990-foot-long, 14-foot-diameter horizontal upper tunnel; (5) a 1,185-foot-long, 17-foot-diameter powerhouse tunnel and penstock; (6) a 60-foot-long, 100-foot-wide metal powerhouse with two Francis turbine units; (7) a 150-foot-long, 40-foot – wide tailrace; (8) a 0.75mile and 0.5 mile extension of two existing logging roads; (9) a 4.2 mile long transmission line; and (10) appurtenant facilities. The project would have an estimated average annual generation of 104,720 megawatt-hours.

### **III. INTEREST OF TROUT UNLIMITED**

Trout Unlimited (“TU”) is a nonprofit coldwater fisheries conservation organization with national headquarters in Arlington, Virginia and local chapters throughout the country. TU is dedicated to the protection of wild trout, salmon, and steelhead fishery resources. TU has approximately 140,000 members nationwide and nearly 4,000 members in Washington State.

Trout Unlimited supports hydropower developments that are properly sited, responsibly operated and appropriately mitigated to minimize impacts to the surrounding environment – particularly related to coldwater fisheries and their habitats. The Black Canyon Hydro project would be located on the North Fork Snoqualmie River – a regionally significant resource renowned for its whitewater recreation and fishing opportunities. After review of the applicants Pre-Application Document (PAD), Scoping Document No. 1 (SD1) and proposed Study Plans, we offer the following comments to help inform future decision-making related to development of this project.

#### IV. COMMENTS

Trout 1 Consistency with Comprehensive Plans: The proposed project site is located on a reach of the North Fork Snoqualmie River that is currently identified under a number of plans and programs aimed at protecting the River's natural values including:

- *Wild & Scenic:* This stretch of river has been recommended to Congress by the US Forest Service (USFS) for inclusion in the national Wild and Scenic River system based on two outstandingly remarkable values: recreation and cutthroat trout fisheries.
- *Mt. Si Natural Resources Conservation Area:* The project site is located within the Washington State Department of Natural Resources Mt. Si Natural Resources Conservation Area.
- *Northwest Power and Conservation Council Protected Area:* The project site is located within the Northwest Power and Conservation Council Protected Area, a designation that is aimed at protecting these waterways from hydropower development.
- *King County Code, Comprehensive Plan, and Conservation Easement:* The project appears to be inconsistent with several provisions of the King County Code and King County Comprehensive Plan, including the Shoreline Master Plan and regional land use zoning. Additionally, King County notes that this project would be located in an area protected by a conservation easement.

The proposed Black Canyon Hydro project would occupy and partially de-water a stretch of river designated under multiple layers of local, state and federal conservation programs. Considering the amount of effort currently focused on protecting this river from development impacts, we question whether this project can be constructed and operated in a manner consistent with these comprehensive plans. Before investing time, money and resources in multiple years of project study and design, we strongly urge the Applicant to demonstrate or further explain how the proposed project can be developed in a manner consistent with these various plans and programs.

Trout 2

Operational Flexibility of Inflatable Dam Structure: The project would utilize an inflatable dam structure which would inflate to a size of 7-feet high, 156 feet long and would inflate and hold a pool level allowing water to be withdrawn. A unique consideration about this dam is that it could be deflated to pass bed load or high flows. The Applicant notes that in medium or high flows (eg: 3,000 / 4,500cfs), it is likely that the dam would be entirely deflated – allowing water and sediments to pass – since the goal of the dam is to hold the water elevation at a height suitable to allow for diversion into the intake structure; which will only be necessary at low flows. We are cautiously optimistic about this form of structural technology, which may minimize some of the more significant and long-lasting sediment and flow impacts caused by traditional dam construction. It seems this inflatable dam may also provide flexibility to return the river channel to a free flowing state at certain flow levels. We suggest the applicant further describe the operational flexibility of this project component – including additional information about the conditions under which the structure could or would be deflated and the flow levels at which an impoundment would be required to supply the project diversion. The applicant should also provide additional information about the anticipated dimensions of the underlying concrete structure.

Trout 4

Instream Flows: We are concerned that the Applicant is not currently proposing any minimum instream flows for the bypassed river reach below the project diversion. Prior to filing a license application, the Applicant should evaluate existing flow conditions at the project site – including the relationship between flows and habitat for existing fish populations. The Applicant should evaluate project impacts to these natural flow patterns and develop a flow schedule or plan to ensure that – should the project

move forward into licensing – minimum flows sufficient to protect fish and fish habitat will be provided as part of project operation.

Trout 5

Road Access and Construction: The project would require construction or extension of existing logging access roads. The applicant should ensure sufficient study to fully account for potential adverse impacts related to the extension and use of these roads, including consideration of- and plans for dealing with - run-off and slope stability as well as impacts related to increased travel and access along these routes.

Trout 3

Water Rights & Water Supply Impacts: The PAD does not indicate any commitment related to water rights needed to support development of this project. Washington State Law requires a storage right and a hydropower production right to divert water and run that water through a turbine for power generation, respectively. The applicant should demonstrate ability to obtain these rights in a manner that does not result in diminishment to existing, more senior water users.

Trout 6

Water Temperature: The North Fork Snoqualmie is a cool water system, providing cool temperatures for resident trout both locally in the North Fork and also providing a cooling influence on the mainstem Snoqualmie River downstream. The proposed hydro project would route up to 900cfs through a powerhouse and turbines and re-deposit that water back into the River below the project. The diversion and power generation is likely to increase water temperatures, resulting in increased temperatures where the water returns to the North Fork below the project. The Applicant must thoroughly evaluate project impacts to river temperatures – both in the North Fork Snoqualmie and potential impacts to temperatures in the mainstem Snoqualmie River downstream. Of particular interest are temperature impacts in the summer months –

August specifically – when the lower flows in the River are already close to or in excess of State Water Quality Standards under existing conditions

Trout 7

Recreation: The North Fork Snoqualmie supports recreational use by boaters, kayakers, anglers, sportsmen and others. The Applicant should fully evaluate existing uses and the impact of project construction and operation on those uses. Specifically, the applicant should study project impacts to recreational access – including potential impacts to trails or river access points – and recreational use – including impacts to whitewater flows and to angler use of the river.

Trout 8

Fishery Impacts: The proposed project is located above Snoqualmie Falls – a natural upstream barrier for anadromous fish – but the area is populated by resident species, including several trout species. The applicant should evaluate project impacts to migration and connectivity for these resident trout populations. The applicant lists a fish ladder as part of the project components – additional information should be provided about the installation and operation of this ladder across multiple flow scenarios.

## V. CONCLUSION

Thank you for the opportunity to comment on these filings. We look forward to continued participation and review of this proposed development.

Respectfully submitted this 24<sup>th</sup> day of July, 2012.



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Kate Miller  
Trout Unlimited

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Original License Application

Black Canyon Hydroelectric Project

Black Canyon Hydro, L.L.C.

FERC Project No. 14110-000

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**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated this 24<sup>th</sup> day of July, 2012.



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Kate Miller  
Trout Unlimited  
227 SW Pine Street, Suite 200  
Portland, OR 97204  
(503) 827-5700 x. 16  
fax (503) 827-5672  
kmiller@tu.org

**ATTACHMENT A**  
**Study Request**

Trout 8      **Resident Fish Study**

The applicant has proposed a major development that would transform the North Fork of the Snoqualmie River from a free-flowing river to a highly regulated river with a completely new flow regime. With no minimum instream flow requirement proposed, the Project will affect resident fish populations. Methods and approach described in the Pre Application Document are insufficient to characterize the unique attributes of fish resources in the reach of river impacted by the Project.

The following study request addresses each of the seven study criteria as required in 18 C.F.R. §5.9(b):

*§5.9(b)(1) — Describe the goals and objectives of each study proposal and the information to be obtained.*

The objective of this study is to determine whether proposed Project operations and alternatives would provide suitable conditions for the long-term viability of the population of coastal cutthroat trout and rainbow trout in the river, and to determine whether proposed operations would have a negative effect on cutthroat trout and rainbow trout viability in the natural river channel bypassed by the Project.

The primary goals of the study are:

- to provide information on the fishery resources of the North Fork Snoqualmie to allow for evaluation of the health of fish populations;
- to provide information and evaluate potential differences between fish populations as they currently exist in the river and future conditions if the Project were constructed; and
- to provide information on potential project-related effects on the health and size of fish populations.

Following is a list of specific study objectives:

- characterization of fish species composition and relative spatial distribution;
- estimate of total or relative abundance;
- analysis of population size-structure and age-class structure; and
- calculation of condition factor.

*§5.9(b)(2) — If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

The mission of the Washington Department of Fish and Wildlife is to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. Goals of the agency include conservation and protection of native fish and wildlife while providing sustainable fishing, hunting and other wildlife-related recreational experiences. Our study request is consistent with meeting these goals.

*§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Our members have a strong interest in the viability of fishery resources of the North Fork Snoqualmie River. To fully evaluate the Project's effect on resident fish populations, a study of the fishery resources within the reach impacted by the Project is relevant to the Commission's public interest determination.

*§5.9(b)(4) — Describe existing information concerning the subject of the study proposal, and the need for additional information.*

As noted in the PAD, data from the Black Canyon are limited, and existing information does not address the need to evaluate Project impacts on the reach that would be dewatered by the Project. Since this reach is different in character from other reaches that have been surveyed, a site-specific analysis is warranted.

*§5.9(b)(5) — Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

A trout viability analysis is necessary because the Project has the potential to isolate trout populations particularly if there are no instream flow requirements. Construction of the project has the potential to affect environmental conditions for fish life in the river. These potential environmental affects include: water temperature, quantity, and quality; transfer of water out of the river channel; creation of reservoirs; entrainment at diversions and intakes; turbidity from dam releases; and changes in physical habitat. Through these effects, the Project could affect fish populations in project-affected stream reaches. The study results will inform the public interest determination regarding the decision of whether to license this project.

*§5.8(b)(6) — Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally*

*accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

A systematic cutthroat trout and rainbow trout population (trout) survey will be conducted in the river reach proposed to be dewatered by the Project to determine the population size and age structure during the low flow period in the summer of 2013. Due to variable sampling conditions in the river reach, the survey methods will include both multipass electrofishing depletion and mark/resight snorkel survey techniques to estimate cutthroat trout abundance. Each of these methods is described below.

#### *Electrofishing-Based Population Estimate*

Where feasible, trout density at each sample unit will be estimated by performing a three-pass electrofishing removal estimate using analytical methods of Zippen (1958). If catch during the second pass is less than the number required for a third pass (to maintain a 95 percent confidence level), a modified two pass removal method will be completed following Seber (1982) and Seber and LeCren (1967). Multipass electrofishing bias will be assessed and reduced following Peterson et al. (2004). Average cutthroat trout densities for each habitat type by size class will then be used to make a cutthroat trout population expansion based on habitat type availability following Hankin and Reeves (1988). This will result in an estimate of total trout abundance by size class in the river.

All trout captured during the electrofishing survey will be identified to species, measured to length, and weighed. Age classes will be assigned based on length frequency distribution. These age classes will then be used to assess year-class strength for population viability analysis. Average condition factors for each age class will be calculated from the length and weight measurements. Condition factor estimates will be used to assess fish growth rates and function as a surrogate to indirectly assess food availability.

Prior to electrofishing, a review of the scientific literature will be performed to determine the minimum size and age of maturity for each trout species. In addition, the length frequency distribution data from the electrofishing survey may also suggest an alternative minimum size at age of mature fish (minimum age at maturation determined from the literature).

#### *Mark/Resight Population Estimate*

Much of the habitat in the reach impacted by the Project includes steep gradient, containing many relatively deep pools that cannot be effectively sampled using electrofishing equipment. In this situation, a more effective deep water mark/resight snorkel survey will be used to estimate adult cutthroat trout abundance. Prior to conducting the resight snorkel survey, a subsample of the trout will be captured using a

combination of angling (deep pools) and marked over a three to four day period. All trout meeting the minimum adult size criteria will be caudal fin-clipped and returned to the river where they were originally captured. Effort to catch and mark trout will be distributed as evenly as possible over the entire length of the river reach impacted by the Project. The day following the last day of marking, experienced snorkel surveyors will conduct a one-day count of all marked and unmarked trout in the river that are greater than the defined minimum size for adult cutthroat trout and rainbow trout. A total population estimate with a 95 percent confidence interval of mature cutthroat within the river reach will be calculated using the mark/resight snorkel data (i.e. mark/recapture) following the bootstrap method (Efron and Tibshirani 1986).

#### *Age structure*

Analysis matrices will be based on age classes. Existing length-age indices will be used to determine the age class. Length-age indices are relatively accurate for smaller fish; however, confidence intervals reduce with larger fish. Scales collected will be read to assist in identifying age class breaks. Regression analysis will be used to analyze the data and if necessary, adjust the indices.

#### *Fish Size and Condition*

Fish size and weight data will be summarized by species and by sample site. Standard scientific software outputs including minimum, maximum, and mean fork length and weight will be calculated. Length and weight data will be used to calculate a relative condition factor ( $K_n$ ) (Anderson and Gutreuter 1983) and to provide a general indication of the health of individuals, where factors greater than 1 indicate more healthy individuals. Relative condition factors for electrofishing sites will be calculated for length and weight data collected at all quantitative electrofishing sites.

#### *Population Viability*

Subsequent to determining the population size and age structure, trout population viability will be assessed by determining if there are any survival gaps in the age class distribution and by comparing mature adult abundance to standard adult fish population viability standards for effective population size. Many studies have described a relationship between the effective number of reproducing individuals in a population and the genetic risks to that population. Theoretical genetics and available empirical data for a variety of organisms (see Franklin 1980; Lande 1995) suggest that, in general, closed populations will begin to show inbreeding depression effects after a few generations with an effective population size ( $N_e$ ) < 50 reproducing adults. Similarly, over ecological time scales, closed populations will begin to lose genetic variation due to the random effects of genetic drift when  $N_e$  drops below 500. Generally, it is conservatively recommended that a spawning population of resident trout, in this case the number of potential mature adults in the bypass reach, should exceed 100 to avoid

genetic and phenotypic variation through drift (Rieman and Allendorf 2001). The  $N_e > 100$  rule applies to the short term viability of a population and the  $N_e > 1,000$  rule applies to long term population persistence and viability. If adult abundance falls below the  $N_e > 1,000$  viable threshold or if a substantial survival bottle neck is observed in the age class distribution, then habitat limiting factors will be assessed, and a separate study of emigration and immigration into the bypass reach will be developed.

*§5.9(b)(7) —Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The cost for preparing the study plan, conducting the study, and preparing the report is difficult to evaluate and depends on the rates of the consultant selected for the work. The total estimated hours for the trout viability analysis is approximately 400 person hours. The allocation of these hours is approximately 40 hours for coordination and study preparation; 2 weeks of field data collection for a 3-person crew (240 hours); 80 hours to complete a draft report; and 40 hours to complete a final report.

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Document Content(s)

Black Canyon Hydro - TU.PDF.....1-15



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Electronic Filing, July 24, 2012

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington, DC 20426

Re: Comments on the Preliminary Application Document (PAD), Scoping Document 1 (SD1),  
and Study Requests for the Black Canyon Hydroelectric Project (FERC P-14110)

Dear Secretary Bose:

Enclosed for filing in the above referenced proceedings is Alpine Lakes Protection Society, American Rivers, American Whitewater, North Cascades Conservation Council, The Mountaineers, and Washington Wild's COMMENTS AND STUDY REQUESTS, submitted in response to the Commission's May 25th, 2012 Notice Soliciting Comments on the Pre-Application Document (PAD) and Scoping Document 1 (SD1) for the Black Canyon Hydroelectric Project.

Copies of this filing have been served on all parties of record to these proceedings. Thank you for your assistance. Please call me at (425) 417-9012 if you have any questions or need additional information.

Sincerely,

Thomas O'Keefe, PhD  
Pacific Northwest Stewardship Director

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Black Canyon Hydro LLC	)	Project No. 14110-000
	)	Black Canyon
	)	Hydroelectric Project
	)	
	)	Comments of Conservation
	)	Groups

ALPINE LAKES PROTECTION SOCIETY, AMERICAN RIVERS, AMERICAN WHITEWATER, NORTH  
CASCADES CONSERVATION COUNCIL, THE MOUNTAINEERS, AND WASHINGTON WILD  
COMMENTS AND STUDY REQUESTS ON THE PRELIMINARY PERMIT APPLICATION AND  
SCOPING DOCUMENT 1 FOR THE BLACK CANYON HYDROELECTRIC PROJECT, FERC PROJECT  
NUMBER 14110-000

(Submitted July 24, 2012)

### I. Introduction

Alpine Lakes Protection Society, American Rivers, American Whitewater, North Cascades Conservation Council, The Mountaineers, and Washington Wild (hereafter Conservation Groups) offer the following comments and study requests in response to the Federal Energy Regulatory Commission's Notice Soliciting Comments on the Pre-Application Document (PAD) and Scoping Document 1 (SD1), as well as study requests for the Black Canyon Hydroelectric Project, dated May 25th, 2012. Conservation Groups have reviewed the PAD and SD1 and also participated in and provided initial comments at the scoping meeting held on June 19th in North Bend, Washington.

The Black Canyon Project would be located on private lands and would consist of the following new facilities: (1) a 7-foot-high, 156-foot-long dam with a fish ladder and an intake structure equipped with coanda screens; (2) a 4.2-acre impoundment with a normal water surface elevation of 958 feet above mean sea level; (3) an 8,175-foot-long buried penstock that includes a 6,990-foot-long, 14-foot-diameter section that connects the intake structure to a 1,185-foot-long, 17-foot-diameter section that connects to; (4) a 60-foot-long, 100-foot-wide powerhouse containing two Francis turbine generating units, one 16.5-MW unit and one 8.5-MW unit, for a total installed capacity of 25 MW; (5) a 150-foot-long, 40-foot-wide tailrace; (6) a 4.2-mile-long, 115-kilovolt overhead transmission line that transmits project power to the regional grid; (7) a 0.75-mile-long and a 0.5-mile-long extension of two existing logging roads that lead to the project facilities; and (8) appurtenant facilities (figure 2). The project would have an estimated average annual generation of 104,720 megawatt-hours.

## **Interest of Conservation Groups.**

The Conservation Groups are national or regional environmental and recreational non-profit organizations with an interest in protecting and restoring rivers and streams and other natural resources located in the Pacific Northwest. Each organization has a direct interest in changes to flows, public river access, flow information, habitat, land management, watershed protection and other topics that will arise in the consideration of a hydropower project on the Black Canyon section (also referred to as "Ernie's Gorge") of the North Fork Snoqualmie River near North Bend, King County, Washington.

Alpine Lakes Protection Society (ALPS) works to protect lands, waters and forests, and to encourage environmentally sustainable recreational development in the Alpine Lakes region, a dramatic area of peaks, forests and over 600 lakes in the central Cascade mountains directly east of Puget Sound.

American Rivers is a national, non-profit, 501(c)(3) conservation organization with northwest regional offices in Seattle, Washington and Portland, Oregon. American Rivers serves more than 35,000 members nationwide and 2,250 members in the region. American Rivers is dedicated to protecting and restoring America's river systems and to fostering a river stewardship ethic. Additionally, American Rivers promotes public awareness about the importance of healthy rivers and the threats that face them. American Rivers' programs address flood control and hydropower policy reform, endangered aquatic and riparian species protection, instream flow, clean water, and urban rivers.

American Whitewater is a national non-profit 501(c)(3) river conservation organization founded in 1954 with over 5,500 members and 100 local-based affiliate clubs, representing whitewater paddlers across the nation. American Whitewater's mission is to conserve and restore America's whitewater resources and to enhance opportunities to enjoy them safely. As a conservation-oriented paddling organization, American Whitewater has a significant percentage of members residing in Washington State and thus an interest in Ernie's Gorge and the North Fork Snoqualmie areas potentially affected by this project.

North Cascades Conservation Council (NCCC) is a 501(c)(3) not-for-profit organization formed to protect and preserve the North Cascades' scenic, scientific, recreational, educational, and wilderness values. NCCC has a 50 year history of aggressively promoting National Parks and Wilderness, protecting old growth forests and pristine watersheds, conserving endangered wildlife, preventing off-road vehicle damage to public lands, and guiding Park and Wilderness management.

The Mountaineers was formed in 1906 to explore the wild areas and peaks surrounding the City of Seattle. The Mountaineers works to ensure that wilderness areas are preserved and protected through the actions of their Conservation, Recreation Resources and Stewardship divisions, and with a mission to enrich the community by helping people explore, conserve, learn about and enjoy the lands and waters of the Pacific Northwest.

Washington Wild is a nonprofit 501(c)(3) conservation organization founded in 1979 with more than 10,000 members and supporters statewide. Its mission is to preserve and restore wild lands and waters in Washington State through citizen empowerment, support for grassroots community groups, advocacy and public education.

## II. Comments

Conservation Groups are opposed to the Project due to the impacts that would result from damming and dewatering one of the region's most treasured free-flowing rivers. The Conservation Groups recognize that hydropower is an important source of energy and have supported projects to improve generation efficiency and new generation at sites that are appropriate for development.<sup>1</sup> This project will not improve efficiency and is not an appropriate site for new development. Rather, this proposed dam would bring new and unacceptable impacts to a river of high value to the region and state, while providing unneeded and only intermittent energy generation.<sup>2</sup> As stated by the Northwest Power and Conservation Council, the "[h]igh value of some streams cannot be compensated by mitigation, outweighing any potential hydropower benefits."<sup>3</sup>

The key to recognizing the promise of increased hydropower generation is choosing the right sites. The North Fork Snoqualmie River is simply an inappropriate river to consider for new hydropower generation. The proposed Project is contrary to local, state and federal laws, policies, and comprehensive plans. The proposed Project site is on a reach of the river that has been recommended to Congress by the USDA Forest Service as a Wild and Scenic River, is within the Washington State Department of Natural Resources Mt. Si Natural Resources Conservation Area, and is identified as a Protected Area from hydropower development by the Northwest Power and Conservation Council. The Project is also inconsistent with the King County Code, King County Comprehensive Plan, King County Shoreline Master Plan, and a

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<sup>1</sup> The Hydropower Reform Coalition, of which many Conservation Groups are members, has spent the past two decades working with dam owners to improve the environmental performance of working dams. Over this time, the Coalition has supported more than 16,000 MW of hydropower at dams where owners have modernized their operations to benefit fisheries, watershed lands, water quality, and recreation.

<sup>2</sup> The North American Electric Reliability Council's (NERC) 2010 annual forecast for electrical supply and demand nationally and regionally for a 10-year period shows that winter peak demands and annual energy requirements for the Northwest sub region are projected to grow at rates of 1.1 percent and 1.2 percent, respectively, from 2010 through 2019 (NERC, 2010). This slow growth in energy requirements is offset by the Northwest Power and Conservation Council's (NWPPCC) 2010 Sixth Power Plan that identifies energy efficiency as the least cost resource and envisions that almost 60 percent of the Pacific Northwest's new demand for electricity over the next five years and 85 percent of load growth over the next 20 years could be met cost effectively with energy efficiency. The plan also predicts that this efficiency will reduce the risk of future electricity shortages, reduce emissions from power plants to help meet regional carbon reduction goals and policies, and cost consumers less than relying solely on new power plants (Emphasis added).

<sup>3</sup> Memorandum ("Discussion of Protected Areas History and Update on Current Work") from Philip Thoennes, Peter Paquet, Manager, and John Shurts, General Counsel, Northwest Power and Conservation Council, to Council Members. 5 (Apr. 26, 2012). Available at <http://www.nwcouncil.org/news/2012/05/4.pdf>, last visited July 24, 2012.

conservation easement purchased by King County with the specific goal “to prevent any use of the forestland that will significantly impair or interfere with its conservation value.”<sup>4</sup>

### **A. Inconsistency With Local, State, and Federal Comprehensive Plans**

Section 10(a)(2)(A) of the Federal Power Act (FPA) specifically requires the Commission to consider “the extent to which [a] project is consistent with a comprehensive plan (where one exists) for improving, developing, or conserving a waterway or waterways affected by the project that is prepared by an agency established pursuant to Federal law that has the authority to prepare such a plan; or the State in which the facility is or will be located.”<sup>5</sup>

The project proposed in Black Canyon Hydro’s Pre Application Document would be plainly inconsistent with a number of relevant comprehensive plans that have previously been filed with the Commission, and are described in further detail below.<sup>6</sup> These plans constitute substantial legal and policy barriers that will make this project extremely difficult if not impossible to license.

The Commission has long recognized the importance of regional and coordinated planning, and has declined to issue licenses in cases where the negative impacts of a proposed project would run counter to these regional plans.<sup>7</sup> Wild and Scenic suitability, inclusion in the National Rivers Inventory, Protected Area status, State Natural Resource Conservation Area designation, and County conservation measures and policies recognizing the river’s natural resource value each constitute relevant in-place plans and strategies to enhance and protect the aquatic, aesthetic, habitat, recreational and conservation resources of the North Fork Snoqualmie River. In addition, the North Fork Snoqualmie, and Ernie’s Gorge in particular, has been recognized for its free-flowing nature and for providing outstanding, unique, and regionally significant whitewater opportunities close to the City of Seattle.

#### **1. Wild and Scenic River Status**

In 1990, the USDA Forest Service, as a part of its land management planning, evaluated all rivers and streams originating on National Forest Lands within the Mt. Baker-Snoqualmie

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<sup>4</sup> Transfer of Development Rights Deed of Conservation Easement, Section 5(g), December 14, 2004, recorded on the same date as King County Official Public Record 20041214002392.

<sup>5</sup> 16 U.S.C. § 803 (a)(2)(A); See also COMPREHENSIVE PLANS IN THE FEDERAL ENERGY REGULATORY COMMISSION’S LICENSING PROCESS <http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf>, last visited July 24, 2012.

<sup>6</sup> Such plans include, but are not necessarily limited to: Mt. Baker/Snoqualmie National Forest Land and Resources Management Plan (June 1990); National Park Service Nationwide Rivers Inventory (June 1982); NWPPC Protected Areas Amendment (Sept. 14, 1988); and NWPPC Sixth Northwest Conservation and Electric Power Plan (February 2010).

<sup>7</sup> See *City of Idaho Falls* 80 FERC 61,342, *Order Denying License*, (1997) (Shelly Project No. 5090-005; Accession No. 19970925-3154); *Intermountain Power Corp* 58 FERC 62,227, *Order Denying License Application* (1992) (Oxbow Bend Hydroelectric Project No. 6329-001, Accession No. 19920324-0183); and *City of Redding*, 55 FERC 62,012 *Order Denying License Application* (1991) (Lake Redding Hydroelectric Project No. 2828-001, Accession No. 19910405-0338).

National Forest to determine their eligibility and suitability for designation under the federal Wild and Scenic Rivers Act. The proposed Black Canyon Hydroelectric Project would be located on a section of the North Fork Snoqualmie River that was found to be suitable and was recommended by the Forest Service for designation; specifically, from Wagner Bridge at River Mile 12.1 (T25N, R09E, S20 NE/NE) to the confluence with the Middle Fork Snoqualmie.<sup>8</sup> The Forest Service recommended this section of the North Fork Snoqualmie even though it lies outside of the forest boundary. While the Forest Service has no direct authority to manage rivers off the National Forest prior to designation, the Forest Service recognized the unique and valuable character of this segment of the North Fork Snoqualmie River by assigning Outstandingly Remarkable Values, including recreation and fisheries.

## 2. Nationwide Rivers Inventory

The North Fork Snoqualmie also is listed in the 1993 update of the Nationwide Rivers Inventory (NRI), which includes the 12-mile reach from Wagner Bridge to the confluence of the Middle Fork Snoqualmie.<sup>9</sup> The NRI is a comprehensive plan as defined under section 10(a)(2)(A) of the Federal Power Act. The website for the NRI explains:

“The Nationwide Rivers Inventory (NRI) is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more ‘outstandingly remarkable’ natural or cultural values judged to be of more than local or regional significance. Under a 1979 Presidential directive,<sup>10</sup> and related Council on Environmental Quality procedures,<sup>11</sup> all federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments.”<sup>12</sup>

To be listed on the NRI, a river must be free-flowing and contain at least one outstandingly remarkable value (ORV) or a river related resource that is unique, rare, or exemplary on a regional or national scale. The North Fork Snoqualmie has two such exemplary river related resources that include resident cutthroat trout and high quality advanced kayaking opportunities. These values are specifically identified for the 12-mile segment from Wagner Bridge to the confluence with Middle Fork Snoqualmie River, which includes the reach that

<sup>8</sup> United States. Forest Service. Land Resource Management Plan. Mt. Baker-Snoqualmie National Forest. June 1990. Wild and Scenic Rivers, Appendix E, pp. E-218 to E-223.

<sup>9</sup> Nationwide Rivers Inventory. National Park Service <http://www.nps.gov/ncrc/programs/rtca/nri/states/wa2.html> last visited July 24, 2012.

<sup>10</sup> MEMORANDUM FOR THE HEADS OF DEPARTMENTS AND AGENCIES. Presidential Directive of President Jimmy Carter. August 2, 1979. <http://www.nps.gov/ncrc/programs/rtca/nri/hist.html#pd> The Directive orders that: “Each federal agency shall, as part of its normal planning and environmental review process, take care to avoid or mitigate adverse effects on rivers identified in the Nationwide Inventory... Each Federal agency with responsibility for administering public lands shall...to the extent of the agency's authority, promptly take such steps as are needed to protect and manage the river and the surrounding area in a fashion comparable to rivers already included in the Wild and Scenic Rivers System.”

<sup>11</sup> Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory. Council on Environmental Quality. <http://www.nps.gov/ncrc/programs/rtca/nri/hist.html#ceq>

<sup>12</sup> <http://www.nps.gov/ncrc/programs/rtca/nri/>, last visited July 22, 2012.

would be impacted by the Project.

### 3. Northwest Power and Conservation Council Protected Area

The proposed Project is located on a segment of the North Fork Snoqualmie River that is identified as a “Protected Area” for resident fish and wildlife by the Northwest Power and Conservation Council (“the Council”).<sup>13</sup> The Council “develops and maintains a regional power plan and a fish and wildlife program to balance the Northwest’s environment and energy needs.”<sup>14</sup> The Fish and Wildlife Program is in place to “protect and rebuild fish and wildlife populations affected by hydropower development in the Columbia River Basin.”<sup>15</sup> In order to meet this goal:

“[t]he Council has adopted a set of standards for the Federal Energy Regulatory Commission, Bonneville and other federal agencies in the Columbia River Basin. As part of this effort, the Council designated certain river reaches in the basin as ‘protected areas.’ The Council found that new hydroelectric development in a designated protected area would have unacceptable risks of loss to fish and wildlife species of concern, their productive capacity, or their habitat.”<sup>16</sup>

While the Commission is not prohibited outright from licensing a project in a Protected Area,

“[t]he Council expects the Federal Energy Regulatory Commission, in the exercise of its licensing authority under the Federal Power Act, to take the Council’s protected areas decision into account to the fullest extent practicable. *The Commission should implement the Council’s decision in the Commission’s licensing and exemption proceedings unless the Commission’s legal responsibilities require otherwise.*”<sup>17</sup>

In the years since the Council first designated Protected Areas in 1988, the Commission has not approved a new license within a Protected Area. For example, in the case of the proposed Shelly Hydroelectric Project on the Snake River in Idaho in 1997, the Commission denied a license application by the City of Idaho Falls, stating that Protected Areas “represent an attempt by the region to prevent the continued degradation of the remaining

<sup>13</sup> See Protected Areas Mapper, available at: <http://map.streamnet.org/website/protectedquery/viewer.htm>, last visited July 21, 2012. Protected Areas were established as part of the Northwest Power Plan to meet the stipulations of Section 4(e)(2) of the Northwest Power Act; that is, to develop a Plan that considers the “protection, mitigation, and enhancement of fish and wildlife and related spawning grounds and habitat” during its development and implementation. Northwest Power Act § 4(e)(2)(C).

<sup>14</sup> <http://www.nwcouncil.org/about/>; last visited July 20, 2012.

<sup>15</sup> *Id.*

<sup>16</sup> Northwest Power and Conservation Council Columbia River Basin Fish and Wildlife Program 2009 Amendments. October 2009. Council Document 2009-09, Section II(D)(1)(e), pages 15-16. Available at: <http://www.nwcouncil.org/fw/protectedareas/Default.htm> (last visited July 24, 2012).

<sup>17</sup> Section II(D)(1)(e); Northwest Power and Conservation Council Columbia River Basin Fish and Wildlife Program 2009 Amendments. October 2009. Council Document 2009-09 at page 15-16. Available at: <http://www.nwcouncil.org/fw/protectedareas/Default.htm> (last visited July 24, 2012).

high quality fish and wildlife habitat, and the region's unwillingness to risk further fish and wildlife losses...[The Shelly Project] would... have unavoidable, long-term adverse impacts on fish and wildlife resources, which the Council has determined to be important to the region.”<sup>18</sup>

In the Pre Application document and during the Scoping meeting, the applicant made the statement that “the plan includes processes to except or amend a Protected Area designation.”<sup>19</sup> While a formal exception process was in place in 1987 and 1994,<sup>20</sup> it is no longer contained in the Fish and Wildlife Program.<sup>21</sup> However, even if the exception process were still in existence, the proposed Project would fail to meet the rigorous standard. The exception process in the previous plans required that parties filing for a petition for an exception to a Protected Area designation must show that the proposed project will achieve “exceptional fish and wildlife benefits” and consult with relevant fish and wildlife agencies and Indian tribes.<sup>22</sup> The Council itself noted “that the standard for exemption based on exceptional benefits is very demanding.”<sup>23</sup> When the program was implemented in 1988, the Council “[did] not anticipate making exceptions to the protected areas designations routinely, and that it “intend[ed] to make exceptions from protected areas only in those infrequent cases where there is general agreement that a project promises real fish and wildlife benefits, and will contribute to the recovery of the region’s fish and wildlife populations.”<sup>24</sup>

#### 4. Mt. Si Natural Resources Conservation Area

The reach of the North Fork Snoqualmie River proposed for the Black Canyon Project includes a segment that flows through the Washington State Department of Natural Resources Mt. Si Natural Resources Conservation Area (NRCA), an area of important conservation value. The state legislature has recognized “the importance of guarding portions of this area from those types of development which would permanently alter the area's natural form and beauty.”<sup>25</sup> The resource values of this area are described as follows in the Mt. Si. NRCA Public Use Plan:

“The Mount Si Natural Resources Conservation Area (NRCA) was one of the first to be

<sup>18</sup> *City of Idaho Falls* 80 FERC 61,342, *Order Denying License*, (1997) (Shelly Project No. 5090-005; Accession No. 19970925-3154).

<sup>19</sup> Black Canyon Hydroelectric Project (FERC No. 14110), Pre Application Document. Page 82. Applicant cites to the Northwest Power and Conservation Council’s Protected Areas Amendments and Response to Comments, published September 14, 1988. Council Document 88-22, <http://www.nwcouncil.org/fw/protectedareas/Default.htm>, last visited July 21, 2012.

<sup>20</sup> See §1300 of the 1987 and 1994 Fish and Wildlife Programs.

<sup>21</sup> See generally Northwest Power and Conservation Council Columbia River Basin Fish and Wildlife Program 2009 Amendments. October 2009. Council Document 2009-09.

<sup>22</sup> Northwest Power and Conservation Council’s Protected Areas Amendments and Response to Comments, published September 14, 1988. Council Document 88-22, §1300(g).

<sup>23</sup> Northwest Power and Conservation Council’s Response to Comments, 1992 Protected Areas Rulemaking, published August 13, 1992. Council Document 92-26.

<sup>24</sup> *Id.* at Summary of Comments § H(5).

<sup>25</sup> RCW 79A.05.725

established in 1987. It was designated to protect numerous natural resources including outstanding geologic features, examples of old growth forest, wildflower communities, and habitat for mountain goat and other species of wildlife. The towering site is a scenic landmark and popular recreation area, offering views of the Olympic Mountains, Snoqualmie Valley, and the Cascade Mountains. The NRCA encompassed 4,670 acres when it was designated in 1987, and has since been expanded to 13,363 acres.”<sup>26</sup>

Land within the river corridor was acquired with funding assistance from the Land and Water Conservation Fund (LWCF) stateside program, which is administered by the Washington Recreation and Conservation Office (RCO). Therefore, these lands are protected under section 6(f)3 of the LWCF Act, which includes strong provisions and an anti conversion requirement to protect the federal investment.<sup>27</sup> The Mount Si NRCA Public Use Plan states that, “The significant features to be found on Mount Si make this NCRA an excellent example of Washington’s natural heritage, especially since it’s so close to the state’s largest urban center.”<sup>28</sup> These natural heritage values are the defining quality of the experience enjoyed by those who recreate in this river corridor, and hydropower development would run counter to these goals and the purposes for which lands were acquired with LWCF funding.

## **5 . King County Conservation Measures for the North Fork Snoqualmie**

Black Canyon Hydro LLC is proposing to build the Black Canyon Hydroelectric Project in King County, even though it is inconsistent with several provisions of the King County Code and the King County Comprehensive Plan. The river has been specifically identified for its conservation values and King County holds a conservation easement on lands within the watershed including parcels specifically identified as necessary for development.

### **a. King County Code – Shoreline Master Plan**

Under the King County Code, shorelines are defined as “all marine water, lakes greater than twenty acres and rivers and streams with a minimum of twenty cubic feet per second mean annual flow.”<sup>29</sup> An “instream structure” is defined as “anything placed or constructed below the ordinary high water mark, including, but not limited to, weirs, culverts, fill and natural materials and excluding dikes, levees, revetments and other bank stabilization facilities.”<sup>30</sup> The code also prohibits hydroelectric generation as an instream structural use in areas with either “Natural” or “Conservancy” shoreline designations.<sup>31</sup> Under the updated Shoreline Master Plan, adopted by King County Council on November 16, 2010, yet pending final approval by the Washington

<sup>26</sup> [http://www.dnr.wa.gov/AboutDNR/ManagedLands/Pages/amp\\_na\\_si.aspx](http://www.dnr.wa.gov/AboutDNR/ManagedLands/Pages/amp_na_si.aspx), last visited July 22, 2012.

<sup>27</sup> 16 U.S.C. § 460I-4 *et. seq.*

<sup>28</sup> See Introductory Cover Letter, Washington State Department of Natural Resources. Mount Si NRCA Public Use Plan. June 1997. Available at:

[http://www.dnr.wa.gov/Publications/amp\\_na\\_mt\\_si\\_public\\_use\\_plan\\_1997\\_final.pdf](http://www.dnr.wa.gov/Publications/amp_na_mt_si_public_use_plan_1997_final.pdf)

<sup>29</sup> K.C.C. 21A.06.1083.

<sup>30</sup> K.C.C. 21A.06.638.

<sup>31</sup> K.C.C. 21A.25.100.

Department of Ecology, the powerhouse for the proposed project is located on lands designated as “Natural Shoreline.”<sup>32</sup> In the pre 2010 version of the Shoreline Master Plan, the powerhouse for the proposed project is designated as “Conservancy Shoreline.”<sup>33</sup> While the two plans set different classifications for the shoreline land involved with the project, both prohibit hydroelectric generation.

#### **b. King County Code - Regional Land Uses**

The Black Canyon Hydroelectric Project is proposed to be built on lands that King County has zoned as “Forestry”<sup>34</sup> and “Rural.”<sup>35</sup> Both zoning classifications identify hydroelectric generation as a conditional use and set forth several conditions that must be met before hydropower development can proceed.<sup>36</sup> The proposed project fails to meet one of the conditions, and is likely economically unfeasible under another. Under one condition, per section 100(B)(14)(a)(2), diversion structures are prohibited from impounding more than three surface acres of water at the normal maximum surface level. The proposed project would impound 4.2 acres, and fails to meet this condition. An additional condition requires developers to prove, in particular, that if a new diversion structure is built, “an exceedance flow of no greater than fifty percent in mainstream reach shall be maintained.”<sup>37</sup> This means that the project will only be allowed to divert the flow of the river that is above the median flow level, based on historic flow records, calculated at 50%.<sup>38</sup> It is unlikely that the project will still be economically feasible under this flow condition.

If the project fails to meet the conditions outlined in section 100(B)(14), project proponents still have the opportunity to apply for a special use permit. Under the procedures outlined in KCC 21A.42, a special use permit will only be issued if the applicant demonstrates compliance with a number of conditions outlined in 21A.44.050. In addition, special use permits are subject to approval by the King County Council.<sup>39</sup>

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<sup>32</sup> Shoreline Master Plan, Appendix A, Map: Shorelines Designations – Northeast King County, available at: <http://your.kingcounty.gov/shorelines/pdf/1011-adopted-plan/shoreline-designations-map-ne.pdf>; last viewed July 5, 2012.

<sup>33</sup> King County iMap, available at: <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>; last visited July 5, 2012.

<sup>34</sup> <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>; last visited on July 5, 2012.

<sup>35</sup> King County Districts and Development Conditions for Parcels 1924099001 and 1824099001; available at: [http://www5.kingcounty.gov/kcgisreports/dd\\_report.aspx?PIN=1924099001](http://www5.kingcounty.gov/kcgisreports/dd_report.aspx?PIN=1924099001) and [http://www5.kingcounty.gov/kcgisreports/dd\\_report.aspx?PIN=1824099001](http://www5.kingcounty.gov/kcgisreports/dd_report.aspx?PIN=1824099001); last visited July 5, 2012.

<sup>36</sup> K.C.C. 21A.08.100.

<sup>37</sup> *Id.* at § (B)(14)(d).

<sup>38</sup> Informed by the Idaho Water Resources Board’s explanation of “exceedance flow”, available at: [http://www.idwr.idaho.gov/waterboard/WaterPlanning/nezperce/exceedence\\_flows.htm](http://www.idwr.idaho.gov/waterboard/WaterPlanning/nezperce/exceedence_flows.htm), last visited July 6, 2012.

<sup>39</sup> K.C.C. 21A.42.100

### c. King County Comprehensive Plan

In the Preliminary Application Document, Black Canyon Hydro LLC states that “[t]he updated King County Comprehensive Plan...describes small hydroelectric projects that are constructed in an environmentally sound manner as a public benefit. The Comprehensive Plan explicitly lists locating hydropower facilities on streams that do not have anadromous fish as an example of environmentally sound construction.”<sup>40</sup>

The developer’s statement in the Preliminary Application Document represents a selective reading of the King County Comprehensive Plan. The Plan states that when the Federal Energy Regulatory Commission licenses projects, they:

*“...must consider existing plans and policies of public and private jurisdictions. While power generation benefits the public, care must be taken to ensure that small hydroelectric projects are constructed in an environmentally sound manner, directing new, small hydropower facilities, for example, to streams that do not have anadromous fish. Construction and operation must also be consistent with the intended functions and uses of forestlands, where most small hydroelectric projects are located.”<sup>41</sup>*

The Comprehensive Plan states that power generation overall is a public benefit, and that it is more environmentally sound to locate new hydroelectric projects on streams that do not have anadromous fish. However, the Plan also emphasizes the importance of existing plans and policies of public and private jurisdictions, and that construction and operation must also be consistent with the intended functions and uses of forestlands.

### d. King County Conservation Easement

As further evidence of the importance of this river corridor and the commitment of the local community to the conservation of this resource, King County purchased a conservation easement for the development rights to 90,000 acres of the Snoqualmie Forest from the Hancock Timber Resources Group on September 2, 2004, including land that the project applicant has identified as necessary for project development. The 90,000 acres of the Snoqualmie Forest, currently owned by Hancock, includes two major rivers (the North Fork Snoqualmie and Tolt), numerous smaller rivers, more than 500 acres of lakes and ponds, more than 6,000 acres of riparian areas along rivers and streams, and more than 4,000 acres of wetlands. The Snoqualmie Forest is located within the ranges of the federally Threatened Northern Spotted Owl and Marbled Murrelet, and contains habitat for numerous fish species and other wildlife. Upon signing the deal, King County Executive Ron Sims said the purchase “ensures the area will always remain green to the crest of the Cascade Mountains.”<sup>42</sup> While the

<sup>40</sup> March 26, 2012 Preliminary Application Document, page 16. Available at [http://elibrary.ferc.gov/idmws/search/intermediate.asp?link\\_file=yes&doclist=14006810](http://elibrary.ferc.gov/idmws/search/intermediate.asp?link_file=yes&doclist=14006810), last visited July 6, 2012.

<sup>41</sup> King County Comprehensive Plan, Chapter 8, p. 8-37.

<sup>42</sup> <http://your.kingcounty.gov/exec/news/2004/090204.htm>, last visited July 22, 2012.

conservation easement explicitly permits the right to construct, operate and maintain run-of-the-river or low-head hydroelectric projects, these are defined in the easement as “no more than 12 megawatt capacity.”<sup>43</sup> While the average generation of the Project is estimated at 11.95 megawatts based on annual generation of 104,720 megawatt-hours, the name plate capacity of the applicant’s proposed project is 25 megawatts, exceeding the 12 megawatt limit and violating the terms of the conservation easement. The 12 megawatt capacity was specifically negotiated to accommodate smaller projects considered on tributaries of the North Fork Snoqualmie, while not allowing the type of major development the applicant has proposed for the mainstem.

## **B. Comments on the Pre Application Document**

Section 4.3 Page 16

AW 1 The applicant states that “Black Canyon intends to sell the power generated by the Project to Puget Sound Energy.” During the public scoping meeting however, the applicant stated that Puget Sound Energy has not made a commitment to purchase energy from this Project.<sup>44</sup>

Section 4.3, Page 16

AW 2 The applicant characterizes the project as consistent with the King County Comprehensive Plan, and as the type of project supported by the Comprehensive Plan. However, as discussed above, this characterization is not accurate.

Section 5, Page 21

AW 3 The PAD notes that much of its assessment of the existing environment is based on two PADS developed for other projects, which in turn were based on previous Final Environmental Assessments for earlier proposed projects. There needs to be additional discussion regarding the relevance of those environmental assessments given the time that has passed since the information was initially developed.

Section 5.1.3.3, Page 21

AW 4 The applicant indicates that further geotechnical assessments are planned during early 2012. The details of these study plans are vague and are premature given that a study plan determination has not been made in this proceeding.

Section 5.2.1.2, Page 23

AW 5 The PAD identifies that minimum flows have been established for the North Fork and that the measuring location is located below the powerhouse. It should be noted that while measured at a specific gage, the minimum flow requirement applies from the headwaters to the mouth of the river.

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<sup>43</sup> Transfer of Development Rights Deed of Conservation Easement, Section 5(g), December 14, 2004, recorded on the same date as King County Official Public Record 20041214002392.

<sup>44</sup> At Page 18 and Page 77, Daytime Scoping Meeting Transcript, Black Canyon Hydroelectric Project No. 14110-001; Accession No. 20120619-4011.

Section 5.2.4.3, Page 35

AW 6 The applicant's proposed water quality studies of head conduction from the tunnel walls and energy dissipation heat gain in the powerhouse bypass valve will provide insufficient information on water quality impacts of the Project. Water quality, including but not limited to temperature, is intimately linked with flow regime. The proposed water quality studies focus narrowly on the impacts of the facilities and equipment on temperature, but fail to examine the impact of project operations on temperature, turbidity, water quantity, and other water quality measures.

Section 4.3.1, Page 36

AW 7 The number changes from using the 5 prefix to the 4 prefix. Throughout the section, there is inconsistent use of 5 and 4 prefixes.

Section 4.3.3.1, Page 41

AW 8 The last sentence of the fourth paragraph is incomplete.

Section 4.3.3.6, Page 43

AW 9 The proposed study plan for Fish and Aquatic Resources falls short for a number of reasons. Fish surveys "accomplished by helicopter" will provide insufficient information on fishery resources in the river reach impacted by the project. The literature review of fish resources studies that is described appears to provide insufficient information on the Project reach, an area with unique habitat that may serve as an important refuge for resident fish in large part due to the difficulty of access.

Section 5.4, Page 44

AW 10 As indicated, the wildlife and botanical resources section is based in large part on similar resource assessments of Hancock and Calligan Creek. Because of this, the review focuses on habitat associated with second or third-growth forest. It fails to mention or consider the habitat characteristics and wildlife associated with remnant old-growth forest within the Mt. Si Natural Resources Conservation Area.

Section 5.4.1.4, Page 46

AW 11 The statement that there is "no old-growth forest remaining" in the Project area is incorrect.

Section 5.4.3.1, Page 54

AW 12 The PAD asserts certain locations at which a small amount of habitat will be removed. The PAD fails to list habitat lost due to the transmission lines and the creation of a pool behind the dam. This loss must be factored into the impacts. In addition, the PAD asserts that adjacent habitat will continue to support wildlife as it did before construction. This assertion, however, is premature given the lack of information regarding the interconnection of the remaining and impacted habitats.

Section 5.4.3.3, Page 55

- AW 13 Terrestrial habitat surveys that include on-the-ground assessment of wildlife and botanical species within the Project area need to be conducted. The review of nearby assessments on commercial forest lands do not adequately characterize the Project area.
- Figure 14, Page 55
- AW 14 The correct organizational name is American Whitewater, and not American Whitewater Association (this appears incorrectly throughout the document).
- Section 5.5.5, Page 59
- AW 15 The PAD appears to limit riparian habitat to the 2.6 mile stretch of the bypass reach. However, the environmental analysis must consider riparian habitat that is also affected by the inundated area created by the dam.
- Section 5.5.6.2, Page 60
- AW 16 The PAD asserts that a habitat survey and studies of water quality and quantity will be undertaken to understand impacts on riparian habitat. However, no details are provided on the actual studies or methodologies for riparian and wetland habitat surveys. As with other resource areas, complete study plans need to be developed for stakeholder and Commission review.
- Section 5.6, Page 60
- AW 17 The statement that there are no threatened, endangered, or special status species in the Project area should be confirmed. Old-growth forest found within the Mt. Si Natural Resources Conservation Area may provide Marbled Murrelet habitat (*Brachyramphus marmoratus*). In addition, habitat for Northern Spotted Owl (*Strix occidentalis caurina*) exists.
- Section 5.6.2.3, Page 63
- AW 18 The species survey of rare, threatened, and endangered species needs to include old-growth habitat within the Project area where these species are likely to be present.
- Section 5.7, Page 67
- AW 19 The North Fork Snoqualmie is incorrectly listed as an eligible wild and scenic river. As detailed above, the Forest Service found the river suitable as a wild and scenic river and recommended it to Congress for designation.
- Section 5.7.2.2, Page 71
- AW 20 The statement is made that the Project would provide the ability to divert water from the North Fork "in a way that it would reduce high, unsafe stream flows, increasing the number of days when the bypass reach can be kayaked safely." No data are presented to substantiate this claim.
- Section 5.7.2.3, Page 71
- AW 21 The study methods focus on counting users but are insufficient in evaluating the impacts of the Project on the recreational resource. The proposed approach does not address the impact of

project operations on existing and future recreational uses.

#### 5.12.1, Page 81

AW 22 This section again incorrectly identifies the North Fork Snoqualmie as an eligible wild and scenic river. As noted above, the Forest Service has deemed the river as a suitable wild and scenic river.

The 1982 Nationwide Rivers Inventory is referenced as a comprehensive plan with FERC. That Inventory has been updated and filed with the Commission. As such, the 1993 update should be referenced and adopted as a Comprehensive Plan.

### C. Comments on Scoping Document 1

#### 3.3, Page 9

AW 23 At a minimum, alternatives to the proposed action will need to include an alternative with minimum instream flow requirements to protect fish and wildlife resources and river-based recreational opportunities.

#### 4.2.2, Page 11

AW 24 The resource issue of impacts to the flow regime must consider magnitude, frequency, duration, timing, and rate of change. The “effect of reduced flows” is but one element of the overall impacts to the flow regime.

#### 4.2.4, Page 12

AW 25 As described above, the claim that there are no known federally listed threatened or endangered species needs to be reexamined in light of the fact that this determination was based off of reports from another project and not specific to the site of the proposed Project.

#### 4.2.8, Page 13

AW 26 The review of developmental resources and specifically project economics, needs to consider the conservation measures that are in place for this river reach. In our analysis, the proposed Project will run counter to the multiple national, regional and local comprehensive river conservation planning strategies that have been implemented to protect the environmental and recreational public resource values of the North Fork Snoqualmie.

### D. Recreational Values

In the past, licenses have not been issued for rivers with outstanding recreational values, particularly where those values are unique and special.<sup>45</sup> The section of the North Fork Snoqualmie River proposed for development is a high gradient reach flowing through a deep and rocky canyon. It is an outstanding and regionally-significant whitewater resource close to

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<sup>45</sup> Namekagon Hydro Company v. FPC 216 F.2d 509 (1954); Scenic Hudson Preservation Conference v FPC; 354 F.2d 608 (2<sup>nd</sup> Circuit) (1965)

the city of Seattle offering a unique, high quality whitewater kayaking experience. Ernie's Gorge (aka Black Canyon) provides one of the more challenging whitewater runs in the region, and, when the flows are right, provides some of the most technical and powerful Class V paddling in the Cascades. The river regularly attracts the region's top expert paddlers living within a 200-mile radius who come to experience the unique attributes of this river gorge. In a survey of whitewater enthusiasts on Whitewater Paddling in the North Cascades, American Whitewater found that the North Fork of the Snoqualmie, and specifically the run through Ernie's Gorge, was rated as having outstanding recreational and aesthetic qualities of regional and national significance.<sup>46</sup> Dozens of individual comments on this docket speak to the spectacular recreational value of this river reach.

American Whitewater's National Rivers Database<sup>47</sup> provides a great deal of information on the recreational use of this resource, including an interactive map of the reach illustrating access points, and suggests that a flow range between 400 and 900 cfs (based on USGS gage 12142000) could provide boating opportunities for most of the fall, winter and spring boating seasons (a quantitative evaluation of flow preferences following established methodology has yet to be conducted). USGS flow data demonstrate that the proposed project's diversion of 900 cfs around Ernie's Gorge would effectively eliminate all whitewater boating in this section of river.<sup>48</sup> Public access to the river is available by putting in at the Wagner Bridge within the county right-of-way (47.6417, -121.6814) and taking out at the public park within the Three Forks Natural Area (47.522, -121.7700). Most paddlers who paddle Ernie's Gorge prefer to use the alternate put-in at the Spur 10 Bridge (47.5794, -121.7150), a private access point that can be used by those who purchase an access permit from Hancock Forest Management.

In comments during the scoping meeting, the applicant referred to his own personal connection to the Stanislaus River in California and the fact that there, "are some areas like that that are so valuable that they should be preserved."<sup>49</sup> This statement accurately characterizes the value that the local and regional community places on the North Fork Snoqualmie and the reason that it has been identified in so many different local, state, and federal conservation plans.

During this same scoping meeting, the applicant stated that whitewater recreation would be enhanced by providing scheduled releases that would provide "more days that you can [currently] run this river".<sup>50</sup> By definition, run-of-river projects generate power with little to no storage, and thus will have limited or no capability to provide scheduled releases. Like recreation on the North Fork Snoqualmie, power generation will be wholly limited by seasonal and available river flow. Even if additional flows were possible, the applicant misses the

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<sup>46</sup> <http://www.americanwhitewater.org/content/Document/view/documentid/554/>, last visited July 22, 2012.

<sup>47</sup> <http://americanwhitewater.org/content/River/detail/id/2223/>, last visited July 22, 2012.

<sup>48</sup> <http://waterdata.usgs.gov/usa/nwis/uv?12142000>, last visited July 22, 2012.

<sup>49</sup> At Page 51, Evening Scoping Meeting Transcript, Black Canyon Hydroelectric Project No. 14110-001; Accession No. 20120619-4012.

<sup>50</sup> At Page 52, Evening Scoping Meeting Transcript, Black Canyon Hydroelectric Project No. 14110-001; Accession No. 20120619-4012.

importance, value and experience provided by a free-flowing Snoqualmie. Everything about the experience of running Ernie's Gorge provides a unique challenge: access, the rapids, scouting and portaging, and carefully watching the weather and local hydrology to find those times with the correct flow levels. The challenge of putting all of this together is the beauty of running this river segment. Providing scheduled and dependable flows for this river segment, even in the unlikely event this is possible, are unwanted and would not enhance the existing attributes of the river.

The applicant's misleading statement that additional opportunities could be provided may be based on an evaluation of daily mean flow data. Given the flashy nature of this system and the way it responds to storm events during the winter season or the diurnal pattern of spring snowmelt, we believe an evaluation of 15 minute flow data will be necessary to understand the real impacts to instream flows on recreational opportunities.

#### **E. Need for Power and Availability of Power with Less Impact**

While the proposed Project could conceivably meet a small part of the Northwest's regional need for power, it would provide a relatively minimal amount of power at a high cost to the outstanding environmental, recreational, cultural and aesthetic values of the North Fork Snoqualmie. Equally important, this power could be easily offset by other renewable generation or by energy efficiency and conservation efforts.

#### **IV. Conclusion**

The Conservation Groups strongly object to the development of the Black Canyon Hydroelectric Project. As outlined in our above comments on both the PAD and Scoping Document 1, this project would have significant and widespread impacts on the recreational, aesthetic, habitat and ecological values of the North Fork Snoqualmie River and the surrounding area. In addition, there are a number of legal and policy barriers that will make this project extremely difficult—if not impossible—to license. The project would violate directives and policies governing the management of this river, which has been found suitable and recommended for designation under the Wild and Scenic Rivers Act and designated as a Protected Area by the Northwest Power and Conservation Council.

The Conservation Groups urge the Commission to fully evaluate our comments and concerns regarding the conservation measures in place for the North Fork Snoqualmie River before entering the study phase. To do otherwise would create an unnecessary burden and expense for the applicant, agencies (including Commission staff), and other stakeholders.

Respectfully submitted,

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Karl Forsgaard  
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Martinique Grigg  
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The Mountaineers

Tom Uniack  
Conservation Director  
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## Study Request

### Recreational Flow Study

AW 27

The applicant has proposed a major development that would transform the North Fork of the Snoqualmie River from a free-flowing river to a highly regulated river with a completely new flow regime. The Project impacts will affect river-based recreation by substantially modifying the flow regime and constructing a navigation hazard in the bed of the river. In addition, the Project will impact the overall quality of the backcountry experience this river provides. The need for a recreational flow study described in detail below is but one element of the overall need for a comprehensive recreation resources assessment.

The following study request addresses each of the seven study criteria as required in 18 C.F.R. §5.9(b):

*§5.9(b)(1) — Describe the goals and objectives of each study proposal and the information to be obtained.*

The goal of this study is to evaluate the effects of project construction and operation on the availability and character of river-based recreational opportunities, particularly whitewater recreation on the North Fork of the Snoqualmie River.

The objectives of the study are to:

1. Determine the acceptable range of flows and the optimum flow needed for recreational boating (evaluate for whitewater kayaks, rafts, and other craft as appropriate) in the reach of the river known as Ernie's Gorge that would be bypassed by the Project.
2. Determine the timing and duration that the minimum and optimum flows for recreational boating will be available under the current free-flowing condition and with the Project at 15 minute intervals (due to the flashy nature of this river in response to winter rain events, daily average flow data are insufficient for analysis). Evaluate under all different modes of operation scenarios that may be considered.
3. Evaluate the impact of the inundation zone and the dam structure on navigability at flow ranges identified as optimal for whitewater recreation.
4. Determine the impact on the character and quality of the current recreational experience available on the North Fork of the Snoqualmie River.

*§5.9(b)(2) — If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

The National Park Service represents the national interest regarding the preservation of natural resources, and to assure that hydroelectric projects subject to FERC licensing recognize the full potential for meeting present and future public outdoor recreation demands, while maintaining

and enhancing a quality environmental setting for those projects. Our study request is consistent with meeting these goals.

*§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Our members have a strong interest in the recreational boating opportunities as they currently exist on the Snoqualmie River and specifically the unique attributes of the wilderness-quality experience that this river provides. To fully evaluate the Project's effect on river-based recreation, a recreational flow study is relevant to the Commission's public interest determination.

*§5.9(b)(4) — Describe existing information concerning the subject of the study proposal, and the need for additional information.*

The PAD provides limited information on river-based recreation. American Whitewater believes that considerably more information is required to accurately identify recreational activities and trends as they relate to paddlesports in the Project area that would be directly impacted by Project operations. Additional site-specific information is necessary. Some limited information not included in the PAD is available from guidebooks and websites, and additional information can be obtained through user surveys and targeted outreach to individuals familiar with the resource. No formal studies have been done to determine the range of boatable flows for different types of watercraft. A recreational flow study will help identify impacts of the Project on river-dependent recreation.

*§5.9(b)(5) — Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Project operation would impact flow-dependent paddling opportunities on the North Fork Snoqualmie River. The Project would impact access for paddling opportunities and flows necessary to support recreational boating in the reach impacted by the Project. An analysis of project operations relative to a range and timing of boatable flows would help form the basis for determining the Project's impact on recreational boating. This will inform associated license requirements that could result from impacts that are identified. The results will also inform the public interest determination regarding the decision of whether to license this project.

*§5.8(b)(6) — Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted*

*practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Using accepted practices for recreational flow study as described in Whittaker et al. (1993), conduct a study of the minimum and optimum instream flow needed for recreational boating including whitewater kayaks, packrafts, and other river craft as appropriate.

Whittaker et al. (1993) outline three levels of study: (1) Level 1 - desktop analysis, (2) Level 2 - limited reconnaissance, and (3) Level 3 - intensive studies. Desktop analyses are designed to pull together existing information about channel characteristics, hydrology, river recreational opportunities, access points, and flows in order to determine if whitewater resources are present and affected by a project and if additional evaluations are warranted. The river reach in question has been paddled and rough estimates of study flows are available. While the results of the desktop analysis need to be documented, we believe the existing information and knowledge that this river is used for recreation warrants more intensive studies. A quantified analysis of instream flow needs for recreation is needed to define the range of boatable flow levels, and to assess the effects of these flows on generation, project economics, and competing resources.

Prepare a report that describes the recreational boating attributes of the range of flows evaluated, including level of difficulty, portage requirements, length of trip, experiences, etc. Identify the minimum acceptable and optimal flow for each reach and describe the frequency of availability of the identified flows under current and any proposed project operations. Because the reach of interest is currently free-flowing, a controlled flow study is not possible, but we have successfully used a survey approach supplemented by an expert panel to evaluate instream flow needs for recreation on rivers where flows are not regulated. We believe this study could be conducted over two seasons.

*§5.9(b)(7) — Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The cost for preparing the study plan, conducting the study, and preparing the report is difficult to evaluate in light of the challenging terrain in the Project area. While a desktop analysis as described above is a necessary first step, we believe more intensive studies are justified for this Project. Studies specific to instream flow needs of recreation typically cost between \$50,000 and \$75,000, but we believe this cost could be higher for this. This cost does not include the cost of travel to the site or field work associated with hydrologic or aquatic habitat studies that could likely be integrated with this study.

#### *Literature Cited*

Whittaker, Doug, Bo Shelby, William Jackson. 1993. Instream flows for recreation: a handbook on concepts and research methods. U.S. Department of Interior, National Park Service Rivers

and Trails Conservation Program, Oregon State University, and National Park Service Water Resources Division. January 1993.

AW 28 **Study Request**  
**Resident Fish Study**

The applicant has proposed a major development that would transform the North Fork of the Snoqualmie River from a free-flowing river to a highly regulated river with a completely new flow regime. With no minimum instream flow requirement proposed, the Project will affect resident fish populations. Methods and approach described in the Pre Application Document are insufficient to characterize the unique attributes of fish resources in the reach of river impacted by the Project.

The following study request addresses each of the seven study criteria as required in 18 C.F.R. §5.9(b):

*§5.9(b)(1) —Describe the goals and objectives of each study proposal and the information to be obtained.*

The objective of this study is to determine whether proposed Project operations and alternatives would provide suitable conditions for the long-term viability of the population of coastal cutthroat trout and rainbow trout in the river, and to determine whether proposed operations would have a negative effect on cutthroat trout and rainbow trout viability in the natural river channel bypassed by the Project.

The primary goals of the study are:

- to provide information on the fishery resources of the North Fork Snoqualmie to allow for evaluation of the health of fish populations;
- to provide information and evaluate potential differences between fish populations as they currently exist in the river and future conditions if the Project were constructed; and
- to provide information on potential project-related effects on the health and size of fish populations.

Following is a list of specific study objectives:

- characterization of fish species composition and relative spatial distribution;
- estimate of total or relative abundance;
- analysis of population size-structure and age-class structure; and
- calculation of condition factor.

*§5.9(b)(2) —If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

The mission of the Washington Department of Fish and Wildlife is to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. Goals of the agency include conservation and

protection of native fish and wildlife while providing sustainable fishing, hunting and other wildlife-related recreational experiences. Our study request is consistent with meeting these goals.

*§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Our members have a strong interest in the viability of fishery resources of the North Fork Snoqualmie River. To fully evaluate the Project's effect on resident fish populations, a study of the fishery resources within the reach impacted by the Project is relevant to the Commission's public interest determination.

*§5.9(b)(4) — Describe existing information concerning the subject of the study proposal, and the need for additional information.*

As noted in the PAD, data from the Black Canyon are limited, and existing information does not address the need to evaluate Project impacts on the reach that would be dewatered by the Project. Since this reach is different in character from other reaches that have been surveyed, a site-specific analysis is warranted.

*§5.9(b)(5) — Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

A trout viability analysis is necessary because the Project has the potential to isolate trout populations particularly if there are no instream flow requirements. Construction of the project has the potential to affect environmental conditions for fish life in the river. These potential environmental affects include: water temperature, quantity, and quality; transfer of water out of the river channel; creation of reservoirs; entrainment at diversions and intakes; turbidity from dam releases; and changes in physical habitat. Through these effects, the Project could affect fish populations in project-affected stream reaches. The study results will inform the public interest determination regarding the decision of whether to license this project.

*§5.8(b)(6) — Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

A systematic cutthroat trout and rainbow trout population (trout) survey will be conducted in

the river reach proposed to be dewatered by the Project to determine the population size and age structure during the low flow period in the summer of 2013. Due to variable sampling conditions in the river reach, the survey methods will include both multipass electrofishing depletion and mark/resight snorkel survey techniques to estimate cutthroat trout abundance. Each of these methods is described below.

#### *Electrofishing-Based Population Estimate*

Where feasible, trout density at each sample unit will be estimated by performing a three-pass electrofishing removal estimate using analytical methods of Zippen (1958). If catch during the second pass is less than the number required for a third pass (to maintain a 95 percent confidence level), a modified two pass removal method will be completed following Seber (1982) and Seber and LeCren (1967). Multipass electrofishing bias will be assessed and reduced following Peterson et al. (2004). Average cutthroat trout densities for each habitat type by size class will then be used to make a cutthroat trout population expansion based on habitat type availability following Hankin and Reeves (1988). This will result in an estimate of total trout abundance by size class in the river.

All trout captured during the electrofishing survey will be identified to species, measured to length, and weighed. Age classes will be assigned based on length frequency distribution. These age classes will then be used to assess year-class strength for population viability analysis. Average condition factors for each age class will be calculated from the length and weight measurements. Condition factor estimates will be used to assess fish growth rates and function as a surrogate to indirectly assess food availability.

Prior to electrofishing, a review of the scientific literature will be performed to determine the minimum size and age of maturity for each trout species. In addition, the length frequency distribution data from the electrofishing survey may also suggest an alternative minimum size at age of mature fish (minimum age at maturation determined from the literature).

#### *Mark/Resight Population Estimate*

Much of the habitat in the reach impacted by the Project includes steep gradient, containing many relatively deep pools that cannot be effectively sampled using electrofishing equipment. In this situation, a more effective deep water mark/resight snorkel survey will be used to estimate adult cutthroat trout abundance. Prior to conducting the resight snorkel survey, a subsample of the trout will be captured using a combination of angling (deep pools) and marked over a three to four day period. All trout meeting the minimum adult size criteria will be caudal fin-clipped and returned to the river where they were originally captured. Effort to catch and mark trout will be distributed as evenly as possible over the entire length of the river reach impacted by the Project. The day following the last day of marking, experienced snorkel surveyors will conduct a one-day count of all marked and unmarked trout in the river that are greater than the defined minimum size for adult cutthroat trout and rainbow trout. A total population estimate with a 95 percent confidence interval of mature cutthroat within the river

reach will be calculated using the mark/resight snorkel data (i.e. mark/recapture) following the bootstrap method (Efron and Tibshirani 1986).

### *Age structure*

Analysis matrices will be based on age classes. Existing length-age indices will be used to determine the age class. Length-age indices are relatively accurate for smaller fish; however, confidence intervals reduce with larger fish. Scales collected will be read to assist in identifying age class breaks. Regression analysis will be used to analyze the data and if necessary, adjust the indices.

### *Fish Size and Condition*

Fish size and weight data will be summarized by species and by sample site. Standard scientific software outputs including minimum, maximum, and mean fork length and weight will be calculated. Length and weight data will be used to calculate a relative condition factor ( $K_n$ ) (Anderson and Gutreuter 1983) and to provide a general indication of the health of individuals, where factors greater than 1 indicate more healthy individuals. Relative condition factors for electrofishing sites will be calculated for length and weight data collected at all quantitative electrofishing sites.

### *Population Viability*

Subsequent to determining the population size and age structure, trout population viability will be assessed by determining if there are any survival gaps in the age class distribution and by comparing mature adult abundance to standard adult fish population viability standards for effective population size. Many studies have described a relationship between the effective number of reproducing individuals in a population and the genetic risks to that population. Theoretical genetics and available empirical data for a variety of organisms (see Franklin 1980; Lande 1995) suggest that, in general, closed populations will begin to show inbreeding depression effects after a few generations with an effective population size ( $N_e$ ) < 50 reproducing adults. Similarly, over ecological time scales, closed populations will begin to lose genetic variation due to the random effects of genetic drift when  $N_e$  drops below 500. Generally, it is conservatively recommended that a spawning population of resident trout, in this case the number of potential mature adults in the bypass reach, should exceed 100 to avoid genetic and phenotypic variation through drift (Rieman and Allendorf 2001). The  $N_e > 100$  rule applies to the short term viability of a population and the  $N_e > 1,000$  rule applies to long term population persistence and viability. If adult abundance falls below the  $N_e > 1,000$  viable threshold or if a substantial survival bottle neck is observed in the age class distribution, then habitat limiting factors will be assessed, and a separate study of emigration and immigration into the bypass reach will be developed.

*§5.9(b)(7) — Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The cost for preparing the study plan, conducting the study, and preparing the report is difficult to evaluate and depends on the rates of the consultant selected for the work. The total estimated hours for the trout viability analysis is approximately 400 person hours. The allocation of these hours is approximately 40 hours for coordination and study preparation; 2 weeks of field data collection for a 3-person crew (240 hours); 80 hours to complete a draft report; and 40 hours to complete a final report.

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AW 29 **Study Request**  
**Indicators of Hydrologic Alteration/Range of Variability Analysis**

The IHA/RVA are components of an analytical software package typically used to characterize and compare complex river reach or river basin-scale hydrologic regimes from two or more periods of time, such as pre-dam and post-dam (Richter et al. 1996; Richter et al. 1997). The program assesses and presents a summary of 64 ecologically relevant hydrology statistics derived from daily hydrologic data (e.g. magnitude of monthly flows, timing of annual extreme water conditions, frequency and duration of high and low pulses, etc.). These parameters are of great ecological importance and utility in detecting physical habitat alteration in rivers.

The following study request addresses each of the seven study criteria as required in 18 C.F.R. §5.9(b):

*§5.9(b)(1) — Describe the goals and objectives of each study proposal and the information to be obtained.*

Variations in the hydrologic regime over space and time play an important role in determining habitat conditions and biodiversity (Poff and Ward 1989; Poff et al. 1997), and long-term alteration of streamflow characteristics can produce large changes in aquatic ecosystem structure and function. For example, changes in the magnitude, timing, frequency, or duration of naturally occurring flow events can reduce habitat diversity, cause river channels to degrade and disconnect from floodplains, disrupt migration and spawning cues for fish, affect the breeding and dispersal of amphibians, and alter the survival and distribution of juvenile fish and macroinvertebrates (ISG 2000, NRC 1996, Richter et al. 1996).

The overall objective of the IHA/RVA study is to quantify flow differences between the existing condition and the modified flow regime that would result from Project development. The study would describe flow changes in terms of several dozen metrics that can be used to help inform future flow management decisions. The objective of the USFS' study is to characterize peak and base flow hydrographs in the reach of river impacted by the Project, comparing current condition flow statistics to a modified flow regime that would result with Project development. The availability of long-term flow records from gage sites within the North Fork Snoqualmie River basin makes it possible to evaluate changes in the flow regime resulting from development of the proposed Project. IHA analysis of the North Fork Snoqualmie River may determine the relationship between the current instream flow management practices, productivity of its fishery resources, and changes that could occur with development of the Project.

*§5.9(b)(2) — If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.*

The State of Washington, has management responsibility and authority over fish and wildlife resources in the North Fork Snoqualmie basin as well as obligations under Section 401 of the

Clean Water Act. The results of the study can be used to help identify instream flow management alternatives and to better understand project-related changes in river morphology and water quality. The flow statistics obtained through the analysis will also inform the results of other, related studies. Our study request is consistent with meeting these goals.

*§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.*

Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Our members have a strong interest in the viability of fishery resources of the North Fork Snoqualmie River. To fully evaluate the Project's effect on resident fish populations, a study of the fishery resources within the reach impacted by the Project is relevant to the Commission's public interest determination.

*§5.9(b)(4) — Describe existing information concerning the subject of the study proposal, and the need for additional information.*

Streamflow data have been collected on the North Fork Snoqualmie for several decades. This analysis will provide a quantitative means of evaluating hydrology and identifying parameters of significant ecological importance and utility in detecting physical habitat alteration in the river that would occur under different development flow scenarios.

*§5.9(b)(5) — Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.*

Project operations would affect the hydrology of the North Fork Snoqualmie River. These changes would affect the quantity and quality of habitat available for both the aquatic and riparian communities. In a river system, this regulation can degrade habitat over time; filling in pools, reducing gravel recruitment from riverbanks and diminishing LWD recruitment. River regulation can also restrict both the lateral connectivity between the river and the floodplain and the temporal and spatial variation in connectivity in the mainstem of the river (Ward and Stanford, 1995; Kingsford, 2000).

*§5.8(b)(6) — Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

The analysis will rely on the IHA/RVA software (Richter et al. 1996; Richter et al. 1997)

following the development of comparable daily flow records using fairly standard approaches. Not all of the metrics evaluated by the model are necessarily relevant to the analysis for the Snoqualmie River. We anticipate that the applicant will engage stakeholders in identifying the variables that are most relevant to the goals and objectives of informing impacts of the proposed Project.

*§5.9(b)(7) —Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.*

The study would cost approximately \$20,000.

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**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Black Canyon Hydro LLC

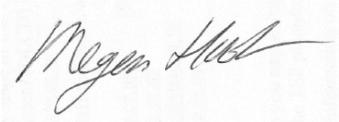
Docket No. P – 14110-001

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**CERTIFICATE OF SERVICE**

Pursuant to Rule 2010 of the Commission’s Rules of Practice and Procedure, I hereby certify that I have this day caused the foregoing Conservation Group **Comments on the Preliminary Application Document (PAD), Scoping Document 1 (SD1), and Study Requests for the Black Canyon Hydroelectric Project (P-14110)**, to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated this 24<sup>th</sup> day of July 2012.



Megan Hooker  
American Whitewater

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