

**Black Canyon Hydroelectric Project
FERC Project No. P-14110
Proposed Wildlife, Vegetation, and Sensitive Habitats Study Plan
September 2012**

Prepared for
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1 INTRODUCTION

Black Canyon Hydro, LLC, (BCH) ultimately plans to file an application for an original license for the Black Canyon Hydroelectric Project (Project), FERC Project Number P-14110, and associated facilities on the North Fork Snoqualmie River (North Fork), approximately 4 miles northeast of North Bend in King County, Washington. The Project has a proposed generation capacity of 25 megawatts (25) and would be located entirely on private lands.

The Project would consist of the following new facilities: 1) a 8-foot-high, 162.4-foot-long inflatable rubber diversion with associated fish passage and intake structures; (2) a variable pooling area behind the diversion with a normal water surface elevation of 971 feet above mean sea level and a maximum pooling of 2.83 acres; (3) a power conduit tunnel consisting of an approximately 450-foot-deep vertical tunnel into an approximately 8,300-foot-long, 8 to 12-foot-diameter horizontal tunnel and penstock connecting to; (4) 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; (5) a 200-foot-long, 24-foot-wide tailrace; (6) a 4.2-mile-long, 115-kilovolt overhead transmission line that transmits project power to the regional grid (transmission line would be an overbuild of an existing transmission line with only approximately 0.65 miles of new transmission); (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 (switchyard, maintenance building, etc.).

The project would operate in run-of-river mode. The combined maximum hydraulic capacity of the two project turbines would be 900 cubic feet per second (cfs). The project would divert water from a 2.6-mile-section of the North Fork Snoqualmie River.

BCH filed a Notice of Intent (NOI) and the associated Pre-Application Document (PAD) to commence the FERC Integrated Licensing Process on March 27, 2012. In response to the subsequent study requests filed by FERC staff and other stakeholders and as detailed in 18 CFR 5.11, BCH is required to submit relevant resource study plans. This includes a study of wildlife, vegetation, and sensitive habitats within and adjacent to the Project boundary which follows the requirements of 18 CFR 5.11(b)-(e).

In this document, BCH proposes to study terrestrial wildlife, vegetation, and sensitive habitats in the project area to meet FERC licensing requirements. Based on comments

received from resource agencies and the public, the following terrestrial studies are proposed:

- Vegetation Habitat Study
- Rare Plant Study
- Wildlife Observation Study

The objectives and methods proposed for the vegetation habitat, rare plant, and wildlife observation studies are described in separate sections of this document. Although presented separately, the tasks and activities comprising the three studies will be carefully coordinated to ensure that available resources are put to best use. The findings and recommendations of the three studies will be reported in a single document – the Wildlife, Vegetation, and Sensitive Habitats Study Report – when the three studies are completed.

2 STUDY DESCRIPTION AND OBJECTIVES

In accordance with 18 CFR §5.11(d)(1), this section describes the goals and objectives of the study and the information to be obtained. The goal of this study is to identify effects of the proposed project on wildlife, vegetation, and sensitive habitats in the project area. The specific objectives of the study are to:

2.1 Vegetation Habitat Study

The goal of the Vegetation Habitat Study is to identify, describe, and map vegetation habitat types within the proposed Project Area. The study will focus primarily on areas that support and are essential to wildlife species of concern, and that could potentially be affected by project construction and operations. Sensitive habitats such as wetlands and old growth forest, if present, will also be inventoried.

- Measure and describe the vegetation habitats that occur within the Project area, including sensitive habitats such as wetlands and old growth forest.
- Evaluate the potential effects of project construction and operation on the identified habitats.
- Develop a Habitat Management Plan that identifies prevention, mitigation, and enhancement measures that could be used for the project if a license is issued.

2.2 Rare Plant Study

The goal of the Rare Plant Study is to identify and map the locations of rare plants encountered, if any, within the proposed study area. In the context of this study, rare plants are defined as plants listed or proposed for listing as threatened or endangered

under the Endangered Species Act (ESA), candidates for possible future listing as threatened or endangered under the ESA, or plants that have been designated as rare under the Washington Natural Heritage Program (WNHP).

- Identify and map rare plants within the study area.
- Evaluate the potential effects of the project on the identified rare plants.
- Identify PM&E measures that could be implemented if a license is issued, and incorporate those measures into the HMP.

2.3 Wildlife Observation Study

The purpose of the wildlife study will be to collect baseline information on the occurrence and distribution of wildlife within and near the study area. This study will document all terrestrial vertebrate wildlife detections within the study area, with special emphasis on species that are listed as Endangered, Threatened, Proposed, Candidate, Species of Concern, and Partial Status under the ESA, or included in the PHS list. For the purposes of this study, these species will be collectively referred to as species of concern.

- Identify wildlife that is or may be present within and adjacent to the study area.
- Evaluate the potential effects of the project on the identified wildlife.
- Identify PME measures that could be implemented if a license is issued, and incorporate those into the HMP.

3 STUDY AREA

3.1 Vegetation Habitat Study

Vegetation habitat units that occur within the Project Area (Appendix A) will be delineated on maps and aerial photographs based on discernible plant associations. This information will be used to preliminarily classify habitat units by habitat type.

All habitat units that lie, either partially or wholly, within 100 meters of the natural and aboveground project features identified in Appendix B will be mapped. Field sampling will be completed wherever accessible. Project features include:

- Inflatable diversion and fish passage corridor,
- Water intake structure,
- Water intake access road,
- Northern tunnel boring entry point,
- Powerhouse and tailrace,
- Transmission line extension,

- Southern tunnel boring entry point,
- Powerhouse access road, and
- Riparian areas adjacent to, and immediately up- and downstream of the North Fork Project reach.

Particular attention will be paid to habitat units within the Project Area that are representative of sensitive vegetation habitat types, defined as regionally rare, endangered, or atypical plant associations. The precise location and size of the areas to be surveyed will be determined following a site reconnaissance and revision of this study plan.

3.2 Rare Plant Study

The study is intended to document whether rare plant species are present in the Project Area, as delineated in Appendix A. The exact locations and extent of the areas to be surveyed in the field, referred to henceforth as the Study Area, will be determined through field reconnaissance. The study area tentatively includes areas within 100 meters of aboveground structures proposed for the project, including the diversion, fish ladder, intake, water conveyance tunnel, powerhouse, tailrace, roads, and transmission lines (Appendix B). Those portions of the Project reach that are adjacent to the stream channel and are likely to be affected by fluctuating water levels will also be surveyed, provided they can be safely accessed on foot.

Rare plants encountered within the Project Area during the course of other project-related activities, including studies not described in this report, will be documented.

3.3 Wildlife Observation Study

The areas in which wildlife surveys will be conducted are consistent with those proposed for the Vegetation Habitat study areas that lie, either partially or wholly, within 100 meters of the natural and aboveground project features identified in Appendix B. Special consideration will be given to riparian areas adjacent to the North Fork and upland areas traversed by roads and transmission lines. The exact location and extent of the areas to be sampled for wildlife will be described in the final study plan and will be determined based on field reconnaissance.

4 RESOURCE MANAGEMENT GOALS

In accordance with 18 CFR §5.11(d)(2), this section describes resources management goals of agencies or Indian tribes with jurisdiction over the resources to be studied.

4.1 Vegetation Habitat Study

Most of the land in the vicinity of the proposed project is privately owned and has historically been managed as timberland, which will likely continue to be the case following project construction.

The Washington Department of Fish and Wildlife (WDFW) has established fishing and hunting regulations and encouraged stewardship of public and private lands for the benefit of native fish and wildlife species in the Snoqualmie River basin.

The Northwest Power and Conservation Council designated a segment of the North Fork that includes the proposed Project Reach as a “Protected Area.” Protected Areas are those stream reaches and associated terrestrial habitats where hydroelectric development is deemed to pose unacceptable risks to fish and wildlife resources. The designation of the North Fork occurred in late 1980’s. The specific evaluation of the criteria and any supporting documentation used to establish this section of the North Fork that comprises the Project Reach as “Protected,” have not been found.

The 13,363-acre Mount Si Natural Resources Conservation Area (NRCA) lies adjacent to the eastern boundary of the project area. The NRCA is managed to protect a variety of unique habitats and features, including old-growth Douglas-fir, mountain hemlock, and western hemlock forests; outstanding geologic features; a high-elevation Sitka spruce forest; wetlands and lakes; rock outcrops; cliffs; grasslands; and riparian areas (WDNR 2012).

4.2 Rare Plant Study

Many agencies and organizations are working to protect rare native plants in Washington. The WNHP, established by the Department of Natural Resources in 1981, develops and maintains a list of rare plants in Washington State. The primary mission of the WNHP (WDNR 2012b) is to:

- Identify which species and ecosystems are priorities for conservation effort;
- Build and maintain a database for priority species and ecosystems; and
- Share the information with others so that it can be used for environmental assessments and conservation planning purposes.

The United States Fish and Wildlife Service (USFWS) is the federal agency that is primarily responsible for administering the ESA for federally listed plant species. Under the ESA, all federal agencies are to use their existing authorities, in consultation with the USFWS, to conserve species listed as threatened and endangered under the ESA. These

authorities extend to the management of federal lands, federal actions, and federally approved private actions (USFWS 2012b).

4.3 Wildlife Observation Study

The mission of the WDFW is to “preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities” (WDFW 2012b). To this end, the WDFW maintains a comprehensive database of species and habitats of conservation and management concern known as the Priority Habitats and Species List. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; and vulnerable species of recreational, commercial, or tribal importance. The PHS list currently contains 152 vertebrate species, including fish, mammals, birds, amphibians, and reptiles (WDFW 2012a).

Threatened and endangered wildlife species in Washington State are regulated by the Threatened and Endangered Species section of the WDFW, which oversees the listing and recovery of those species in danger of extirpation (WDFW 2012b). The USFWS is the principal federal agency for administering the ESA for federally listed wildlife species. Under the ESA, all federal agencies are to use their existing authority, and in consultation with the USFWS, to conserve species listed as threatened and endangered under the ESA. This authority applies to the management of federal lands, federal actions, and federally approved private actions (USFWS 2012b).

5 EXISTING INFORMATION

In accordance with 18 CFR §5.11(d)(3), this section describes existing information on wildlife, vegetation, and sensitive habitats at the Project. The additional information needed regarding wildlife, vegetation, and sensitive habitats is discussed in the “Study Description and Objectives” section above.

5.1 Vegetation Habitat Study Plan

The PAD for the proposed Project (BCH 2012) summarized information from terrestrial resource studies conducted for the nearby Calligan Creek and Hancock Creek Hydroelectric Projects (Snohomish PUD 2011a,b). Both projects are located within 3 miles of the proposed Project, and have similar land-use histories and habitat types. Results from these studies will be used to assess what conditions may be encountered within the study area during field surveys.

Other relevant information available for areas within and near to the study area includes:

- National Wetland Inventory (NWI) database and maps (USFWS 2012a);
- Priority Habitats and Species (PHS) database (WDFW 2012a);
- Maps, aerial photos and satellite imagery; and
- Information published for the Mount Si NRCA (WDNR 2012a).

5.2 Rare Plant Study

Rare plant species in Western Washington that are currently listed under the ESA include:

- Marsh sandwort (*Arenaria paludicola*),
- Golden paintbrush (*Castilleja levisecta*),
- Water howellia (*Howellia aquatilis*),
- Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*),
- Nelson's checker-mallow (*Sidalcea nelsoniana*), and
- Bradshaw's desert parsley (*Lomatium bradshawii*).

The WNHP lists an additional 21 rare plant species that are known to occur within King County (WDNR 2012b; Appendix A). WNHP plant distribution data will be reviewed to determine if a prior record exists of rare plants occurring within the Project Area. Other relevant information on the distribution and abundance of rare plants in the vicinity of the project will be gleaned from terrestrial resource study reports prepared for the Hancock Creek and Calligan Creek Hydroelectric Projects (Snohomish PUD 2011a,b), which are located within three miles of the proposed project and have similar land-use histories and habitat types.

5.3 Wildlife Observation Study

The results of several wildlife studies undertaken during the licensing of the Hancock Creek Hydroelectric Project (Snohomish PUD 2011b) were incorporated into the Black Canyon Hydroelectric Project PAD (BCH 2012). These studies yielded the following information:

- A list of mammals that could possibly be present in the Project area based on species distribution;
- A list of birds that could possibly be present in the Project area based on species distribution and broad habitat requirements; and
- A list of reptiles and amphibians that were detected during field surveys or that could possibly occur within the Project area.

As shown in Appendix B, 48 species of concern (or groups of species) are known to occur in King County. Several species of concern are known to occur within or near the Project area, including Columbian black-tailed deer (*Odocoileus hemionus columbianu*), which was identified as a species of management concern to project stakeholders during the scoping process.

Species of concern that are known to occur near the Project area (within 2 miles) include western toad (*Anaxyrus boreas*), northern goshawk (*Accipiter gentili*), marbled murrelet (*Brachyramphus marmoratus*), Northern spotted owl (*Strix occidentalis*), and mountain goat (*Oreamnos americanus*) (WDFW 2012a).

6 NEXUS TO PROJECT

In accordance with 18 CFR §5.11(d)(4), this section describes any nexus between Project operations and effects on wildlife, vegetation, and sensitive habitats.

6.1 Vegetation Habitat Study

The proposed project may affect terrestrial habitat through vegetation removal and soil disturbance resulting from construction of the road extensions and transmission line; boring of the tunnel; and construction of the diversion, intake, powerhouse, and tailrace. Reducing flows in the Project reach and altering flows at the proposed tailrace area could also affect riparian habitat. Maintenance procedures during the operational phase of the project may introduce pesticides, herbicides, or invasive species to the area, which may also affect plant communities.

This study will help determine project effects on habitats comprising different vegetation types; identify sensitive habitats such as wetlands or old growth forest; identify habitats that support or could conceivably support threatened, endangered, and rare species; and provide a basis for the development of a Habitat Management Plan for the project.

6.2 Rare Plant Study

The proposed project has the potential to negatively impact rare plants within the study area as a result of vegetation removal and soil disturbance associated with construction of the road extensions and transmission line; boring of the tunnel sections; and construction of the diversion, intake, powerhouse, and tailrace. Hydrologic and geomorphic changes resulting from the withdrawal of water for hydroelectric power generation could conceivably affect rare plants that may be present in the riparian corridor. Maintenance

procedures during the operational phase of the project may introduce pesticides, herbicides, or invasive species to the area, which may also cause adverse effects to rare plants, if present. This study will help to determine the project effects on rare plants, and provide a basis for developing appropriate PME measures to implement before, during, and following construction.

6.3 Wildlife Observation Study

The proposed project could have both direct and indirect impacts on wildlife. Potential direct effects may include displacement of individuals due to temporary and permanent habitat loss associated with construction of the road extensions and transmission line; boring of the proposed tunnel sections; construction of the diversion, intake, and powerhouse; and altering flows in the Project Reach and at the proposed tailrace area. Indirect impacts to wildlife could result from disturbance associated with construction and operation of project facilities (e.g., noise, increased human presence). This study will identify wildlife species of concern that may be affected by the proposed Project, assess the overall impacts to wildlife that may result from construction and operation of the Project, and make recommendations and provide a framework for developing PMEs and the Habitat Management Plan.

7 METHODS

In accordance with 18 CFR §5.11(d)(1) and §5.11(d)(5), this section provides a detailed description of the proposed study methodology, including data collection and analysis techniques, or objectively quantified information, sampling strategy, and a schedule including data collection and analysis techniques, or objectively quantified information, sampling strategy, and a schedule including appropriate field season(s) and the duration (see “Schedule” heading below for schedule).

7.1 Vegetation Habitat Study

7.1.1 Measure and describe the various plant communities and habitats that occur within the Project Area, including sensitive habitats such as wetlands or old growth forest.

This objective will be addressed by compiling available information on local plant communities from published and unpublished sources, and conducting field investigations to confirm and supplement this information.

7.1.1.1 Review of Available Information

Prior to conducting field surveys, biologists will gather and review available information to determine the types of vegetation communities that are likely to be present and to identify habitats of special concern.

The background review will include retrieval and review of published and unpublished material, including:

- Research papers, theses, and reports;
- Maps, aerial photos, and satellite images;
- PADs for the Calligan Creek and Hancock Creek Hydro Projects (Snohomish PUD 2011a,b);
- NWI online mapper (USFWS 2012a); and
- PHS database (WDFW 2012a).

Additional information will be gathered through interviews and documents retrieved from local, state, tribal, and federal land managers, including representatives of King County, Tulalip and Snoqualmie Indian Tribes, WDFW, Washington Department of Natural Resources (WDNR), the US Forest Service (USFS), Weyerhaeuser, and Hancock Forest Management.

Based on the review of available information, a map of vegetation communities and sensitive habitats will be created using ArcMap. The map will be based on the most recent aerial imagery available. The boundaries of discrete habitat units will be delineated on the map and used for reference during field investigations.

7.1.1.2 Field Survey

A field survey will be conducted to identify and describe vegetation communities within the study area, and to confirm the boundaries of discrete vegetation habitat units identified during the background review.

7.1.1.3 Habitat Type Classification

Vegetation habitat types within the Project Area will be classified using the Field Guide to the Forested Plant Associations of the Mount Baker-Snoqualmie National Forest (Henderson et al. 1992), based on the projected climax plant community that would occupy a site given current climate and site conditions and the absence of disturbance. Vegetation habitat types will also be classified by cover type, as described by Hall et al. (1985), which takes into account characteristics that contribute to wildlife habitat by considering successional states.

7.1.1.4 Habitat Unit Delineation

The physical boundaries of discrete vegetation habitat units within the Project Area that cannot be reliably determined from aerial photographs or satellite images will be delineated in the field using a global positioning system (GPS) device. The location and extent of vegetation habitat units will be determined by changes in vegetation composition (i.e., plant associations) and structure across the landscape. To be considered discrete, a vegetation habitat unit must comprise a vegetation community comprised of similar plant species and vertical spacing throughout a given area.

7.1.1.5 Habitat Unit Sampling

A subset of habitat units representing each vegetation habitat type will be selected for sampling. All habitat units that are representative of sensitive vegetation habitat types will be sampled. A rapid vegetation assessment will be conducted for selected vegetated habitat units following methods described in the California Native Plant Society — Vegetation Rapid Assessment Protocol (California Native Plant Society [CNPS] 2004). For each sampled habitat unit, biologists will collect the following information:

- Representative photographs;
- Plant species and estimated percent cover for dominant and subdominant trees and shrubs;
- Substrate;
- Presence and condition of large woody debris;
- Estimated average diameter at breast height of dominant trees;
- Estimated percent canopy cover;
- Estimated slope; and
- Estimated age of dominant vegetation.

If wetlands are found within the project area, they will be classified further according to the Cowardin wetland classification system (Cowardin et al. 1979). To aid in the classification, field staff will obtain more detailed measurements of the boundaries, extent, and plant species composition of each wetland.

The vegetation habitat field survey will be conducted between mid-April and mid-July, 2012, which is within the growing season for native plants in the vicinity of the Project (NRCS 2012). The vegetation habitat survey will be completed prior to the Rare Plant Survey.

7.1.2 Evaluate the potential effects of project construction and operation on the plant communities

The project will be comprised of several structures, including a diversion, fish ladder, intake, water conveyance tunnel, powerhouse, tailrace, roads, and transmission lines. Following construction, the project will be operated as a run-of-river hydroelectric generation facility. The potential for adverse effects to vegetation and wildlife will need to be evaluated over the entire life cycle of the project, including the eventual deconstruction and removal of project components. The direct, indirect, and cumulative effects of constructing, operating, maintaining, and decommissioning these facilities will be evaluated after the habitat survey has been completed and the final configuration and design of the proposed project have been established. Potential direct effects include habitat fragmentation and loss, changes in habitat structure such as increased edge habitat, and ongoing disturbances to vegetation following construction. The potential for perturbing sensitive habitats such as riparian areas and old growth forests is of special concern.

Potential indirect effects on habitat include noise, introduction of invasive species, and other issues related to increased human presence in the area. Potential cumulative effects of the project will be evaluated by considering the direct and indirect effects of project components or activities in association with the effects of other human activities in the area. The effects analysis will determine whether the ecological impacts of the project accumulate or interact to propagate additional impacts over space and time. If deemed significant, these impacts will require special management, mitigation, or consideration in decision making.

7.1.3 Develop a Habitat Management Plan that identifies prevention, mitigation, and enhancement measures that could be used for the project if a license is issued

The effects analysis described will be applied to the results of the Vegetation Habitat Study, Rare Plant Study, and Wildlife Observation Study. If that analysis determines that the project is likely to adversely affect wildlife, vegetation, or sensitive species and habitat in the project area, then specific measures to manage or mitigate those effects will be recommended. Potential mitigation measures include (Council on Environmental Quality 2011):

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

Prevention, mitigation, and enhancement measures will be recommended that address the environmental impacts of constructing, operating, and decommissioning the project on terrestrial resources, in particular plant and wildlife species of concern. The recommendations and their underlying basis will be discussed with agency, tribal, and stakeholder project participants and, to the extent practicable, incorporated into the Habitat Management Plan.

7.2 Rare Plant Study

7.2.1 Identify and map rare plants within the study area

This objective will be addressed by a combination of background literature review and field surveys as needed to confirm and refine the information obtained during the background review.

7.2.1.1 Review of Available Information

Existing information on the occurrence of rare plants in the project area will be compiled and reviewed prior to conducting field surveys. The background review will determine if rare plant species and associated habitats are likely to be present in the project area. As part of the review, biologists will review the Hancock and Calligan Creek project reports, the WNHP database, and other information that will be located through a search of published and unpublished documents. Agency and tribal biologists who are familiar with the project area will also be consulted.

7.2.1.2 Field Surveys

Field surveys to search for rare plants in the Project Area will be conducted in conjunction with the Vegetation Habitat Study to provide thorough coverage of potential impact areas. Habitats known to support populations of rare plants, as determined from a review of available information, will be intensively surveyed. If rare plants are encountered, their locations will be mapped using GPS techniques, and the associated habitat conditions will be described in detail.

In areas where it is not known if rare plants are present, a reconnaissance survey will be conducted by a qualified botanist to assess the overall diversity and structural complexity of vegetation present. This information will be used to establish the appropriate survey method and level of effort to be used to sample the study area. It is anticipated that the “Intuitive-Controlled Methodology” for sampling vascular plants (Whiteaker et al. 1998) will be used in the field surveys. This sampling methodology is designed so that there is a high probability of finding populations of rare plant species, if present. During the survey, a botanist will traverse the selected cross sections, recording the species and mapping the location of any rare plants encountered.

Field surveys will be conducted during May through August, when rare plant species in the vicinity of the project are most likely to be detected (NRCS 2012). Multiple surveys may be required to identify plants that display characteristics (e.g., flowers or fruit) at different times of the year. It is anticipated that two surveys will be conducted during the growing season; one in spring to early summer (i.e., May through June) and one in the late summer (i.e., July through August).

7.2.2 Evaluate the potential effects of the project on the identified rare plants

The evaluation of potential project effects on rare plants in the project area will include consideration of direct, indirect, and cumulative impacts caused by the construction, operation, maintenance, and decommissioning of project facilities. The effects analysis will be completed after the final configuration and design of the project have been established. Potential direct effects include the destruction of rare plants and the reduction or modification of their habitat due to project construction, or exposure to herbicides during facility maintenance. Potential indirect effects to rare plants include the introduction of invasive plant species, and other impacts associated with increased human presence in the project area. These impacts will be evaluated both individually and collectively, and in combination with impacts caused by other human activities in the vicinity of the project, to determine the potential cumulative effects of the project on rare plants.

7.2.3 Identify PME measures that could be implemented if a license is issued, and incorporate those measures into the HMP

Informed planning, mitigation, monitoring, and adaptive management will be necessary to avoid and minimize adverse impacts to rare plant species. The implications of the Rare Plant Study, in terms of potential project impacts and opportunities for mitigation, will be addressed in the Habitat Management Plan. Specifically, the HMP will detail the

various effects the project might have on rare plants, along with appropriate measures to mitigate for those impacts that would have negative consequences. Prevention, mitigation, and enhancement measures will be discussed with agency, tribal, and stakeholder project participants before a project license application is filed by the project proponent.

7.3 Wildlife Observation Study

7.3.1 Identify wildlife that is or may be present within and adjacent to the study area

This objective will be addressed by a combination of literature search and review, and field surveys as needed to confirm and supplement the information on the presence of wildlife within the study area.

7.3.1.1 Review of available information

Prior to the field investigation, biologists will gather and review published and unpublished information to determine what wildlife species may be present on or within two miles of the project, and identify species of concern to search for during the field investigation. Biologists will review the results of the Vegetation Habitat Survey and the PHS database to compile a list of species of concern that could potentially occur within the study area that will be searched for during the field investigation.

Additional information will be gathered through interviews with and material provided by local, state, tribal, and federal land managers, including representatives of King County, Tulalip and Snoqualmie Indian Tribes, WDFW, WDNR, USFS, Weyerhaeuser, and Hancock Forest Management.

7.3.1.2 Field Surveys

Due to the broad scope of the study objective to document wildlife presence, no protocol-level surveys for individual species will be conducted. Field surveys will include point count surveys to document birds, and a walking survey to document all observable wildlife.

Wetlands and habitat for stream-dwelling amphibians are not likely to exist within the project area. Therefore, amphibian surveys will not be conducted during this study.

Walking Surveys

Walking surveys will be conducted simultaneously with the Rare Plant Survey. The walking survey will follow the same intuitive-controlled survey route that will include the range of conditions present within the study area. During the walking surveys, biologists will document all wildlife species or signs (e.g., nest, tracks, scat, pellets, burrows, vocalizations) that are encountered. The time of day, weather, and walking route for each survey will be noted.

For each species detected during the survey, field staff will collect the following information:

- Name of species,
- Detection type (sight, sound, sign),
- Number of individuals ,
- Sex(es) (when possible),
- Developmental stage (i.e., juvenile or adult),
- Habitat type,
- Time, and
- GPS location for species of concern.

Walking surveys will be conducted twice, once in the spring (May through early June) and once in the summer (July through August), and will be conducted during normal seasonal conditions (i.e., avoiding days that are excessively above or below average temperatures).

Point Count Surveys

Point count surveys will be conducted using the point count method adapted from the US Environmental Protection Agency (EPA) “Methods for Evaluating Wetland Condition: Biological Assessment Methods for Birds” (EPA 2002) and the US Forest Service “Managing and Monitoring Birds Using Point Counts: Standards and Applications” (Ralph et al. 1995). Each survey will begin a half hour after sunrise and end no later than 10:00 a.m. At each survey station, all birds seen or heard during a 5-minute interval will be identified and recorded. Bird sign (e.g., forage holes, nests), individuals seen or heard between point count stations, or birds flying through the survey area overhead will also be noted. Surveys will not be conducted during inclement weather.

The locations of point count stations will be selected to represent the range of conditions within the study area using information gathered during the Vegetation Habitat Survey

Point count stations will be spaced at least 200 meters apart during each survey to avoid overlap, and station locations will be recorded using a GPS.

Two point count surveys will be conducted—one in spring (May through early June) and one in summer (July).

7.3.1.3 Reporting

The objectives, methods, and results of the Wildlife Observation Study will be incorporated into the Wildlife, Vegetation, and Sensitive Habitats Study Report, which will be released as a draft in late 2013.

7.3.2 Evaluate the potential effects of the project on the identified wildlife

Evaluating the potential impact of project construction and operation on wildlife identified in and near the project area will include an analysis of both direct and indirect effects. Potential direct effects include the displacement of individuals as a result of habitat loss due to project construction. Potential indirect effects to wildlife include issues associated with habitat fragmentation, including loss of travel corridors; changes in habitat structure, such as increased edge habitat; noise; and other issues related to increased human presence in the area. Particular attention will be given to assessing the potential impacts to wildlife species of concern within and adjacent to the Project area.

7.3.3 Identify PME measures that could implemented if a license is issued, and incorporate those measures into the HMP

The potential project impacts on key wildlife species and mitigation measures to avoid, minimize, or counteract those effects will be evaluated and discussed further in the Habitat Management Plan. The purpose of the HMP will be to identify negative effects the project could potentially have on wildlife, and to recommend prevention, mitigation, and enhancement measures to counteract those effects. The primary emphasis will be on species listed under the ESA and on the PHS list. Agency, tribal, and stakeholder participants in the licensing process will be consulted on the recommendations before they are finalized. All permit-related PMEs will be submitted for approval by the appropriate regulatory agencies.

8 PROGRESS REPORTING

In accordance with 18 CFR §5.11(b)(3), this section describes provisions for periodic progress reports, including the manner and extent to which information will be shared; and the time allotted for technical review of the analysis and results.

Study reports will be submitted as required by the FERC Integrated Licensing Process (ILP). The most recent schedule, issued by FERC in Appendix B of Scoping Document 1, includes a number of opportunities for progress reports, exchange of analysis and results between stakeholders, and information sharing. After proposed study plans are filed with FERC there will be a study plan meeting and comment period before a revised study plan is filled and a comment period passes. Once studies begin, the ILP also has deadlines for an Initial Study Report to be submitted, an Initial Study Report Meeting, and an Initial Study Report Meeting Summary. However, this schedule is subject to change by FERC staff and should not necessarily be relied upon. It is BCH's understanding that any changes to the ILP plan and schedule will be noticed by FERC staff.

9 SCHEDULE

In accordance with 18 CFR §5.11(b)(2), the schedule for conducting the study is provided in Table 1 below.

Table 1. Resource Study Schedule

Component	Completion Date*
Pre-field Review	February 28, 2013
Field Surveys	August 31, 2013
Initial Study Report filed with FERC	February 6, 2014
Study Report Meeting	February 21, 2014
Initial Study Report Meeting Summary	March 10, 2014
Updated Study Report	July 16, 2014
Updated Study Report Meeting	July 31, 2014
Updated Study Report Meeting Summary	August 15, 2014
Final Study Report	August 31, 2014

*Dates based on schedule created and presented by FERC in Scoping Document 1 and subject to change.

10 LEVEL OF EFFORT AND COST

In accordance with 18 CFR §5.11(d)(6), the anticipated level of effort and cost are provided in Table 2 below.

The estimated cost of this work is approximately \$59,750.

Table 2. Level of Effort and Cost

Task	Labor and Expenses
Background Review	\$3,750
Field Surveys & Meetings	\$18,000
Draft & Finalize Technical Report	\$25,000
Draft & Finalize Habitat Management Plan	\$13,000
Total	\$59,750

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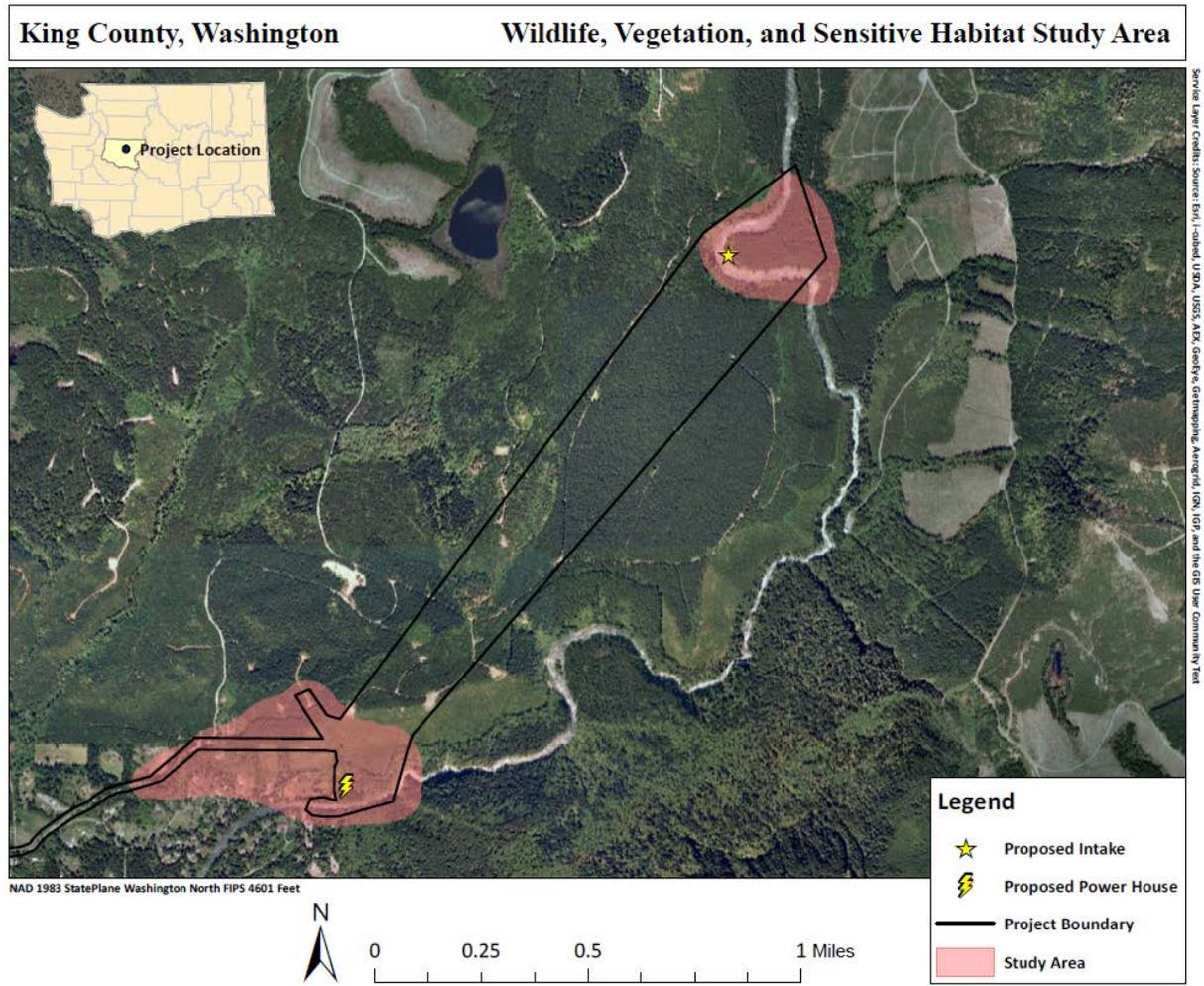
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12 APPENDIX A: Wildlife, Vegetation, and Sensitive Habitat Study Area



13 APPENDIX B: Wildlife, Vegetation, and Sensitive Habitat Survey Area

