

Revised Study Plan
Boundary Hydroelectric Project (FERC No. 2144)

Study No. 15
Waterfowl/Waterbird Study

Seattle City Light

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TABLE OF CONTENTS

1.0 Introduction.....1

2.0 Study Plan Elements.....1

 2.1. Nexus between Project Operations and Effects on Resources..... 1

 2.2. Agency Resource Management Goals3

 2.3. Study Goals and Objectives4

 2.4. Need for Study5

 2.5. Detailed Description of Study.....6

 2.6. Work Products10

 2.7. Consistency with Generally Accepted Scientific Practice.....10

 2.8. Consultation with Agencies, Tribes, and Other Stakeholders10

 2.9. Schedule.....11

 2.10. Progress Reports, Information Sharing, and Technical Review12

 2.11. Anticipated Level of Effort and Cost.....12

3.0 Literature Cited13

List of Tables

Table 1.0-1. Waterfowl, waterbirds, and other water-dependent birds known to occur or potentially occurring in the Boundary Project vicinity..... 2

Table 2.9-1. Schedule for Waterfowl/Waterbird Study..... 12

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Study No. 15 – Waterfowl/Waterbird Study

1.0 INTRODUCTION

There are approximately 69 species of waterfowl (ducks, geese, swans), shorebirds (spotted sandpiper, killdeer), waterbirds (loons, grebes, herons, coots, and cormorants), and other water-dependent birds (belted kingfishers, ospreys, and swallows) that potentially use the aquatic, wetland, riparian, and shoreline habitats along Boundary Reservoir (Table 1.0-1). A few of these species are year-round residents; others use the area for nesting and winter further to the south. Many species occur only occasionally during migration; a few may winter in the Boundary Project (Project) area. This study will focus on two species groups: (1) ground-nesting waterfowl, because they are game species and could potentially be affected by Project operations; and (2) piscivorous waterbirds, double-crested cormorants in particular, because increasing populations of these species could impact the fishery associated with the Project. Data on actual use of the Project area by these two species groups is limited.

2.0 STUDY PLAN ELEMENTS

2.1. Nexus between Project Operations and Effects on Resources

Based on general knowledge of the potential effects of reservoir operations, water-level fluctuations in Boundary Reservoir may reduce wetland/riparian habitat quality for ground-nesting waterfowl. Potential effects of water level fluctuations on these species include: (1) reduced availability of nesting habitat, (2) direct flooding of low-elevation nests during the egg laying or incubation stages, or (3) altered cover and forage for broods and adult birds. Water level fluctuations may directly affect productivity of birds that nest on the ground near the shoreline or in emergent wetland vegetation. This can be of particular concern to waterfowl and shorebirds because their nests are highly susceptible to changes in water level, particularly stage increases. Water-level fluctuations during the fall and winter may also influence habitat conditions for birds that occur in the Project area during these seasons.

In general, there is little existing information on use of the Project area by waterfowl and waterbirds, and this information is needed to identify potential Project effects. Existing information and reconnaissance observations indicate suitable nesting habitats adjacent to Boundary Reservoir are not being used by waterfowl, a circumstance that could potentially be related to effects of the Project. In addition, information is needed on the number of piscivorous waterbirds that inhabit the Project vicinity¹ and the locations in which they congregate and/or breed; piscivorous waterbirds in other areas are known to create a significant mortality factor for juvenile fish.

¹ The study area for the botanical and wildlife resource studies varies by study, referring to both the “Project area” and “Project vicinity”. The area within the FERC-licensing Project boundary (which includes all Project structures, the reservoir, and the transmission line right-of-way from the powerhouse to the BPA interconnection) is considered the “Project area.” For the purposes of the botanical and wildlife resource studies, the “Project vicinity” encompasses the Project area as well as any adjacent lands that are included in the study area.

Table 1.0-1. Waterfowl, waterbirds, and other water-dependent birds known to occur or potentially occurring in the Boundary Project vicinity.

Species ¹	NE Washington Status ²	Status at Box Canyon Reservoir ³	Species ¹	NE Washington Status ²	Status at Box Canyon Reservoir ³
LOONS	1		RAILS	3	
Common Loon	XR(SB), U(M)	M (U)	Virginia Rail	U (SB)	Not Observed
GREBES	5		Sora	C (SB)	Not Observed
Pied-billed Grebe	U (R)	B (C)	PLOVERS	2	
Eared Grebe	U (SB)	M (U)	Killdeer	C (SB)	B (C)
Horned Grebe	U (M)	M (U)	Semipalmated Plover	U (M)	Not Observed
Red-necked Grebe	U (SB)	M (U)	SANDPIPERS	12	
Western Grebe	R (SB)	M (U)	Greater Yellowlegs	C (M)	M (U)
CORMORANTS	1		Lesser Yellowleg	C (M)	Not Observed
Double-crested Cormorant	U (SB)	Not Observed	Solitary Sandpiper	U (M)	Not Observed
BITTERNS AND HERONS	3		Spotted Sandpiper	C (SB)	B (C)
American Bittern	U (SB)		Western Sandpiper	U (M)	Not Observed
Great Blue Heron	C (R)	R (A)	Least Sandpiper	U (M)	Not Observed
Black-crowned Night Heron	R	C (Ca)	Semipalmated Sandpiper	R (M)	Not Observed
WATERFOWL	27		Pectoral Sandpiper	U (M)	Not Observed
Tundra Swan	C (M)	W (U)	Long-billed Dowitcher	C (M)	Not Observed
Greater White-fronted Goose	R (M)	Not Observed	Common Snipe	U (R)	B (U)
Snow Goose	U (M), U (W)	Not Observed	Wilson's Phalarope	R (SB)	Not Observed
Canada Goose	C (R)	R (A)	Red-necked Phalarope	X (RM)	Not Observed
Mallard	C (R)	R (A)	GULLS AND TERNS	7	
Gadwall	C (R)	B (C)	Bonaparte's Gull	R (M)	Not Observed
American Wigeon	C (R)	B (A)	Ring-billed Gull	C (R)	Not Observed
Redhead	C (SB), R (W)	B (C)	California Gull	U (M)	M (C)
Lesser Scaup	R (SB), C (W)	R (C)	Herring Gull	R (W)	M (U)
Greater Scaup	U (W)	Not Observed	Caspian Tern	U (M)	Not Observed
Cinnamon Teal	U (SB)	B (U)	Forster's Tern	U (M)	Not Observed
Blue-winged Teal	U (SB)	B (C)	Black Tern	U (SB)	B (U)
Green-winged Teal	U (R)	B (U)	KINGFISHERS	1	
Wood Duck	U (R)	B (C)	Belted Kingfisher	C (SB)	B (C)
Ring-necked Duck	U (R)	B (U)	DIPPERS	1	
Northern Pintail	U (R), C (M)	M (C)	American Dipper	C (R)	Not Observed
Northern Shoveler	U (R), R (W)	B (C)	SWALLOWS	6	
Canvasback	U (R), C (M)	R (U)	Tree Swallow	C (SB)	M (U)
Hooded Merganser	U (R)	W (U)	Violet-green Swallow	C (SB)	B (A)
Common Merganser	U (R)	R (A)	Northern Rough-winged Swallow	C (SB)	Not Observed

Table 1.0-1, continued...

Species ¹	NE Washington Status ²	Status at Box Canyon Reservoir ³	Species ¹	NE Washington Status ²	Status at Box Canyon Reservoir ³
Barrow's Goldeneye	U (R)	Not Observed	Bank Swallow	U (SB), C(M)	M (U)
Common Goldeneye	R (R), C (W)	R (C)	Cliff Swallow	C (SB)	M (U)
Ruddy Duck	C (R), R (W)	B (C)	Barn Swallow	C (SB)	M (U)
Harlequin Duck	R (SB)	M (R)			
Bufflehead	U(R), C(W)	W (C)			
White-winged Scoter	R (W)	Not Observed			
Surf Scoter	R (W)	Not Observed			
American Coot	U(R), R(W)	R (A)			

Source: USFS, USFWS, BLM and WDFW 2001, as modified by Smith et al. 1997.

- 1 Species observed in Boundary Project area are shown in bold.
- 2 Northeast Washington Codes: Occurrence status: C=common, U=uncommon, R=rare, XR=extremely rare, (REC)=recorded few records, Seasonal status: (SB)=summer breeder; (W)=winter; (M)=migrant; (R)=resident
- 3 Box Canyon Reservoir codes: B = breeding, R = resident, W = wintering, M = migrant, C = casual, U = uncertain, (A) = Abundant, (C) = common, (U) = uncommon, (R) = Rare, (Ca) = Casual, (Acc) = Accidental (Reese and Hall 1991).

2.2. Agency Resource Management Goals

In addition to providing information needed to characterize Project effects, the Waterfowl/Waterbird Study will provide information to help agencies with jurisdiction over these species in the Project area identify appropriate conditions for the new Project license pursuant to their respective mandates. Agency management goals and policies associated with waterfowl/waterbird management in the context of FERC relicensing of the Boundary Project are summarized in the following sections.

USDA Forest Service (USFS)

The USFS follows standards and guidelines in the Colville National Forest (CNF) Land and Resource Management Plan (LRMP) (USFS 1988) for managing riparian habitats for fish and wildlife resources. One of the guidelines in the LRMP addresses maintenance and improvement of waterfowl habitat in the CNF. A number of the standards and guidelines in the LRMP have been amended based on the Inland Native Fish Strategy (INFISH) to contribute to attainment of riparian management objectives (USFS 1995).

U.S. Bureau of Land Management (BLM)

The BLM does not have any specific standards or guidelines related to waterfowl and waterbird management.

U.S. Fish and Wildlife Service (USFWS)

The USFWS is responsible for managing migratory birds, including waterfowl and waterbirds, under the Migratory Bird Treaty Act (MBTA). Executive Order No. 13186 requires that the USFWS “administer, oversee, and enforce the provisions of the MBTA”. As such, the USFWS has the responsibility to:

- Avoid or minimize adverse impacts to migratory bird resources.
- Restore and enhance migratory bird habitat.
- Prevent or abate pollution or detrimental environmental alterations to benefit migratory birds.
- Promote plans and programs benefiting migratory birds.
- Ensure that environmental analysis of federal actions evaluates the effects of actions and agency plans on migratory birds.
- Promote interagency inventory, monitoring, management studies, research, and information exchange related to the conservation of migratory birds and their habitats.

In addition, the USFWS sets annual hunting regulations for waterfowl to keep harvest levels at levels compatible with the population maintenance.

Washington Department of Fish and Wildlife (WDFW)

There are no general waterfowl habitat management goals provided by WDFW. However, WDFW does provide management recommendations for the great blue heron, which is considered a priority species in Washington, as summarized below (Quinn and Milner 2004). The WDFW also is responsible for managing the state’s waterfowl hunting season. Northeast Washington is part of Goose Management Area 5, which encompasses portions of eastern Washington outside of the Columbia River Basin.

2.3. Study Goals and Objectives

The primary goal of the Waterfowl/Waterbird Study is to provide information on suitable habitat in the Project area for ground-nesting waterfowl and use of this habitat, and to characterize any effects of Project operations on this habitat. An additional goal of this study is to provide information on populations of piscivorous waterbirds in the Project area, particularly cormorants. Specific objectives of this study are to:

- Document the extent of existing nesting by ground-nesting waterfowl in wetland, riparian, and shoreline habitats along Boundary Reservoir upstream of Metaline Falls.
- Estimate the amount of waterfowl ground-nesting habitat that could potentially occur in the reservoir fluctuation zone upstream of Metaline Falls.
- Determine the elevation range utilized by ground-nesting waterfowl and evaluate the impact of reservoir water levels on the availability of suitable nesting habitat and on the degree of nest failure due to flooding.

- Estimate the number of piscivorous waterbirds using the Project area and locate their nest sites, if possible, with an emphasis on double-crested cormorants.
- Document levels of use of the Project area by waterfowl and waterbirds during the fall migration and winter time period.

2.4. Need for Study

Summary of Existing Information

At Box Canyon, 19 waterfowl species were documented as year-round residents or as present during the breeding season (Reese and Hall 1991). Nesting studies conducted at Box Canyon confirmed that most ground duck nests hatched in late June and July, and that many early nests are flooded by rising water levels (peak flows occur in June). Broods of mallards, American widgeon, wood duck, gadwall, common goldeneye, and green-winged teal were confirmed at Box Canyon. Brood-rearing habitat at Box Canyon Reservoir was concentrated in sloughs, around islands, and other shallow water habitats.

Reconnaissance-level surveys conducted by Seattle City Light (SCL) in 2005 documented six waterfowl species, as well as the double-crested cormorant, great blue heron, and ring-billed gull (Table 1.0-1). Based solely on shoreline topography, the majority of the potential nesting habitat for waterfowl and waterbirds at Boundary Reservoir likely occurs upstream of Metaline Falls, although a few small areas near Everett Island and the forebay portion of the reservoir could also provide habitat for ground-nesting species. Based on the few surveys conducted, winter use of the reservoir by waterfowl appears to be low.

In terms of water level fluctuations in Boundary Reservoir, SCL voluntarily restricts most water surface fluctuations to a 10-foot range (between forebay elevations 1,980 and 1,990 feet NGVD 29 [1,984–1,994 feet NAVD 88]) to facilitate reservoir access and related recreational activities during daytime hours in the summer (approximately Memorial Day weekend through Labor Day weekend). For the remainder of the year, the typical forebay fluctuation range is between elevations 1,990 feet and 1,970 feet. (See section 1.3 of the Proposed Study Plan [PSP; SCL 2006b] for a description of the Project reservoir and operations.) Between 1987 and 2004, the daily water level fluctuation during the April–August waterfowl nesting and young rearing season was as much as 12.6 feet, as measured at the forebay (PAD Table 3.4-3; SCL 2006a). However, there is some evidence to suggest that a differential water level response exists upstream, vs. downstream of Metaline Falls. Apparently, the submerged falls acts as a hydraulic control, resulting in significant attenuation in the upstream reach of the reservoir of the relatively large water surface elevation fluctuations that occur downstream of Metaline Falls (PAD section 3.4.2.1). Similarly, the constriction at the site of Metaline Falls would be expected to cause water to back up above the falls during periods of high inflow to the reservoir. In addition, this constriction, which slows the passage of water, may also slow the response time of the Upper Reservoir Reach compared to the portion of reservoir downstream of the Metaline Falls constriction. Thus, both the magnitude and rate of change in water surface elevation is greatly smoothed out in the reservoir upstream of Metaline Falls as compared to the downstream portion. When the Project is operating at forebay water surface elevations lower than the top of Metaline Falls (approximate water surface range of elevation 1,980 feet to elevation 1,975 feet

NGVD 29 [1,984–1,979 feet NAVD 88]), there are almost no changes in daily water surface elevations in the upper reservoir reach. Preliminary hydrology data for the years between 1987 and 2004 indicate that reservoir levels upstream of Metaline Falls range from 1,985–2,015 feet elevation, as measured at the U.S. Geological Survey (USGS) gage below Box Canyon Dam.

Need for Additional Information

There is currently inadequate information available for the Project to describe: (1) the locations and extent of nesting by waterfowl at the Project; (2) the extent to which water level fluctuations may directly flood nests or affect nesting habitat for these species; (3) use of the Project area by waterfowl and waterbirds during the fall and winter; and (4) the estimated populations of piscivorous birds and the habitats they use.

2.5. Detailed Description of Study

Study Area

The study area for the Waterfowl/Waterbird Study will be focused primarily on the reservoir, shorelines, and adjacent wetland and riparian habitat along Boundary Reservoir upstream of Metaline Falls (refer to PSP Figure 1.3-2 [SCL 2006b] for a location map of the Boundary Project). The study area will extend approximately 8 miles along the Pend Oreille River from the Box Canyon tailrace downstream to Metaline Falls and will encompass the reservoir, the reservoir fluctuation zone (elevation \approx 1,985–2,015 feet NGVD 29 [1,989–2,019 feet NAVD 88], as measured at the USGS gage below Box Canyon Dam), and all suitable waterfowl nesting habitat within 200 feet of the high water level (approximately 2,015 feet NGVD 29 [2,019 feet NAVD 88]) and within the SCL-owned Boundary Wildlife Preserve (BWP).^{2 3} For the purposes of estimating populations of piscivorous waterbirds and the habitats they use, the study area also includes the reservoir from Metaline Falls to Boundary Dam.

The ability to conduct waterfowl surveys on private land within the study area outside the FERC Project boundary may be limited due to access constraints.

Proposed Methodology

The Waterfowl/Waterbird Study will consist of six tasks, each of which is described in the following sections.

² The estimated fluctuation range of approximately 1,985–2,015 feet upstream of Metaline Falls is based on the review of existing hydrology data, as described in Section 1.3.5 of the PSP (see Table 1.3-1; SCL 2006b). Following completion of the Hydrology Dataset and Statistics in March 2007 (see Attachment 1, section 3.1 of this RSP), SCL will review and refine, as necessary, this elevation range.

³ As indicated in this and other study plans in the RSP, SCL agrees it is appropriate to study the existing fluctuation range of the reservoir; however, for development of the Preliminary Licensing Proposal (PLP) and License Application, SCL will base its assessment of potential protection, mitigation, and enhancement measures on that portion of the fluctuation zone that is determined to be under the influence of Boundary Project operations, versus the effects of inflows and Metaline Falls that are beyond the control of the Project.

Task 1: Map and Estimate Existing Habitat for Ground-nesting Waterfowl

Flows coming into Boundary Reservoir are highly variable in the spring and summer. As a result, reservoir levels during this time can also change substantially, affecting the amount of available habitat for ground-nesting waterfowl over the course of a single breeding season, as well as between breeding seasons. Estimating the amount of suitable habitat for ground-nesting waterfowl under existing operations will require an evaluation of existing hydrology data and the development of GIS maps. The following steps will be required:

- 1) Daily hydrology data for the April 1 – June 30 period for each year from 1987 through 2005 will be thoroughly analyzed to document the range of reservoir elevations upstream of Metaline Falls, as measured at the USGS gage below Box Canyon Dam, during the nesting season. The Hydraulic Routing Model, which will be developed as part of the Mainstem Aquatic Habitat Modeling Study (see Attachment 2, Study No. 7 of this RSP), will be used to translate the USGS gage data into corresponding water surface elevations along the length of the study area. Daily water surface elevations over the nesting season will be displayed graphically for a representative normal, wet, and dry year and/or by showing the daily or weekly mean and range for the entire dataset. Additional graphics will show the timing and duration of reservoir levels over the course of the waterfowl nesting season.
- 2) Bathymetry, LIDAR (Light Detection And Ranging), and vegetation community GIS data will be used to develop a set of maps and acreage estimates of available ground nesting habitat for waterfowl for the representative wet, dry, and normal years based on reservoir level. Each map for each year will show the amount and location of habitat available for the entire nesting season, as well as the amount that is flooded at least once. An alternative would be to display the amount of nesting habitat available early, mid-, and late season. It may also be possible to develop additional quantification relating acreage of waterfowl habitat to reservoir water level via regression equations or other means.

The results of this mapping exercise will provide an understanding of how normal Project operations affect habitat for ground-nesting waterfowl over the course of the breeding season and between breeding seasons with normal, wet, and dry hydrology.

Task 2: Estimate Potential Habitat for Ground-nesting Waterfowl in the Reservoir Fluctuation Zone

Estimating the amount of potential waterfowl nesting habitat in the reservoir fluctuation zone will involve the following steps:

- 1) Hydrology and bathymetry data will be used to delineate the aerial extent of the reservoir fluctuation zone upstream of Metaline Falls in 5-foot (vertical) increments.
- 2) The bathymetry map and GIS data on vegetation cover types will be used as a base for delineating the vegetation communities that could potentially develop in the fluctuation zone if pool levels were held at levels lower than under current operations. This step will assume that existing shoreline vegetation types would expand into the fluctuation zone if the reservoir were operated at lower levels during the growing

season and there were no significant changes in topography or substrate. Depending on topography, it may also be necessary to modify the riparian/upland boundary in some locations. Riparian grassland, riparian shrubland, and wetland communities will be assumed to provide the most suitable habitat for ground-nesting waterfowl.

- 3) GIS will be used to develop a map of cover types representing suitable ground-nesting waterfowl habitat that could potentially develop in the reservoir fluctuation zone. Data in the associated acreage table will be displayed in 5-foot (vertical) increments. Vegetation types representing potentially suitable habitat for breeding will be identified from the literature for the ground-nesting waterfowl species that use the study area.

This task will be coordinated with the Riparian Tree and Shrub Inventory (see Attachment 2, Study No. 16) and the Big Game Study (see Study No. 19), which also require evaluating the development of potentially suitable habitat in the fluctuation zone.

Task 3: Waterfowl Nest Searches

Nest searches will be conducted to determine waterfowl use of the existing breeding habitat in the study area. Riparian, wetland, and shoreline habitats in the study area will be searched a minimum of four times during April–June to document waterfowl ground nests. Complete surveys of existing suitable nesting habitat will be conducted by biologists systematically walking through accessible areas. Surveyors will attempt to locate nests by flushing females or pairs and then searching for the nest. The location of each nest will be marked with an inconspicuous marker so as not to draw attention to the site (offset from the actual nest). GPS will be used to document locations of nests. If a nest cannot be located after 5 minutes of searching the flushing site, surveyors will revisit the location 2–8 hours later (during daylight hours). If no bird flushes on the second visit, there is no need to conduct any further visits to that site. Nest searches will be conducted in a way that minimizes disturbance to nesting waterfowl to the greatest extent possible. An attempt will be made to restore any trampled vegetation to lessen trails that could be used by predators.

Data will be recorded on standard datasheets and will consist of the following for each nest:

- Date and time of visit
- Visit number
- Species
- Species Identification Method (flushed hen, nest characteristics, etc.)
- Nest location
- Nest type
- Nest elevation
- Horizontal distance from water's edge
- Habitat type
- Concealment vegetation (for ground nests)
- Evidence of human disturbance

Maps showing the surveyed area and locations of nests will be generated using GIS. Nest elevation will be measured using a survey rod and level and recorded relative to the current water level. By noting time of day, the elevation of existing nesting sites can be calculated relative to the known water level at nearby points on the reservoir from the transducers installed for the Hydraulic Routing Study (see Attachment 2, Study No. 7 of this RSP). The elevation data will allow an assessment of the effects of potential reservoir level fluctuations on current-year nest sites.

Following the nest searches, the quality of existing nesting habitat for waterfowl will be characterized by evaluating the data against nesting ecology information obtained from the literature or other available sources (e.g., published journals, agency data, Habitat Suitability Index [HSI] models, etc.).

Task 4: Piscivorous Waterbird Surveys

The number and location of piscivorous waterbirds observed on the reservoir will be recorded concurrently with waterfowl nest searches (Task 3). These species will be recorded for the entire reservoir, not just the area upstream of Metaline Falls. This task will be coordinated with survey efforts being conducted as part of the RTE Wildlife and Big Game studies to provide estimates for multiple days per month in the spring and summer. Results of this task will provide a general estimate of the number of piscivorous waterbirds and their preferred habitats. Species will include the double-crested cormorant, as well as the great blue heron. Any nesting sites found for these species will be mapped; populations in the study area will be estimated as well.

Task 5: Fall Migration and Winter Surveys

During the fall and winter (September–March) of 2007–2008, monthly surveys of the reservoir will be conducted to record waterfowl and waterbird use. Surveys will be conducted from a boat and bird observations will be counted by species and plotted on maps. To the extent possible, these surveys will be coordinated with other field efforts.

Task 6: Documentation and Effects Assessment

All data collected in the field will be recorded on datasheets and/or maps or aerial photographs. Mapped data will be entered into the Project GIS database; other data will be entered into a database for analysis.

Project effects on *existing* waterfowl nesting habitat will utilize information from Task 1. The maps from Task 1 will be used to show how normal Project operations affect the amount of breeding habitat available for ground-nesting waterfowl in years with normal, wet, and dry hydrology. The acreages for each year will be compared in a summary acreage table. Similarly, the amount of habitat *potentially* available for nesting waterfowl in the fluctuation zone will be a quantitative assessment based on the results of Task 2, and will include a map and table of acreage estimates.

Information from the waterfowl nest searches and fall/winter surveys conducted in Tasks 3 and 5 will be used to estimate the amount or percentage of available habitat that is actually used over

the year, acknowledging that use will vary. The effects of Project-related activities, as well as other activities (i.e., grazing, off-road-vehicle use) on waterfowl use of the study area will be qualitatively assessed based on field observations.

2.6. Work Products

The results of the waterfowl/waterbird surveys will be compiled and discussed in a final study report, written in standard scientific format. The report will include at least the following information:

- Maps and a summary acreage table of waterfowl nesting habitat under current operating conditions for representative normal, dry, and wet years and a graph of pool elevations over the April 1 – June 30 period for each year.
- Maps and a summary acreage table of waterfowl nesting habitat that could potentially occur in the fluctuation zone, in 5-foot (vertical) increments, upstream of Metaline Falls.
- A summary of the methods used to conduct the waterfowl nesting and fall/winter surveys. This section will include an accounting of when and where the surveys were conducted and a map of the areas covered.
- The results of the surveys, including maps and descriptions of existing and potential nesting habitats (by species), and maps of areas used by waterfowl and waterbirds during the fall and winter. It will also include an assessment of the elevations of nest sites relative to normal daily and seasonal water level fluctuations under existing operating conditions for years with normal, wet, and dry hydrology.
- Estimated numbers of piscivorous waterbirds and the areas/habitats they use throughout the year.
- A discussion of direct and/or indirect Project-related impacts and other activities to waterfowl and their habitats, as determined from the results of this study. The full assessment of potential Project-related impacts, including the effects of the type and timing of Project operations and maintenance and Project-related recreation, will be part of the integrated resource analysis (see Attachment 1, section 2.4).

2.7. Consistency with Generally Accepted Scientific Practice

The methods (as described above) are consistent with generally accepted scientific practices for wildlife field surveys. Similar approaches have been used in published studies of waterfowl/waterbirds by resource agencies and other researchers.

2.8. Consultation with Agencies, Tribes, and Other Stakeholders

This study plan was prepared with input from the USFS and WDFW, which was provided at meetings of the Terrestrial Resources Workgroup on June 28, July 26, and August 15, 2006. Input provided at the workgroup meetings is summarized in the PSP, Attachment 5-1 (SCL 2006b) and can also be found in the workgroup meeting summaries, available on SCL's relicensing website (<http://www.seattle.gov/light/news/issues/bndryRelic/>). Additional input was

provided by the WDFW in written comments (letter from D. Robison, WDFW, to M. Lynn, SCL, August 28, 2006) and a follow-up phone conversation (D. Robison, WDFW, personal communication, August 28, 2006) (included in the PSP, Attachment 5-1). Additional comments were also provided by the USFS in its PAD/Scoping comments and official study requests (USFS 2006). A proposed Waterfowl/Waterbird Study plan addressing these comments was included in the PSP that was filed with FERC on October 16, 2006.

Since filing the PSP, SCL has continued to work with relicensing participants on its proposed study plans. In response to comments made during the November 15 study plan meeting and comments filed with FERC by the USFWS (2007) and USFS (2007), SCL has further modified the Waterfowl/Waterbird Study plan. (SCL's responses to comments are summarized in Attachment 3 and consultation documentation is included in Attachment 4 of this RSP.) Modifications included adding clarification, additional supporting rationale, and additional detail to address USFWS and USFS comments. SCL believes that these agencies' comments are adequately addressed in this revised study plan.

2.9. Schedule

The Waterfowl/Waterbird Study will be conducted in 2007 and 2008 according to the schedule shown in Table 2.9-1.

Table 2.9-1. Schedule for Waterfowl/Waterbird Study.

Activity	Timeframe
Finalize study implementation details	April 2007
Map and estimate existing and potential breeding habitat for ground-nesting waterfowl	April–October 2007
Conduct nest searches	April–June 2007
Conduct nesting habitat assessment	May–July 2007
Conduct fall surveys	September–December 2007
Prepare interim study report (first-year results)	November–December 2007
Distribute interim study report	January 2008
Meet with relicensing participants to review first year efforts and results and discuss plans for second year efforts	February 2008
Conduct winter surveys	January–March 2008
Include interim report in Initial Study Report (ISR) filed with FERC	March 2008
Hold ISR meeting and file meeting summary with FERC	March 2008
Conduct nest searches	April–June 2008
Prepare “draft” final study report	October–November 2008
Distribute “draft” final study report for relicensing participant review	December 2008
Meet with relicensing participants to review study efforts and results and “cross-over” study results	January 2009
Include final study report in Updated Study Report (USR) filed with FERC	March 2009
Hold USR meeting and file meeting summary with FERC	March 2009

2.10. Progress Reports, Information Sharing, and Technical Review

In addition to preparing the study reports (as described in the above), there will be several opportunities for information sharing and technical review with relicensing participants. Agency biologists will also be invited to participate in survey efforts. Preliminary survey results will be communicated to relicensing participants as they become available in 2007–2008. Prior to release of the Initial and Updated Study Reports (which will include the results of this study), SCL will meet with relicensing participants to discuss the study results, as described in Attachment 1, section 2.3 of this RSP.

2.11. Anticipated Level of Effort and Cost

The Waterfowl/Waterbird Study is expected to involve about 300 hours of field time, as well as additional time for mapping, data summary, analysis, and reporting. The estimated cost for this study is \$60,000–\$70,000.

3.0 LITERATURE CITED

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