Boundary Hydroelectric Project (FERC No. 2144)

Study No. 18

Rare, Threatened, and Endangered (RTE)

Wildlife Species Study

Interim Report

Prepared for
Seattle City Light

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Tetra Tech

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Study No. 18 – Rare, Threatened, and Endangered (RTE) Wildlife Species Study
Interim Report
Boundary Hydroelectric Project (FERC No. 2144)

1 INTRODUCTION

Study No. 18, the Rare, Threatened, and Endangered (RTE) Wildlife Species Study, is being conducted in support of the relicensing of the Boundary Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 2144, as identified in the Revised Study Plan (RSP; SCL 2007) submitted by Seattle City Light (SCL) on February 14, 2007, and approved by the FERC in its Study Plan Determination letter dated March 15, 2007. This is the interim report describing the 2007 (through October) study efforts for the RTE Wildlife Species Study.

For this study, RTE wildlife species were defined as follows:

- *Federally Listed or Proposed Species* — Species that are listed and protected under the Endangered Species Act (ESA) of 1973, as endangered or threatened, or proposed for listing.
- *Federal Candidate Species* — Species for which the U.S. Fish and Wildlife Service (USFWS) believes it has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA. However, the USFWS encourages the formation of partnerships to conserve these species.
- *State Listed Species* — Species that are protected by the state of Washington (Washington Administrative Code 232-12-297):
    - State Endangered Species include "species native to the state of Washington that are seriously threatened with extinction throughout all or a significant portion of their range within the state."
    - State Threatened Species include any "species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats."
    - State Sensitive Species are defined as "species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats" (WDFW 2006a).
- *State Candidate Species* — Species that the Washington Department of Fish and Wildlife (WDFW) will review for possible listing as State Endangered, Threatened, or Sensitive. A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive (WDFW 2006a).

- *State Monitor Species* — Species not state listed, but monitored for status and distribution. State Monitor Species are managed by the WDFW, as needed, to prevent them from becoming endangered, threatened, or sensitive (WDFW 2006a).
- *USFS Colville National Forest Sensitive Species* — Species on the July 2004 Regional Forester's List of Sensitive Species for the Colville National Forest (CNF). The Regional Forester's List also includes species already protected under the ESA and candidates for listing.
- *USFS Colville National Forest Management Indicator Species (MIS)* — Species on the CNF selected for management. These species "were chosen to provide habitat needs of all vertebrate species, to monitor selected habitats that could become limiting to some species through forest management activities, and to provide sufficient populations of selected species to meet demands for wildlife-related recreation" (USFS 1988).
- *BLM Sensitive Species* — Species on the March 2005 Washington Bureau of Land Management (BLM) Special Status Species List. The BLM list also includes species already protected under the ESA or state listed as endangered or threatened and candidates for listing.
- *WDFW Priority Species* — Priority species are those species requiring protective measures and/or management guidelines to ensure their perpetuation. These include those that have state status or are commercially or culturally important (WDFW 2006b).

RTE bat species were addressed in detail in a separate study (Study 20, Bat Surveys and Habitat Inventory Interim Report [SCL 2008a]). Deer (*Odocoileus* spp.) and elk (*Cervus elaphus*), both of which are designated as MIS on the Colville National Forest and as WDFW Priority Species, are addressed in the Study 19, Big Game Study Interim Report (SCL 2008b). Lastly, great blue herons (*Ardea herodias*) are addressed in detail in the discussion of piscivorous birds in the Study 15, Waterfowl/Waterbird Study Interim Report (SCL 2008c).

2 STUDY OBJECTIVES

The primary goal of the RTE Wildlife Species Study is to provide information needed to determine the presence of RTE wildlife species and/or their habitats in the Project vicinity, identify limiting factors in landscape movement across the Project vicinity, and assess Project effects on RTE species and their habitats. Specific objectives of the study are to:

- Document historical and recent RTE wildlife species observations in the Project vicinity.
- Identify and map new occurrences of select RTE wildlife species in the Project vicinity.
- Document locations and conditions of potential habitat for RTE species and identify any factors that may limit landscape movement of these species across the Project vicinity.
- Identify potential threats to RTE wildlife species or their habitats, including potential Project effects.

3 STUDY AREA

The "primary" study area for the RTE wildlife study (Figure 3.0-1) extends approximately 18 miles along the Pend Oreille River from the Box Canyon tailrace downstream to the U.S.-Canada border and encompasses the following:

- Downstream of Metaline Falls — The reservoir, fluctuation zone under existing operations, and the land within the FERC Project boundary (Project area). The Project area includes most Project facilities, the area 200 horizontal feet (i.e., along the ground surface, perpendicular to the shoreline) beyond the high water level along both reservoir shorelines, and the transmission line right-of-way (ROW) from the powerhouse to the Bonneville Power Administration interconnection.
- Upstream of Metaline Falls — The reservoir, fluctuation zone and the land within approximately 200 horizontal feet beyond the high water level (approximately 2,019 feet NAVD 88 [2,015 feet NGVD 29])[1] along both reservoir shorelines extending to the FERC project boundary for the Box Canyon Project. [2]
- The Boundary Wildlife Preserve (BWP) (155 acres) and adjoining SCL-owned property (85 acres).
- 100 feet around any Project works areas that extend outside the Project boundary.
- 50 feet along both sides of Project-related roads, which include the road between the Boundary Dam and the Vista House, the road to the dam off County Road 2975, and the road from the Vista House to SR 31.
- 100 horizontal feet along both sides of the river from Boundary Dam to the U.S.-Canada border (approximately 0.9 mile).

For purposes of addressing RTE wildlife species with large home ranges, a secondary study area (Figure 3.0-2) was established that covers the area between the near ridgelines east and west of the study area. The eastern boundary of the secondary study area roughly aligns with Boundary Ridge, Crowell Mountain, and Sand Creek Mountain and the ridge between the reservoir and Sullivan Lake. On the west side, the boundary follows a line connecting Frisco, Abercrombie, Litton, and Baldy mountains.

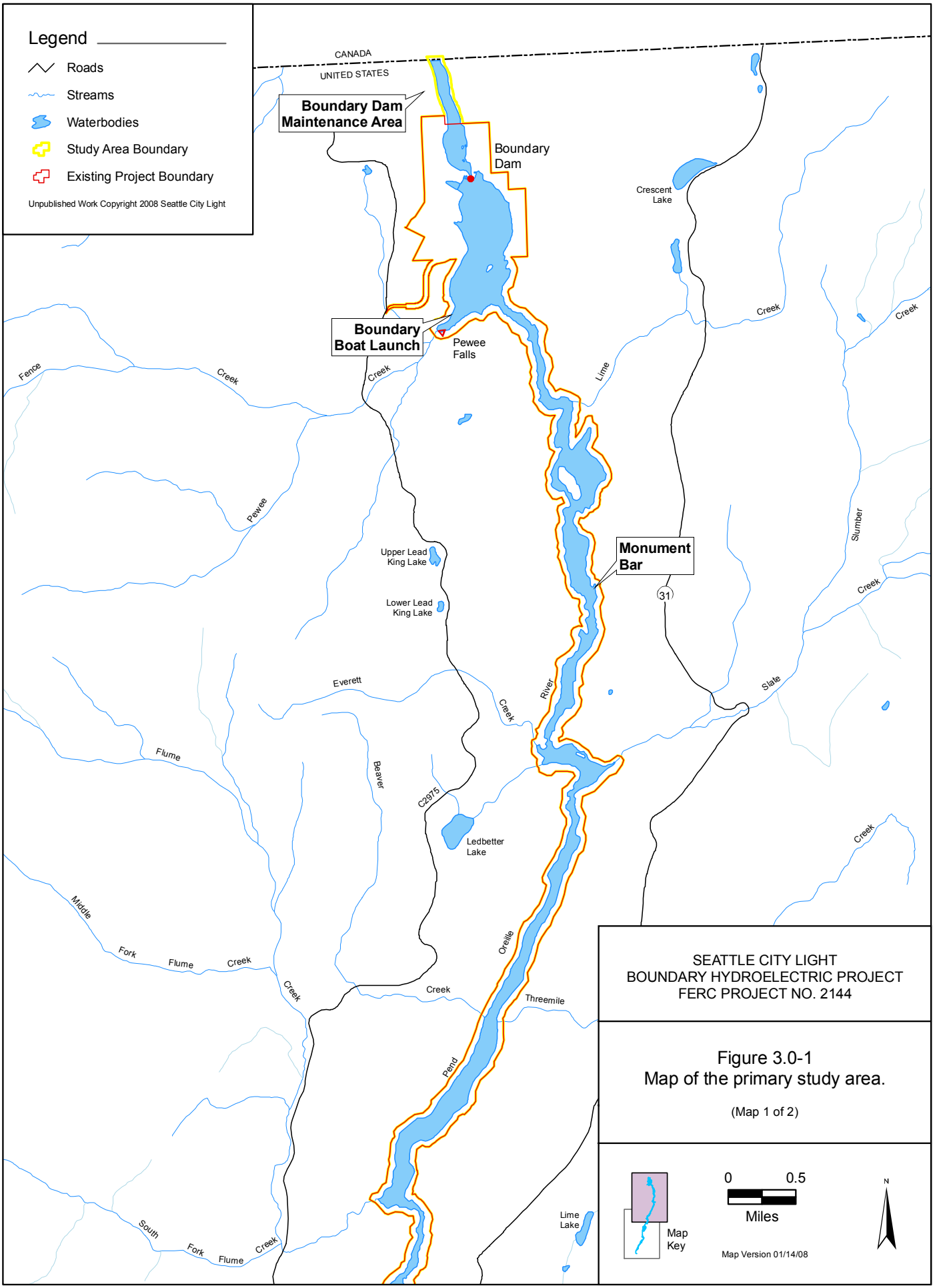
Concerning the reservoir fluctuation zone, the range of water surface elevations recorded during the survey periods for this study is presented below; these ranges represent typical operating

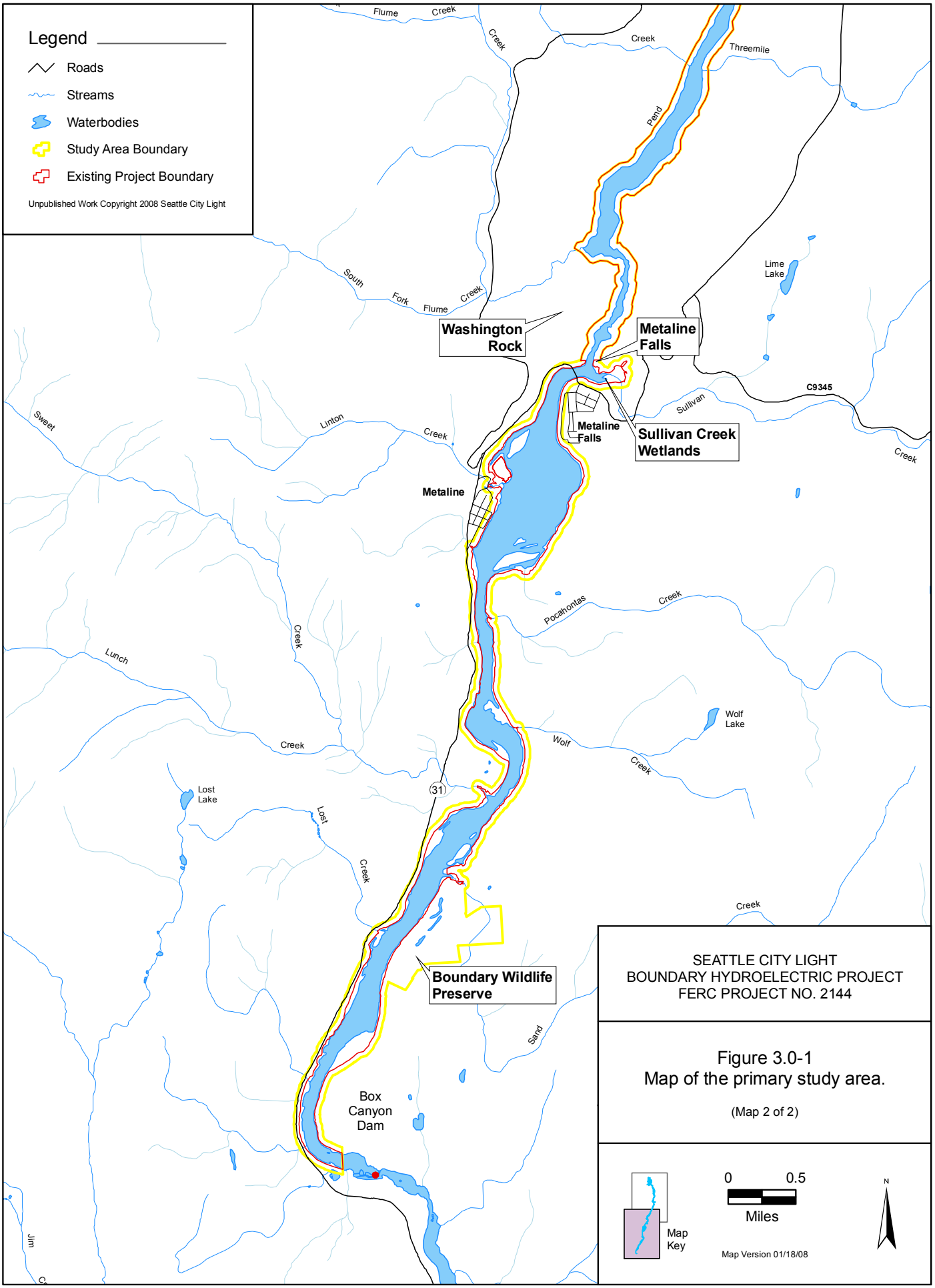
[1] SCL is in the process of converting all Project information from an older elevation datum (National Geodetic Vertical Datum of 1929 [NGVD 29]) to a more recent elevation datum (North American Vertical Datum of 1988 [NAVD 88]). As such, elevations are provided relative to both data throughout this document. The conversion factor between the old and new data is approximately 4 feet (e.g., the crest of the dam is 2,000 feet NGVD 29 and 2,004 feet NAVD 88).

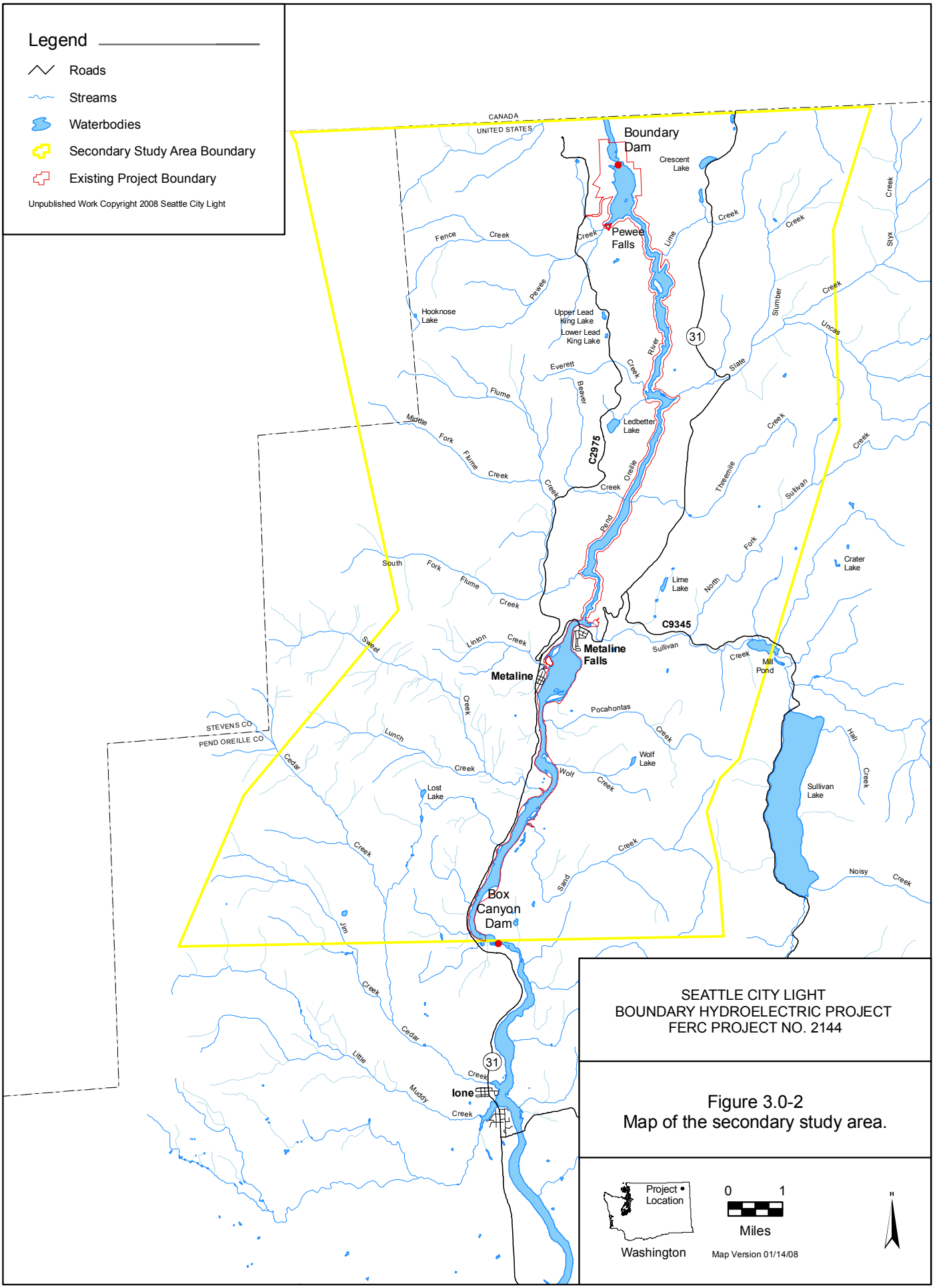
[2] As indicated in this and other study reports in the ISR, SCL agrees it is appropriate to study the existing fluctuation range of the reservoir; however, for development of the Preliminary Licensing Proposal (PLP) and License Application, SCL will base its assessment of potential protection, mitigation, 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.

conditions for the period in which data were collected. Existing conditions at the time of surveys were considered adequate to acquire all data required for this study:

- From Box Canyon Dam to Metaline Falls – Elevation 1,991–1,999 feet NAVD 88 (1,987-1,995 feet NGVD 29), as measured at the USGS gage 12396500
- From Metaline Falls to Boundary Dam – Elevation 1,968-1,993 feet NAVD 88 (1,964-1,989 feet NGVD 29), as measured at the SCL gage located in the Boundary forebay


Legend
Roads
Streams
Waterbodies
Study Area Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
CANADA
UNITED STATES
Boundary Dam Maintenance Area
Boundary Dam
Crescent Lake
Boundary Boat Launch
Pewee Falls
Fence
Creek
Pewee
Lime
Creek
Creek
Upper Lead King Lake
Lower Lead King Lake
Monument Bar
31
Slumber
Creek
Everett
Creek
River
Slate
Flume
Beaver
C2975
Ledbetter Lake
Creek
Middle
Fork
Flume
Creek
Creek
Creek
Orelle
Threemile
Pend
Lime Lake
South
Fork
Flume
Creek
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 3.0-1
Map of the primary study area.
(Map 1 of 2)
Map Key
0
0.5
Miles
Map Version 01/14/08
N


Legend
Roads
Streams
Waterbodies
Study Area Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
Flume
Creek
Creek
Creek
Threemile
Pend
Lime Lake
South
Fork
Flume
Creek
Washington Rock
Metaline Falls
C9345
Sullivan
Metaline Falls
Sullivan Creek Wetlands
Creek
Sweet
Linton
Creek
Metaline
Pocahontas
Creek
Creek
Lunch
Wolf Lake
Wolf
Creek
Creek
31
Lost Lake
Lost
Creek
Creek
Boundary Wildlife Preserve
Sand
Box Canyon Dam
Jim
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 3.0-1
Map of the primary study area.
(Map 2 of 2)
Map Key
0
0.5
Miles
Map Version 01/18/08
N


Legend
Roads
Streams
Waterbodies
Secondary Study Area Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
CANADA
UNITED STATES
Boundary Dam
Crescent Lake
Pewee Falls
Hooknose Lake
Upper Lead King Lake
Lower Lead King Lake
Ledbetter Lake
C2975
C9345
Lime Lake
Crater Lake
Metaline Falls
Metaline
Mill Pond
Sullivan Lake
Wolf Lake
Lost Lake
Box Canyon Dam
Ione
STEVENS CO
PEND OREILLE CO
31
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 3.0-2
Map of the secondary study area.
Project Location
Washington
0
1
Miles
Map Version 01/14/08
N

4 METHODS

Four tasks were identified as part of this study. The methodologies for tasks completed or initiated in 2007 are described in detail below; methods for tasks to be completed in 2008 are described in the RSP.

4.1. Information Update

The purpose of the Information Update is to update the list of RTE species potentially occurring in the study area, as provided in the RSP, with any additions, deletions, or status changes. The primary sources for acquiring potentially new information were:

- WDFW, Priority Habitats and Species Program
- BLM Sensitive Species List
- USFS Regional Forester's Sensitive Species List

Additionally, the following sources will be contacted in 2008 to obtain the most up-to-date information on RTE species occurrences in the study area:

- USFWS, Spokane Office
- WDFW, Spokane Office (Steve Zender)
- USFS, CNF Headquarters (Chris Loggers)
- USFS, CNF Sullivan Lake Ranger District (Jim McGowen and Mike Borysewicz)

Species were added to the RTE species list if new information indicated they could potentially occur in the Project vicinity and also had federal or state protective status. The list will be reviewed and updated again as needed in 2008. Because all wildlife species, regardless of status, were recorded during all wildlife surveys, data from 2007 will be available for any RTE species added in 2008.

4.2. Identification of Potential Habitat for RTE Wildlife Species

Identification of potential habitat in the study area for RTE wildlife species was a five-step iterative process:

1. Habitats were characterized concurrently with RTE wildlife surveys (Section 4.3).
2. Published literature was reviewed to determine the habitat requirements for each RTE species.
3. Habitat types most important for RTE species documented in the study area were identified.
4. Potentially suitable habitat was identified for RTE species not observed during field surveys.
5. RTE species for which no apparently suitable habitat occurs in the study area were identified and a justification narrative was developed.

To date, these steps have been completed for RTE amphibian species and the results presented in this report. For the remaining RTE species, preliminary data are presented in this report; however, research is ongoing and complete data will be reported (including maps) in the Updated Study Report (USR) in 2008.

4.3. RTE Wildlife Surveys and Habitat Assessment

Because of the number and diversity of RTE wildlife species potentially occurring in the study area, several types of field surveys were conducted to collect data on species presence, habitat suitability, and potential Project-related effects. The following sections describe the various field survey and habitat assessment efforts.

4.3.1. Amphibian Surveys

We used the visual encounter survey (VES) technique (Heyer 1994) to survey for target amphibians and their egg masses (western toad [*Bufo boreas*], Columbia spotted frog [*Rana luteiventris*], and northern leopard frog [*Rana pipiens*]) in potentially suitable habitats. VES is a survey technique that is effective in still or slow-moving water with good visibility; it is accomplished by walking systematically through the habitat area (i.e., wetland or pond) and searching the water column, substrate, and/or emergent or submergent vegetation. VES involved 60 to 90 minutes of searching at each site and was supplemented by dip netting to find amphibians that were difficult to see due to size or coloration. Based on the initial maps of potentially suitable habitat, nine sites were targeted for amphibian surveys; however, the total number of potential amphibian sites surveyed at least once was increased to 19 to include other apparently suitable sites found during survey efforts. Most of the 19 sites were surveyed four times between April and June 2007, although some of the initial sites were deemed unsuitable for RTE amphibian species and were therefore surveyed only once, while other sites were discovered later in the survey season and therefore surveyed less than four times. The chief reasons for considering a site unsuitable as breeding habitat for the RTE amphibian species were the presence of predatory fish and/or dewatering.

In addition to scheduled amphibian-specific surveys, we recorded incidental observations of frogs heard calling during twilight or nighttime surveys conducted for other species. This increased the detection of amphibian species presence and added to our knowledge of their distribution. However, this methodology works best for vocal leopard frogs and non-target anurans such as Pacific treefrogs (*Pseudacris regilla*) and bullfrogs *(Rana catesbeiana)*, rather than spotted frogs, which call under water, or western toads, which are mostly silent.

4.3.2. Seasonal Surveys of Avian RTE Species

Surveys to determine the use of primary study area habitats by RTE avian species were conducted in May, July, and October 2007. Surveys of the reservoir and adjacent habitats, including cliffs and waterfalls, were conducted by boat. Surveyors drove the boat at a slow pace, using binoculars to look for birds and recording all observed species.

Terrestrially-based surveys were conducted on foot in the following habitats and locations (locations of these sites are presented in Figure 5.3-2):

- The coniferous, riparian, and meadow habitats of the BWP, west of the railroad tracks
- Sullivan Creek wetlands
- Rocky habitats from Washington Rock to Metaline Falls (proper)
- Coniferous forest habitat at Monument Bar
- The mixed conifer and open habitats of the transmission line right-of-way near Boundary Dam
- The Boundary forebay boat launch area
- The mixed conifer habitat in the vicinity of the maintenance facilities below Boundary Dam
- The riparian and mixed conifer habitats on the east side of the Pend Oreille River between Boundary Dam and the Canadian border

Night surveys to detect calling by RTE owl species were conducted in May and July at the BWP. Night-calling birds noted during the evening bat surveys (Study 20, SCL 2007) were also recorded. In addition to the three scheduled seasonal avian surveys, field staff recorded all RTE bird species observed during all wildlife surveys, for a total of nine surveys between April and October 2007.

Spring and summer seasonal surveys for RTE avian species were also used to document the location and status of bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) nests in the study area. The locations of all nests observed were recorded with a Global Positioning System (GPS) unit. Nest activity status was determined by observing whether adults were present on the nest. Surveyors looked for nestlings in subsequently monitored active eagle nests to determine whether eggs hatched. Fledgling and nest site productivity was determined by looking for immature birds roosting near the nest with adults. Productivity data for osprey, however, were limited because nest placement did not allow direct viewing into the nests (in addition, all nests were outside of the study area). Surveyors also noted where ospreys were seen roosting, perching, and foraging and noted any nearby sites of human development and use.

4.3.3. RTE Wildlife Habitat Assessment

Information from the published literature (see Section 4.2) was used to determine the characteristics of high-quality habitat for RTE species. Specific sites that potentially represent high-quality habitat for one or more RTE species were identified and mapped during the field surveys and entered into the Geographic Information System (GIS). Qualitative data were also recorded to describe habitat conditions.

Identification of locations along the reservoir that represent potential crossing opportunities for RTE mammal species, as well as sites that could be possible bottlenecks to movement, is being conducted in conjunction with Study 19 (Big Game; SCL 2007). The results of that analysis as they pertain to gray wolves and grizzly bears is not complete and will be included in the USR.

4.4. Documentation and Effects Assessment

This interim report presents the first year efforts of a 2-year study. Thus, it is premature to assess the potential effects of project operations on RTE wildlife; Project effects will be fully addressed in the USR.

5 PRELIMINARY RESULTS

The preliminary results from the study efforts conducted to date are presented below. Reporting includes surveys conducted between April 20 and October 12, 2007.

5.1. Information Update

A review of the lists of RTE species potentially occurring in the study area did not result in any changes, although one additional species, black tern (*Chlidonias niger*), was added to the original list in response to a relicensing participant request. Including the black tern, 42 RTE species are known to or could potentially occur in the study area (Table 5.1-1).

Table 5.1-1. List of rare, threatened, and endangered wildlife species occurring or potentially occurring in the Boundary Project study area.

Scientific Name **Common Name**	**USFWS Status[1]**	**USFS Status[2]**	**BLM Status[3]**	**WDFW Status[4]**	**Suitable Habitat**
Amphibians (3)					
Bufo boreas western toad	—	—	BT	SC,PS	Breeds at lake margins, ponds, and wetlands.
Rana luteiventris Columbia spotted frog	—-	—	BT	SC,PS	Breeds in cool, temporary water.
Rana pipiens northern leopard frog	—	S	—	SE,PS	Permanent to semi-permanent lentic habitats for breeding; overwinter in water.
Birds (28)					
Gavia immer common loon	—	S	BT	SS,PS	Secluded lakes, emergent wetlands.
Podiceps nigricollis eared grebe	—	S	BT	PS	Lakes and wetlands.
Aechmophorus occidentalis western grebe	—	—	—	SC,PS	Lakes and wetlands.
Pelecanus erythrorhynchos American white pelican	—	—	SE	SE,PS	Large lakes and emergent wetlands.
Ardea herodias great blue heron	—	MIS	BT	SM,PS	Nests in trees; forages in wetlands and rivers.
Grus canadensis sandhill crane	—	S	SE	SE,PS	Emergent wetlands, meadows.
Cathartes aura turkey vulture	—	—	BT	SM	Nests in caves and crevices in cliffs; forages in open habitats.
Pandion haliaetus osprey	—	—	BT	SM	Nests in large trees or on platforms near water.
Aquila chrysaetos golden eagle	—	—	BT	SC,PS	Typically nests on cliffs or large trees in open or semi-open habitats.

Table 5.1-1, continued…

Scientific Name **Common Name**	**USFWS Status[1]**	**USFS Status[2]**	**BLM Status[3]**	**WDFW Status[4]**	**Suitable Habitat**
Haliaeetus leucocephalus bald eagle	—	—	—	ST,PS	Forest stands with large trees near water.
Accipiter gentilis northern goshawk	—	—	BA	SC,PS	Mature conifer forests.
Falco columbarius merlin	—	—	BT	SC,PS	Conifer stands near openings.
Falco peregrinus anatum American peregrine falcon	—	S	BS	SS,PS	Cliffs for nesting.
Strix varia barred owl	—	MIS	—	—	Lower elevation mature and old growth forest.
Otus flammeolus flammulated owl	—	—	BT	SC,PS	Open mature conifer forests.
Strix nebulosa great gray owl	—	S	BT	SM	Mature mixed conifer forest.
Aegolius funereus boreal owl	—	—	BT	SM	Subalpine forests.
Chlidonias niger black tern	—	—	—	SM	Nests on lake shores and marshes.
Melanerpes lewis Lewis's woodpecker	—	—	BT	SC,PS	Nests in large, dead cottonwood trees.
Picoides arcticus black-backed woodpecker	—	—	BT	SC,PS	Post-fire forests with standing dead trees.
Picoides tridactylus three-toed woodpecker	—	MIS	BT	SM	Nests in mature lodgepole pine or sub-alpine fir; forages on dead standing trees.
Picoides albolarvatus white-headed woodpecker	—	—	BA	SC,PS	Ponderosa pine or mixed conifer forests.
Dryocopus pileatus pileated woodpecker	—	MIS	BT	SC,PS	Forests with large trees and snags.
Chaetura vauxi Vaux's swift	—	—	BT	SC,PS	Roosts and nests in tree cavities.
Cypseloides niger black swift	—	—	—	SM	Nests in colonies on protected cliffs beneath waterfalls.
Dendragapus obscurus blue grouse	—	MIS	—	Game, PS	Nests in open forests with grass/shrub understory at lower elevations.
Lanius ludovicianus loggerhead shrike	—	—	BT	SC,PHS	Open, savannah-like habitats.
Sialia mexicana western bluebird	—	—	BT	SM	Fields and open woods.
Mammals (11)					
Myotis evotis long-eared myotis	—	—	BT	SM,PS	Hibernates in caves; summer day roosts under bark of trees in coniferous forests.
Myotis volans long-legged myotis	—	—	BT	SM,PS	Mid-elevation forests; hibernates in winter in mines or caves.
Corynorhinus townsendii Townsend's big-eared bat	—	S	BA	SC,PS	Maternity colonies and roosts found in caves, mines and buildings in a variety of habitats.
Castor canadensis beaver	—	MIS	—	Game	Aquatic and riparian habitats with aspen and willow.

Table 5.1-1, continued…

Scientific Name **Common Name**	**USFWS Status[1]**	**USFS Status[2]**	**BLM Status[3]**	**WDFW Status[4]**	**Suitable Habitat**
Martes americana marten	—	MIS	—	Game, PS	Mature and old growth mesic conifer forests with downed trees at moderate to high elevations.
Martes pennanti Pacific fisher	—	—	FC	SE,PS	Closed canopy forests with abundant logs and snags and riparian and wetland habitats.
Gulo gulo California wolverine	—	S	BA	SC,PS	Conifer forests at higher elevations.
Canis lupus gray wolf	FE	FE	FE	SE,PS	Various habitats secluded from human activity.
Ursus arctos grizzly bear	FT	FT, MIS	FT	SE,PS	Various habitats secluded from human activity.
Lynx canadensis lynx	FT	FT	FT	ST,PS	Various habitats secluded from human activity; typically at higher elevations.
Rangifer tarandus caribou woodland caribou	FE	FE, MIS	FE	SE,PS	High elevation forests.

Notes:
1 U.S. Fish and Wildlife Service — FE = Federal Endangered; FT = Federal Threatened.
2 U.S. Forest Service — FT = Federal Endangered; FT = Federal Threatened; S = Sensitive; MIS = Management Indicator Species.
3 Bureau of Land Management — BS = Bureau Sensitive; BA = Bureau Assessment; BT = Bureau Tracking.
4 Washington Department of Fish and Wildlife — SE = State Endangered; ST = State Threatened; SC = State Candidate; SS = State Sensitive; SM = State Monitor.

All SE, ST, SC, and SS species are also designated Priority species (PS) by the WDFW; there are also a number of game species that are designated PS. Game species that have no other status except PS were not included (e.g., wild turkey).

5.2. Identification of Potential Habitat for RTE Wildlife Species

The literature review and 2007 field survey results identified habitat in the study area for 24 of the 42 RTE wildlife species potentially occurring in the study area. The Project reservoir and shorelines provide habitat for common loons (*Gavia immer*), eared grebes (*Podiceps nigricollis*), western grebes (*Aechmophorus occidentalis*), great blue herons, osprey, bald eagles, and beaver (*Castor canadensis*). The mixed conifer forest stands within the study area, although mostly young-aged, provide some habitat for pileated woodpeckers (*Dryocopus pileatus*) and northern goshawks (*Accipiter gentilis*).

Washington Rock, which is just outside of the study area, provides potentially suitable nesting habitat for peregrine falcons (*Falco peregrinus*) and turkey vultures (*Cathartes aura*), both of which were observed in the study area. Finally, the streams, small ponds, and wetland seeps in the immediate vicinity of Boundary Dam provide habitat for Columbia spotted frogs and western toads.

Habitat for all 3 species of RTE bats (long-eared myotis [*Myotis evotis*], long-legged myotis [*Myotis volans*], and Townsend's big-eared bat [*Corynorhinus townsendii*]) occurs in the study area. Each of these species was recorded during field surveys and is addressed in detail in the Study 20 Interim Report (SCL 2008a).

The mature cottonwood stands at the BWP and at Sullivan Creek appear to provide suitable breeding habitat for barred owls (*Strix varia*), Lewis' woodpeckers (*Melanerpes lewis*), and possibly merlins (*Falco columbarius*). We also would expect to see merlins using the Pend Oreille River valley as a fall migration corridor. Based on past reports, suitable habitat for golden eagles may occur in the Canyon Reach and around Washington Rock, but to date we have not confirmed golden eagle use, and suspect that some reports are of immature bald eagles. Suitable habitat for blue grouse (*Dendragapus obscurus*) may also occur on the upper slopes above the Canyon Reach and in the upper conifer reaches of the BWP, but no blue grouse have been observed to date. We would not expect blue grouse near the reservoir edges or in the denser young-aged conifers which are more suitable for ruffed grouse (*Bonasa umbellus*) (not an RTE species). Sufficient snags, conifer edge habitat, and open foraging spaces occur on the BWP and along the edges of the upper reservoir, suggesting that these areas could support breeding populations of at least a few pairs of western bluebirds (*Sialia mexicana*).

Two species, grizzly bear and gray wolf, are very transitory in northeastern Washington and use a wide variety of habitat types, including habitats found in the study area. We suspect that these species occasionally move through the study area, and forage and travel within the coniferous, riparian, and shoreline habitats present. Investigation on regional populations that could provide transitory individuals is ongoing.

For the remaining 18 RTE species potentially occurring in the study area, suitable habitat does not appear to be present or the species do not occur for other reasons. Suitable habitat for fisher (*Martes pennanti*) may occur in the Project area, and many of the most recent (1990s) Washington records for this species occur in Pend Oreille County (Lewis and Stinson 1998). However, fisher are now considered extirpated from the state of Washington, and there are no known source populations close enough for natural re-establishment (Lewis and Hayes 2004). Northern leopard frogs occurred in the Pend Oreille River drainage as late as 1959, but they have not been recorded in subsequent surveys and are now considered extirpated (Leonard and McAllister 1996). Flammulated owls (*Otus flammeolus*), white-headed woodpeckers (*Picoides albolarvatus*), and Vaux's swifts (*Chaetura vauxi*) use older age-class ponderosa pine (*Pinus ponderosa*) stands and this habitat does not occur in the study area. Remnant ponderosa pine stands occur along the southern edges of the reservoir, but the trees are too young to be preferred by these species. Great gray owls (*Strix nebulosa*), boreal owls (*Aegolius funereus*), black-backed woodpeckers (*Picoides arcticus*), three-toed woodpeckers (*Picoides tridactylus*), marten (*Martes americana*), wolverine (*Gulo gulo*), lynx (*Lynx canadensis*), and woodland caribou are high mountain species found at elevations generally above the Project area. We might expect to see great gray owls moving to the lower elevations in the study area during the winter. Identifying the actual lower elevational limits of some species (e.g., marten and black-backed woodpecker) requires further investigation. The study area does not contain suitable habitat for either sandhill cranes (*Grus canadensis*) or black terns and is probably outside the typical range for the American white pelican (*Pelecanus erythrorhynchus*), black swift (*Cypseloides niger*), and loggerhead shrike (*Lanius ludovicianus*). However, all these conclusions are preliminary and investigations into the habitat requirements of each species continue.

5.3. RTE Wildlife Surveys and Habitat Assessment

Of the 24 RTE species for which potentially suitable habitat occurs within the study area, 13 species (excluding bats) were documented during 2007 surveys (Table 5.3-1; Figure 5.3-1). (Appendix 1 provides a list of all wildlife species recorded during the course of this study and other related wildlife studies.)

Table 5.3-1. Rare, threatened, and endangered species observed in the study area during the 2007 surveys.

Scientific Name **Common Name**	**General Location Information**
Amphibians (2)	
Bufo boreas western toad	Observed only once, at the Boundary boat launch area.
Rana luteiventris Columbia spotted frog	Ten individuals observed downstream of Boundary Dam, on both the west and east banks of the river.
Birds (10)	
Gavia immer common loon	Observed twice, once near Boundary Dam, and once in Metaline pool (the broad-expanse of reservoir between Metaline and Metaline Falls).
Podiceps nigricollis eared grebe	Two observations, both in Metaline pool in the spring.
Aechmophorus occidentalis western grebe	Three observations, all in Metaline pool; only seen in spring and fall.
Ardea herodias great blue heron	Twenty-three observations throughout the study area.
Cathartes aura turkey vulture	Eighteen observations throughout the study area.
Pandion haliaetus osprey	Thirty-four observations throughout the study area; common.
Haliaeetus leucocephalus bald eagle	Forty-nine observations throughout the study area; ubiquitous.
Accipiter gentilis northern goshawk	Observed once near Selkirk High School.
Falco peregrinus anatum American peregrine falcon	Seen only once, flying over Washington Rock.
Dryocopus pileatus pileated woodpecker	Observed four times; seen in Canyon Reach, BWP, and near Pend Oreille mine.
Mammals (1)	
Castor canadensis beaver	Commonly seen, especially around dams at Sullivan Creek, at the "Thurman" adit (Project river mile [PRM] 28.8), near the PRM 30.2 islands, and across from the BWP.

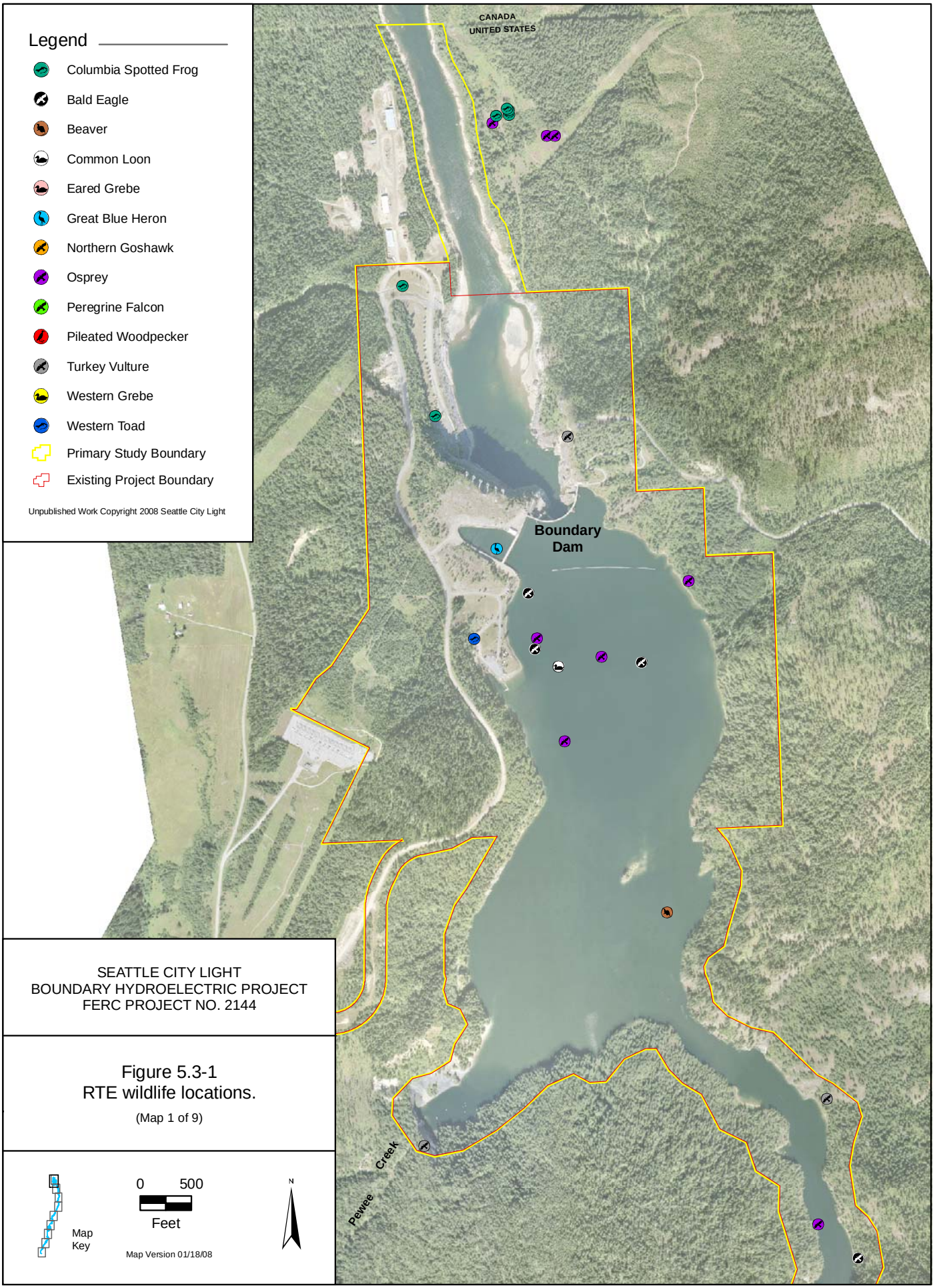


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Figure 5.3-1
RTE wildlife locations.

(Map 1 of 9)

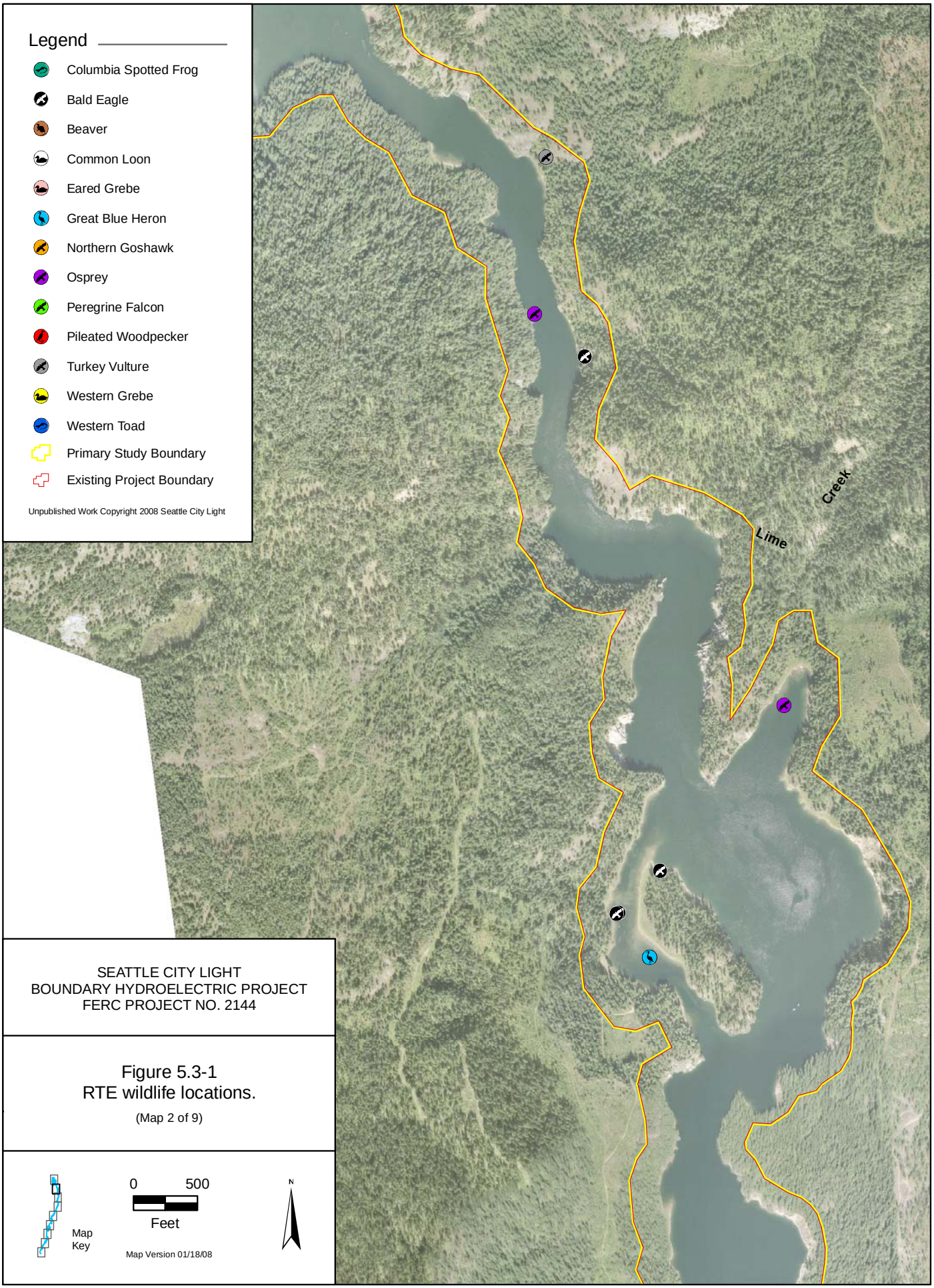

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Figure 5.3-1
RTE wildlife locations.

(Map 2 of 9)

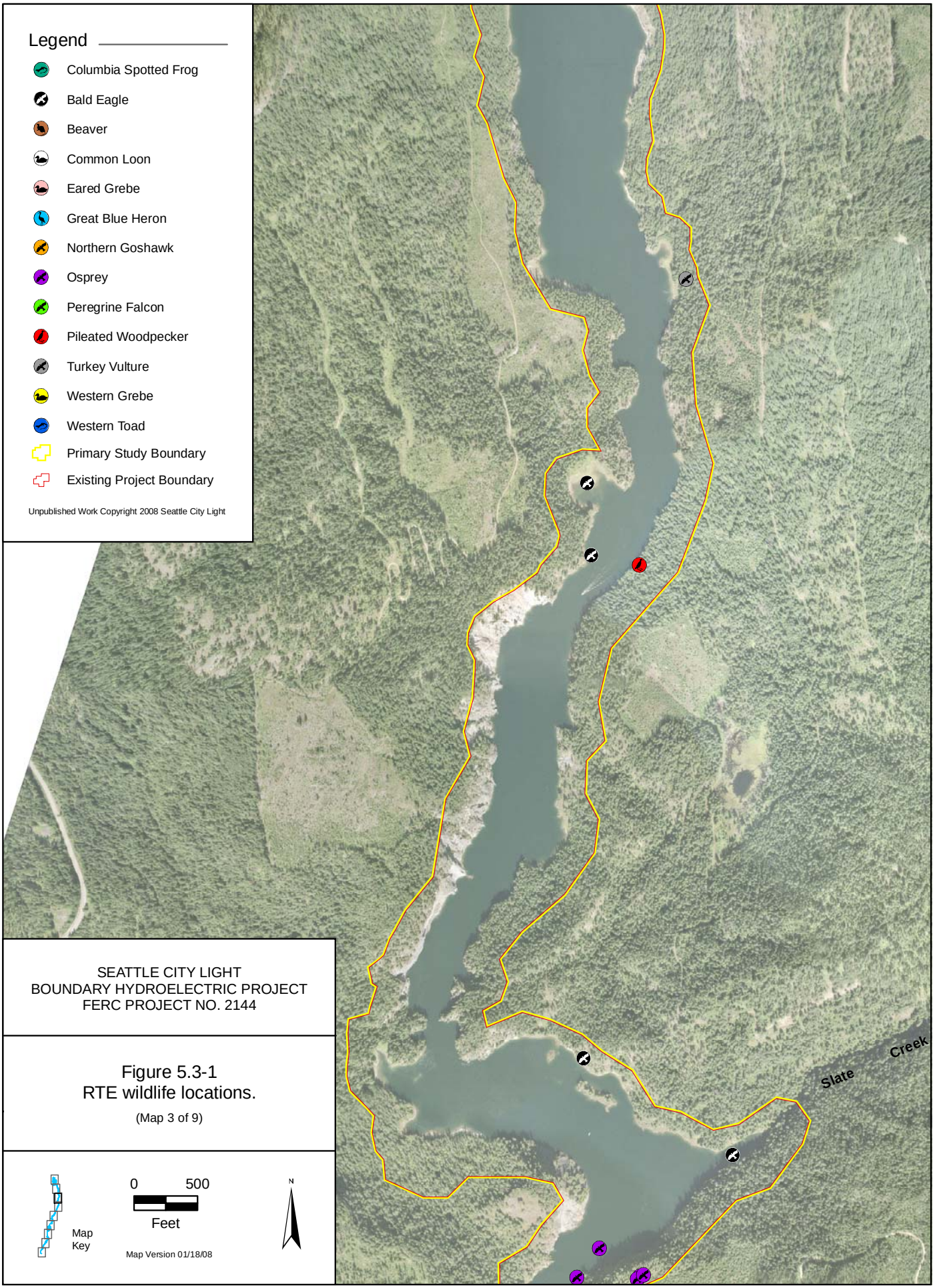

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Figure 5.3-1
RTE wildlife locations.

(Map 3 of 9)

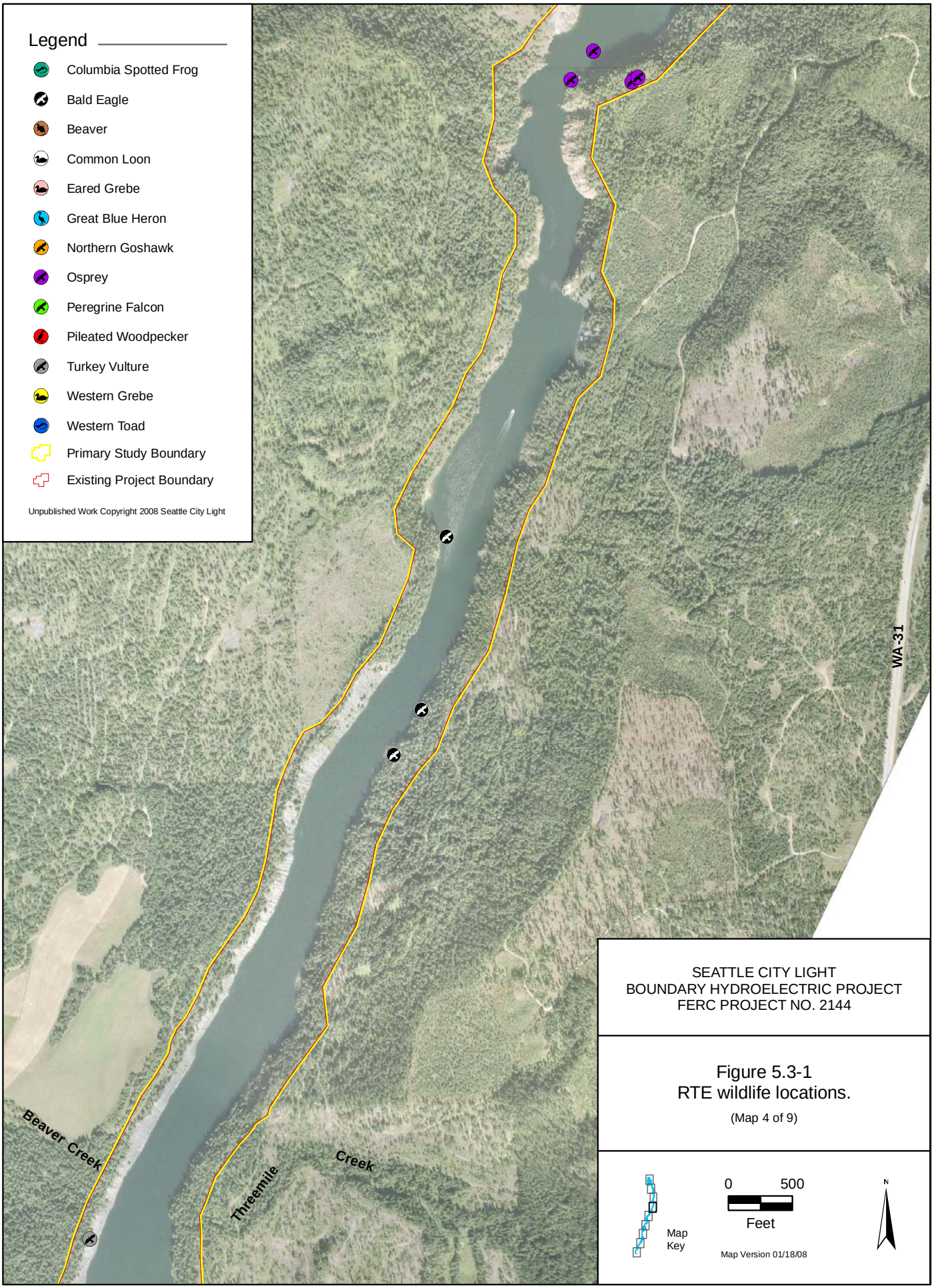

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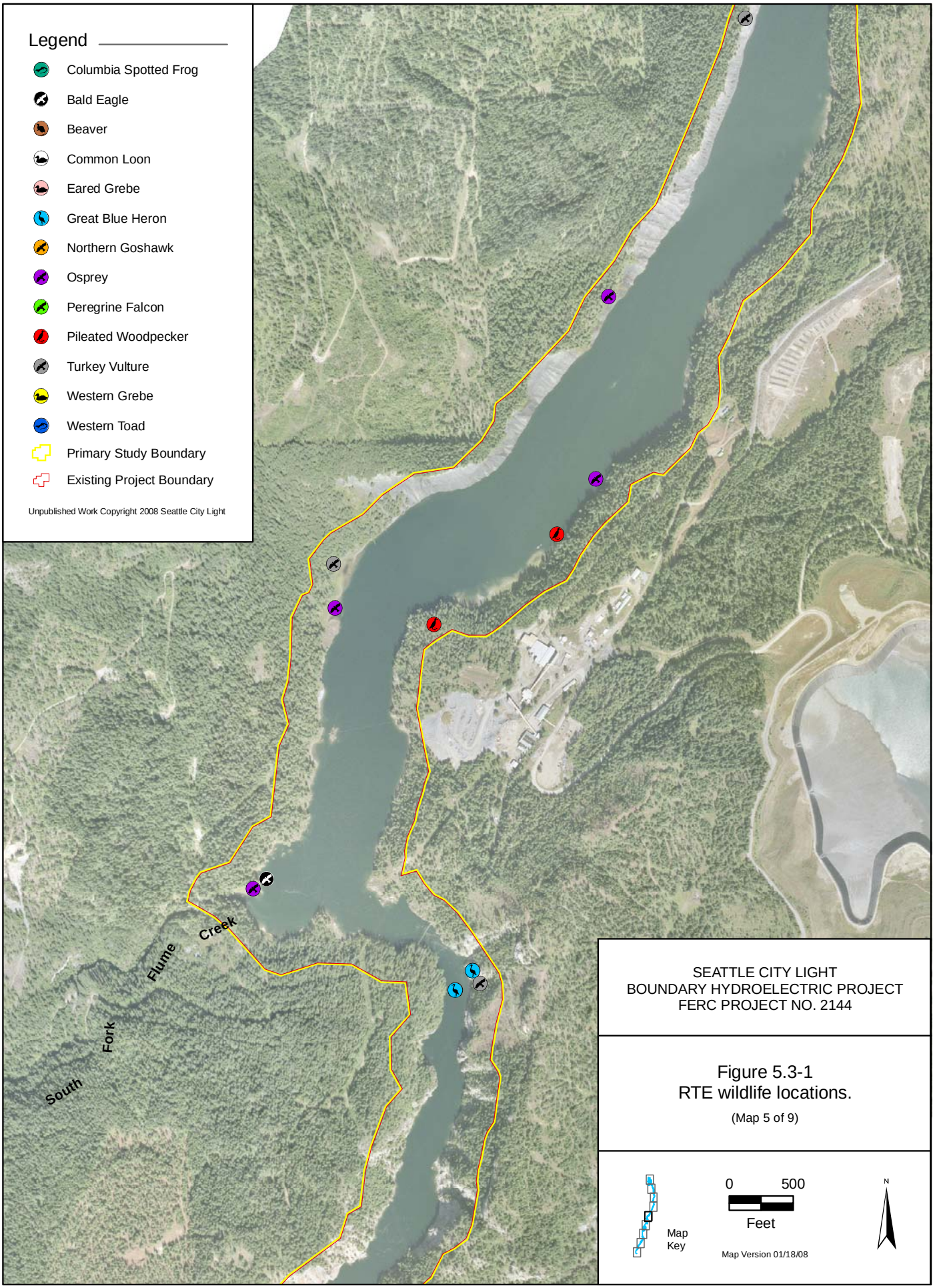
Figure 5.3-1
RTE wildlife locations.

(Map 4 of 9)


Legend
Columbia Spotted Frog
Bald Eagle
Beaver
Common Loon
Eared Grebe
Great Blue Heron
Northern Goshawk
Osprey
Peregrine Falcon
Pileated Woodpecker
Turkey Vulture
Western Grebe
Western Toad
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
South Fork Flume Creek
SEATTLE CITY LIGHT
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FERC PROJECT NO. 2144
Figure 5.3-1
RTE wildlife locations.
(Map 5 of 9)
Map Key
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Feet
Map Version 01/18/08
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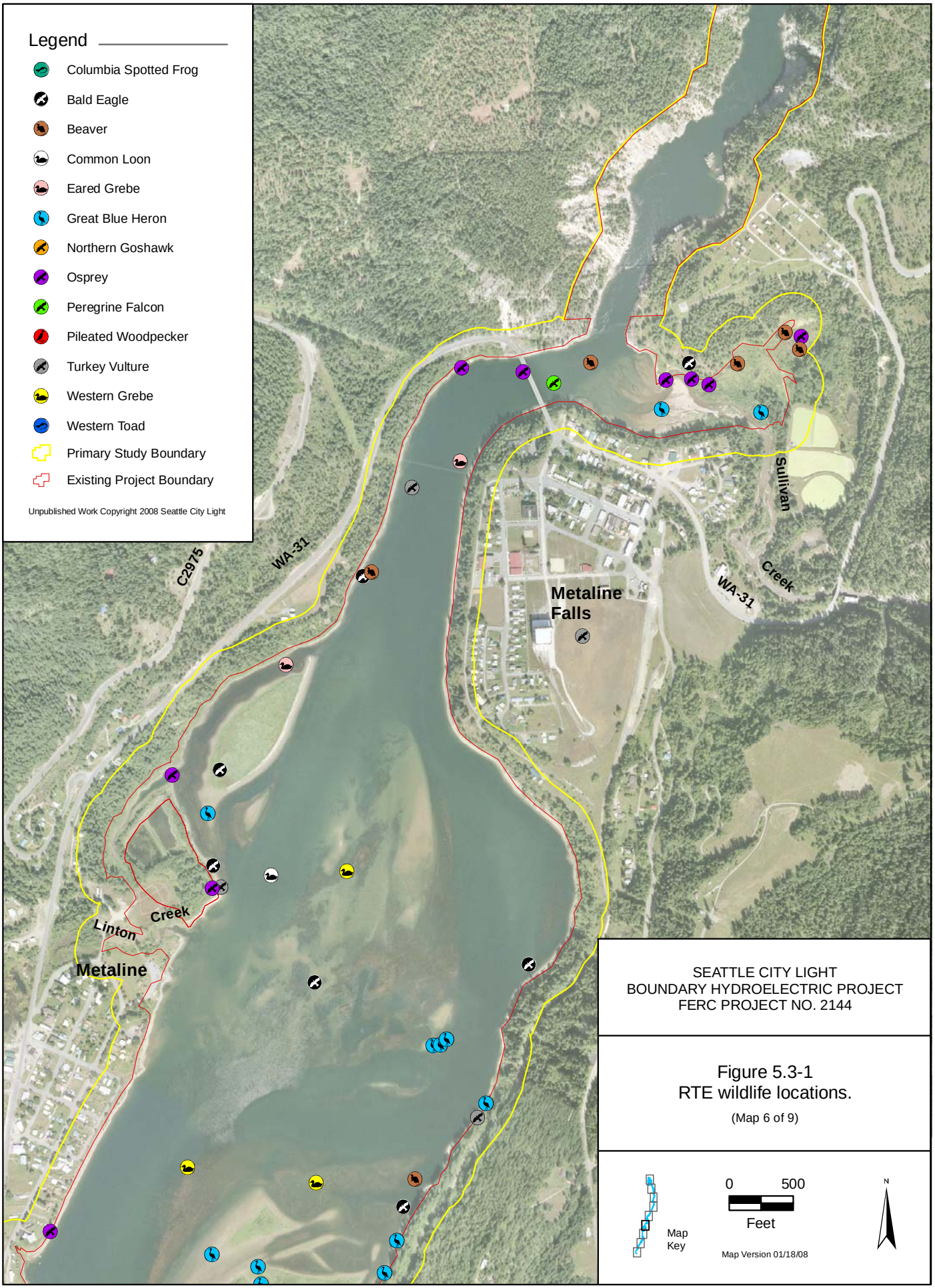

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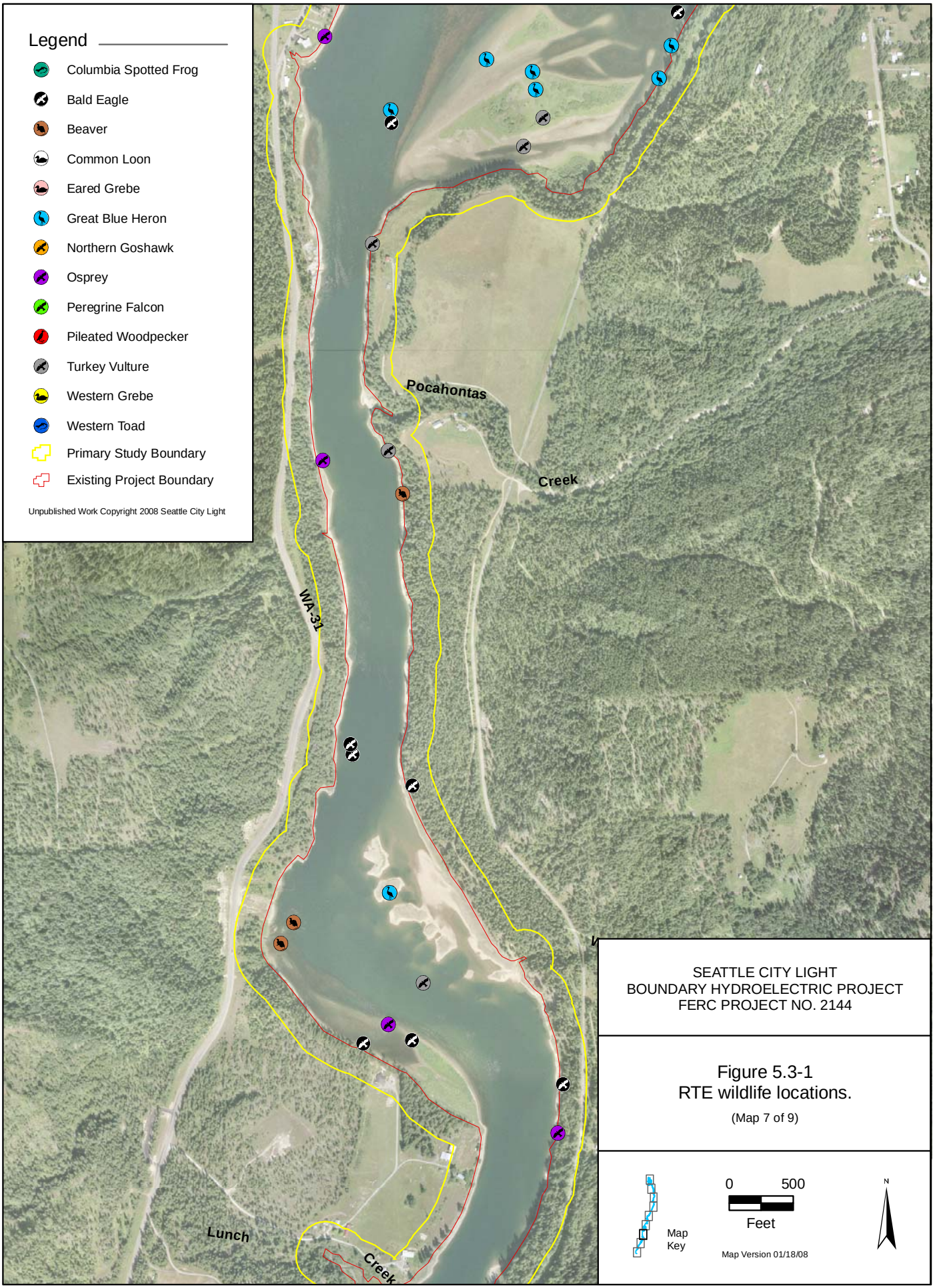
Figure 5.3-1
RTE wildlife locations.

(Map 6 of 9)


Legend
Columbia Spotted Frog
Bald Eagle
Beaver
Common Loon
Eared Grebe
Great Blue Heron
Northern Goshawk
Osprey
Peregrine Falcon
Pileated Woodpecker
Turkey Vulture
Western Grebe
Western Toad
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
Pocahontas
Creek
WA-31
Lunch
Creek
SEATTLE CITY LIGHT
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FERC PROJECT NO. 2144
Figure 5.3-1
RTE wildlife locations.
(Map 7 of 9)
Map
Key
0
500
Feet
Map Version 01/18/08
N

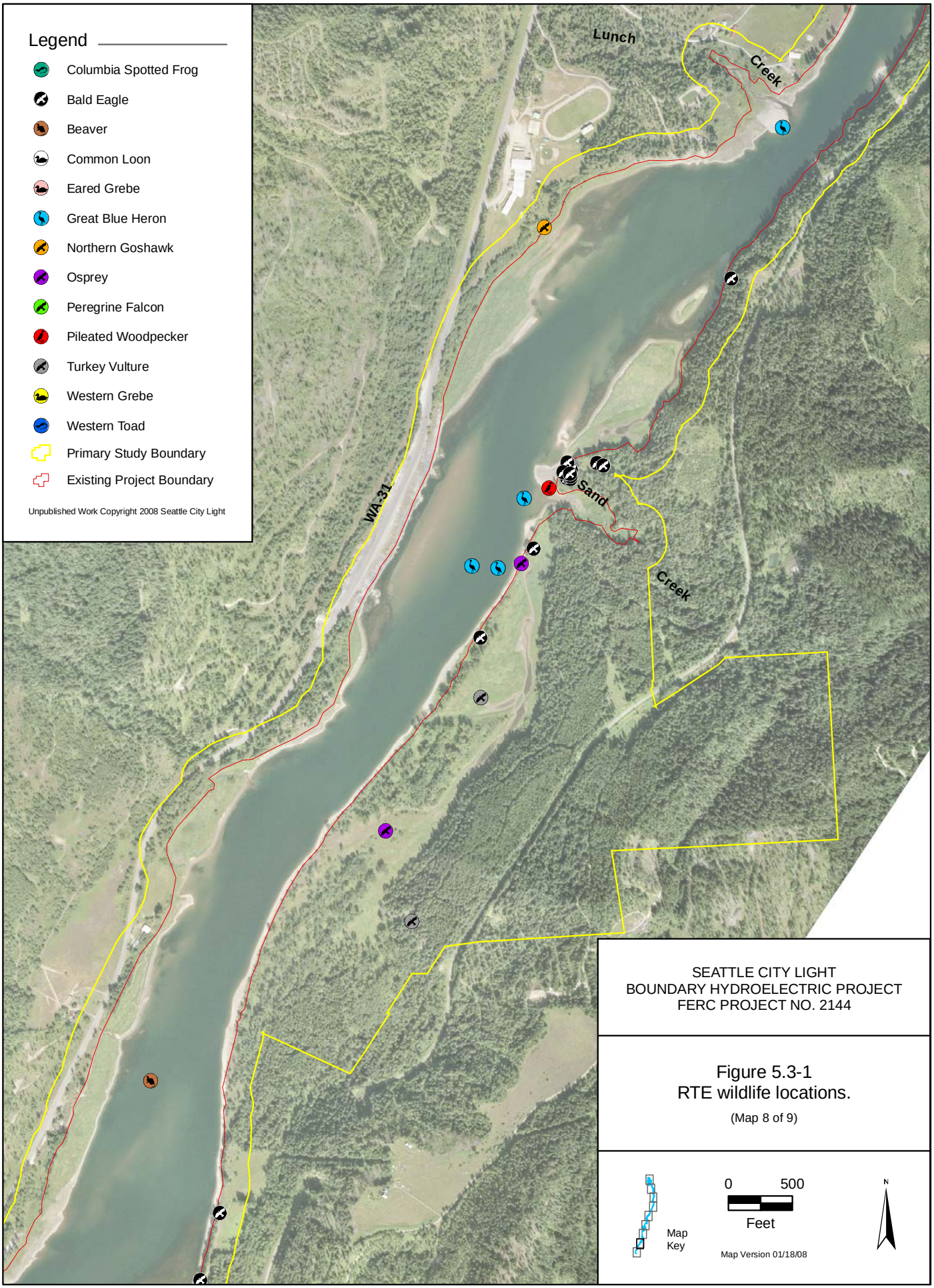

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Figure 5.3-1
RTE wildlife locations.

(Map 8 of 9)

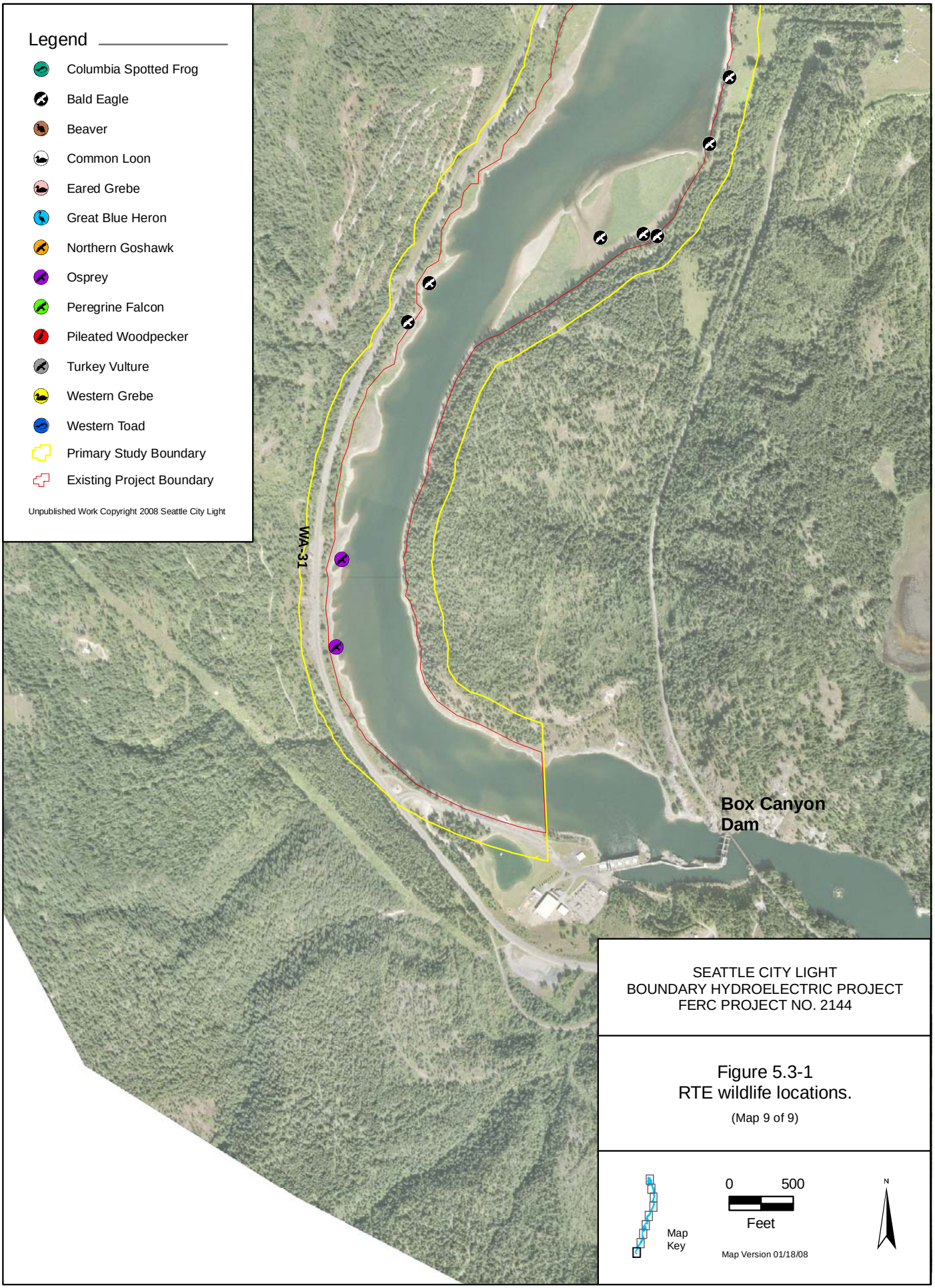

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Figure 5.3-1
RTE wildlife locations.

(Map 9 of 9)

5.3.1. Amphibian Surveys

Sites surveyed for RTE amphibians are identified on Figure 5.3-2. The only RTE amphibian species documented during the 2007 surveys — Columbia spotted frogs — were associated with wetlands in the vicinity of Boundary Dam (Figure 5.3-2, Map 1). The wetland seeps along the east side of the Pend Oreille River below Boundary Dam (tailrace area) were surveyed for spotted frogs because of sightings in 2006. This species was observed at one of two small ponds in the tailrace area, immediately upslope of the river (subsequently determined to be just outside of the study area). Additionally, one large unidentified tadpole was observed at the lower of these two ponds. Spotted frogs were also found at three small streams running through the Tailrace Recreation Area below Boundary Dam. A wetland seep near the Boundary forebay boat launch was added to the list of survey sites after a SCL staff person reported finding a western toad near the boat launch. Although no toads were observed during four amphibian surveys of this location, presence of this species was confirmed when a single large western toad was found near the restroom building during other survey activities on July 26, 2007.

Surveys determined that 10 sites in the study area (Everett Island, Everett Creek, Flume Creek, and seven backwater channels along the upper reservoir) were unsuitable for breeding amphibians, either because areas dewatered during the breeding season or were directly connected to the reservoir and supported populations of predatory fish such as yellow perch (*Perca flavescens*), small-mouth bass (*Micropterus dolomieu*), and northern pikeminnow (*Ptychocheilus oregonensis*). The head of the backwater channel in the BWP had several ponds that were fish-free. These ponds supported treefrogs, but no RTE amphibian species were found. A wetland near Sullivan Creek, partially within the study area, was also fish-free and supported bullfrogs and treefrogs, but no target amphibians were observed or heard during night surveys.

Two seep areas along the reservoir downstream of Metaline Falls (downstream of Flume Creek [Figure 5.3-2, Map 5] and at the mouth of Lime Creek [Figure 5.3-2, Map 2]) were surveyed four times, but no frogs or toads were observed. An incidental sighting of a frog at the site near Flume Creek was reported but is believed to have been a treefrog.

5.3.2. Seasonal Surveys for Avian RTE Species

Ten RTE bird species were recorded during all wildlife surveys conducted between April and October 2007. One additional species — the golden eagle — is suspected based on incidental sightings, but not confirmed. Each of the 11 species is addressed below.

- *Common loon*. A single common loon was observed in the Boundary forebay (Figure 5.3-1, Map 1) in late April, and another single loon on May 30 in the river near Metaline (Figure 5.3-1, Map 6). The bird recorded in May was seen capturing a fish then immediately leaving the reservoir. It is possible that this bird was breeding at a location outside the study area (e.g., Sullivan Lake) and coming to the reservoir to forage.
- *Eared grebe*. A large number (61 total) of migrant eared grebes was observed in the river near Metaline on April 20, dwindling to only 2 birds by mid-May. We suspect this bird is a common spring (and possibly fall) migrant. No eared grebes were recorded June to October.

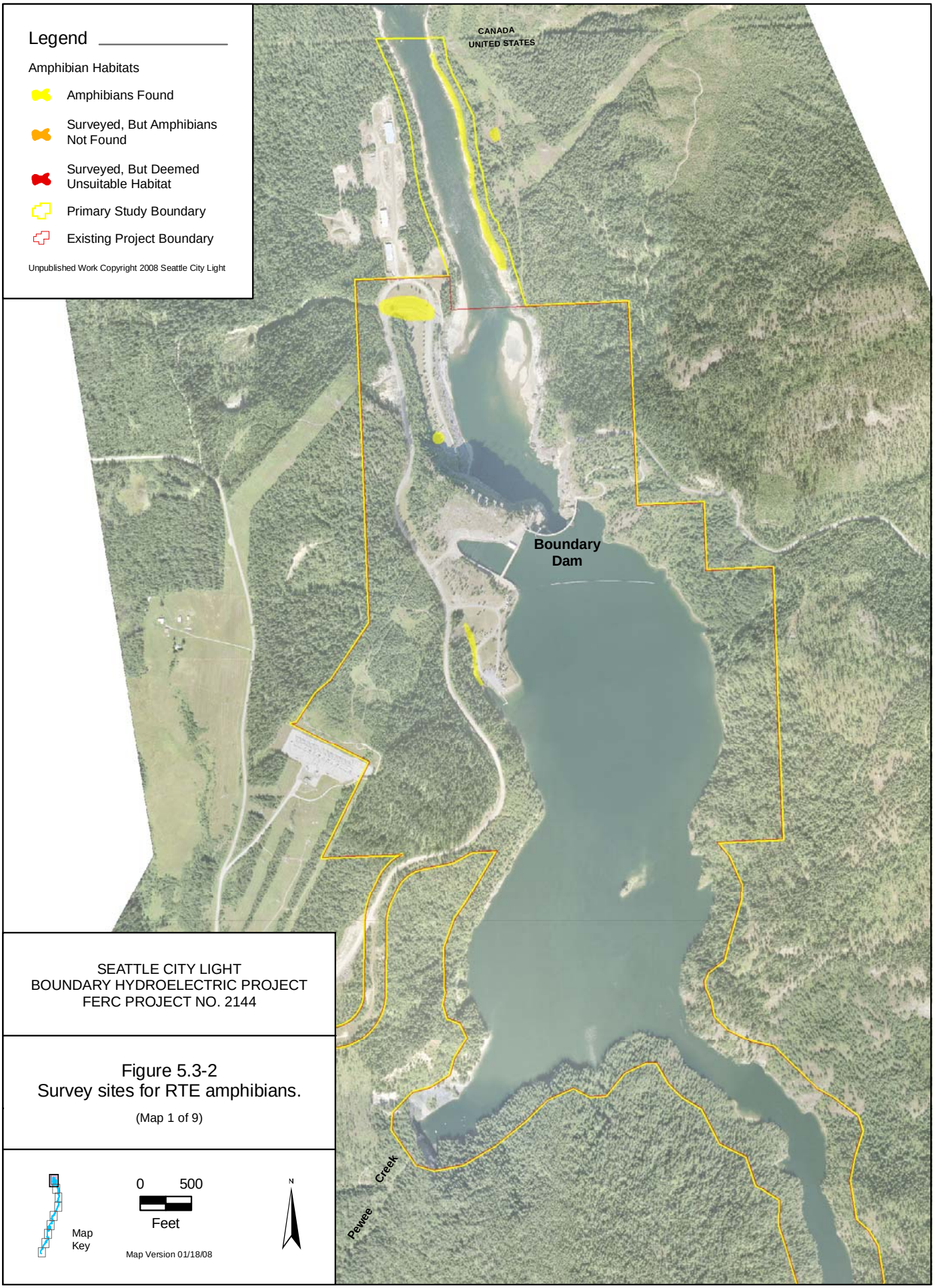

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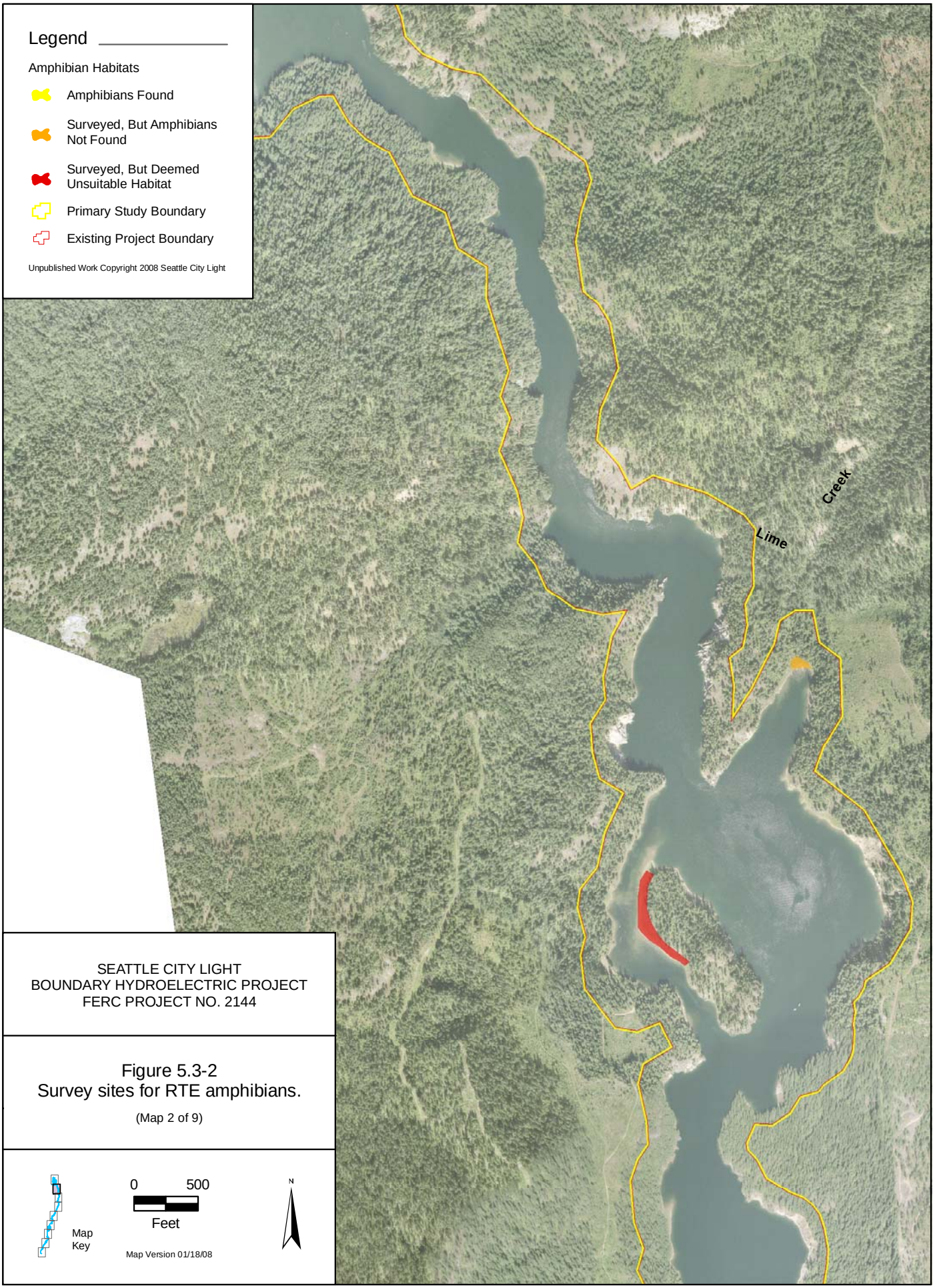
Figure 5.3-2
Survey sites for RTE amphibians.

(Map 1 of 9)


Legend
Amphibian Habitats
Amphibians Found
Surveyed, But Amphibians Not Found
Surveyed, But Deemed Unsuitable Habitat
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
Lime
Creek
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 5.3-2
Survey sites for RTE amphibians.
(Map 2 of 9)
Map Key
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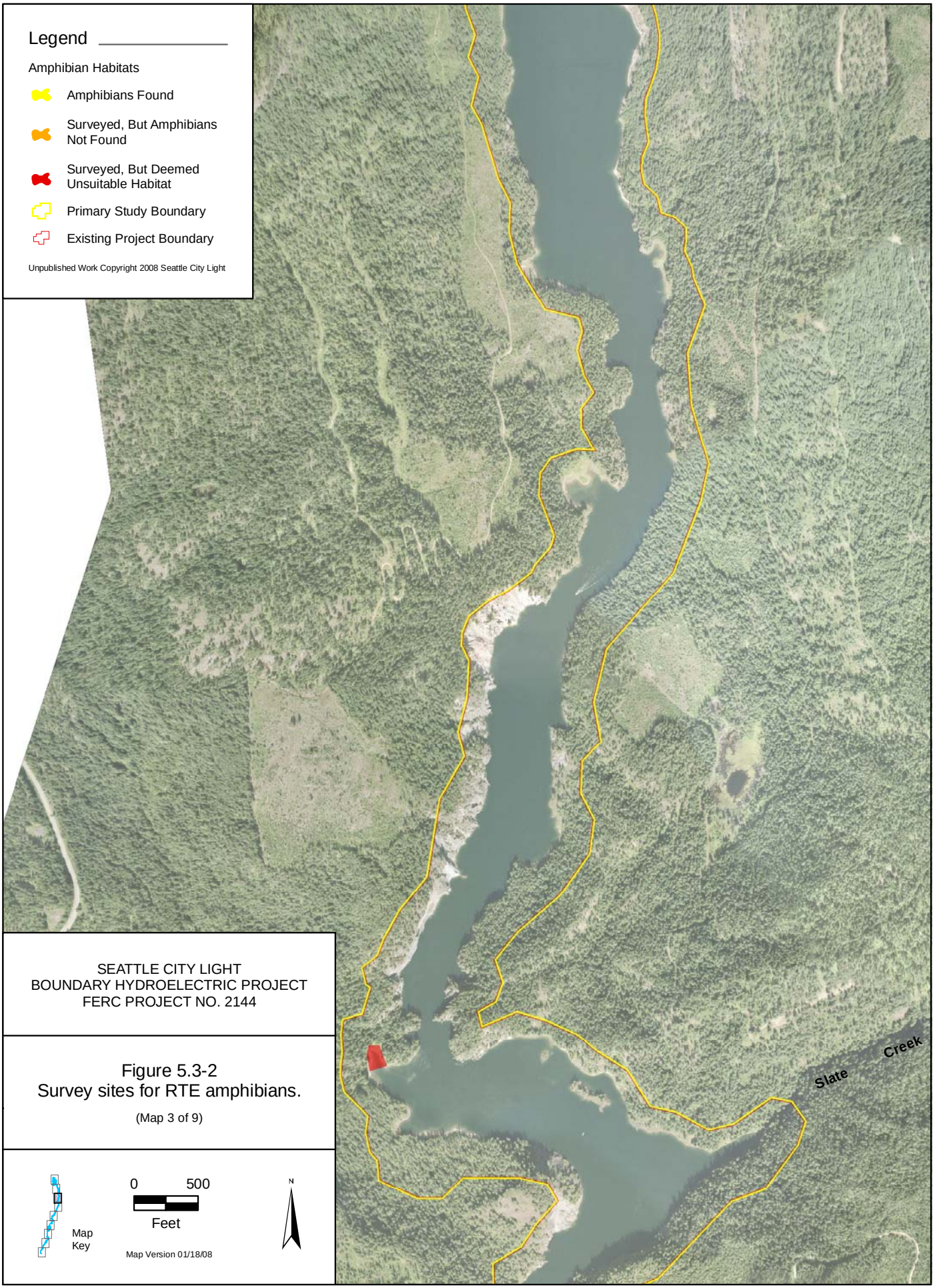

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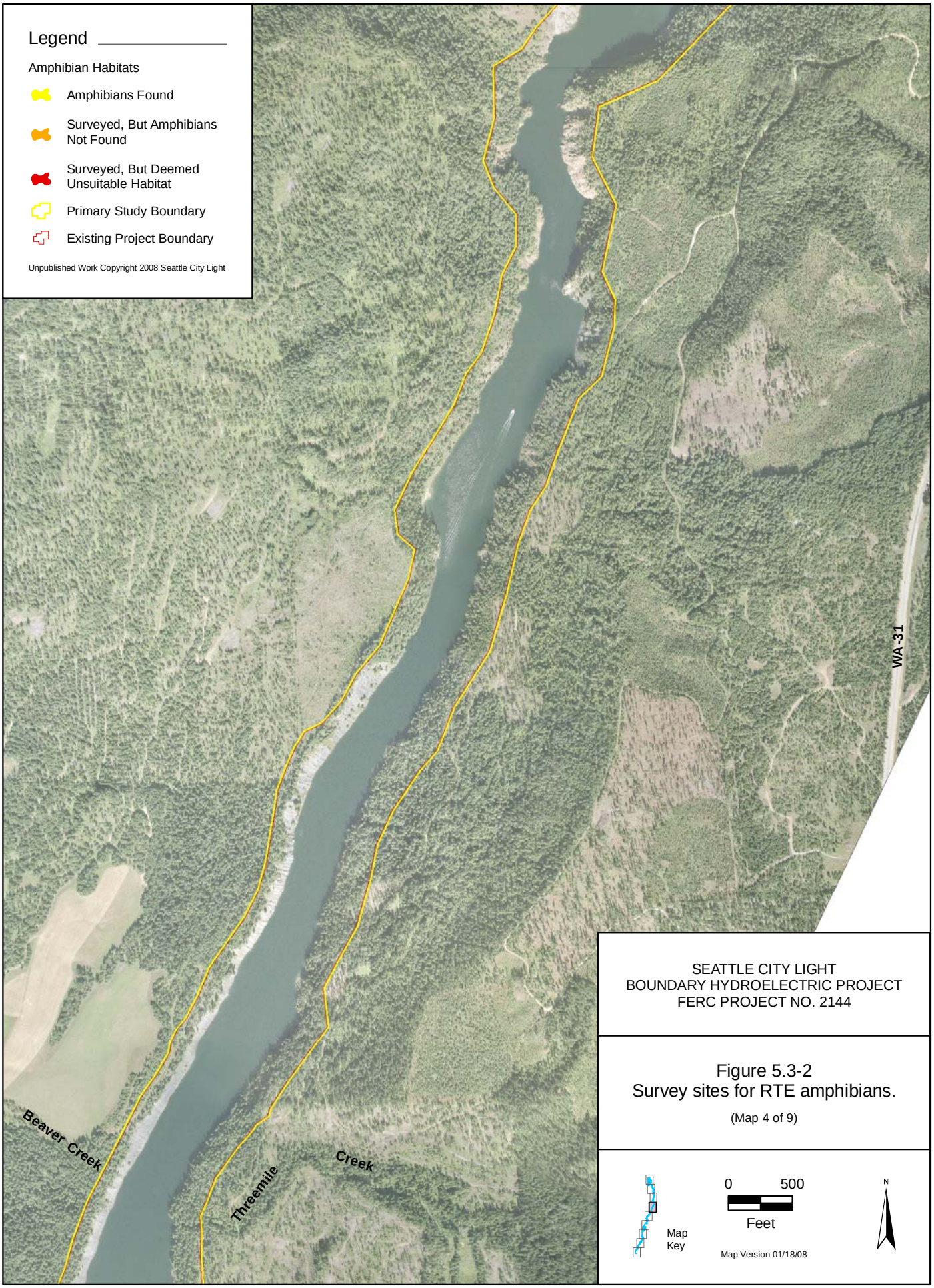
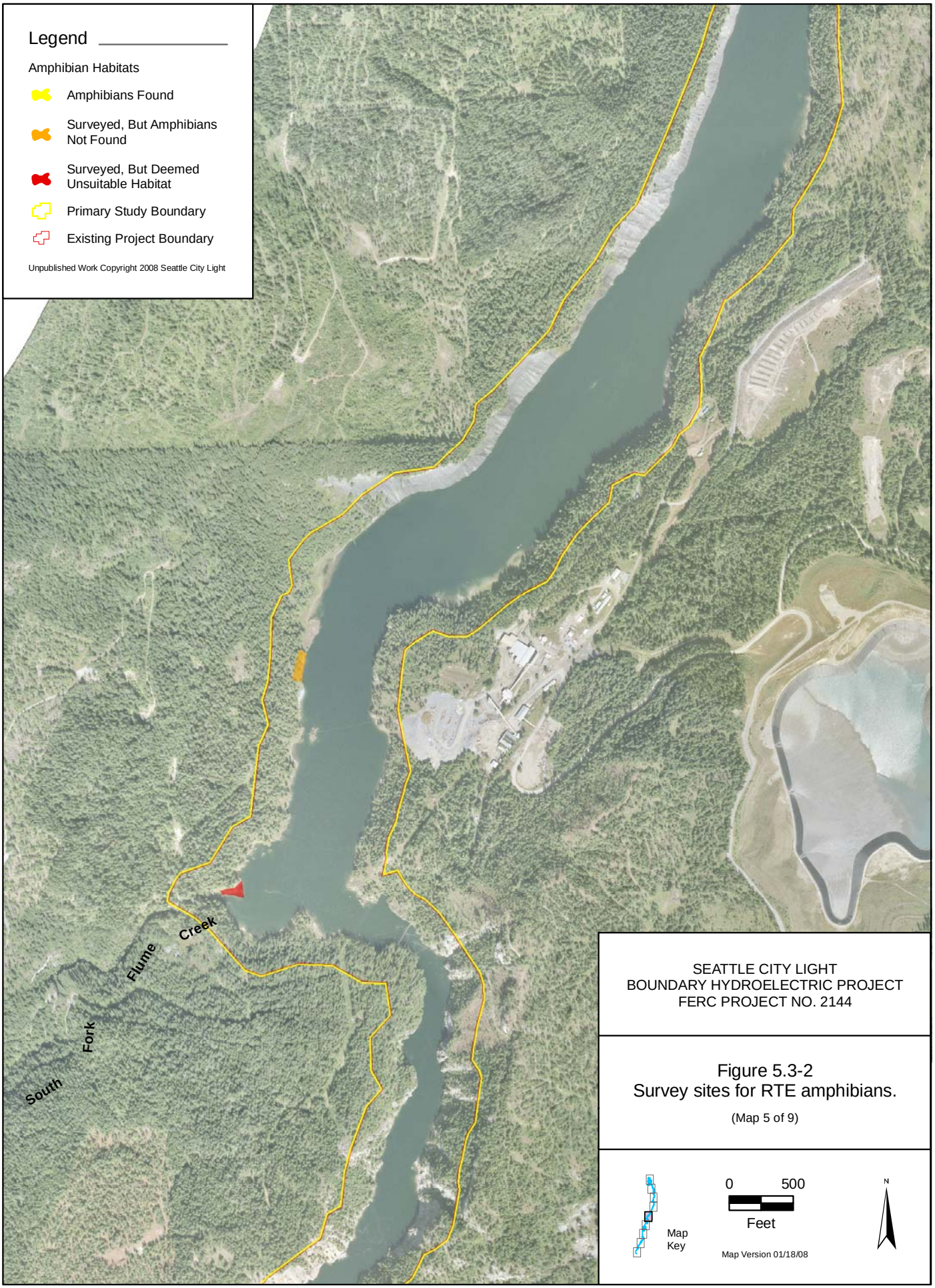
Figure 5.3-2
Survey sites for RTE amphibians.

(Map 3 of 9)


Legend
Amphibian Habitats
Amphibians Found
Surveyed, But Amphibians Not Found
Surveyed, But Deemed Unsuitable Habitat
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
WA-31
Beaver Creek
Threemile
Creek
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 5.3-2
Survey sites for RTE amphibians.
(Map 4 of 9)
Map Key
0
500
Feet
Map Version 01/18/08
N


Legend
Amphibian Habitats
Amphibians Found
Surveyed, But Amphibians Not Found
Surveyed, But Deemed Unsuitable Habitat
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
South Fork Flume Creek
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 5.3-2
Survey sites for RTE amphibians.
(Map 5 of 9)
Map Key
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Feet
Map Version 01/18/08
N

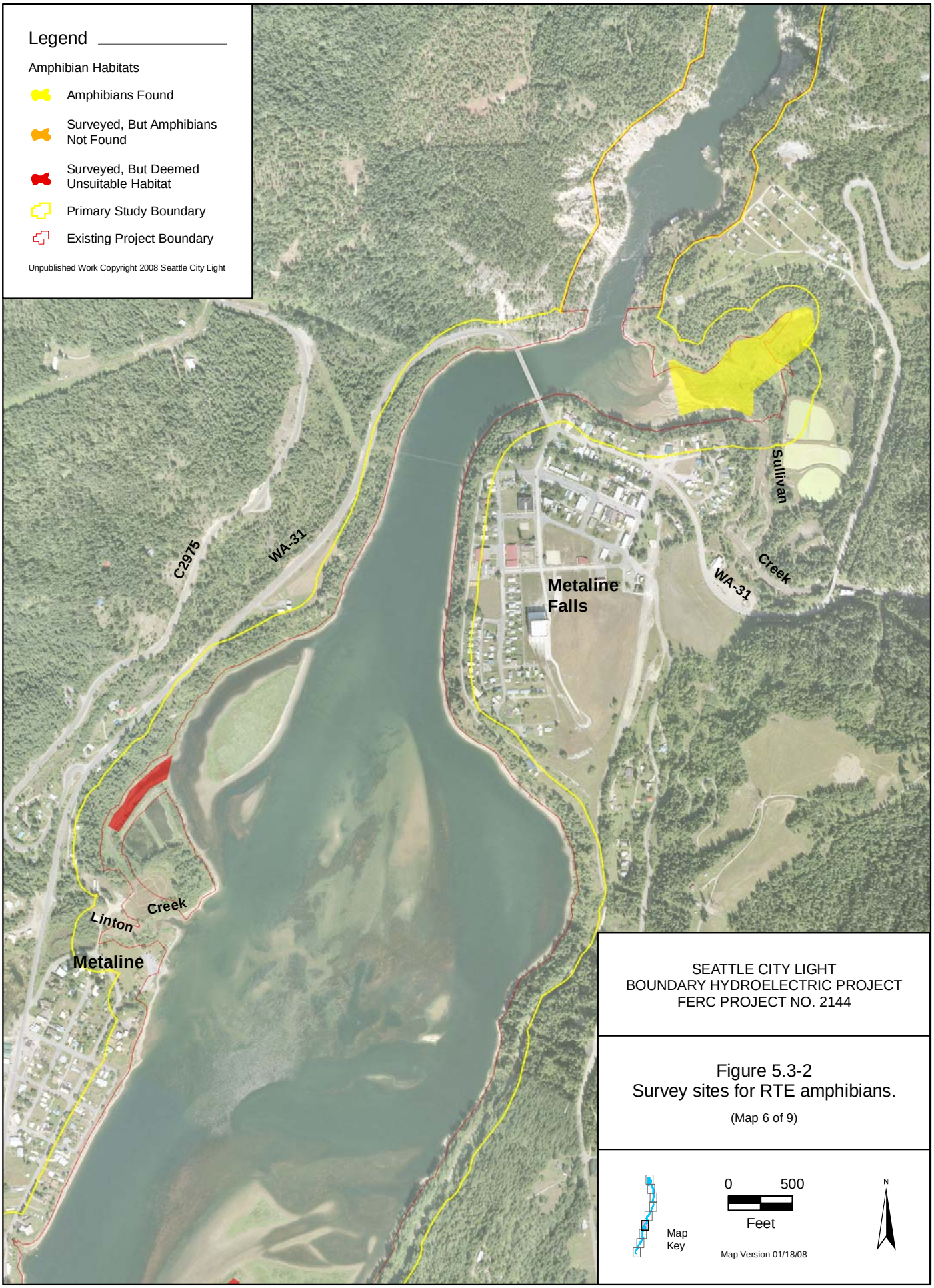

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Figure 5.3-2
Survey sites for RTE amphibians.

(Map 6 of 9)

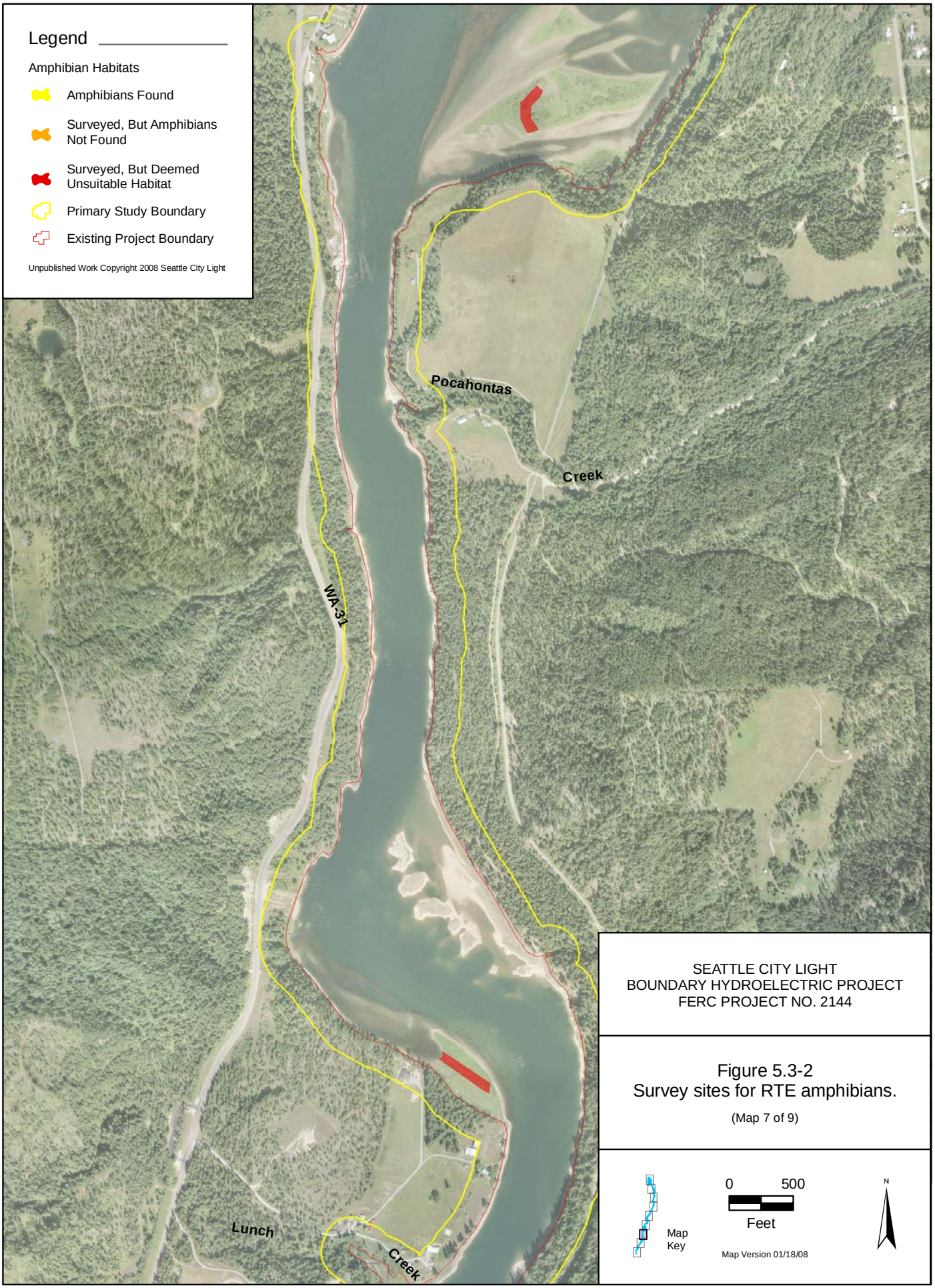

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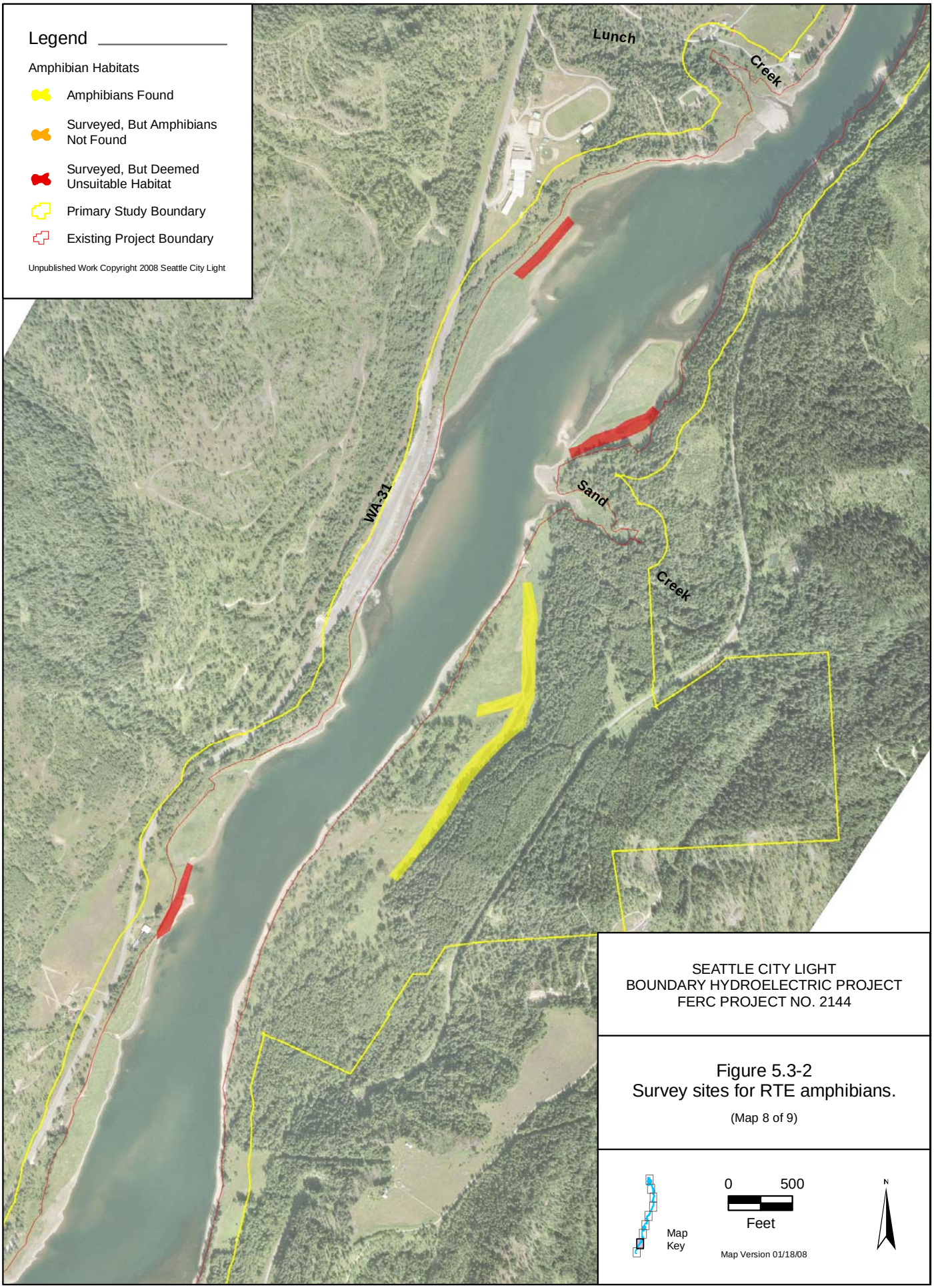
Figure 5.3-2
Survey sites for RTE amphibians.

(Map 7 of 9)


Legend
Amphibian Habitats
Amphibians Found
Surveyed, But Amphibians Not Found
Surveyed, But Deemed Unsuitable Habitat
Primary Study Boundary
Existing Project Boundary
Unpublished Work Copyright 2008 Seattle City Light
Lunch
Creek
WA-31
Sand
Creek
SEATTLE CITY LIGHT
BOUNDARY HYDROELECTRIC PROJECT
FERC PROJECT NO. 2144
Figure 5.3-2
Survey sites for RTE amphibians.
(Map 8 of 9)
Map Key
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Feet
Map Version 01/18/08
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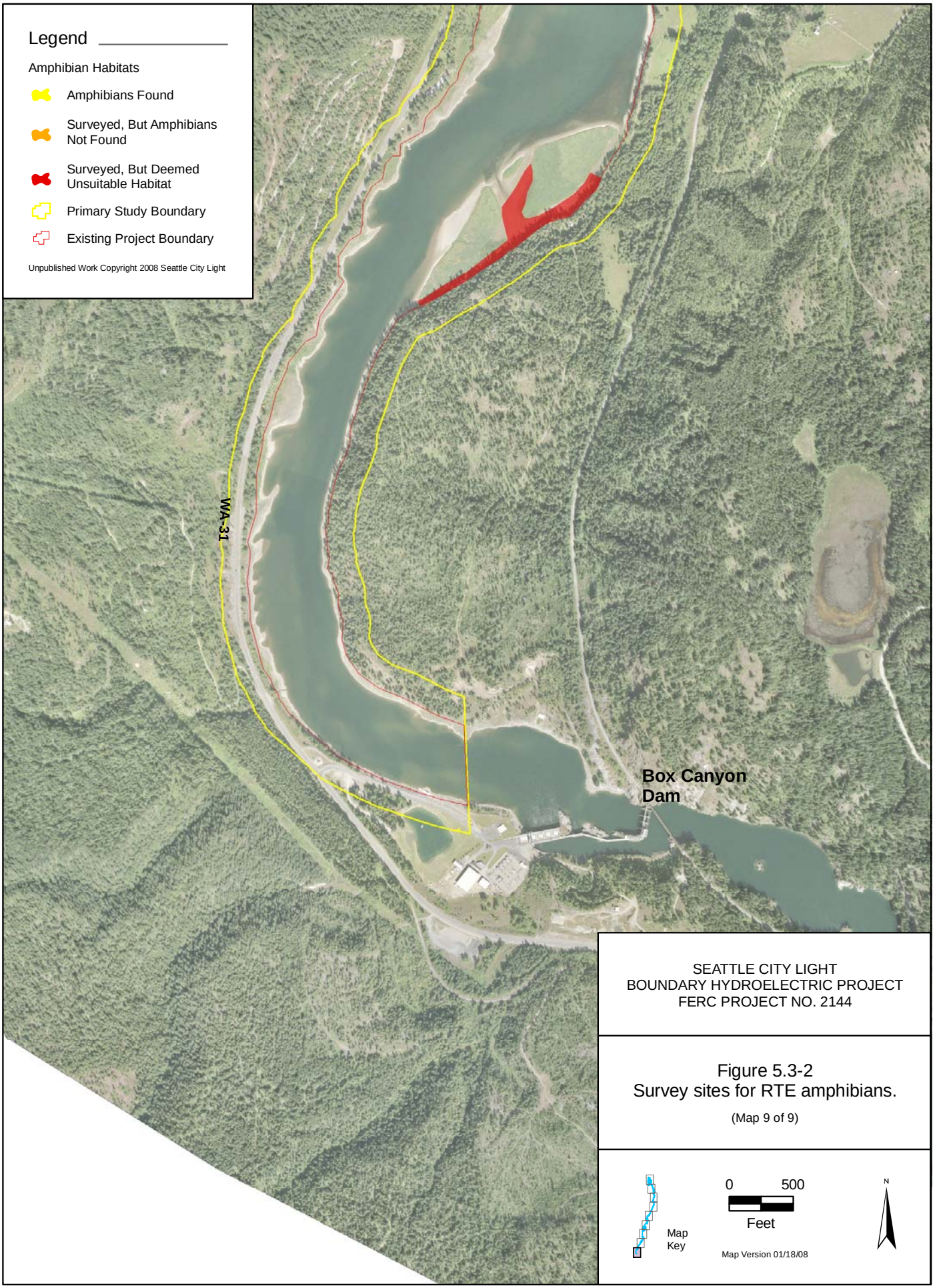

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Figure 5.3-2
Survey sites for RTE amphibians.

(Map 9 of 9)

- *Western grebe*. Western grebes were observed in low numbers in the river near Metaline in mid-April (three) and again in October (two), suggesting use during the migration season only.
- *Great blue heron*. Great blue herons are addressed in greater detail in the Study 15 interim report, the Waterfowl/Waterbird Study (SCL 2008c). In general, great blue heron use of Boundary Reservoir is relatively light. The number of herons observed during nine surveys between April and October 2007 ranged between one and nine, with no herons observed on four surveys. There is no evidence of heron breeding in the study area.
- *Turkey vulture*. Turkey vultures are often seen soaring singly or in groups at many locations throughout the study area. They are most commonly seen soaring over the river near Metaline, and several vultures were observed on the exposed gravel bars near Metaline, foraging on an unidentified item during the September drawdown. It is possible that vultures nest in the cliff areas of the Canyon Reach and possibly the rock face below Vista House, but no breeding has been confirmed.
- *Osprey*. Four osprey pair nested within the vicinity of the study area and foraged in Boundary Reservoir. All nest sites appeared to have successfully fledged at least one young in 2007, although three of the nests were difficult to see into and the fourth was only discovered after the fledging period. All the nest sites occur outside the study area boundary. One is located on a lattice transmission tower below Boundary Dam (east side of the river; Figure 5.3-1, Map 1). The others are located: 1) high on a ridge where the Canyon Reach empties into Boundary forebay; 2) upslope of the mouth of Slate Creek (Figure 5.3-1, Map 3); and 3) immediately across the river from the town of Metaline Falls on the edge of a powerline right-of-way (Figure 5.3-1, Map 6). As expected, osprey are commonly seen along the reservoir during the spring and summer. A high count of 10 osprey was made in mid-June. By August, the number of osprey began to dwindle and they were entirely gone by October.
- *Golden eagle*. This species was reported near Boundary Dam in 2005, and we received an incidental report in 2007 of a golden eagle along the reservoir downstream of Metaline Falls. We cannot confirm the presence of this species in the study area at this time, especially since two juvenile bald eagles, which are often mistaken for golden eagles, remained in the vicinity of the Everett Island bald eagle territory all season. An abandoned eagle nest was discovered this year on a steep slope above Metaline Falls on the backside of Washington Rock (Figure 5.3-1, Map 6); this nest, situated at the top of a flat-topped ponderosa pine tree, may be an old golden eagle nest.
- *Bald eagle*. Four eagle nesting territories were occupied in the Boundary Reservoir in 2007, but only the three territories upstream of Metaline Falls (Metaline, Figure 5.3-1, Map 6; Sand Creek, Figure 5.3-1, Map 8; and Box Canyon, Figure 5.3-1, Map 9) were active, collectively producing at least five fledglings (it was not certain whether Metaline fledged one or two eaglets). The Everett Island nesting territory (Figure 5.3-1, Map 2) was occupied at various times by two adults and two juveniles. Juveniles occasionally will stay within their parents breeding territory for years. Although the nest tree was used at least as a roost by these eagles, no evidence of a breeding attempt was observed. The nest upslope of Metaline Falls mentioned above

in the discussion on golden eagles could have been constructed by bald or golden eagles.

- *Northern goshawk*. A single goshawk was observed during a June waterfowl survey flying along the edge of a mixed conifer forest belt near Selkirk High School (Figure 5.3-1, Map 8). Based on the available habitat, we would expect goshawks to be uncommon residents in the Project vicinity. The study area may prove to be more valuable to goshawks as wintering habitat.
- *American peregrine falcon*. Washington Rock (on the edge of the study area) and possibly portions of the Canyon Reach provide suitable nesting habitat for peregrine falcons. A possible incidental sighting of a peregrine falcon was made just below Metaline Falls during an April sight visit, but the sighting was too brief to confirm the species. Washington Rock was searched several times (with high power binoculars) for the presence of falcons with no success. During an August bat survey at Metaline Mine, two peregrine falcons flew off Washington Rock, circled over the mine entrance, and then flew back onto the rock (Figure 5.3-1, Map 6). Because the study area could serve as important foraging habitat for any nesting pair using Washington Rock, more effort will be made in 2008 to locate the suspected nest and confirm peregrine falcon use in the study area.
- *Pileated woodpecker*. Pileated woodpeckers were observed four times flying across the reservoir. In addition, a single pileated woodpecker was observed in September outside the Box Canyon Motel (on the edge of the study area). These sightings, plus records of several old nest cavities and foraging holes, suggest that although pileated woodpeckers may not be abundant, they might be relatively common in the Project vicinity.

5.3.3. RTE Wildlife Habitat Assessment

The Project area provides quality habitat for a number of RTE wildlife species and potentially serves as a migration corridor for species such as gray wolves and grizzly bears. Habitat features of both the study area and migration corridors are discussed below.

5.3.3.1. High Quality Habitat

The primary high quality habitat features of the study area are the reservoir itself, its associated shoreline, and the large stands of mature cottonwood trees at the BWP and other shoreline locations. The entire length of the reservoir is important foraging habitat for common loons, eared grebes, western grebes, great blue herons, osprey, bald eagles, and potentially peregrine falcons, and is the primary habitat for local beaver. More specifically, the river in the vicinity of Metaline (Figure 5.3-1, Map 6), located between the Metaline Falls bridge and the town of Metaline, is heavily used by all of the above species, plus a wide variety of other waterfowl and waterbirds. This area offers several features important to wildlife including bathymetric diversity with a sinuous deep-water channel adjacent to shallow rocky areas, and patches of aquatic macrophytes, which provide habitat for fish and aquatic invertebrates (important for eared grebes). Overall, the area provides foraging habitat for both piscivorous and herbivorous waterfowl and waterbirds and protected resting or loafing areas. Beaver, muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), hundreds of bats, and at least 27 species of waterbirds and

waterfowl have been recorded here. The Boundary forebay in many ways is similar to the Metaline pool, and is used by common loons, great blue herons, bald eagles, osprey, and beaver, but not at the diversity and levels found at the Metaline pool.

Mature cottonwood trees (*Populus balsamifera* ssp. *trichocarpa*) along the shoreline upstream of Metaline Falls provide nesting and perching habitat for bald eagles. All three active bald eagle nests, and two inactive nests, were built in large cottonwood trees.

Other quality habitats include Washington Rock (peregrine falcons; Figure 5.3-1, Map 6) and the ponds below Boundary Dam on the east side of the river (Columbia spotted frogs; Figure 5.3-1, Map 1), both of which are just outside of the study area boundary. A small patch of dead large cottonwood trees, plus a cattail pond with clear water, is found at the head of the Sullivan Creek wetland area, but both of these features are also just outside of the study area boundary. The portion of Sullivan Creek wetland below the upper pond is heavily used by beavers, but its overall value to wildlife is limited by choking stands of reed canarygrass (*Phalaris arundinacea*), and algal blooms and oily water resulting from decaying vegetation and possibly from Metaline Falls sewage pond effluent.

The coniferous habitats within the study area are not remarkable. Most of the stands are second-growth, and no high-quality old-growth stands are present. The most mature conifer trees within the study area are western larch (*Larix occidentalis*) found scattered between the maintenance facilities north of Boundary Dam and the river. Snags suitable for nesting by woodpeckers are found throughout the study area, many of which are residual from past logging. However, large snags are not abundant, and no high density patches of snags have been identified. Pileated woodpecker nest cavities were found in both ponderosa pine and western larch snags, but nearly all of these snags were below the 33 inches diameter at breast height average size reported from northeastern Oregon (Bull 1987, Bull et al. 1992).

The island habitats within the reservoir are important to a variety of local wildlife and should be considered quality habitat, although these habitats are not necessarily important to RTE wildlife.

5.3.3.2. Potential Crossings

Given that the study area includes nearly 17.5 miles of reservoir, it represents, like all rivers, some level of obstacle to wildlife, including RTE species such as gray wolves and grizzly bears that may be traversing through the area, especially between Boundary Dam and Metaline Falls where the area's isolation may favor these secretive species. Whether some crossing locations are favored because of terrain or current, or whether movement across the reservoir is diffuse, is currently unknown. A task called for in Study 19 (Big Game; SCL 2007) is underway to investigate recorded trail crossings and landscape permeability based on local topography. Because the landscape permeability analysis carried out for deer and elk would apply equally well to bears and wolves, the results of that analysis (as they pertain to bears and wolves) will also be reported in this study.

5.4. Documentation and Effects Assessment

The effects of Project operations on RTE wildlife will not be assessed until all field efforts are completed and all data analyzed. This documentation and effects assessment will be presented in the USR.

6 SUMMARY

Thirteen of the 42 species of RTE wildlife listed in Table 5.1-1 were recorded in the study area in 2007 (excluding bats). We have deduced that potential habitat occurs for an additional six species (blue grouse, golden eagle, merlin, barred owl, Lewis woodpecker, and western bluebird); it is also possible that two more species (gray wolf and grizzly bear) occasionally move through the study area. We have also preliminarily concluded that the remaining 18 species are not to be found in the study area because of a lack of suitable habitat or because the area is outside of the species' normal range; however, refinement of this assessment continues.

Spring surveys were conducted at 19 locations for the presence of western toads, Columbia spotted frogs, and northern leopard frogs. A single western toad was found near the Boundary forebay boat launch, and spotted frogs were found on both sides of the river below Boundary Dam. No leopard frogs were observed.

Three quarterly surveys for RTE bird species were conducted both in aquatic and terrestrial habitats, with 10 species recorded to date. Most of these species are associated with the reservoir.

The habitats of most importance to local RTE species are the reservoir itself, its associated shoreline, and the stands of mature cottonwoods found at the BWP and other locations along the reservoir upstream of Metaline Falls. Specifically, the Metaline pool supported the greatest diversity of wildlife, including RTE wildlife. Of the 13 RTE species recorded to date, 9 have been recorded at the Metaline pool. The mature cottonwood stands are especially important as nesting and roosting habitat for bald eagles.

7 VARIANCES FROM FERC-APPROVED STUDY PLAN AND PROPOSED MODIFICATIONS

No variances were made to the approved plan for this study. In general, more data have been collected than planned because RTE species have been recorded during wildlife surveys targeting other species.

8 REFERENCES

This interim report describes the results of the first few seasons of field study (and some analysis) for this 2-year study. Supporting protocol references for this study can be found in the RSP. Life history information, with associated supporting references, will be provided, along with methodology references, in the USR.

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Appendix 1. List of Species Recorded During Study 18 Surveys and Related Studies

Table A.1-1. All wildlife species recorded during studies 15, 18, 19, and 20.

Common Name	Scientific Name
Birds	
common loon	*Gavia immer*
eared grebe	*Podiceps nigricollis*
red-necked grebe	*Podiceps grisegena*
western grebe	*Aechmophorus occidentalis*
double-crested cormorant	*Phalacrocorax auritus*
American bittern	*Botaurus lentiginosus*
great blue heron	*Ardea herodias*
snow goose	*Chen caerulescens*
Canada goose	*Branta canadensis*
wood duck	*Aix sponsa*
Mallard	*Anas platyrhynchos*
Gadwall	*Anas strepera*
green-winged teal	*Anas crecca*
American widgeon	*Anas americana*
northern shoveler	*Anas clypeata*
cinnamon teal	*Anas cyanoptera*
ring-necked duck	*Aythya collaris*
lesser scaup	*Aythya affinis*
common goldeneye	*Bucephala clangula*
Bufflehead	*Bucephala albeola*
common merganser	*Mergus merganser*
turkey vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
bald eagle	*Haliaeetus leucocephalus*
sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
northern goshawk	*Accipiter gentilis*
northern harrier	*Circus cyaneus*
red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
peregrine falcon	*Falco peregrinus*
ruffed grouse	*Bonasa umbellus*
wild turkey	*Meleagris gallopavo*
American coot	*Fucila americana*
Killdeer	*Charadrius vociferous*
lesser yellowlegs	*Tringa flavipes*
spotted sandpiper	*Actitis macularia*
common snipe	*Gallinago gallinago*
California gull	*Larus californicus*
common nighthawk	*Chordeiles minor*
rufous hummingbird	*Selasphorus rufus*
belted kingfisher	*Ceryle alcyon*
northern flicker	*Colaptes auratus*
red-naped sapsucker	*Sphyrapicus nuchalis*
pileated woodpecker	*Dryocopus pileatus*
willow flycatcher	*Empidonax traillii*
Say's phoebe	*Sayornis saya*
eastern kingbird	*Tyrannus tyrannus*
Steller's jay	*Cyanocitta stelleri*
gray jay	*Perisoreus canadensis*

Table A.1-1 continued…

Common Name	Scientific Name
common raven	*Corvus corax*
tree swallow	*Tachycineta bicolor*
violet-green swallow	*Tachycineta thalassina*
bank swallow	*Riparia riparia*
northern rough-winged swallow	*Stelgidopteryx serripennis*
cliff swallow	*Petrochelidon pyrrhonota*
barn swallow	*Hirundo rustica*
black-capped chickadee	*Poecile atricapillus*
chestnut-backed chickadee	*Poecile rufescens*
red-breasted nuthatch	*Sitta canadensis*
winter wren	*Troglodytes troglodytes*
marsh wren	*Cistothorus palustris*
golden-crowned kinglet	*Regulus satrapa*
Swainson's thrush	*Catharus ustulatus*
hermit thrush	*Catharus guttatus*
American robin	*Turdus migratorius*
gray catbird	*Dumetella carolinensis*
European starling	*Sturnus vulgaris*
cedar waxwing	*Bombycilla cedorum*
yellow-rumped warbler	*Dendroica coronata*
yellow warbler	*Dendroica petechia*
common yellowthroat	*Geothlypis trichas*
chipping sparrow	*Spizella passerine*
fox sparrow	*passerella iliaca*
savannah sparrow	*Passerculus sandwichensis*
song sparrow	*Melospiza melodia*
dark-eyed junco ("Oregon")	*Junco hymalis*
red-winged blackbird	*Agelaius phoeniceus*
brewer's blackbird	*Euphagus cyanocephalus*
pine siskin	*Carduelis pinus*
Mammals	
Yuma myotis	*Myotis yumanensis*
California myotis	*Myotis californicus*
little brown bat	*Myotis lucifugus*
northern long-eared myotis	*Myotis septentrionalis*
long-legged myotis	*Myotis volans*
long-eared myotis	*Myotis evotis*
big brown bat	*Eptesicus fuscus*
silver-haired bat	*Lasionycterus noctivagans*
hoary bat	*Lasiurus cinereus*
Townsend's big-eared bat	*Corynorhinus townsendii*
yellow pine chipmunk	*Eutamis amoenus*
red squirrel	*Tamiasciurus hudsonicus*
yellow-bellied marmot	*Marmota flaviventris*
striped skunk	*Mephitis mephitis*
Raccoon	*Procyon lotor*
Beaver	*Castor canadensis*
Muskrat	*Ondatra zibethicus*
river otter	*Lutra canadensis*
black bear	*Ursus americanus*
bobcat	*Lynx rufus*
mountain lion	*Puma concolor*

Table A.1-1 continued…

Common Name	Scientific Name
mule deer	*Odocoileus hemionus*
white-tailed deer	*Odocoileus virginianus*
elk	*Cervus elaphus*
Amphibians	
western toad	*Bufo boreas*
Pacific tree frog	*Pseudacris regilla*
bullfrog	*Rana catesbeiana*
Columbia spotted frog	*Rana luteiventris*
Reptiles	
painted turtle	*Chrysemys picta*
northern alligator lizard	*Elgaria coerulea*
western terrestrial garter snake	*Thamnophis elegans*
common garter snake	*Thamnophis sirtalis*

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