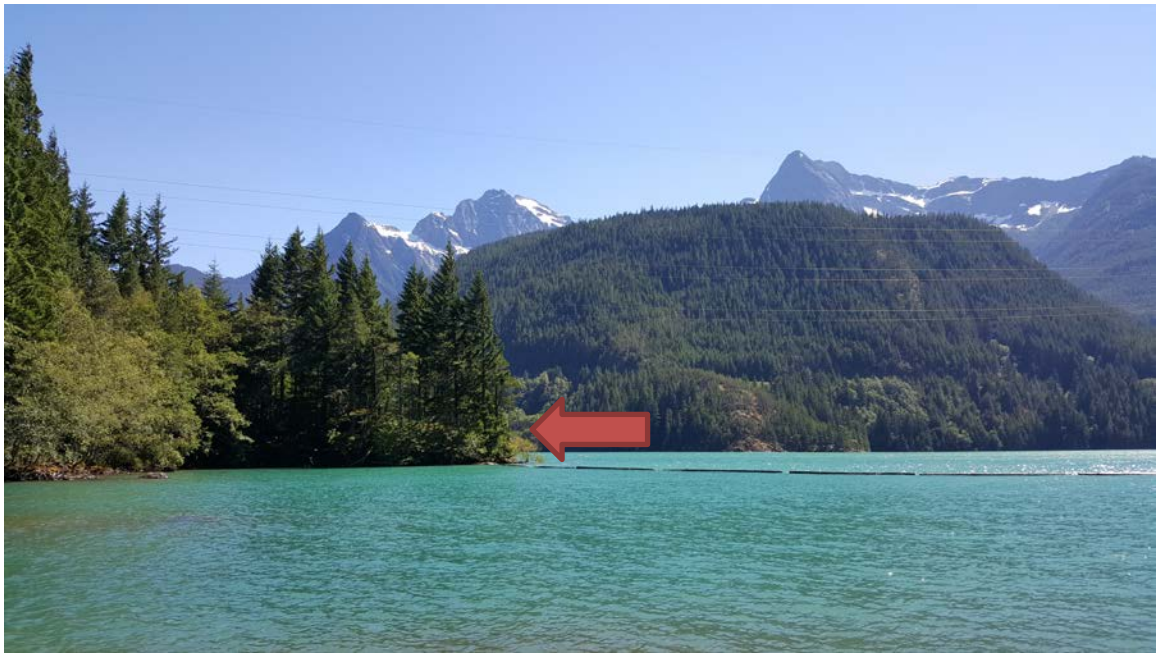
Diablo Lake New Tour Dock Project
Environmental Assessment



July 2018

National Park Service
U.S. Department of the Interior
North Cascades National Park Service Complex
810 State Route 20
Sedro-Woolley, Washington 98284

1. Executive Summary

1.1. Proposed Action

Seattle City Light (City Light) proposes to build a new tour dock on Diablo Lake in Ross Lake National Recreation Area (Ross Lake NRA). The proposed dock location is near the North Cascades Environmental Learning Center (ELC) on the north side of Diablo Lake on federal land. The new tour dock would be composed of a dock, gangway, and pier. The western portion of the existing Peninsula Trail would be improved for American Disabilities Act (ADA) access, and a new trail section, approximately 115 feet long, would be built to connect the Peninsula Trail to the new pier. Construction would take approximately six weeks in late fall 2018 or spring 2019.

The decision to be made is whether the National Park Service (NPS) should authorize City Light to carry out the proposed action. The decision focuses on selecting an action that best achieves the purpose and need of this project while minimizing and mitigating impacts on the resources and values of the Ross Lake NRA.

1.2. Purpose and Need

The purpose of the Diablo Lake New Tour Dock Project (project) is to provide safe, convenient, and ADA-compliant, public access to the tour boat used for the Diablo Lake Tours. The tours are a recreational and educational opportunity for visitors to Ross Lake NRA. The tours are a cooperative program between City Light, NPS, and North Cascades Institute (NCI).

The accessibility of the tour dock and of the tour boat itself has been an ongoing problem for tour operations since arrival of the new tour boat, the *Alice Ross IV*, in 2016. Currently, up to 45 tour participants at a time walk down a metal gangway and through City Light's Diablo Boathouse to reach the tour boat. The Diablo Boathouse was designed to support hydroelectric project operations; thus, the current arrangement for public access to the tour boat presents several safety issues. The new proposed location for the tour dock improves safety and eliminates the need to improve the currently unsafe pedestrian access through the ELC parking lot and along the road to the Diablo Boathouse. The proposed location also has the advantage of reducing the walking distance for tour participants.

1.3. Summary of Impacts

The impacts of the proposed action and a No Action Alternative are summarized in the Table 1 below. If an issue/impact is not listed in the table then it does not have a notable impact. To put the size of the new structure in context it would have an area of 1,450 square feet of new overwater cover, which is 0.004 percent of the surface area of Diablo Lake. Likewise, the new installation would occupy 60 linear feet of the lake shoreline, 0.08% of existing shoreline.

Table 1. Summary of impacts for No Action and the Proposed Action.

Impact Topic	No Action	Proposed Action
Water Resources	No change from existing conditions.	Temporary increase in turbidity from construction: 1) Turbidity effects include lowering of light penetration affecting photosynthesis and decreasing primary productivity, reduced foraging efficiency of fish on invertebrate and small fish prey, and potential abrasion to fish gills. This amount of turbidity would not likely cause any significant impacts to aquatic life. 2) Turbidity levels resulting from sediment runoff into the reservoir from the project site would not likely cause any significant impacts to aquatic life. 2) Turbidity would be minimized with best management practices (BMPs) and by working in the dry. 3) Turbidity monitoring would be performed near the proposed site during and after construction. 5) Turbidity levels would not be expected to exceed Washington Department of Ecology turbidity standards. Cumulative effects from temporary increases in turbidity, underwater noise disturbance, and alteration of the shoreline during construction of other projects. Approximately 480 square feet of new impervious surface (new foot path). This small amount and type of use is not expected to have impacts on water quality.

Table 1. Summary of impacts for No Action and the Proposed Action.

Impact Topic	No Action	Proposed Action
Vegetation	Climate change, disease, and invasive species may affect the type and mix of vegetation over the long-term, but that would occur with either No Action or the Proposed Action.	Long-term impacts include: 1) ~120 square feet of the vegetated shoreline would be replaced with a concrete footing. 2) ~480 square feet of vegetation would be removed for a new ADA-access trail, and improvements on an existing trail. 3) Up to five living trees would be removed that are 6 to 30 inches diameter at breast height. 4) All other areas are either void of vegetation or would be replanted. 5) Removal of established vegetation would be minimized by limiting project footprint and replanting. Cumulative effects include disturbance or removal of vegetation for other construction projects.

Table 1. Summary of impacts for No Action and the Proposed Action.

Impact Topic	No Action	Proposed Action
Fish and Wildlife, including Rare/Listed Species	No direct or indirect effects on fish and wildlife. Climate change, disease, and invasive species may affect species populations and distribution over the long term, but that would occur with either No Action or the Proposed Action.	Temporary avoidance of construction area by fish and wildlife because of turbidity and/or noise during the six-week construction period and possible cumulative effects in space and time from other nearby projects. Permanent loss of ~600 square feet of riparian habitat in shoreline areas. Long-term adverse effects from aquatic habitat structure changes in and immediately adjacent to the project area. Effects include loss of potential large woody debris and concrete footing and anchor blocks would reduce shallow water habitat and could alter predator-prey interactions with a disadvantage to native fish species. The operation of tours at the new tour dock location (a previously undeveloped portion of the shoreline) would have long-term impacts to fish and wildlife from noise and activity in the water. Also the operations in the new location may potentially increase shore line erosion (turbidity) in the vicinity of the tour dock due to wave action generated by the boat. A Biological Evaluation was prepared for this project in accordance with the Endangered Species Act, concluding that the proposed project would have no effects on marbled murrelet, northern spotted owl, gray wolf, grizzly bear, or Canada lynx. "The project may affect but is not likely to adversely affect" bull trout.

Table 1. Summary of impacts for No Action and the Proposed Action.

Impact Topic	No Action	Proposed Action
Cultural Resources	No effect to undiscovered cultural resources.	No known impacts to undiscovered cultural resources at the time of publishing. Monitoring would occur during construction and effects to cultural resources would be determined upon investigation. An archaeological monitoring plan and monitoring report would be submitted by City Light to the consulting parties for review. As a part of this monitoring and reporting process, direct and indirect impacts would be evaluated using Section 106 of the National Historic Preservation Act and 36 CFR Part 800.
Recreation and Visitor Use	Potential for slip and fall or ADA accessibility lawsuit at boathouse. Cumulative impacts from other construction projects may cause disturbance or unsafe conditions for Skagit Tours participants accessing the tour boat by walking from the ELC parking lot.	Long-term beneficial impacts of improved safety, ADA accessibility, and convenience for tour participants (approximately 4,500 annually), due to trail improvements and because location is near the ELC check-in. Short-term adverse impacts to hundreds of visitors from closure of the Peninsula Trail during construction. However, there are other nearby trails that could be used during construction. Short-term adverse noise impacts to visitors using the nearby lake, trails, campgrounds, and Environmental Learning Center. Cumulative impacts would include noise and visual disturbance to visitors during construction of other projects (see impacts to Soundscape indicators).
Soundscape	No change to background sound levels (46 dBA) resulting from this alternative.	6-week increase in noise and visual disturbance from construction activities may adversely impact sensitive species (i.e., bald eagle, common loon, peregrine falcon, Vaux's swift, and pileated woodpecker).

Table 1. Summary of impacts for No Action and the Proposed Action.

Impact Topic	No Action	Proposed Action
Soundscape continued	The soundscape in the project vicinity is already affected by daily boat traffic from City Light operations. Over the long term, background noise levels may increase slightly if visitation, boat traffic, and road traffic were to increase in the area.	Increased noise levels, from construction activities, would exceed three Ross Lake NRA General Management Plan indicator thresholds a few hours a day for the duration of the project: 1) Ambient Sound Levels, 2) Change in Sound Exposure, and 3) Sounds During Interpretive Programs. Cumulative impacts from incremental additive effects on noise where project timing and noise attenuation distances may overlap.
Visual Resources	No change from existing conditions.	Changes to the visual resources in the project area, including construction of a new trail, removal of natural shoreline, and construction of a new dock. Degree of adverse/beneficial impact would vary among individuals, but likely negligible effect for most people, given prevalence of other recreational and industrial facilities in the vicinity. Cumulative impacts similar to the impacts of Proposed Action alone, but none that would significantly change the character of the area.

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2. Purpose of and Need for Action

2.1. Proposed Action

City Light proposes to build a new tour dock on Diablo Lake, within the Ross Lake NRA. The proposed dock location is near the ELC on the north side of Diablo Lake (Figures 1 and 2). More precisely, the new tour dock would be located approximately 350 feet south of the ELC dining hall along the Peninsula Trail (Figure 3 and Appendix A). The new tour dock would be composed of a dock, gangway, and pier. The western portion of the existing Peninsula Trail would be improved for ADA access, and a new trail section, approximately 115 feet long, would be built to connect the Peninsula Trail to the new pier (Appendix A). To put the size of the new structure in context it would have an area of 1,450 square feet of new overwater cover. That represents 0.004 percent of the surface area of Diablo Lake. Likewise, the new installation would occupy 60 linear feet of the lake shoreline, which is 0.08% of existing shoreline. More details about the facilities and construction are included in Section 3.3.

2.2. Introduction

Diablo Lake, a reservoir behind Diablo Dam, is part of the Skagit River Hydroelectric Project (Skagit Project). The current Federal Energy Regulatory Commission (FERC) license (No. 553) for the Skagit Project includes a requirement, as part of the Recreation and Aesthetics Settlement Agreement, that City Light provide tours of the hydroelectric project (i.e., "Skagit Tours"). One of the most popular tour options is a boat ride on Diablo Lake (i.e., "Diablo Lake Boat Tours"), providing interpretative opportunities for approximately 4500 participants a year to learn about the natural and cultural history of the area, and the operation of the Skagit Project. The Diablo Lake Boat Tours are operated in partnership between City Light, NPS, and the North Cascades Institute.

The purpose of the project is to provide safe public, and ADA-compliant, access to the tour boat used for the Diablo Lake Boat Tours. The accessibility of the tour dock and of the tour boat itself has been an ongoing problem for tour operations since arrival of the new tour boat, the *Alice Ross IV*, in 2016. Currently, up to 45 tour participants at a time walk down a metal gangway and through City Light's Diablo Lake Boathouse to reach the tour boat, which is moored at an outer dock on the east side of the boathouse.

The Diablo Boathouse was designed to support hydroelectric project operations and the current arrangement for public access to the tour boat presents several safety issues. The gangway to the boathouse is very steep, can be slippery when wet, and is difficult to navigate by the elderly and people with disabilities. The route to the tour dock through the boathouse is constrained, bordered on one side by a wall with equipment that protrudes, and on the other side by two boat slips, which represent a hazard, particularly to small children who escape parental supervision. Once at the dock, the height differential between the dock and boat requires that tour participants climb three steps to board. Again, this can be difficult for mobility impaired participants and impossible for anyone in a wheelchair. The stairs also create a potential for slip and fall accidents while boarding the boat.

2.3. Decision to Be Made

The decision to be made is whether the NPS should authorize the proposed action. If approved the NPS would issue a Special Use Permit.

The Enabling Legislation for the Ross Lake NRA, as amended by the Washington Parks Wilderness Act of 1988, provides jurisdiction to FERC for existing hydroelectric operations and several proposed projects within the Ross Lake NRA, including Diablo Lake. City Light is currently authorized to operate and maintain the Skagit Project in accordance with a 30-year license provided by FERC, which expires in 2025. Although the FERC license authorizes City Light to maintain and operate the Skagit Project, City Light needs a Special Use Permit from the NPS to implement the proposed action because the project impacts resources not previously assessed in the environmental assessment that was part of the FERC license.

2.4. Project Area

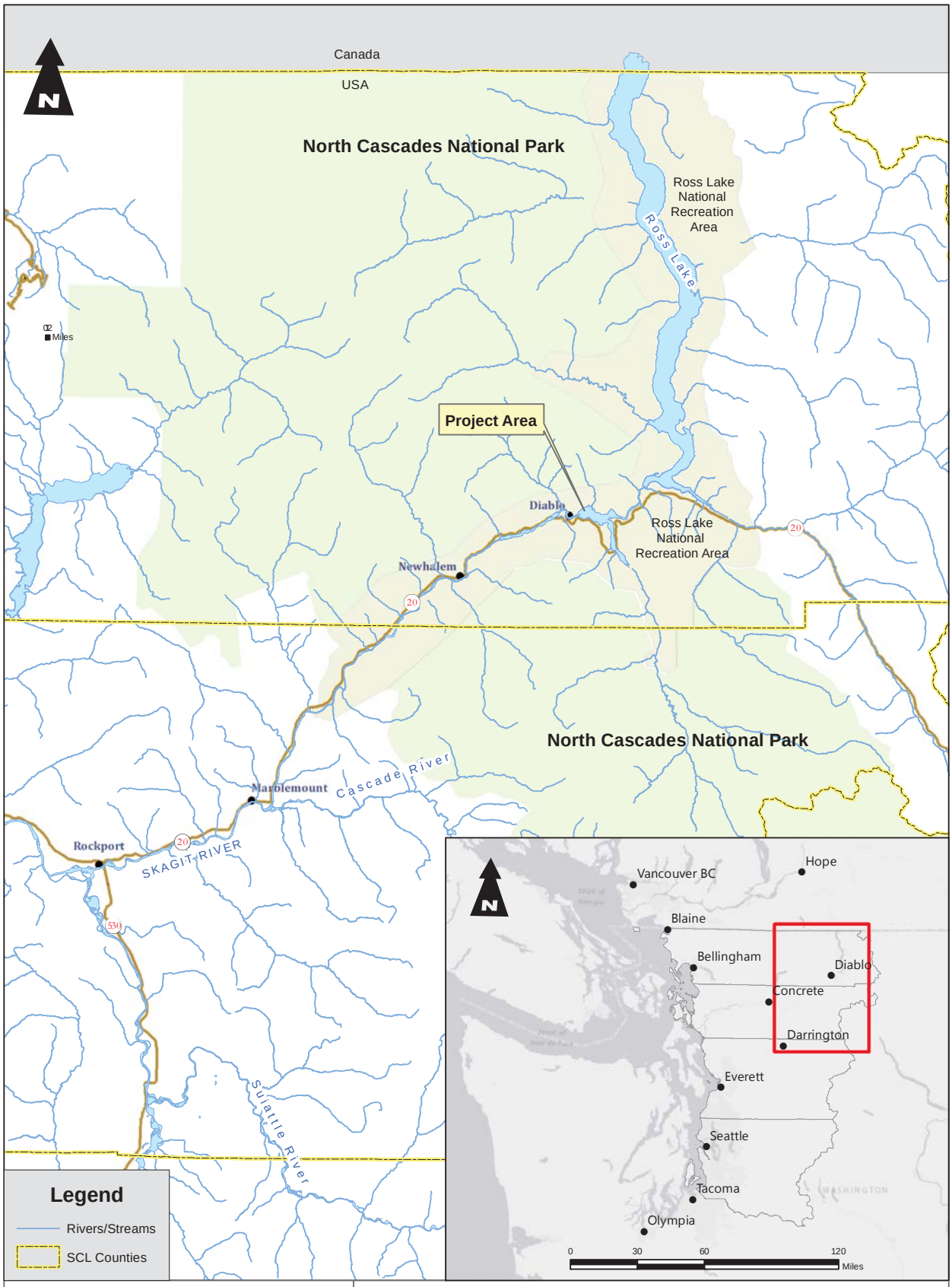
The proposed project would occur on and near Diablo Lake in Whatcom County, Washington State, approximately 350 feet south of the ELC (Figures 1, 2, and 3). Diablo Lake is the reservoir behind Diablo Dam, which is part of City Light's Skagit Project. The project area is within the southeast quarter of Section 4, Township 37 North, Range 13 East of the Willamette Meridian. The project area is within Ross Lake NRA, which is part of the North Cascades National Park Service Complex (the Complex).

2.5. Background

Diablo Lake is a reservoir that is a component of the Skagit Project, licensed by FERC (Project Number 553). The Skagit Project is composed of a series of three hydroelectric dams on the Skagit River and their associated reservoirs, structures and facilities. From downstream to upstream, the three dams are: Gorge Dam, Diablo Dam, and Ross Dam. Each dam has an associated powerhouse immediately downstream and an associated reservoir immediately upstream.

City Light's current FERC license for the Skagit Project includes a requirement, as part of the Recreation and Aesthetics Settlement Agreement, that City Light provide tours of the hydroelectric project ("Skagit Tours"). One of the most popular tour options is a boat ride on Diablo Lake ("Diablo Lake Boat Tours"), which provides interpretative opportunities to learn about the natural and cultural history of the area, and the operation of the Skagit Project. Until the recent past, the boat tour began at an existing dock on the west side of Diablo Lake, approximately 600 feet upstream from the right abutment of the dam (Figure 2). Parking is very limited near this dock, so tour participants were directed to park at the ELC parking lot (0.5 mile from the tour dock) and check in at the ELC dining hall (0.2 mile from the ELC parking lot). From the ELC dining hall, tour participants walked along the narrow access road, which has no sidewalk or shoulder, to the tour dock. Thus, the total trip from the ELC parking lot to the dining hall, then to the tour dock was 0.9 mile. Participants who were unable to walk this distance were transported by shuttle van.

In 2013, City Light removed its tour boat (the *Alice Ross III*) from service due to non-compliant diesel emissions and a damaged hull. From 2013 to 2015 the *Cascadian*, a 40-foot boat designed to provide ferry service for passengers and equipment across Diablo Lake, was also used for the boat tours. Because the *Cascadian* sat too high in the water to board from the existing tour dock, tour operations were temporarily moved to the Diablo Boathouse, which can accommodate the *Cascadian*. In 2016 City Light purchased a new tour boat, the *Alice Ross IV*, which sits even higher in the water than the *Cascadian*, so passengers still could not board at the existing tour dock. Access to the *Alice Ross IV* from the Diablo Boathouse dock is currently accommodated by a set of stairs, which are not ADA-accessible. The height difference between the boat and the dock also presents safety risks for passengers when boarding and disembarking the vessel. In addition, access to the boathouse is via a metal gangway, which can be quite steep when reservoir water levels are low.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Ross Lake National Recreation Area
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Rockport
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Seattle City Light
Figure 1. Maps showing the location of the project area in northwestern Washington State and within Ross Lake National Recreation Area.
Created 11/15/2017 by Seattle City Light, Environment, Land and Licensing Business Unit.
SCL provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
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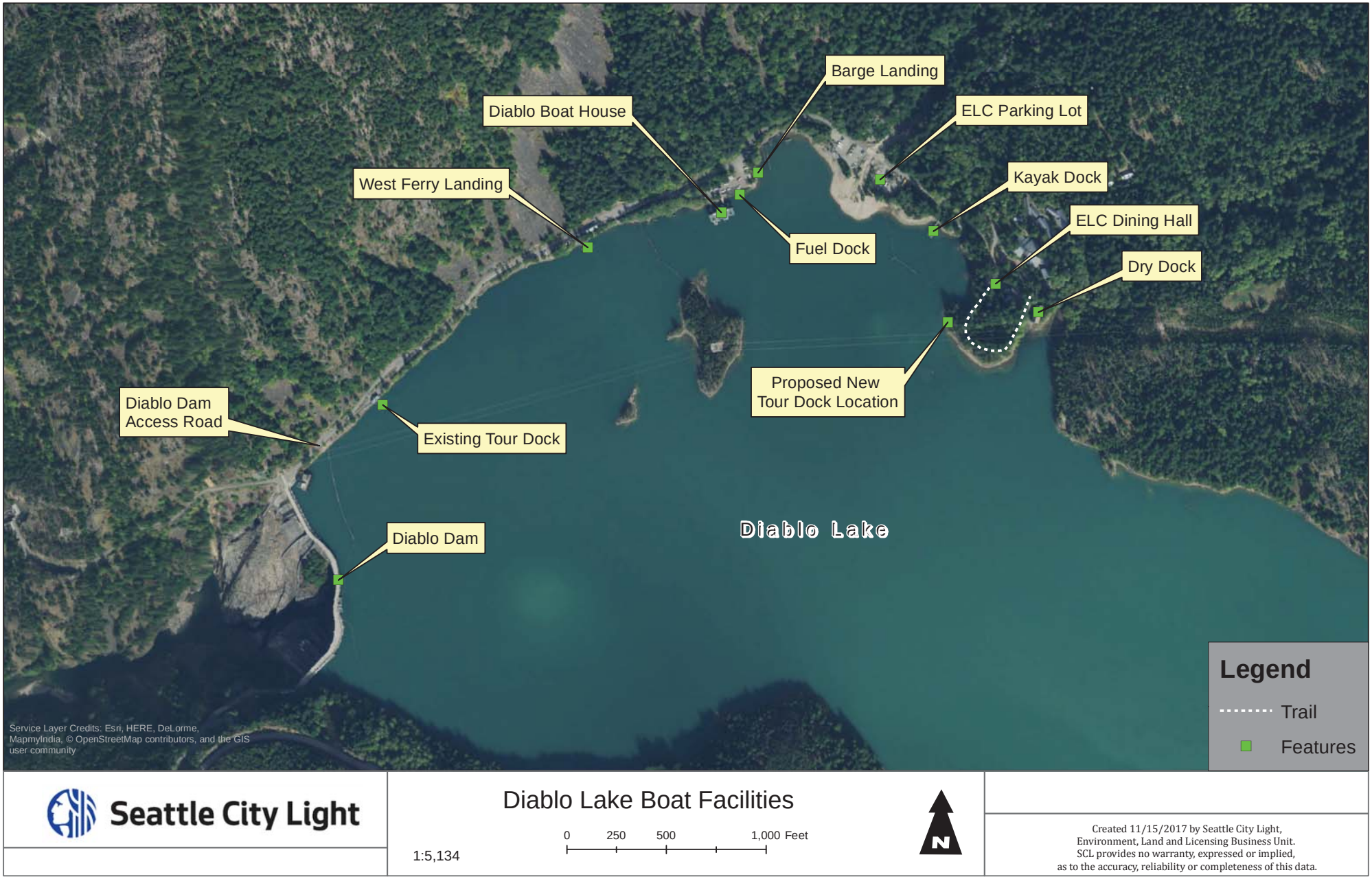

Figure 2. Map showing the northwest portion of and facilities on Diablo Lake, including the existing tour dock, the Diablo Boat House, the proposed tour dock location and the Environmental Learning Center (ELC) dining all and parking lot.

Figure 3. Map showing the walking route for Diablo Lake Boat Tour Participants from the ELC parking lot to the ELC Dining Hall (red dashed line), The existing PeninsulaTrail that would be improved (green line), and the proposed new access trail (purple line) from the Peninsula Trail to the new tour dock (orange blocks).

Visitor parking is not available at the boathouse, so tourists have continued to park at the ELC parking lot. The total trip from the ELC parking lot to the dining hall, then to the boathouse is 0.6 mile. Tour participants needing assistance are shuttled back and forth from the ELC to the boathouse in a van.

The boathouse has four slips to provide covered moorage for the crew boats and work vessels. Additional boats can be moored outside the boathouse. For City Light operations, speedboat round trips to/from the boathouse average approximately six round trips per day, Monday through Friday, including up to approximately 25 trips on busy days and two round trips on slow days. Tugboat round trips average six per week Monday through Friday, with up to five round trips on a busy day and none or one on a slow day. Crews and equipment stage in and near the boathouse.

The Diablo Lake Boat Tours run five days per week from the late June/early July through Labor Day weekend and are offered twice daily Fridays-Sundays and once per day on Mondays and Thursdays. Weekend tours run through the end of September. City Light also operates a ferry service twice daily from Memorial Day weekend through the end of October to shuttle visitors and their gear from the ferry landing on the west side of Diablo Lake to the east side, just downstream of Ross Powerhouse. From there, visitors can access Ross Lake by walking or taking a shuttle operated by Ross Lake Resort, an NPS concessionaire.

2.6. Issues to Be Studied in Detail

The following issues were identified for detailed analysis in this EA by NPS staff in consultation with City Light:

- Temporary and potential long-term impacts on water quality: The Proposed Action would disturb sediments during project construction occurring below the ordinary high-water mark (OHWM) of Diablo Lake, which could be re-suspended after the lake levels are returned to normal following the draw down. Sediments could also enter the water from upland disturbed areas during construction. Several mitigation measures would be utilized to minimize suspended sediments and turbidity (reduced water clarity). Potential long-term impacts to water quality due to the traffic of a 40 foot vessel and changes in wave action associated new in water structure also have the potential to increase shore line erosion in the vicinity of the tour dock and subsequently increase turbidity. The existing conditions of the affected environment are described in Section 4.1.1 and the impacts from proposed action are described in 5.4.1, *Water Resources*.
- Permanent and temporary impacts on vegetation: Disturbance from trail construction and improvements may promote development or expansion of populations of nonnative and invasive plants (weeds) in the project area. The Proposed Action would require removal of riparian vegetation in order to construct the access trail. The existing conditions of the affected environment are described in Section 4.1.2 and the impacts from proposed action are described in 5.4.2, *Vegetation*.
- Impacts on fish, fish habitat, and aquatic resources: Alteration of reservoir fish habitat from: construction of new shoreline and in-water structures, impacts on in-water habitat and water quality during construction, increased boat and visitor activity along an undeveloped shoreline, and a reduction in riparian vegetation would likely affect native fish species including Dolly Varden (*Salvelinus malma*), bull trout (*Salvelinus confluentus*, federally listed as threatened under the ESA), and rainbow trout (*Onchorynchus mykiss*). Waters would be lowered approximately 4 to 6 feet to construct the project in the dry. Following construction, lake levels would be returned to normal, potentially re-suspending sediments in the lake and creating turbidity. Deposition of any re-suspended sediments could

potentially alter fish habitat. Several mitigation measures would be utilized to minimize suspended sediments and turbidity. The existing conditions of the affected environment are described in Section 4.1.3 and the impacts from proposed action are described in 5.4.3, *Fish and Wildlife, Including Rare/Listed Species*.

- Temporary noise and visual disturbance impacts on wildlife: Construction-related noise and visual disturbance could temporarily displace some wildlife species within the vicinity of the project area. Diablo Lake is frequently used by relatively common species of waterfowl (such as merganser and Canada goose), semi-aquatic species (such as beaver), and terrestrial species (such as black-tailed deer). Construction of the trail and dock could adversely affect a small amount of habitat for such species. The existing conditions of the affected environment are described in Section 4.1.3 and the impacts from proposed action are described in 5.4.3, *Fish and Wildlife, Including Rare/Listed Species*.
- Potential impacts on Cultural Resources: The project area is in an area that has been used by people for thousands of years therefore the project has the potential to disturb pre-historic and historic resources/properties. In addition the area is important to local tribes, particularly the Upper Skagit Indian Tribe. The existing conditions of the affected environment are described in Section 4.2 and the impacts from proposed action are described in 5.4.4, *Cultural Resources*.
- Temporary and permanent impacts on recreation and visitor use: The Peninsula Trail would be temporarily closed during construction. Noise and increased vessel traffic related to construction activities may also temporarily disturb visitors and ELC participants in the vicinity. The Proposed Action is expected to produce many beneficial impacts to recreation and visitor use. The existing conditions of the affected environment are described in Section 4.3 and the impacts from proposed action are described in 5.4.5, *Recreation and Visitor Use*.
- Temporary impacts on soundscapes: Noise would be produced during construction because of excavating, grading, removing trees, rock drilling, and rock breaking. The existing conditions of the affected environment are described in Section 4.4 and the impacts from proposed action are described in 5.4.6, *Soundscapes*.
- Temporary and permanent impacts on visual resources: Construction activities would be visible to visitors from several viewpoints around the lake. The project would introduce a new permanent structure (the tour dock) into views of, and from the lake and lake shore, and would change the aesthetics of the existing shoreline. The existing conditions of the affected environment are described in Section 4.5 and the impacts from proposed action are described in 5.4.7, *Visual Resources*.

2.7. Issues Considered but Dismissed

The following issues identified have been dismissed by the NPS and do not warrant detailed impact analysis for the proposed project:

- Air quality: Air quality in Ross Lake NRA is currently affected by NPS and City Light operations, maintenance, and administrative activities, as well as visitor and recreational activities. Most effects are from emissions from vehicles, motorized boats, power equipment, and campfires. A variety of atmospheric pollutants are also received from urban and rural sources as near as the Puget Sound Lowlands and from as far away as Asia. Visibility monitoring in Ross Lake NRA over the 6-year period in the 2000s reflects "stable or improving visibility" on both clear days and hazy days (NPS 2012). Pertinent

to the proposed project, vegetation clearing, and project construction activities may temporarily create locally dusty conditions and release pollutants such as particulate matter, carbon monoxide, and carbon dioxide. Air quality concerns have been dismissed because the project impacts on air quality would be temporary and likely undetectable beyond the immediate project area, which would be closed to visitors during construction.

- Geology: The proposed action may result in minor impacts to bedrock from surface preparation and rock drilling, and minor disturbance of soil from grading, excavation for a concrete foundation, and installation of a small section of new trail. The total amount of new disturbance (excluding resurfacing the existing trail) would be limited to a relatively small area of less than approximately 5,400 square feet. Disturbance of existing soils can lead to adverse impacts from the erosion of soils and shoreline. Various best management practices (BMPs) would be utilized to minimize the chance of erosion and turbid run-off. These impacts and associated BMPs are addressed in Section 5.4.1, *Water Resources* and Section 3.3.1, *Mitigation Measures*.

- Temporary impacts on surficial geology: Construction of a new portion of trail and improvements and resurfacing to the existing trail would disturb sediments and replace native ground surface within the project footprint.

- Greenhouse Gases: A baseline greenhouse gas (GHG) emissions inventory for the Complex was completed in 2007 using the Climate Leadership in Parks (CLIP) Tool as part of the GMP/Environmental Impact Statement (NPS 2012). The most recent GHG emissions inventory for the Complex was completed in 2009 using the CLIP Tool. Both inventories show the same trend, indicating that combustion of fossil fuels by motor vehicles (i.e., mobile combustion) is the single biggest contributor to total emissions in the Complex. In Ross Lake NRA, emissions from mobile combustion by visitors are the largest sources of total emissions. In the vicinity of the project area, the use of motorized vehicles includes speedboats, tugboats, and tour boats on Diablo Lake, as well as cars, trucks, and other maintenance equipment on the North Cascades Highway, the Diablo Dam access road, the powerline right-of-way access road, and around the ELC campus. The proposed action would include construction activities such as minor clearing, excavation, soil grading, resurfacing, and stockpiling that may result in localized releases of pollutants such as dust and other particulate matter during the 6-week construction period. Exhaust emissions from construction equipment may cause temporary increases in carbon monoxide and carbon dioxide (a greenhouse gas), as well as other air pollutants, in minor concentrations. The long-term need for a van to shuttle participants to and from the boathouse for the boat tours would be unnecessary. Therefore, the proposed action would generally reduce greenhouse gas emissions, compared to existing conditions, over the long-term.

- Wilderness: The Proposed Action would not occur in a designated wilderness area, but construction activities could potentially be heard within the Stephen Mather Wilderness. The proposed project is not likely to measurably affect the current baseline of intrusions from human activities occurring outside of wilderness. Given all the various activities that occur within the Skagit Project and on the adjacent highway corridor, most wilderness users would be unable to discern the proposed project activity from routine hydroelectric and NPS operations, ongoing projects, and other auditory and visual impacts, including those along the North Cascades Highway (State Route 20 [SR20]).

- Socioeconomic Effects: Broadly speaking, socioeconomic effects include such things as patterns of consumption, the distribution of incomes and wealth, the way in which people behave (both in terms of purchase decisions and the way in which they choose to spend their time), and the overall quality of life. There may be minor disruptions to visitor access during construction and other project-related activities, but they would not disrupt patterns of consumption, distribution of incomes and wealth, or patterns in behavior. If implemented the proposed action would not change the capacity of participants served by or scheduling of Skagit Tours. Impacts to park visitors, however, are addressed in Section 4.5.6, *Recreation and Visitor Use*.

- Environmental Justice: Executive Order 12898 directs federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. There are no minority or low-income populations and communities in the project vicinity. Adverse effects of the project are minor and there is limited controversy. The equity of the distribution of the benefits and risk of the decision would affect visitors equally. Thus, there would be no disproportionately high and/or adverse effects on minority or low-income populations in the project area.

- Indian Trust Resources: Indian trust resources are those natural resources reserved by or for Indian tribes through treaties, statutes, judicial decisions, and executive orders, which are protected by a fiduciary obligation on the part of the United States. There are no Indian trust resources in the project vicinity.

2.8. Laws, Regulations and Policies and Administrative Procedures Guiding this Decision

2.8.1. National Park Service Organic Act

The Organic Act of 1916 established the NPS and provided the means for the NPS to promote and regulate national parks, monuments, and other reservations. As such, the NPS is required by the Organic Act to protect and preserve unimpaired the resources and values of the National Park System, while providing for public use and enjoyment of unimpaired resources. The Organic Act provides the fundamental management direction for all units of the National Park System.

2.8.2. Enabling Legislation for the Ross Lake National Recreation Area

Title 2, Ross Lake and Lake Chelan National Recreation Areas, provides:

> *… In order to provide for the public outdoor recreation use and enjoyment of portions of the Skagit River and Ross, Diablo, and Gorge Lakes, together with the surrounding lands, and for the conservation of the scenic, scientific, historic, and other values contributing to public enjoyment of such lands and waters.*

Title 5, Special Provisions, as amended by the Washington Parks Wilderness Act of 1988 provides:

> *… Nothing in this Act would be construed to superseded, repeal, modify, or impair the jurisdiction of the Federal Power Commission under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), in the lands and waters within the Skagit River Hydroelectric Project, [FERC] Project 553, including the proposed Copper Creek, High Ross, and Thunder Creek elements of the project.*

2.8.3. Federal Power Act

The Federal Power Act (16 USC) created FERC as the licensing authority for hydroelectric projects and interstate electrical transmission, among other responsibilities. Under authority of the Federal Power Act, FERC issued a 30-year license for the Skagit Project in 1995. The 30-year timeframe reflected the importance of the power provided by the project and the expectation that this power source would continue to support the City of Seattle.

Section 4(e) of the Federal Power Act requires that licenses for projects located within United States (U.S.) reservations must include all conditions the Secretary of the department under whose supervision the reservation falls shall deem necessary for the adequate protection and utilization of such reservation.

2.8.4. Clean Water Act

The Clean Water Act (CWA) is a national policy to restore and maintain the chemical, physical, and biological integrity of waters of the United States; to enhance the quality of water resources; and to prevent, control, and abate water pollution. Sections 404, 401, and 402 of the CWA are applicable to the proposed project. Section 404 regulates the discharge of dredged or fill material into waters of the U.S. Excavation of material from below the OHWM is regulated under the Section 404 program administered by the US Army Corps of Engineers (ACOE) with oversight from US Environmental Protection Agency (EPA). Under Section 401 of the CWA, an activity that includes discharge into waters of the U.S. authorized by the Section 404 program must receive Water Quality Certification from the Washington State Department of Ecology (Ecology). Section 402 of the CWA governs the discharge of pollutants to waters of the U.S., including suspended solids.

2.8.5. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) precludes all federal agencies, including the NPS, from authorizing, funding, or carrying out any activity that may jeopardize the continued existence of an ESA-listed species. The proposed project must comply with the consultation requirements of the ESA. Consultation would occur with the US Fish and Wildlife Service (USFWS; no species occur in the project area that would require consultation with the National Marine Fisheries Service).

2.8.6. National Historic Preservation Act

Cultural resources include those historic properties protected under the National Historic Preservation Act (NHPA) that are prehistoric or historic era sites, structures, buildings, districts, Traditional Cultural Properties (TCP), or objects that are listed or are eligible for listing in the National Register (36 CFR 60). The potential effects to areas of cultural importance to Native Americans (e.g., sacred lands) that do not meet NHPA criteria also are considered.

2.8.7. National Park Service Director's Orders

<u>Director’s Order #47: Soundscape Preservation and Noise Management</u>

The Sound Preservation and Noise Management Director’s Order provides for the protection, maintenance, or restoration of the natural soundscape resource and to maintain a condition unimpaired by inappropriate or excessive noise.

2.8.8. National Park Service Management Policies 2006

Section 4.1 of NPS Policies, *General Management Concepts*, generally discourages intervening in natural processes unless:

- Directed by Congress;
- In emergencies in which human life and property are at stake;
- To restore natural ecosystem functioning that has been disrupted by past or ongoing human activities; or
- When a park plan has identified the intervention as necessary to protect other park resources, human health and safety, or facilities.

2.8.9. Ross Lake National Recreation Area GMP

The Ross Lake NRA GMP (NPS 2012) assigns management zones to different areas of Ross Lake NRA. For each of the management zones, there are specific management goals and objectives for resource management, levels of development, and different types of potential visitors' experiences. The proposed project area lies within the Front country Zone, which "maintains good natural and cultural resource conditions with some modified resources". In this zone, "high level of universal accessibility will be provided for visitors to see, experience and learn about heritage (natural and cultural)" (NPS 2012). Specific management prescriptions for the Front country Zone are outlined in Table 4.1 of Volume I of the Ross Lake National Recreation Area GMP (2012).

2.8.10. Recreation and Aesthetics Settlement Agreement

The Recreation and Aesthetics Settlement Agreement was entered into in 1991 by City Light and the NPS, in addition to other parties. The Settlement Agreement establishes the Skagit Project Recreation Plan, and it describes the continuing mitigation and enhancement measures that City Light either funds or implements. These measures include recreation facility operation and maintenance, services, studies, and capital projects. The Settlement Agreement requires City Light to continue to operate the Skagit Tours, which includes the Diablo Lake Boat Tours, which drives the purpose and need for this project.

2.8.11. Washington State Hydraulic Code

A Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) per 75.20 RCW is required for any project that will use, divert, obstruct, or change the natural flow or bed of any fresh or salt water of the state. This includes all construction or other work water ward and over the OHWM, including dry channels, and may include projects landward of the OHWM (e.g., activities outside the OHWM that will directly impact fish life and habitat, falling trees into streams or lakes, etc.).

2.8.12. Washington State Shoreline Management Act

The overall goal of the Washington State Shoreline Management Act SMA is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The Shoreline Management Act directs each city and county with "shorelines of the state" to prepare and adopt a Shoreline Master Program. The Skagit River is identified as a Shoreline of Statewide Significance in both Whatcom County and Skagit County. Activities within 200 feet of the Skagit River must comply with the Shoreline Master Programs of both Whatcom County and Skagit County as applicable.

2.8.13. Washington State Environmental Policy Act

The State Environmental Policy Act (SEPA) review process helps state and local agencies in Washington identify and analyze possible environmental impacts that could result from governmental decisions, similar to NEPA. Under SEPA, one government agency is usually identified as the lead agency for the proposal and completes a SEPA environmental checklist. The lead agency identifies and evaluates potential adverse environmental impacts of a proposal, and either issues a determination of non-significance or prepares an environmental impact statement. A document prepared for NEPA compliance can also be adopted under SEPA to fulfill SEPA requirements.

2.8.14. Boat Facilities Master Plan

In 2012, City Light prepared the Boat Facilities Master Plan. This document was developed using a stakeholder consensus process with representatives from City Light, the NPS, and North Cascades Institute. Goals and objectives for the plan were identified in relation to current conditions and operations for each stakeholder. Various alternatives were discussed, analyzed, and refined based on review and discussion with the stakeholders and preliminary design analysis.

2.9. Required Permits and Approvals

2.9.1. Section 404 of the Clean Water Act

A CWA Section 404 permit (Nationwide Permit 18 for minor discharges) is being sought from the ACOE. Conceptual project plans have been discussed with the ACOE, and a pre-application meeting was held on September 22, 2016. On February 15, 2018, City Light submitted a Joint Aquatic Resources Permit Application (JARPA) to the ACOE as part of obtaining the nationwide permit. The proposed project would not occur until a Section 404 permit is obtained.

2.9.2. Section 401 of the Clean Water Act

The JARPA submitted by City Light was provided to Ecology on February 15, 2018 for Section 401 Water Quality Certification verification. The proposed project would not occur until a Section 401 Water Quality Certification is obtained.

2.9.3. Coastal Zone Management Act Certification

The JARPA submitted by City Light was provided to Ecology on February 15, 2018 for CZMA Certification. The proposed project would not occur until a CZMA Certification has been obtained.

2.9.4. Endangered Species Act, Section 7 Consultation

A Biological Evaluation (BE) was prepared and submitted to the ACOE with the JARPA. The BE informs federal agencies of potential impacts on federally-listed species that are known to or may occur in the vicinity of the proposed project (Appendix B). The BE concluded that the effects of the proposed work on listed species would result in impacts that are insignificant and discountable. It is anticipated that concurrence from the USFWS will be obtained through the informal Section 7 consultation process, as discussed in a pre-application meeting with ACOE on September 22, 2016, which was attended by a representative of USFWS. The proposed project would not occur until concurrence from USFWS has been received.

2.9.5. Washington State Hydraulic Project Approval

The JARPA prepared by City Light was submitted WDFW to obtain a hydraulic project approval (HPA) on February 15, 2018. Additionally, a representative of WDFW attended the pre-application meeting on September 22, 2016 where conceptual project plans were discussed with WDFW and other regulatory agencies. The proposed project would not occur until an HPA has been obtained.

2.9.6. Washington State Shoreline Substantial Development

A Shoreline Substantial Development and Conditional Use Permit application was submitted in June 2017 to the Whatcom County Planning and Development Division for the project. The proposed project would not occur until a Shoreline Substantial Development and Conditional Use Permit has been obtained.

2.9.7. Washington State Environmental Policy Act

A State Environmental Policy Act (SEPA) checklist was prepared and a Determination of Non-significance was issued by the City of Seattle, the lead SEPA agency, in May 2017. No comments were received on the project.

2.9.8. National Historic Preservation Act Section 106

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of projects on historic sites and cultural resources. To satisfy the directives of NHPA Section 106 (codified in 36 CFR 800) the federal agency must identify whether historic properties exist in the Area of Potential Effect (APE) and, if any exist, evaluate their significance and potential eligibility to the National Register of Historic Places. The process includes consultation with Tribes and the Washington State Historic Preservation Officer (SHPO) to determine whether the project may create an adverse effect on a property that is eligible for or listed on the National Register of Historic Places. City Light has been consulting with all parties; consultation is discussed in depth in Section 5.4.4 below. The proposed project would not occur until the NHPA consultation is completed.

3. Description of Alternatives

3.1. Preliminary Options Considered But Dismissed

Various preliminary options were considered but dismissed for reasons described below.

3.1.1. Modify Existing Tour Dock and Improve Access

The existing tour dock could be modified to be ADA accessible by replacing the existing float with a float having more freeboard. However, this alternative was dismissed for four reasons:
(1) ADA Access - There is no parking at this site. ADA use of this site would continue to require a van or car shuttle from the ELC dining hall.
(2) Tour Participant Access – The road between the existing tour dock and the ELC is a narrow, one-lane road with the lake on one side and rock talus slopes on the other for much of the route. Making access safe for tour participants who walk from the ELC would require widening the roadway to allow a shoulder for pedestrians or constructing a trail through the talus slope. Both of these actions are difficult to engineer and construct and would result in significant ground disturbance as well as environmental and aesthetic impacts along the shoreline.
The only way to make pedestrian access between the ELC and the tour dock safe would be to require tour participants to take a shuttle. However, the narrow road and the small, congested turn-around area near the dam precludes the use of large shuttle vehicles. Transporting all 45 tour participants using standard small

buses or vans, which hold 12 to 20 passengers, requires 4 round trips, each taking about 15 minutes. This makes for 1-hour wait times at the start and end of each boat tour, which would result in an inconvenient, unsatisfactory experience for visitors.
(3) Location – The existing tour dock was constructed when the tours originated in Diablo and participants took an incline lift near Diablo Dam, in which case, the existing tour dock site was the closest point to access the lake. According to City Light's boat captains, however, the existing tour dock has always been a difficult site to dock and board the large tour boats due to the wind and topography.
(4) Other Use – The existing NPS boathouse on Diablo Lake is in poor condition and a location that is becoming unusable due to the accumulation of silt from nearby streams. The tour dock location is ideal for a new NPS boathouse as because there is an existing bulkhead and stiff-arm connections. City Light has agreed to turn this site over to the NPS, and plans are underway for the NPS' new boathouse.

3.1.2. Modify the City Light Diablo Boathouse

Boarding the tour boat from the Diablo Boathouse dock requires a set of stairs, which are not ADA-accessible. To be ADA accessible a 25-foot ramp would be necessary to achieve the 8.33% grade. A 25-foot ramp would make access to the work boats moored nearby difficult. In addition, access to the boathouse is via a metal gangway, which can be quite steep when reservoir water levels are low. At normal operating water levels, the grade ranges from 11.5% to 18.5%. To achieve 8.33% grade, the boathouse would require significant engineering and disturbance to the shoreline, including longer stiff arms (approximately 12 feet), new anchoring into the shoreline, and possibly a new float.

Even if the boathouse were able to be modified for ADA accessibility, this alternative would result in continued public access to a work space designed for City Light operations. Mixing work spaces with those used by the public is not ideal for public safety, security, and operations.

3.1.3. Alternative Locations

Other potential locations for the new tour dock were considered but rejected for the following reasons:

- The ferry dock. The ferry dock is not suitable for the tours primarily because the tour and ferry departure times nearly overlap—which would result in too many people, as well as gear, at the ferry landing.

- Near the ferry dock west of the existing location. This location was eliminated because it did not significantly reduce the walking distance from the ELC, thus not improving safety and accessibility enough to justify the cost of the move. Parking cannot be added near the Diablo Boathouse due to the limited space in the area and the need to prioritize City Light hydroelectric operations at the fuel facility and barge landing facility that are adjacent to the boathouse.

- On the east side of the cove across from the barge landing, adjacent to the ELC parking area. Location was eliminated because the frequent barge and tug operations in the cove could lead to conflicts with the tour vessel operations.

- North of the ELC kayak dock adjacent to the parking area. Location was eliminated due to concerns that sedimentation and debris from Sourdough Creek could potentially impact the dock and the ability of vessels to maneuver in this area.

- A dock on the southwest side of the ELC peninsula was eliminated because it would be routinely exposed to the high winds, which would impact the operations of the tour vessel. Also, because the Deer Creek area may be used by bull trout, keeping the tour vessel operations separate from the creek area is environmentally beneficial.

3.2. No Action

The No Action alternative would involve no changes to the existing dock facilities on Diablo Lake, no improvement or extension of the Peninsula Trail, and no substantial changes to current tour boat operations. Tour participants would continue to walk along the Diablo Dam access road from the ELC parking lot to the Diablo Boathouse.

The No Action alternative fails to meet the Purpose and Need of the action. The purpose of the project is to provide safe public and ADA-compliant access to the tour boat. Because the existing tour dock cannot accommodate City Light's tour boat because of its height, it would be turned over to the NPS. The NPS would move their boathouse (currently next to Colonial Creek Campground) to this location and obtain permits and conduct NEPA analysis, as appropriate, as a separate project.

3.3. Proposed Action

The specific objectives of the Proposed Action are to achieve ADA compliant, and improve the safety, accessibility, and overall experience for boat tour participants by: Constructing a new tour dock closer to the ELC parking lot, so tour participants have a shorter, more convenient, and safer walk to the tour boat; Providing an ADA-accessible trail from the ELC to the new tour dock, thereby eliminating the need for visitors to walk along the Diablo Dam access road to reach the boat tours or to load and unload from the shuttle van; and Constructing a dock that provides safe access onto the tour boat.

The Proposed Action includes construction of a new tour dock near the ELC, and 420 feet of improvement and extension of an existing trail to provide ADA-compliant access between the ELC and the proposed tour dock (Figure 3 and Appendix A). No changes to tour boat scheduling or capacity are proposed. Thus, parking needs are unchanged. No new sanitation facilities are proposed, because tour boat participants would continue to have access to restroom facilities in the ELC Dining Hall. The trail and dock would be open to the public, except the dock would be closed during tour boarding times.

Under the Proposed Action, a new tour dock would be located approximately 350 feet southeast of the ELC dining hall along the "Peninsula Trail" (Figure 3 and Appendix A). The tour dock would consist of a dock, gangway, and pier and would be ADA-accessible. The dock structure would be 50 feet long, 25 feet wide, and 5 feet high, and constructed of steel pontoons, Alaska cedar walers, and a partial grating surface (30 percent) to allow light penetration. This grating would allow for 50% light penetration. The dock design meets Washington State requirements for protecting salmonid migration, feeding, and rearing areas (see WAC 220-660-140 3(c)(iv)(A)). The pier would consist of two nonlinear sections, one 36 feet long by 20 feet wide and the other 19 feet long and 10.5 feet wide. The pier would be composed of galvanized steel support and wood structural members treated with water-based wax emulsion sealer, and the deck would be fitted with molded fiberglass grating to allow light penetration. The gangway would be approximately 40 feet long and 5 feet wide and would connect the pier to the dock. The gangway would be constructed of composite grating and aluminum members. The project plan set is included in Appendix A.

The new tour dock would be transported to Diablo Lake in two pieces, fashioned together in the City Light Diablo Boathouse parking lot, and launched from one of the barge landings. The dock would be temporarily stored on the water near Buster Brown campground, then floated to the project site and anchored to the shoreline structures. The tour dock would float on metal pontoons and would be attached to the shoreline with two steel stiff arms, each approximately 20 feet long and each connected to a main concrete anchor block. The two main anchor blocks would be approximately 12 feet by 6.5 feet by 4 feet and would be secured in place with six rock bolts drilled into bedrock to an estimated depth of 6 feet. The main concrete anchors would be horizontally attached to bedrock with rock bolts. A continuous anchor block (50 feet long, 2 feet wide, and 2 feet deep) would run along the underside of the northeast edge of the pier. Four concrete pier supports (each 2 feet long, 2 feet high, and 2 feet deep) would anchor the opposite side of the pier, with a rock bolt drilled through each pier.

City Light staff and contractors would perform all construction. Most work would be conducted from a barge. An excavator would be used to excavate any soil. All soil removed from the trenches would be temporarily stockpiled on the barge. The trenches would be backfilled with the stockpiled native soil. All concrete would be poured from a concrete mixer truck and pumper truck on the barge. A pneumatic drill mounted on tracks would be used to install the rock bolts. City Light would use a dump truck on a barge for importing and exporting materials. A pneumatic jackhammer would prepare the bedrock surfaces. In addition, a chainsaw, a small vibratory compactor, and other miscellaneous hand tools may be used.

An approximately 305-foot-long section of the existing Peninsula Trail would be improved to comply with ADA recommendations. Approximately 115 feet of new trail would be built to connect the improved section of the Peninsula Trail to the new pier (Figure 3, Appendix A). Overall, the walk from the ELC dining hall (where tour participants must check in) to the new tour dock would be approximately 420 feet. As shown in the project plans (Appendix A), trail improvements would include:

- Minor regrading for 305 feet
- Where necessary, widening to provide a 3-foot-wide trail over the 305-foot section.
- Resurfacing with 4 inches of 3/4-inch gravel (15 cubic yards)
- Adding one turnout that is 6 feet long and 3 feet wide
- Installing new rockery and/or replacing existing rockery in several locations for a total length of approximately 400 feet (7.3 cubic yards)

Construction of the new trail section would include:

- Clearing and grading along the length of new trail, approximately 115 feet long by 3 feet wide
- Adding approximately 10 inches of aggregate along the new trail (approximately 10.6 cubic yards)
- Removing up to five trees within the proposed trail alignment. The trees range in size from 6 inches to 30 inches diameter at breast height.
- Constructing one turnout that is 6 feet long and 3 feet wide
- Installing approximately 20 feet of new rockery along the trail (2.2 cubic yards)

Equipment used for trail improvements and construction may include a mini excavator, small vibratory compactor, motorized wheelbarrow, and various hand tools. Construction would require a 6-week period between April and June 2019 (excluding Memorial Day) or October through November 2018. All land disturbing activities would be conducted in the dry. Thus, during construction, Diablo Lake would be drawn

down to an elevation of 1,202 feet (NAVD 88), approximately 9 feet below the lake's OHWM. Elevation 1,202 is 4 to 6 feet below normal operating levels.

The existing tour dock would be turned over to the NPS. The NPS would move the boathouse function (currently next to Colonial Creek Campground) to this location and obtain permits and conduct NEPA analysis, as appropriate, as a separate project.

3.3.1. Mitigation Measures

Mitigation measures are actions that would be taken to minimize, avoid, or otherwise offset the potential effects of the Proposed Action. Table 2 summarizes the mitigation measures that would be employed, including the monitoring components and potential adaptive management options that would be pursued if the mitigation measures do not function as intended. City Light, in coordination with NPS, would monitor the effectiveness of the mitigation measures to ensure they function as intended. If the measures do not function as intended, or unintended consequences arise, City Light would collaborate with NPS to develop alternative means of avoiding or minimizing adverse effects.

Table 2. Summary of mitigation measures.

Affected Resource	Mitigation Measure
Water resources, including fish	**Minimize turbidity using various best management practices (BMPs).** All relevant and appropriate BMPs would be implemented, as necessary, to meet the state water quality standard for turbidity, which is no more than 5 nephelometric turbidity units (NTUs) above background levels when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background is more than 50 NTU. The lake would be lowered so that all ground disturbing activities are conducted in the dry. Soil would be stockpiled on the barge rather than on land. Compost socks would be installed around the perimeter of construction to prevent or minimize erosion and sedimentation during construction. Mulch would be applied to all disturbed areas immediately following construction. Turbidity in the lake would be monitored during construction following WDOE turbidity monitoring requirements (WAC 173-201A-200 (1)(e)(i)(D).
	Minimize impacts on water quality. A concrete wash-out area would be created for use during construction. City Light would ensure that wash water does not enter the lake and would have spill response equipment on site throughout the duration of construction.
	Reduce overwater shade from new facilities. The surface of the dock structure would have full grating and the pier surface would be constructed of molded fiberglass grating designed to allow 50% light penetration.
	Protect bull trout from overfishing. The dock would be closed to fishing until it can be determined that angling pressure will not disproportionately impact bull trout.

Table 2. Summary of mitigation measures.

Affected Resource	Mitigation Measure
Vegetation	**Rehabilitate shoreline portions of the construction area.** The proposed trail alignment was selected to minimize tree removal; up to five trees would be removed, of which two are flagged for saving during construction if possible. Trees proposed for removal would be flagged prior to construction. City Light would prepare a revegetation plan in consultation with the NPS for shoreline areas disturbed by construction of the trail improvements and new trail section. Disturbed areas would be replanted with native species derived from local genetic stock. **Minimize invasive plant establishment.** Exposed soil would be seeded and mulched as soon as possible to prevent the establishment of invasive plants. If excess fill is to be stored in the park for later use as soil, and the storage area is in a location where invasive non-native plants are present, the fill pile shall be protected with mulch to prevent the acquisition of weed seeds.
Recreation and Visitor Use	**Minimize impacts on visitor use.** Construction activities would occur outside of peak visitor periods (July through September) and the boat tour season (late July through mid-September). **Notification:** The public would be notified when the work is occurring. **Access:** For safety reasons, people would not be allowed on the dock when the boat is docking. Guides would escort each tour group to the dock once the boat is ready for boarding. **Sign:** A sign would be installed at the dock informing visitors of boat docking times and other relevant safety information. **Emergency response plan.** City Light would write and enact an emergency response plan relevant to the new tour dock location that is coordinated with the NPS and NCI. It would include evacuation response, emergency medical response, emergency phone access, etc.
Cultural Resources	**Monitoring during construction.** An archaeological monitoring plan would be prepared prior to construction. The Seattle City Light Unanticipated Discovery Plan would be implemented during project construction (See Section 5.4.4).
Soundscapes	**Scheduling to minimize impacts.** Construction would occur in the off-peak season. Construction would occur only between the hours of 7:00 AM and 5:00 PM. **Reduce impacts associated with construction equipment.** Construction equipment have properly functioning mufflers. Equipment would be shut off when not in use rather than idling. The barge would be tied to the shoreline rather than using the tugboat to hold the barge in place if used for construction.

4. Affected Environment

4.1. Biological and Physical Environment

The physical environment that would be affected includes the project area, primarily where construction activities would occur, including staging areas, stockpiling areas, and travel routes. The biological environment extends beyond the project area to include adjacent habitats for vegetation, fish, and wildlife. The affected environment for cultural resources is specifically described in Section 3.2. This section describes the current conditions of the resources and establishes a baseline for the impact analysis in Section 5, *Environmental Consequences*.

4.1.1. Water Resources

Diablo Lake is the only water resource in the project area. The water quality, quantity, and beneficial uses of the lake are discussed below after a brief discussion of water quality standards and quality in watershed resource inventory area (WRIA) 4, which is the Upper Skagit River Basin.

Water quality standards for freshwaters in Washington, including designated uses and water quality criteria, are identified in the Washington Administrative Code (WAC) 173-201A-200. Table 3 shows the designated uses for the Upper Skagit WRIA 4, which includes all associated tributaries to the Skagit River. In addition to the designated uses, the water quality criteria identified in Appendix C are applicable.

Table 3. Designated uses of waters in the project area within WRIA 4.

	Aquatic Life Uses						Recreational Uses			Water Supply Uses				Misc. Uses				
Water Body	**Char**	**Core Summer Habitat**	**Spawning/Rearing**	**Rearing/Migration**	**Redband Trout**	**Warm Water Species**	**Ex Primary Contact**	**Primary Contact**	**Secondary Contact**	**Domestic Water**	**Industrial Water**	**Agricultural Water**	**Stock Water**	**Wildlife Habitat**	**Harvesting**	**Commerce/Navigation**	**Boating**	**Aesthetics**
Skagit River and all tributaries upstream of Skiyou Slough except designated tributaries		✓					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Designated WRIA 4 tributaries, including Thunder Creek	✓						✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

Every two years, Ecology prepares an Integrated Water Quality Assessment. Included in the assessment are streams on the Clean Water Act Section 303(d) list of impaired water bodies in need of a plan that describes the impaired segment's total maximum daily load (TMDL) and measures to improve water quality in the segment. Relative to state water quality standards, the Upper Skagit WRIA 4 (upstream and including the Sauk

River) is in good condition. Based upon Ecology (2016), no stream segments in WRIA 4 have a required TMDL, and only one segment within WRIA 4 is on the current Section 303(d) list.

Diablo Lake is a 4.8-mile-long reservoir formed by Diablo Dam and is primarily used for daily and weekly regulation of discharge from Ross Dam. The reservoir is normally drawn down by only 11 feet from the full operating pool elevation (1,205 feet). Diablo Lake is an oligotrophic lake that drains a pristine drainage. Thunder Creek is the major tributary to the Skagit River that enters Diablo Lake.

Diablo Lake is designated as "Conservancy" in the Whatcom County Shoreline Management Program. The lake is a Type "S" Water according to WAC 222-16-030. Diablo Lake is designated by Ecology as a Category 1 water body, which means there are no documented water quality impairments (Ecology 2017). Water quality in the lake is excellent because the lands in the upper Skagit basin are largely pristine, as they are located with the boundaries of the Complex, Upper Skagit Provincial Park (British Columbia), and the Pasayten Wilderness Area. The Upper Skagit River drains mountainous terrain with land cover ranging from old growth forests and wetlands on the valley walls and bottoms to alpine meadows, bedrock, snowfields, and glaciers at higher elevations. Water flowing through the Skagit Project remains clean and cold throughout the year. Summer temperatures range between 14 and 16 degrees Celsius in the epilimnion of the reservoir (shallower than 25 feet), and between 5 and 10 degrees Celsius in the hypolimnion of the reservoir (deeper than 85 feet, City Light data for 2015 and 2016). The lake experiences naturally high turbidity caused by the glacial "flour" (i.e., fine-grained, silt-sized particles of rock, generated by mechanical grinding of bedrock by glacial erosion) contributed by Thunder Creek. Turbidity levels in Diablo Lake are variable over time and location within the lake. The Skagit River Basin supports the healthiest bull trout populations in Washington, which reflects the excellent water quality conditions in the project area (USFWS 2008).

There are no timber harvest activities or residential areas that affect the water quality of Diablo Lake. Overall, the ongoing operations of the Skagit Project have minimal impact on the water quality of the Upper Skagit River Basin, including water quality conditions in the Diablo Lake.
The shoreline of Diablo Lake in the vicinity of the proposed project area is composed of both bedrock and unconsolidated alluvial, fluvial, and/or glacial sediments. The unconsolidated sediments may be subject to erosion from wave action.

4.1.2. Vegetation

Past actions in the region, including clearing vegetation for logging, hydroelectric development and operations, roads, and Ross Lake NRA recreational developments, have all affected vegetation resources in the project area. The previous activities have also promoted the introduction and spread of invasive weeds in the vicinity, although the project area is relatively weed-free.

The project area is within the North Pacific Maritime Dry-Mesic Douglas-Fir Western Hemlock Ecological System, as defined by the Washington Natural Heritage Program (Rocchio and Crawford 2009). The ecosystem, typical of interior western Washington lowlands (less than 2,000-foot elevation), is characterized by mild, moist maritime climate, with more precipitation occurring as rain than snow; fire is a major natural disturbance (Rocchio and Crawford 2009). Vegetation in the project area is dominated by mature Douglas-fir (*Pseudotsuga menziesii*) with western hemlock (*Tsuga heterophylla*) co-dominant or occasional in the canopy. The understory is sparse due to the shallow soils. Vegetation in the project area consists of a mix of nonnative and native species common to riparian and upland habitats in western Washington and characteristic of areas that have

been previously cleared or disturbed (see Appendix D for a list of plant species recorded in the project area). Vegetation in the project area is generally not diverse compared to other areas of Ross Lake NRA. No rare or sensitive plant species are known to occur within the project area.

4.1.3. Fish and Wildlife, Including Rare/Listed Species

The North Cascades is one of the most diverse ecosystems in North America. It supports at least 28 fish species, 75 mammal species, more than 200 bird species, and 21 species of reptiles and amphibians, and recent surveys have documented over 500 types of land insects and approximately 250 aquatic invertebrate species (NPS 2015). Far fewer species would be expected to occur within the fragmented and disturbed habitats in the project area. The project area is substantially influenced by human activities, recreational facilities, past disturbance, and boat traffic from daily operations of the hydroelectric project.

Fish Habitat and Fish Use

Fish species currently found in Diablo Lake include native bull trout, Dolly Varden, rainbow trout (*O. mykiss*), a nonnative char species: eastern brook trout (*Salvelinus fontinalis*) and non-native cutthroat trout (*Onchorynchus clarki*). The redside shiner (*Richardsonius baleatus*), a minnow species native to the Lower Skagit River also occurs in Diablo Lake. The population of redside shiners has been increasing rapidly in Ross Lake after being introduced to the Upper Skagit River system approximately 10 years ago, and this species is now present in Diablo Lake.

Littoral gill net surveys conducted by the NPS and WDFW have found that all of these species and all age classes from age two and older are distributed throughout the littoral zone of the reservoir. The densities of these fish vary by location and from year-to-year and using these data it does not appear any particular species is more common in the main body of the lake, Thunder Arm, or the lake's eastern arm.

Bull Trout

The only federally-listed threatened species and designated critical habitat within the vicinity of the project area are bull trout (under the Endangered Species Act). See the Biological Evaluation in Appendix B for more detail on bull trout.

Diablo Lake is within Core Area 3, Upper Skagit River, which is one of 21 designated core unit areas within the Coastal Recovery Unit (USFWS 2015). Diablo Lake was designated as a critical habitat for bull trout by the USFWS in the final rule published October 18, 2010 (50 CFR 17:63898-64068). Diablo Lake primarily provides foraging, migration, and overwintering habitat for subadult and adult bull trout (City Light 2012).
City Light fish biologists estimated the number of bull trout in Diablo Lake at 370 (City Light 2012). USFWS (2013) suggested that the actual number of bull trout may be lower due to poor spawning habitat conditions in Thunder Creek because of naturally high turbidity from glacial runoff. Thunder Creek is the only major stream drainage where bull trout can spawn in this reservoir system. Spawning by a small number of bull trout has also been observed by NPS biologists in the lower section of Colonial Creek, a stream located within the Thunder Arm area of Diablo Lake, which is on the opposite side of the reservoir from the proposed dock site. Bull trout require streams and rivers to spawn, so there is no spawning habitat in the vicinity of the proposed dock site.

Based upon the results of experimental gill net sampling conducted by WDFW in 2005 and by the NPS from 2010 to 2013, Diablo Lake is used by juvenile/subadult and adult bull trout (i.e., fish aged 2 years and older). No

young-of-year or one-year old bull trout have been captured in the experimental gill nets used in the sampling (Appendix E). And while fish under 2 years of age are typically not sampled by gillnets, this finding is consistent with the life history of bull trout, which typically spend the first 2 to 3 years of life in their natal tributaries (USFWS 2015). There is no known spawning habitat within the immediate vicinity of the project area and it is believed that most of the spawning and early juvenile (< 2 years old) rearing habitat areas for bull trout in Diablo Lake are located within the Thunder Creek drainage and are designated by the USFWS as critical habitat for this reason (FR 75(200):63898-64070). The mouth of Thunder Creek , as well as Colonial Creek that supports small numbers of spawning bull trout, are located on the opposite side of the reservoir from the proposed project approximately 2 miles away. However, it should be noted that Sourdough Creek which drains into Diablo Lake is less than 0.1 miles from the project site has not been surveyed for fish and this area may contain spawning, rearing, and foraging habitat for bull trout.

Bull trout typically congregate at the mouths of major tributaries in Ross and Diablo Lakes to feed on small fish migrating out of the tributaries and invertebrate drift. Based upon research findings in Ross Lake, it is expected that most adult bull trout in Diablo Lake make regular daily migrations between shallower warmer feeding areas of the lake and the cold "resting" areas located in deeper areas of the lake for the remainder of the day (Eckmann et al. 2016). Since, bull trout are visual predators they may feed in shallower areas of the reservoir during the day to take advantage of the increased light penetration in the normally turbid lake, and to forage on the higher densities of redside shiners and juvenile rainbow trout that are observed along the shoreline (littoral) areas of the reservoir. Bull trout would be expected to use the surface waters of Diablo Lake, including the shoreline area where the proposed tour dock would be located, to a greater extent than observed in Ross Lake during the summer since surface water temperatures in Diablo are cold (< 14 ^{0}C) throughout the year (City Light, Unpublished Data).

Wildlife Habitat and Wildlife Use

Wildlife species observed in or near the project area include black bear (*Ursus americanus*), black-tailed deer (*Odocoileus hemionus columbianus*), Douglas squirrel (*Tamiasciurus douglasii*), bobcat (*Lynx rufus*), Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), common raven (*Corvus corax*), and a variety of songbirds, such as dark-eyed junco (*Junco hyemalis*) and red-breasted nuthatch (*Sitta Canadensis*). Several species of bats (*Myotis* spp.) breed and use day roosts in Ross Lake NRA and likely forage for insects in the immediate vicinity of the project area and over nearby aquatic habitats.

Other wildlife inhabiting or likely to use the project area are habitat generalists, including those species tolerant of relatively high levels of human activity or those that can use relatively small patches of disturbed habitat.

Rare and Listed Species

There are ten species that are federally or state listed as threatened or endangered for which there is suitable habitat in the North Cascades west of the Cascades crest. Another nine species potentially occurring in the area are state-listed as sensitive, or are candidates for federal or state protection. Of the 19 listed species, only 6 would be expected to use habitats in or near the project area. They include bald eagle, peregrine falcon, pileated woodpecker, and common loon.

- Bald Eagle – Bald eagles are relatively common along the Skagit River, particularly during the winter. Use by breeding bald eagles is low; there are a few historical nest sites documented along the river downstream of the Sauk River and two known nest territories along Ross Lake. The primary wintering area is downstream of Newhalem, where large numbers of eagles are attracted to the food provided by

spawning chum salmon between November and February. Bald eagles occasionally perch in the trees along the shoreline or forage on Diablo Lake in the vicinity of the project area. They are not often observed around Diablo Lake because there is a greater abundance of forage fish further downstream.

- Peregrine Falcon – Peregrine falcons are frequently observed perched on Gorge and Diablo Dams and foraging over Diablo and Gorge Lakes. Surveys conducted by the NPS, City Light, and WDFW indicate that there are several peregrine falcon nest territories between Newhalem and Ross Dam that are consistently occupied on an annual basis. The ledges selected for nesting within each territory vary annually; nest sites have been used by peregrine falcons in the past within 0.5 to 1 mile of the project area (Christophersen 2016).
- Pileated Woodpecker – Pileated woodpeckers have been observed around the project area, typically in forest stands with large trees and snags (Tressler 2017). The species may occasionally use the forested habitats near the project area; however, most trees in the project area are relatively small, and it is unlikely that pileated woodpeckers use them for nesting, but the area may be used for foraging.
- Common Loon – Common loons are occasionally observed on Diablo Lake, mostly in the winter. The nearest known breeding site is Hozomeen Lake, approximately 17 miles north of Diablo Lake (Christophersen 2016).
- Vaux's Swift – A Vaux's swift has been reported near Diablo Lake on eBird (internet site), but the source and validity of the reports on this site are uncertain (eBird 2017). The species is typically found in coniferous forests or mixed coniferous/deciduous forests, but more commonly in old-growth forests than in younger stands, such as those in the project area. Vaux's swifts may use the project area for foraging.
- Western Toad – Western toads are most commonly found near their breeding habitats (wetlands, ponds, lakes, reservoir coves, and off-channel habitats of rivers) but are also known to wander great distances from these areas through forests or shrubby thickets (Leonard et al. 1993). Western toads could be found in either the terrestrial or aquatic portions of the project area.

Critical habitat has not been designated for gray wolves or grizzly bears, although Ross Lake NRA is part of the North Cascades ecosystem grizzly bear recovery zone. Small populations of both species are known to inhabit the North Cascades Ecosystem. Suitable habitat is present in the vicinity of the proposed project for both gray wolves and grizzly bears. Historic observations of grizzly bears have been documented in the vicinity (WDFW 2017b). However, it is unlikely that grizzly bears or gray wolves would use the project area because of its relatively high level of human activity and disturbance.
There is no suitable habitat for Canada lynx in the vicinity of the proposed project. Lynx generally use higher elevation (above 3,000 to 4,000 feet) lodgepole pine, subalpine fir, and/or Engelmann spruce forests (NPS 2012). Designated lynx critical habitat is over 16 miles away from the project area.

Suitable nesting habitat for the marbled murrelet and the northern spotted owl does not occur in the vicinity of the project area. This habitat is characterized by mature and old-growth trees with dense canopy closure, abundant logs, standing snags, and live trees with broken tops.

The nearest confirmed detection of marbled murrelets to the project area is more than 13 miles away (WDFW 2017b, Siegel et al. 2012). USFWS (2013b) considers potential murrelet nest trees to be those that are greater than or equal to 18" DBH with one or more suitable nesting platforms within 55 miles of marine water. Within

the Complex, much of the available suitable habitat for marbled murrelets lies between 42 miles and 53 miles from the nearest saltwater, which is within the known murrelet nesting distance. However, no active nests have ever been recorded in the Complex. There are six unverified records of individual marbled murrelets observed on Ross Lake, Diablo Lake, and on Baker Lake, west of the park boundary (NPS unpublished data). Radar surveys were conducted at six sites in and adjacent to NOCA in 2008 to determine presence, numbers and flight patterns, murrelet-type targets or probable absence of murrelets (Hamer Environmental 2009). The surveys detected 59 murrelet-type targets which were presumed to be murrelets based on flight speed, size, shape, and time of day, but they did not positively confirm any murrelets or active nests. There are no records of nesting marbled murrelets in the Complex, and the species is unlikely to be present in the project area.

The northern spotted owl is considered an uncommon resident in the Complex. Most previously known territories west of the Cascades crest are now occupied by barred owls (*Strix varia*). There is a historical spotted owl site approximately 2.3 miles from the project area. However, no owls have been documented there for over 30 years, and the site is separated from the project area by a steep ridge line, creating a topographic barrier (WDFW 2017b, Siegel et al. 2012). The nearest known spotted owl nest site with recent spotted owl detections is in the Newhalem Creek drainage, about 6 miles southwest of the project area. That site was active in 2009, but no spotted owls were detected in 2010, the most recent survey year (Siegel et al. 2012). The nearest northern spotted owl designated critical habitat is approximately 7 miles away.

4.2. Cultural Resources

Background research was used during internal scoping of the project to assess the potential for presence of historic properties within the proposed project's Area of Potential Effect (APE), and a moderate potential for undiscovered archaeological resources has been recognized. An outcome of Section 106 consultation thus far is that, if the proposed project construction moves forward, archaeological monitoring is required during ground-disturbing activity. This stipulation is to provide for further investigation into the presence or absence of historic properties within the APE.

4.2.1. Traditional Cultural Places

To date, no Traditional Cultural Places in the proposed project's APE have been formally recorded, delineated, or registered with the Department of Archaeological and Historic Preservation (DAHP). However, the broader Upper Skagit watershed is culturally significant to several indigenous groups.

At the time Europeans first traveled into the Diablo area, the Miskaiwhu band of Upper Skagit Indians had established several winter villages along the Upper Skagit river in the vicinity of Marblemount and Newhalem, based on ethnographic data (Collins 1974; Smith 1988; Suttles and Lane 1990) (e.g., Weiser 2015). Based upon an archival overview for both Diablo and Gorge Lakes and summary of ethnographic research, Lewarch and Larson (1990) submitted that the primary ethnographically-recorded groups to use the area were the Upper Skagit and Nlaka'pamux and to a lesser extent the Chilliwack and Chelan. The project area is situated up stream of winter villages of the Upper Skagit, the closest of these in Newhalem, (about eight miles). The winter villages of the Nlaka'pamux, located along the Fraser River canyon in today's British Columbia were situated about 60 miles upstream of the project area. The Nlaka'pamux would have been able to reduce travel time by canoe along the Skagit River for much of the trip, with portages in a few key places. Research by Blukus Onat (1990) also included connections to other groups such as the Sauk-Suiattle and Swinomish who were settled in other

parts of the watershed (to the south and southeast) but had relationships with the Upper Skagit and engaged in hunting and gathering in or near the project area.

Like most of the surrounding terrain, the project area had a wealth of resources both practical and spiritual including food sources (e.g., deer, elk, bear, mountain goat, fish including Dolly Varden, rainbow and bull trout (e.g., Smith and Anderson 1921), and edible plants), raw materials for tool making (e.g., bone, sinew, stone, wood and other useful parts of many plant and animal resources), and medicinal plants for protecting and healing the body as well as spiritual practice and spiritual health. Colored earth was a desirable resource for spiritual practice and though no sources are known for the project area, they may be present in the broader vicinity. Lewarch and Larson (1990) proposed that due to its remoteness from village settlements, the project area may have been attractive for vision questing and acquisition of guardian spirits.

Today's Upper Skagit Tribe still identifies the Diablo vicinity as an area of traditional cultural value within a broad hunting region for goat, elk, deer, and bear (Smith 1988). TCPs and areas of special cultural significance throughout the Skagit watershed represent a wide variety of their traditional activities, but specific information is only shared in special circumstances, when the sites are in danger of degradation (Personal communication, Upper Skagit Tribe, 2015) (e.g., Weiser 2015:7). Most TCPs are identified as a way to protect cultural places or associations that are ephemeral on the landscape and typically do not leave archaeological signatures.

4.2.2. Archaeological Context

Archaeological evidence reflects over 5,000 years of indigenous use of the Upper Skagit River valley in the vicinity of the project area (i.e., the Newhalem area) and nearly 10,000 years of indigenous use in the broader region throughout the North Cascades (e.g. North Cascades National Park Records; Bush 2008, 2009; Mierendorf 1986, 1993, 1997, 1998, 2004; Mierendorf and Baldwin 2015; Mierendorf and Foit 2008; Mierendorf et al. 1998, 2011) (e.g., Weiser 2015:6).

Two formal cultural resource surveys have overlapped in the project area. Prior to either of these, the Diablo Lake Resort (consisting of several buildings and associated trails) was situated on the landscape adjacent to the project area. With the exception of the dining hall, this complex was demolished in 1977. The Environmental Learning Center facilities later replaced the Diablo Lake Resort in the mid-2000s, constructed on the disturbed building footprints and reusing/retrofitting the dining hall, and these facilities remain today. The dining hall and associated trails are the closest in proximity to the project area.

In 1987, a cultural resource survey was conducted by a crew of four, focusing their pedestrian surface survey along a stretch of Diablo Lake shoreline that was exposed during a drawdown of the reservoir to 1182 feet, 15 feet below normal full pool of that time (1197 feet) (Mierendorf and Luxenberg 1987) The project APE was included in the areas surveyed on foot. No archaeological or historic sites were found during this survey but the researchers noted that reservoir mud and sand (siltation) may have obscured archaeological evidence.

In 1990, Lewarch and Larson conducted a cultural resource reconnaissance of Diablo and Gorge Reservoirs, including a pedestrian survey and shovel scraping in the project area to clear away surface duff. Their observations were that the "peninsula southeast of Diablo Lake Resort" (the project APE) was used intensively by people from the Diablo Lake Resort as evidenced by numerous trails, plastic, wood, and other refuse scattered along trails and across other surfaces. No historic or prehistoric artifacts were discovered but the surveyors did not employ any subsurface survey at that location.

Archaeological Expectations

Despite the lack of archaeological evidence for the project APE thus far, a subsurface investigation has never been conducted and there is potential for buried cultural resources. A number of human activities are reflected in the archaeological record for the broader vicinity, such as pre-contact hunting/resource gathering, post-contact trapping, homesteading, government administration, hydroelectric development, and tourism; yet, many of the early or pre-contact uses of the land, both practical and spiritual, would leave no archaeological signatures. Intact trail segments from the early indigenous trails are possible for the vicinity, though large portions of the routes are likely obscured or obliterated by modern roads and historic and modern trails. None are known for the project area. Lithic scatters, isolated artifacts that could withstand the test of time (typically stone), or hearth remnants that reflect overnight camps are possibilities for the project area.

Prior to inundation of Diablo Lake, the project area would have been a low rise and knob situated above the Skagit River near the edge of a sloping river terrace. Such an area may have been a desirable location to cook a meal and have an overnight rest, sharpen and repair tools, see and hunt game, or a place for reflection and solitude. Proposed ground disturbance for the project is in a small and limited area and includes shallow bedrock and tree roots that may have either prevented soil development or disturbed the soil context and soil stratigraphy.

To date, no archaeological sites have been recorded within a half mile of the project area, as per the DAHP digital database, the Washington Information System for Architectural and Archaeological Records Data (WISAARD), as well as in-house cultural resource records of the Complex. However, given the topographic features, distance to water, and archaeological and ethnographic context of the broader area, there is presumed to be a moderate possibility for archaeological discovery.

4.2.3. Historic Structures and District

The proposed project is located within the Skagit River Hydroelectric Project, a National Register listed district. There are no known historic resources in the project area. The nearest historic contributing resources are the Diablo Dam, Dry Dock, Tug Diablo II, and the Monkey Island Navigation Light.

4.3. Recreation and Visitor Use

The project area is entirely within Ross Lake NRA, which is managed by the NPS for resource protection and preservation, education and interpretation, and visitor use. Ross Lake NRA offers a variety of recreational opportunities to visitors, including short walks to scenic vistas, boating on and swimming in the Skagit Project reservoirs, and hiking and backpacking in the backcountry, among other activities. Most visitors to Ross Lake NRA arrive via SR20, also known as the North Cascades Scenic Highway. The highway provides access to a number of trails, campgrounds, and boat launches, as well as to the Skagit River, the North Cascades Visitor Center, and the City Light towns of Newhalem and Diablo. Although Ross Lake NRA is open to the public year-round, visitation is largely seasonal, with 82 percent of all visits occurring from June through September, and 28 percent of visits occurring during the peak month of August (NPS 2012).

4.3.1. Diablo Lake

Diablo Lake is a popular destination for outdoor recreation, including camping, boating, hiking, fishing, and as an access point to Ross Lake. The northwest side of Diablo Lake, including the proposed project construction area, is relatively developed and is a focal point for visitors to Diablo Lake, particularly to attend Skagit Tours

and ELC programs. The only access to the northwest side of the lake is along the Diablo Dam access road (Figures 1 and 2).

The North Cascades Institute operates the ELC under a lease agreement with City Light and a cooperative agreement with NPS. NCI provides educational programs on a daily and semester basis. The ELC campus is approximately 200 feet north and east of the proposed tour dock location. The ELC campus includes dining, lodging, and various support and recreational facilities such as those for kayaking and canoeing. The shoreline near the ELC, approximately 400 feet north of the proposed tour dock site, is used as a kayak and canoe launch. The number of visitors to the ELC varies by season in accordance with their programming schedule (Figure 4).

The summer season is the peak of ELC programming and visitors, with many family and adult programs offered, as well as the Skagit Tours Diablo Lake boat tour, as described in Section 1.5, *Background*. In the spring and fall, programs are reduced, mainly consisting of the Mountain School Program that hosts local elementary students, and various conferences and retreats. The winter season is the lowest use period, with remote medical training programs offered by a contractor to the North Cascades Institute.

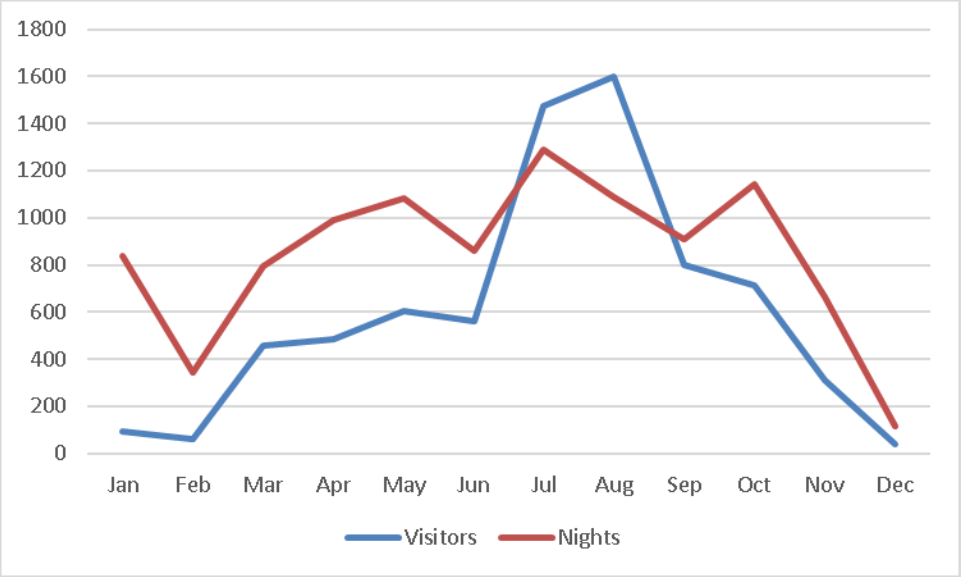

Figure 4. Average number of monthly visitors to the ELC and nights stayed at the ELC, from 2010 through 2016. Visitor numbers include Diablo Lake boat tour participants.

Various trails and a powerline right-of-way access road extend east from the ELC. One of the trails, the Peninsula Trail, lies partly within the project construction area (Figures 2 and 3). The Peninsula Trail begins at the ELC, continues south to within approximately 115 feet of the proposed tour dock site, then loops east back around the peninsula to the ELC. This trail is primarily used by visitors to the ELC (as opposed to general visitors to the Complex, who are mainly drawn to other destinations) and is one of the most popular trails in the area around the ELC because it is short in length and suitable for children and most visitors with disabilities. The Diablo Lake Trail begins at the ELC, approximately 200 feet from the project area, and continues eastward along the shoreline of Diablo Lake.

4.4. Soundscapes

The Ross Lake NRA General Management Plan (GMP) identifies visitor experience and resource standards with measurable indicators to monitor key aspects for each management zone in the Ross Lake NRA. The Proposed Action occurs in the Front country Zone with the Hydroelectric and Backcountry Zones in close enough proximity to be influenced by noise on the lake. Applicable indicators for soundscapes include Ambient Sound Levels, Change in Sound Exposure, Audible Watercraft Sounds, Campground Tranquility, and Sounds During Interpretive Programs. Soundscape indicators and associated project impacts are discussed in Section 4, *Environmental Consequences*.

The ambient noise level at the proposed tour dock location is affected largely by boat traffic, industrial operations, traffic on Highway 20, and visitors to the ELC. City Light operates speed boats and tugboats during daytime hours Monday through Friday, and the tour boat on weekends and some weekdays during the summer (see Section 2.5, *Background*, for further details). The ELC, Diablo Dam, and various City Light marine facilities, including the existing tour dock, the West Ferry Landing, the Diablo Boathouse, a marine fueling station, a boat ramp, and two barge landings, are within 0.6 mile of the proposed project area (Figure 2). Highway 20 is approximately 0.5 miles south. Noise from visitors at the ELC and related light vehicular traffic on Diablo Road is common on all days of the week during the summer and fall.

No site-specific ambient or background noise data exist for the project area, but an NPS noise study in 2009 measured a background noise level of 46 decibels-A-weighted (dBA) for Newhalem in the vicinity of Gorge Powerhouse (NPS 2009). Given the frequent boat activity and highway noise, the background noise level in the project area is likely no lower than what was measured at the site near Newhalem; therefore, 46 dBA is used as the background noise level for analysis of environmental consequences.

4.5. Visual Resources

The proposed tour dock location is on an undeveloped portion of the shoreline on Diablo Lake (Figure 5), approximately 200 feet south of the ELC. This portion of shoreline is visible from many locations along the Diablo Dam access road and on the lake, as well as from some locations used by visitors to the ELC, such as the shoreline used for launching kayaks and canoes, which is about 400 feet north of the project area.

The shoreline on the peninsula maintains much of its natural, undeveloped character; however, existing powerlines run overhead of the peninsula, as seen in Figure 5. Other facilities in the near vicinity, including powerlines, towers, barge landings, and various dock facilities, have also altered the natural character of the shoreline.

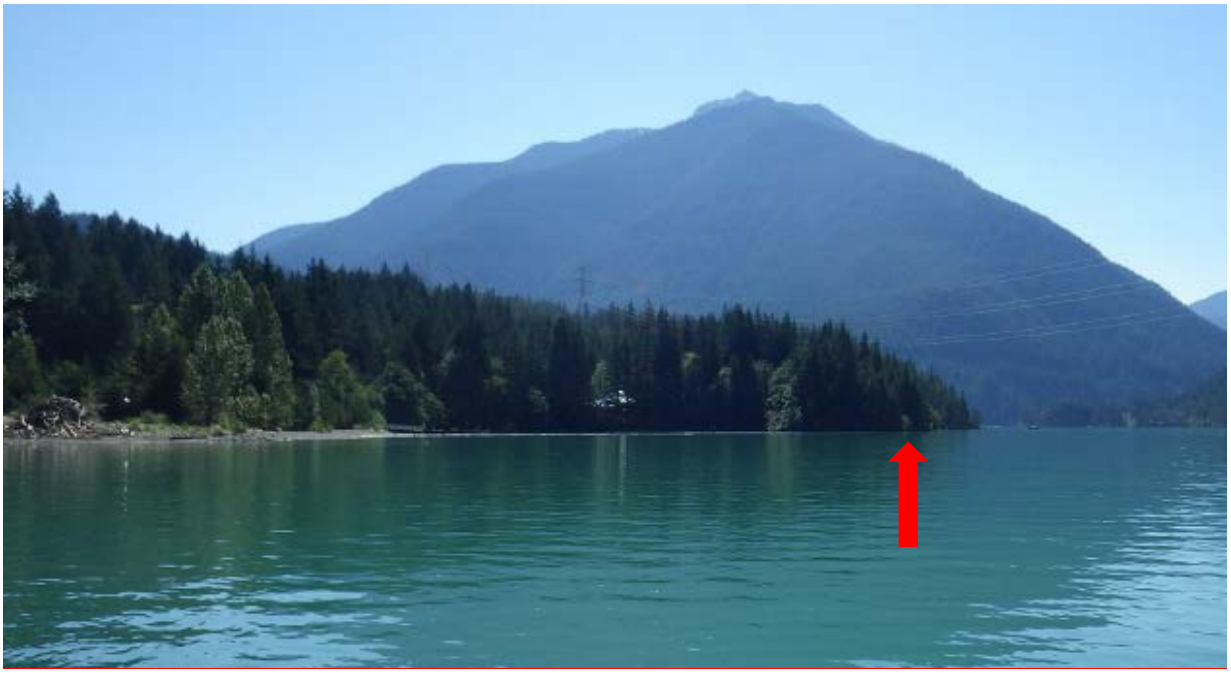

Figure 5. View of the current shoreline conditions on the ELC peninsula, where the proposed project would be located. The red arrow indicates the approximate location of the proposed new tour dock.

5. Environmental Consequences

5.1. Introduction

This chapter describes the direct, indirect, and cumulative environmental impacts, or consequences, of the two alternatives considered in this EA. The scope of the analysis, and the impact topics selected for analysis, are based upon the ecosystem functions, natural and cultural resources, and human values described in Chapter 3, *Affected Environment*.

5.2. Methods for Evaluating Impacts

This EA provides a factual description of direct and indirect impacts (both beneficial and adverse) as described in 40 CFR 1508.8 and identifies past, present, and reasonably foreseeable actions to characterize cumulative effects as described in 40 CFR 1508.7. The impacts associated with No Action (No Action), were assessed by comparing the current, or baseline, condition of the affected environment with its future condition if the project were not implemented. Similarly, the impacts associated with The Proposed Action (The Proposed Action), are assessed by evaluating the construction-related effects and future conditions resulting from implementation of the Proposed Action relative to the baseline condition of the affected environment.

Conclusions regarding environmental impacts are stated clearly and concisely for each affected resource and for the project as a whole, and enough information is provided to support a determination that either: 1) the project would result in a significant adverse impact, and an environmental impact statement would be

prepared, or 2) the project would have no significant adverse impacts, and the NPS would issue a finding of no significant impact (FONSI).

To assess potential cumulative impacts, other past, present, and reasonable foreseeable management actions and projects in the project area and vicinity, including those within the Skagit Project, were identified by reviewing the Ross Lake NRA GMP (NPS 2012), the Seattle City Light Diablo Lake Boat Facilities Master Plan (Reid Middleton 2014), City Light capital improvement project lists, and information from state agencies (Washington State Department of Transportation). The cumulative effects analysis assumed that the effects of past projects are represented by existing conditions described for the affected environment. Thus, future projects that were considered in the cumulative effects analysis include:

- City Light operation and maintenance of the Skagit Project. City Light continues to operate the Ross, Diablo, and Gorge Dams, adhering to its FERC license. Dam operations result in variable reservoir water levels and river flows. Some of the common City Light maintenance activities include access road maintenance; vegetation management near dams and powerhouses, in the towns of Diablo and Newhalem, and along transmission lines; cleaning trash racks at water intakes in the three reservoirs; painting dam infrastructure; and maintenance of log booms on the reservoirs.
- Diablo Lake Boat Facility Updates. Due to a combination of aging facilities, vessels, and changing program needs, City Light and the NPS are planning to replace or upgrade most of the boat-related facilities on Diablo Lake over the next several years. Planned projects include:
    - *City Light Diablo New Fuel Dock*. This project would replace the existing fuel dock with a new dispenser and relocate it slightly offshore into deeper water to allow vessels to access the facility during low lake levels. Fuel piping would be routed to the dock and dispenser, and fuel hoses would be located on the dock. The dock would be accessed by a gangway instead of a ladder. The project would improve safety and reduce spill hazards because hoses would not need to be carried down a ladder and across the float, as currently required. Work would occur in October to November 2018 or May to June 2019.
    - *City Light Dry Dock Removal*. This project would involve the removal of the existing dry dock, which is a dilapidated, unsafe structure. Soils are likely contaminated from historic use and may require removal in the vicinity. Work may occur sometime in 2018 for the dry dock removal and 2019 for the soil cleanup.
    - *City Light West Diablo Barge Landing Facility*. This project would involve combining the adjacent 100-ton and 80-ton barge landings, resulting in a smaller footprint. This project would construct a single barge landing that would accommodate a heavy haul-out facility. A schedule for this project has not been developed yet.
    - *NPS Boathouse Relocation*. The existing tour dock location would be turned over to the NPS. This project would remove the existing dilapidated NPS boathouse currently on Thunder Arm of Diablo Lake and build a new one at the current tour dock location. This will eliminate the regular dredging necessary to maintain adequate water depths for vessel operations at the current location next to Colonial Creek Campground and the SR20 bridge over Thunder Arm. The work of removing the old boathouse may occur in fall 2018 or spring 2019. And the new boathouse will be constructed in fall 2018 or spring 2019.

- NPS implementation of the Ross Lake NRA GMP (NPS 2012). NPS provides ongoing maintenance for access roads and recreational facilities such as campgrounds, campsites, trails, and trailheads.
- Washington Department of Transportation routine maintenance of SR20. Ongoing routine maintenance of SR20 includes periodic resurfacing, vegetation clearing, and culvert maintenance.

5.3. Impacts of the No Action Alternative

5.3.1. Water Resources

Direct and Indirect Impacts

Under the No Action alternative, the water quality, quantity, and uses in Diablo Lake would be similar to current conditions.

Cumulative Impacts

The No Action alternative would not contribute to cumulative effects on water resources.

5.3.2. Vegetation

Direct and Indirect Impacts

The No Action alternative would have no direct or indirect effect on vegetation in the project area. Climate change, disease, and invasive species may affect the type and mix of vegetation over the long term, but that would occur with either the No Action alternative or the Proposed Action. City Light would continue to manage vegetation as described in Section 3.1.3 for the foreseeable future.

Cumulative Impacts

The No Action alternative would not contribute to cumulative effects on vegetation.

5.3.3. Fish and Wildlife, Including Rare/Listed Species

Direct and Indirect Impacts

The No Action alternative would have no direct or indirect effects on fish and wildlife species and habitat within the project area and vicinity. Climate change, disease, and invasive species may affect species populations and distribution over the long term, but that would occur with either the No Action alternative or the Proposed Action.

Cumulative Impacts

The No Action alternative would not contribute to cumulative effects on fish and wildlife or their habitat.

5.3.4. Cultural Resources

Direct and Indirect Impacts

Under the No Action alternative, no historic properties in the project area would be affected, directly or indirectly, because no action would be taken that could affect resources within the project area.

Cumulative Impacts

Under the No Action alternative, there would be no cumulative impacts to historic properties in the project area because no action would be taken that could affect cultural resources within the project area.

5.3.5. Recreation and Visitor Use

Direct and Indirect Impacts

Under the No Action alternative, the Diablo Lake boat tours would continue to operate from the Diablo Boathouse aboard the *Alice Ross IV*. Tourists would continue to park at the ELC parking lot, check in at the ELC, and walk along the Diablo Dam access road to the boathouse, for a total walking distance of 0.6 mile, one-way. City Light would continue to provide shuttle service to those needing it. This alternative would provide no improvement in safety, accessibility, or user experience for tour participants along the access road. In addition, it would maintain the potential for slip and fall accidents or an ADA-accessibility lawsuit due to the height differential between the vessel and the boathouse dock.

Because the No Action alternative does not include specific improvements to the Peninsula Trail, the trail would remain substandard in terms of ADA recommendations.

Cumulative Impacts

Other projects proposed for the area currently used by participants of Diablo Lake Boat Tours (i.e., around the Diablo Boathouse) include a new fuel dock, dry dock demolition, and barge landing improvements. These projects would result in construction-related noise and activities that may cause disturbance to Diablo Lake Boat Tour participants in a setting that is already less than optimal.

5.3.6. Soundscape

Direct and Indirect Impacts

Because the No Action alternative would not include construction of the tour dock and trail improvements, the background noise level would continue to be similar to existing conditions (46 dBA) in the short term. Over the long term, background noise levels may increase slightly if visitation, boat traffic, and road traffic were to increase in the area.

Cumulative Impacts

The No Action alternative would not contribute to cumulative effects on the soundscape.

5.3.7. Visual Resources

Direct and Indirect Impacts

The No Action alternative would not affect views within and of the project area.

Cumulative Impacts

The No Action alternative would not contribute to cumulative effects on visual resources.

5.4. Impacts of the Proposed Action Alternative

5.4.1. Water Resources

Direct and Indirect Impacts

The Proposed Action would have temporary and potential long-term impacts to water quality.

Construction activities would temporarily increase suspended sediment and turbidity levels in Diablo Lake in the immediate vicinity of the proposed tour dock for a period of hours to days. Potential long-term impacts to water quality due to the traffic of a 40 foot vessel, erosion around concrete footings, and changes in wave action associated new in water structure have the potential to increase shore line erosion in the vicinity of the tour dock and subsequently increase turbidity. However, the lake experiences natural turbidity caused by the glacial "flour." Some work would occur below the OHWM, but City Light would draw down the lake during construction, so in-water work would not occur. Working in the dry would minimize suspension of sediments during construction. No other water quality metrics, including water temperatures and dissolved oxygen levels, would be measurably affected.

Approximately 24.4 cubic yards of concrete would be placed below the OHWM for construction of pier footings and anchor blocks. The concrete anchor blocks themselves are not expected to have any impacts on water quality. However, erosion around the footings and increased shoreline erosion due to changes in wave action are possible.

Approximately 10.5 cubic yards of material would be excavated, and 3.3 cubic yards of material would be filled (redistributed from excavation) below the OHWM during installation of the deadman anchors. Following construction, lake levels would be returned to normal, potentially causing a short-term increase in localized turbidity in the lake, if soils disturbed during excavation and fill are suspended by rising water. However, increased turbidity over background level is not likely, given natural turbid conditions caused by the glacial flour. Most of the impacts of increased suspended sediments levels on water resources would be expected to be limited to small area of the reservoir adjacent to the project site.

Turbidity levels resulting from sediment runoff into the reservoir from the project site would not be expected to exceed Ecology turbidity standards. However, turbidity would be monitored in the vicinity of the proposed project area following methods agreed on by the NPS and City Light.

The amount of disturbed ground would be limited to ~6,700 square feet, exposed soils would be covered with mulch, rainfall would be dispersed by tree canopy cover, and compost socks would intercept any runoff before it reached the lake. All soil removed from the trench would be temporarily stockpiled on the barge. Native vegetation would be planted after construction to help stabilize soils. No imported soil would be placed below the OHWM, eliminating the potential for introducing contaminated sediments.

The tour dock and gangway would have a combined surface area of 1,450 square feet, which would include grating materials to allow 50% of the ambient light to pass through, thereby minimizing effects on primary productivity and aquatic organisms in the water below. The grating would also allow contaminants tracked onto the dock and gangway surface to enter the lake; however, the tour dock would be open to foot traffic only, so it would not receive the level of contamination consistent with a surface used by motor vehicles.

Fueling would not be conducted from the tour dock; the potential for pollution to enter the lake via the proposed tour dock facility is very low.

The ~480 square feet of new impervious surface added by the new trail could lead to increased runoff into Diablo Lake. However, the trail would be open only to foot traffic and would not receive the level of contamination consistent with a road surface used by motor vehicles. In addition, the area of new impervious surface represents a small area of the ELC peninsula to be altered, and, although gravel is classified as an impervious surface, there is a level of infiltration through the gravel and the native vegetation and soils bordering it.

Cumulative Impacts

Other proposed projects contributing to cumulative impacts on water resources could include those involving construction activities below the Diablo Lake OHWM, such as the new fuel dock facility, the West Diablo Barge Landing Facility, removal of City Light's dry dock, and relocation of the NPS boathouse.

Those projects could have temporary adverse impacts from increased turbidity. However, with the possible exception of the new fuel dock, the projects would not occur at the same time or in the same area as the Proposed Action; the effects of one project in time and/or space would dissipate before the effects of another project would occur.

City Light proposes to replace its fuel dock facility in either October to November 2019 or May to June 2019. The fuel dock project would utilize an underwater turbidity curtain and significantly draw down the lake. The tour dock site is 1200 feet from the fuel dock and given the level of increased turbidity from the Proposed Action is expected to be no higher than 10% above background at 150 ft from the site and the use of a turbidity curtain at the fuel dock, it seems unlikely to increase turbidity much above background turbidity levels in the reservoir. Any combined effects would be temporary. Water quality monitoring would be conducted for both projects to ensure that state water quality standards are not exceeded.

Other projects that may create new impervious surfaces include fuel dock replacement and/or updating the barge landing. These are already in a disturbed operational/industrial area dominated by impervious surfaces. The combined new impervious surface of those projects and the Proposed Action would have a minor effect on water resources. The fuel and tour docks would both be designed with grated surfaces, and BMPs used during construction would minimize impacts.

5.4.2. Vegetation

Direct and Indirect Impacts

The Proposed Action would remove five living trees, ranging in size from approximately 6 inches to 30 inches diameter at breast height (one lodgepole pine and four Douglas fir) and up to approximately 600 feet of associated understory near the lake shore, resulting in short-term and long-term effects on riparian vegetation. See Table 4 for sources of loss. Some areas cleared for construction would be replanted with various native species; the short-term effects and long-term effects would occur until those species mature. Following construction, disturbed areas would be mulched and replanted with native species. The project was designed to minimize tree removal to the extent feasible. Two of the five trees may not need to be removed near the new trail (Appendix A) but that would be determined during trail building.

Table 4. Summary of permanent vegetation removal in project area, the total area is 601 square feet.

Location		
Concrete footing for pier at shoreline	2 ft X 60 ft	120
New flagstone path to pier deck	6 ft X 12 ft	72
Clearing for new trail	3 ft X 115 ft	345
Clearing for turnout along new trail	3 ft X 6 ft	18
Clearing for turnout along existing trail	3 ft X 6 ft	18
Widening existing trail	~1 ft X 100 ft	100

Cumulative Impacts

Other projects in the area may result in short- and long-term loss of vegetation. City Light and NPS would implement measures similar to those described for the Proposed Action, as appropriate, to minimize and mitigate construction impacts. The total area of vegetation that may be affected is not known at this time; however, it is unlikely to be significant because most projects occur in a previously disturbed or built environment footprint.

5.4.3. Fish and Wildlife, Including Rare/Listed Species

Direct and Indirect Impacts

The Proposed Action would have potential short-term effects on fish and common wildlife species within the project area. Potential impacts on ESA-listed bull trout and wildlife species are described in detail in the Biological Evaluation for this project (Appendix B). In summary, there would be, as defined by Section 7 of the ESA, *no effects* on marbled murrelet, northern spotted owl, gray wolf, grizzly bear, or Canada lynx. The Proposed Action "*may affect, but is not likely to adversely affect*" bull trout.

With the proposed mitigation measures (Section 3.3.1), increases in suspended sediments are expected to be very low and not likely detectable over background levels. Additionally, Diablo Lake experiences natural

turbidity caused by glacial flour. Thus, potential short-term impacts on fish and other aquatic biota are unlikely to result from increases in turbidity following construction when lake levels are returned to normal. The impacts are summarized below; a more detailed and technical analysis of the impacts is provided in the Biological Evaluation (Appendix B).

Bull trout are visual foragers and likely feed in shallower areas including the site of the Proposed Action during the day to take advantage of the higher concentrations of smaller fish (including juvenile rainbow trout and redside shiners) that are observed in shoreline (littoral) areas. If there are notable increases in turbidity during and after construction these fish could be affected. However, as mentioned above these fish are unlikely to be adversely affected.

Bull trout and other fish species may avoid the noise and any turbidity near the project area for hours or days during the six-week construction period.

The drawdown of water levels for the project would occur within the normal operation levels of the reservoir, thus fish stranding would be within normal operational limits as set by the current FERC license.
The tour dock and gangway would have a combined area of 1,450 square feet of new overwater cover. Shading from the addition of the overwater structures would shade benthic communities and reduce primary productivity and create a visual barrier to fish migrating around the margin of the lake. If adult Eastern brook trout capitalize on the shading of the dock for ambush, predation rates on juvenile native fish could increase, thereby negatively impacting native fish. Given the largely undeveloped nature of Diablo Lake negative impact due to shading of bull trout critical habitat or habitat for other fish species in the reservoir would be small, and the grated surface of the dock and gangway would allow light penetration. Due to its small size, the tour dock would not affect water temperatures in the lake.

The construction of continuous concrete footing and anchor blocks would alter predator-prey interactions likely decreasing the survival of juvenile salmonids. This could produce a negative effect if Eastern brook trout capitalize on the new construction and prey on native salmonids. The construction of continuous concrete footing and anchor blocks would reduce shallow water benthic habitat, and thereby, a loss of aquatic organisms. Construction of the concrete footings and anchor blocks for the tour dock and ramp would affect approximately 60 linear feet of the lake shoreline below the OHWM, although only approximately 80 square feet of exposed concrete below the OHWM. This affected area of the shoreline is extremely small relative to the 74,600 feet of shoreline around the lake, however this does represent a new impact in an undeveloped portion of the lake and increases the overall foot print of human infrastructure in the reservoir.

The removal of ~600 square feet of riparian vegetation would have short-term and long-term effects on fish and aquatic habitat. Riparian vegetation provides a source of invertebrates when they fall or are blown by the wind into the water for foraging fish. These impacts are likely to have a greater impact on juvenile trout and char and adult trout but are not likely to impact adult bull trout since they are primarily piscivorous. Removal of 3-5 trees from the shoreline area would mean the loss of these trees as potential large woody debris (if they were to fall into the lake), which would reduce refugia for juvenile native fish and substrate for aquatic macroinvertebrate production as well as reduce terrestrial food resources for fish.

The operation of tours at the new tour dock location would have long-term impacts to fish and wildlife. Docking and launching the tour boat would increase the noise disturbance on a previously undeveloped

portion of the shoreline. This would drive away fish and waterfowl in the vicinity of the tour dock and increase benthic substrate disturbance due to propeller action and may potentially increase shore line erosion (turbidity) in the vicinity of the tour dock due to wave action generated by the boat.

Overall, trail improvement and expansion would have a minor, long-term adverse impact on amphibians, songbirds, small mammals, black-tailed deer, and other species that forage or rest in riparian forest habitats. Approximately 600 square feet of riparian forest habitat in the footprint of the new trail would be permanently removed. In areas that are restored adjacent to the permanent trail and pier footprint, it would take a number of years planted for trees and shrubs to reach maturity, although some habitat values would be restored more quickly. If the vegetation clearing for the trail occurs in the spring months there is the potential to destroy the active nest, eggs, and young of nesting songbirds. Similarly small mammals using the trees for habitat and nesting could be impacted in either spring or fall. The area of vegetation that would be lost is small and the habitat it provides is not unique. Except for nesting birds, any wildlife using the vegetated area would have opportunity to move to other areas to meet their habitat needs.

Noise and visual disturbance from construction activities during the 6-week construction period could cause some wildlife to temporarily avoid the project area and nearby, adjacent habitat. While noise levels are expected to exceed background levels up to 9,045 feet from the project area over water and 3,200 feet over land (Section 5.4.6, *Soundscape*), disturbance would be limited to a smaller area because most of the resident wildlife are likely habituated to disturbance and noise from existing human activities in the vicinity of the ELC, vessel traffic on the lake, and vehicular traffic on the Diablo Dam access road.

Sensitive species, such as bald eagle and state-listed wildlife species including the common loon, peregrine falcon, Vaux's swift, and pileated woodpecker, may experience temporary adverse impacts from noise and visual disturbance during the 6-week construction period. The Proposed Action would not affect nesting habitat for sensitive species because there is no suitable nesting habitat for those species within the project area. Sensitive species that use terrestrial habitat, such as western toads, could also be impacted by habitat loss. Only a small area of vegetation would be permanently impacted; and there is abundant, high quality habitat available in nearby areas that could be used by any transitory or foraging individuals displaced during construction activities. The Proposed Action would not affect other federally- or state-listed wildlife species because those species are unlikely to be in the area that would experience habitat loss, visual disturbance, or elevated noise levels during project construction.

Cumulative Impacts

Other proposed projects contributing to cumulative impacts on fish and wildlife could include those the new fuel dock facility, the West Diablo Barge Landing Facility, removal of City Light's dry dock, and relocation of the NPS boathouse.

Those projects listed above could have temporary adverse impacts from increased turbidity. However, with the possible exception of the new fuel dock, the projects would not occur at the same time or in the same area as the Proposed Action; the effects of one project in time and/or space would dissipate before the effects of another project would occur. However, if other projects occurred during the same timeframe, particularly the fuel dock construction and NPS boathouse relocation, combined effects could temporarily expand the area of disturbance in water and on land.

City Light proposes to replace its fuel dock facility in either October to November 2019 or May to June 2019. The fuel dock project would utilize an underwater turbidity curtain and significantly draw down the lake. The tour dock site is 1200 feet from the fuel dock and given the level of increased turbidity from the Proposed Action is expected to be no higher than 10% above background at 150 ft from the site and the use of a turbidity curtain at the fuel dock, it seems unlikely to increase turbidity much above background turbidity levels in the reservoir. Any combined effects would be temporary. Water quality monitoring would be conducted for both projects to ensure that state water quality standards are not exceeded.

Construction noise and visual disturbance would also temporarily affect wildlife use of upland habitats in and near the project area.

Combined, the proposed tour dock and new fuel dock would create approximately 2,000 square feet of additional overwater cover. Both facilities would incorporate grated decking to reduce the effects of shading. The cumulative effects would be similar to those described above for the Proposed Action, but over a larger area. The combined shading effects of these projects on fish would be very small, since the new projects allow for light penetration and the total shading from all projects would remain extremely small relative to the large size of Diablo Lake.

The combined loss of upland habitat that may occur from the Proposed Action and other planned projects would likely be minimal. All of the other planned projects would occur in areas that are consistently disturbed by human activities, so the type of habitat lost would not be of high value or likely to be used by listed or particularly sensitive species.

5.4.4. Cultural Resources

Direct and Indirect Impacts

Archaeological Resources

At this time, there are no known direct and indirect impacts of the project to cultural resources because no cultural resources have been identified within the APE. The Section 106 process to identify historic properties as per 36 CFR Part 800.4(b) is in progress. The project undertaking does include ground-disturbing activity so could therefore impact cultural resources if they are present. Background research suggests there is potential for discovery of buried cultural resources because of the historical and cultural importance of the area for indigenous people. Tribes and other consulting parties have agreed that archaeological monitoring during project construction would be an appropriate course of action for City Light to follow through on a "reasonable and good faith effort" to identify (i.e., discover and evaluate) any buried cultural resources that may be present and impacted, either directly or indirectly, by the project. To ensure that presence or absence of cultural resources is evaluated in areas of proposed ground disturbance, archaeological monitoring would be implemented during ground disturbing activities by a professional archaeologist qualified through Secretary of Interior's Standards. For the construction phase of the project, City Light would also follow the existing Unanticipated Discovery Plan (UDP). An archaeological monitoring plan and monitoring report would be submitted by City Light to the consulting parties for review. As a part of this monitoring and reporting process, direct and indirect impacts would be evaluated using Section 106 and 36 CFR Part 800.

Historic Structures and District

Ongoing and planned City Light and NPS projects undergo review and evaluation for potential impacts to historic properties and cultural resources per the Skagit Project's Historic Resources Mitigation and Management Plan. The project APE falls within the aforementioned historic district which includes approximately 87 contributing resources (Johnson 2010) however, no contributing resources would be affected by direct or indirect impacts of the project.

Cumulative Impacts

At this time, there are no known cumulative impacts to cultural resources because no cultural resources have been identified within the project's APE. If cultural resources are discovered, they would be evaluated using the Section 106 process and 36 CFR Part 800 and consultation discussion and recommendations would include potential cumulative impacts.

In addition, ongoing and planned City Light and NPS projects undergo evaluations for potential impacts to historic properties and cultural resources. Furthermore, ongoing management of the Historic District follows the Skagit Project Historic Resources Mitigation and Management Plan. Implementation of and compliance with this plan would protect existing historic and cultural resources.

5.4.5. Recreation and Visitor Use

Direct and Indirect Impacts

The Proposed Action would benefit visitors over the long-term by improving ADA accessibility and providing safer and more convenient access to the Diablo Lake tour dock for tour participants. The proposed new trail would also improve visitor experience (ELC visitors and general public) by providing a short, enjoyable forest walk to the lake shore.

Construction would result in temporary, minor adverse impacts on recreation and visitor use. The Peninsula Trail would be closed for the estimated 6-week construction period, although the impact would be reduced by timing the construction for the off-peak season (from October to November or from April to June, excluding Memorial weekend). Visitors wishing to use the ADA-accessible Peninsula Trail would be displaced to other nearby recreation areas, such as the ADA-accessible Deer Creek Trail. These areas have the capacity to absorb the few visitors that would potentially be displaced during trail construction. NCI's Mountain School may use this trail, but other trails would be available; thus, the project may temporarily impact Peninsula Trail access.

The ELC canoe and kayak launch area is approximately 400 feet north of the proposed tour dock. The launch area is used by ELC programs and staff and is not open to the public. It is used less than once per week, mainly for family getaway programs, which are scheduled for approximately 10 days during the summer (which is not during the proposed construction period). Construction activity could be seen and heard from the shoreline used for the canoe and kayak launch. The Proposed Action would not affect access to or use of the launch.

Construction noise could potentially disturb visitors on the ELC campus, on nearby trails, and three boat-in campgrounds. Effects would be temporary and would be confined to a 6-week period during the off-peak season. Given existing noise levels from daily operations in the industrial area, as well as daily marine traffic, and highway noise, and that construction would not occur during the peak season, adverse impacts would be minor. Noise will likely have attenuated significantly (~50dBA) at the three boat in campgrounds because of

their distance from the project site and due to local topographic features and vegetation. Noise impacts are discussed in more detail in the following Section 5.4.6, *Soundscape*.

Many more visitors would benefit from the improved Skagit Tours (an average of around 9,000 visitors annually to the ELC, including Skagit Tours participants), whereas the number of visitors likely to be affected during the 6-week construction period would be comparatively small (an average of around 650 visitors during any one of the months of the proposed schedule). The new tour dock and updates to the Peninsula Trail infrastructure would continue to benefit visitors in perpetuity, for as long as Skagit Tours and the ELC are in operation, particularly because Skagit Tours is a popular way for visitors to access and recreate on the lake.
City Light would continue to coordinate with NPS and ELC to minimize impacts on recreation and visitor use.

Cumulative Impacts

Cumulative effects of the Proposed Action and other planned activities, such as continued operation and maintenance of the Skagit Project and NPS implementation of the GMP, would benefit recreation and visitor use of the area. In particular, the Proposed Action and the GMP are intended to improve access and convenience for existing and future levels of visitation, as well as the overall experience for visitors.

Other projects, such as the Diablo Lake boat facilities improvements, would result in minor, temporary adverse effects on recreation during construction. If the projects do not occur simultaneously, the construction effects of one project would dissipate before the effects of another project would occur. If the new fuel dock and the Proposed Action were to be constructed during the same season, the construction impacts may be greater than those of only one of the projects due to the temporary additive effect of construction noise, vehicle traffic, workers and equipment at both sites, and the ELC parking area which would be a common parking, turnaround, and/ short-term staging area for both projects. Construction of two or more projects over multiple seasons at Diablo Lake would affect recreation and visitor experience over those seasons, but the effects are unlikely to affect visitation or recreation over the long term.

5.4.6. Soundscape

Direct and Indirect Impacts

Noise impacts are assessed based on the area within which sound levels generated by the Proposed Action would exceed background sound levels. Noise would be produced as a result of construction activities, including excavating, grading, removing trees, rock drilling, and rock breaking. Construction equipment may include an excavator, concrete truck, pumper truck, pneumatic drill, dump truck, pneumatic jackhammer, chainsaw, small vibratory compactor, mini excavator, motorized wheelbarrow, and barge. Noise generated by equipment would be in the range of 74 to 89 dBA at 50 feet from the source, with the highest noise level generated by the jackhammer (Table 5). Increased noise levels, from construction activities, would exceed Ross Lake NRA GMP indicator thresholds a few hours a day for the duration of the project (Table 7). Although, some days may exceed thresholds for 8 hours and others zero. It is anticipated that during the first three weeks, the duration of construction noise would be longer and may occur for eight hours during daytime work hours.

Table 5. Equipment that would be used for construction of the Proposed Action and associated sound levels.

Equipment	dBA
Dump truck, 10 cubic yard	76[1]
Excavator	81[1]
Jackhammer	89[2]
Chainsaw	84[1]
Concrete pump truck	81[1]
Concrete mixer truck	79[1]
Rock drill	81[1]
Small vibratory compactor	83[1]
Mini excavator	74[3]
Motorized wheelbarrow	74[4]

[1] Source: Washington Department of Transportation, Construction Noise Impact Assessment

[2] Source: Federal Highway Administration, Construction Noise Handbook (FHWA 2006)

[3] Source: Update of Noise Database for Prediction of Noise on Construction and Open Sites, Department for Environment Food and Rural Affairs, United Kingdom

[4] Source not available, assuming similar to mini excavator

Several pieces of equipment may be in use at a single time, resulting in additive effects. The noise level at 50 feet from the construction area, as a result of the additive effect of more than one equipment running at a time, would be a maximum of 91 dBA. Additive effects are calculated using basic rules for combining sound levels that are used by the Federal Highways Administration when considering highway and construction noise impacts (Table 6).

Table 6. Rules for combining noise levels.

When two decibel values differ by:	Add the following to the higher decibel value:
0 or 1 dBA	3 dBA
2 or 3 dBA	2 dBA
4 to 9 dBA	1 dBA
10 dBA or more	0 dBA

Source: USDOT (2011).

Topography and vegetation serve to dampen noise levels more than flat, hard surfaces such as concrete, rock, and water. The construction area consists of both hard surface (the lake) and soft surface (the forested peninsula). The soft features are expected to provide a dampening effect of 7.5 dB per doubling distance from the noise source (WSDOT 2011). Using this dampening factor, construction noise would attenuate to the background level of 46 dBA at 3,200 feet from the construction area over flat land, and theoretically 9,045 feet over the water (Figure 6). However, the lake is not that wide, and noise attenuates much sooner due to the presence and dampening effect of forested land and complex topography on the lake periphery. Vessel traffic and other routine operations of the Skagit Project produce sporadic, elevated sound levels above background sound levels daily. A baseline for those daily noise-generating activities is not available. The analysis of sound levels provided here likely overestimates the project-related impacts because the simple model used to generate the noise extent in Figure 6 does not take into account the complex vegetation and topography surrounding the lake.

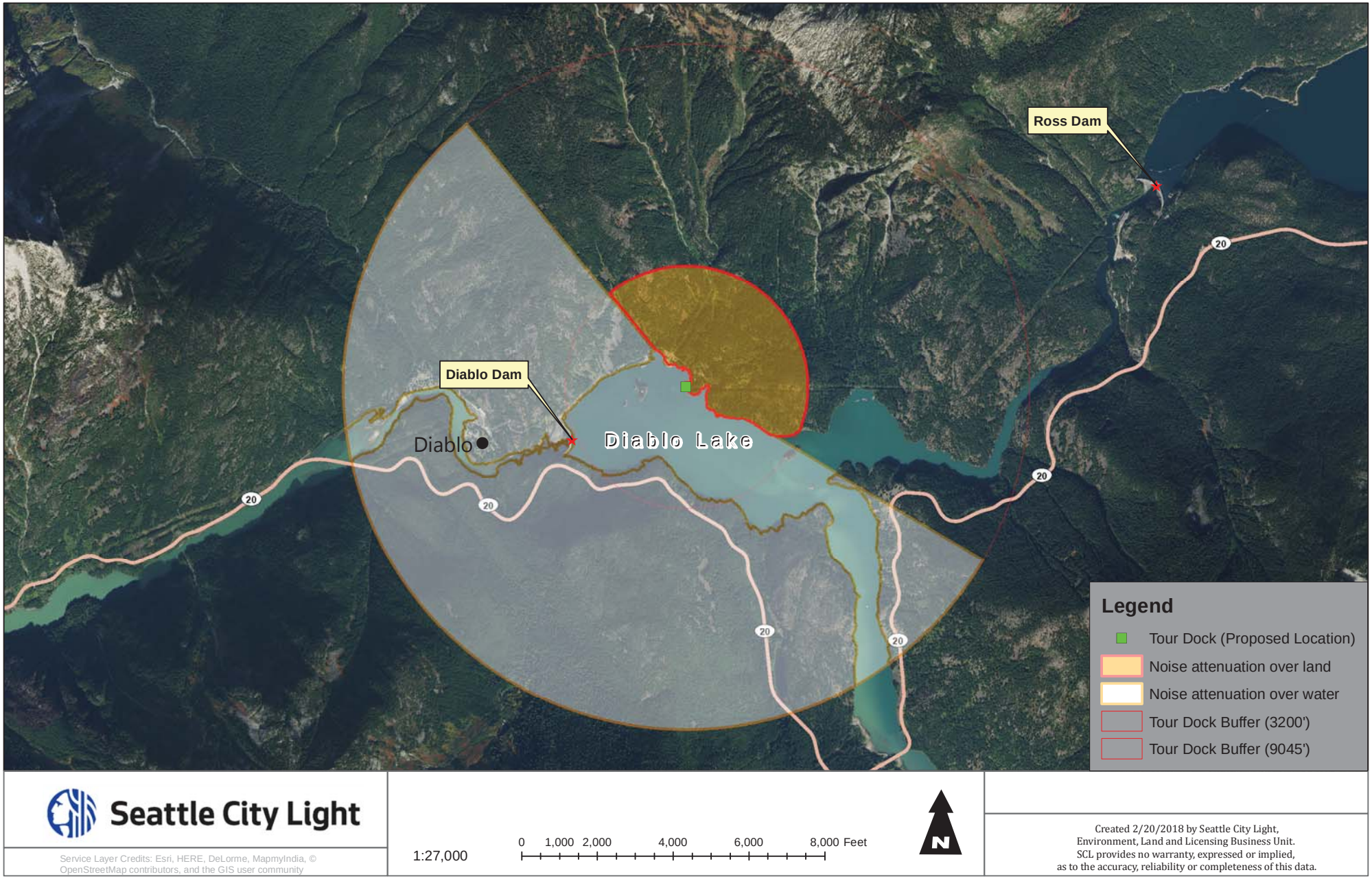

Figure 6. Map showing the estimated sound attenuation distances over water (white) and over land (orange). These are simplified distances and do not take into account the effect of the specific topography or vegetation in the area.

The proposed project occurs within the Front country Zone, as defined in the Ross Lake GMP (2012). Construction noise would attenuate 3,200 feet over land, and further over the water, into other management zones. These additional management zones include Wilderness, Backcountry, Hydroelectric, and Skagit River. The soundscape indicators and corresponding standards according to management zone are addressed in Table 7 below.

Table 7. Soundscape indicators, standards, and associated impacts.

Soundscape Indicator	Zone	Standard	Project Impact
Ambient sound levels	Wilderness, Backcountry, Front country, Skagit River, Hydroelectric	Maximum sound levels never exceed 65 dB during day and 35-45 dB during night, depending on location.	Temporary exceedance, daytime hours during the entire 6-week construction period with longer periods during the first 3 weeks
Change in sound exposure	Wilderness, Backcountry, Front country, Skagit River, Hydroelectric	Hourly change in exposure doesn't exceed 3 dB 65 percent of the day and 85 percent of the night.	Temporary exceedance, daytime hours, during 6-week construction period
Audible watercraft sounds	Backcountry	Watercraft sounds are audible less than 15 percent of daytime hours and 10 percent of nighttime hours.	Unlikely to exceed
Campground tranquility	Front country	Sound levels do not exceed 60 dB for more than 5 percent of daytime hours and 35 dB for more than 5 percent of nighttime hours.	No exceedance.
Sounds during interpretive programs	Front country	Sound levels do not exceed 52 dB for more than 5 percent of time during interpretive programs.	Temporary exceedance, daytime hours during 6-week construction period

Although periods of construction noise would exceed 65 dB during the day, ambient sound levels would not be affected because proposed construction is temporary in duration (approximately 6 weeks). The standards for the soundscape indicators, "Change in Sound Exposure" and "Sounds During Interpretive Programs" (occurring at the ELC) would likely be exceeded during the six-week construction period.

It is unlikely that the standard for "Audible Watercraft Sounds" would be exceeded, because the tugboat used for hauling the barge would typically make one daily round trip, and no more than three daily round trips. If the barge would be used as a working platform it would be tied to the shoreline rather than held in place by

the tugboat. It is also unlikely that the standard for "Campground Tranquility" would be exceeded. All three boat-in campgrounds on Diablo Lake are 0.9 miles or farther from the construction site. Construction noise would attenuate to 50.4 dB at 0.9 miles, which is less than the standard of 60 dBA

Construction would have a temporary, adverse impact on the soundscape in the vicinity of the project area. Construction is scheduled to occur over a 6-week period, either April through June 2018 (excluding Memorial Day), or October through November 2018. Sensitive noise receptors in the area during the construction period would include ELC staff and students on the lake or land, NPS staff on the lake or land, visitors on the lake or land, City Light staff on the lake, and wildlife. (Noise impacts on wildlife are described in Section 4.5.4). The number of people affected would be limited because construction would occur in the off-peak season. In addition, construction equipment would be required to have properly functioning mufflers to minimize noise. To further reduce impacts, equipment would be shut off when not in use, and construction would occur only between the hours of 7:00 AM and 5:00 PM.

Cumulative Impacts

Construction of other planned projects in the vicinity, such as the Diablo Lake boat facilities upgrade projects, would generate noise in the area. Collectively, the projects would have incremental additive effects on noise if project timing and noise attenuation distances overlap, and the magnitude of those incremental increases would depend on the type of equipment used. It is expected that similar heavy construction equipment would be used for all of the projects. However, the projects are not planned to occur simultaneously, so the effects of one project would dissipate before the effects of another project would occur. If the new fuel dock and the Proposed Action were to be constructed during the same season, the noise impacts of construction would be greater and impact a slightly larger area than those of only one of the projects, but the effects would not be significant because they are short term and temporary in duration. Similarly, there would be a greater impact to soundscape standards if the new fuel dock and tour dock were constructed simultaneously, but it is unlikely that there would be additional exceedances of indicator standards.

5.4.7. Visual Resources

Direct and Indirect Impacts

Under the Proposed Action, new visual elements would be introduced to the landscape in the project area. Trail improvements and the new trail would be consistent with existing trails in the area. Vegetation removal would be evident in the short term, but long-term effects, as plants in revegetated areas mature, would be minor. The new tour dock would change views of the ELC peninsula (where it would be built) from viewpoints from the north through the west to the south on land and on the lake. The tallest proposed structure would be the railing on the pier and walkway, ~4 feet high. It would also create new viewpoints of the lake and surrounding mountains from the pier and tour dock. As a visual element on the shoreline, the tour dock would coincide with existing boat facilities on the northwest side of the lake. The proposed tour dock site occupies a small fraction of the shoreline on Diablo Lake, and an abundance of other scenic views are available from the lake and on land. However, it will introduce a new development to a mostly undeveloped view from the ELC kayak dock and the beach below the ELC parking area that are frequented by small groups of visitors (see cover photo and Figure 5). The new structure may be visible by those with a sharp eye from high on the Sourdough Ridge Trail directly to the north. The new tour dock would not be visible from the Diablo Lake Overlook along SR20.

The materials for the dock (cedar and steel) and pier (concrete, wood, and fiberglass) would detract from the natural character of the shoreline on the ELC peninsula. Some visitors may find the visual quality of the dock and pier aesthetically displeasing, while others might not appreciate the visual change from current conditions. As with all matters of aesthetics, the degree of adverse impact would vary among individuals, but the Proposed Action would likely have no significant effect on visual quality for most people, given the relatively small size and prevalence of other recreational and industrial facilities in the vicinity.

Cumulative Impacts

Cumulative changes to the visual resources in the Hydroelectric Zone of the Diablo Lake area would affect visitors differently. Projects such as updates to the Diablo Lake boat facilities may improve the aesthetics for some visitors, while some visitors may not appreciate the change from current conditions. Generally, foreseeable future projects would either remove structures from the shoreline or would replace structures within the same approximate footprint and not consist of prominent visual features. Thus, the cumulative effects would not significantly change the visual character of the area.

The location of the fuel dock would move ~50 feet to the east and remove some of the existing vegetation thus removing a natural visual break to the City Light Diablo Boathouse area. Designs are not finalized for the adjacent barge landing but the amount of vegetation to be disturbed is minimal and the updating of that area could incorporate aesthetic improvements. The NPS boathouse will replace the old tour dock ~0.5 mile to the west adding another larger and taller structure to the north shoreline of the lake but the old dilapidated boathouse will be removed from Thunder Arm adjacent to the North Cascades Scenic Highway and Colonial Creek Campground.

6. Planning and Internal Scoping Process

6.1. History of the Planning and Internal Scoping Process

City Light has realized the need for a new tour dock since at least 2011 and began analyzing potential dock locations around that time. In 2012, City Light contracted with Reid Middleton to prepare the Boat Facilities Master Plan. This document was developed using a stakeholder consensus process with representatives from City Light, the NPS, and North Cascades Institute. An initial project meeting was held with the stakeholders in October 2, 2012 to identify goals and objectives for the plan and to discuss current conditions and operations. Subsequent stakeholder meetings were held in November 13, 2012 and September 11, 2013 to discuss alternatives and recommendations. Various alternatives were discussed and analyzed for each of the individual facilities. The alternatives were refined based on review and discussion with the stakeholders and preliminary design analysis.

In addition to the planning meetings described in the previous section, further meetings between the NPS and City Light occurred on the following dates: March 21, 2016 City Light provided an overview to NPS staff; May 16, 2016 discussed mitigation; November 7, 2016 discussed the EA with NPS staff; and several phone calls to discuss various proposed tour dock details.

A pre-application meeting was conducted by City Light with USFWS, Ecology, and the Army Corps of Engineers on September 22, 2016. A pre-application meeting pertaining to critical areas, the Shoreline Substantial Development Permit, and Shoreline Conditional Use Permit was conducted by City Light with Whatcom County on November 15, 2016. The hearing with the County for these permits occurred on November 15, 2017.

On April 26, 2017 City Light sent consultation letters regarding the area of potential effect (APE) and the proposed project activities to the NPS, DAHP, Upper Skagit Indian Tribe (USIT), Sauk-Suiattle Tribe, and Swinomish Indian Tribal Community. Concurrence on the APE was received from DAHP on April 27, 2017. On June 7, 2017, all Tribes agreed that a monitoring approach for archeological resources verses surveys would be appropriate; the USIT, however, requested to increase the APE to a ½-mile buffer. On July 6, 2017, the NPS archaeologist, via email, approved the APE and monitoring approach. A monitoring report would be provided to all parties after completion of the project.

6.2. List of Preparers and Contributors

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6.3. Distribution List

A news release of the public review of this EA will be announced via email to the standard distribution list for North Cascades National Park Service Complex. A digital copy of the EA will be available to download and comment on at https://parkplanning.nps.gov/CommentTourDock. Hard copies of this EA will be available upon request. Full copies of the document will be sent to:

- Sauk-Suiattle Indian Tribe
- Swinomish Indian Tribal Community
- Upper Skagit Indian Tribe
- US Army Corps of Engineers, Seattle District
- US Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- Washington State Department of Ecology
- Whatcom County Planning and Development

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8. Glossary

Boulder. Using the Wentworth scale, sediment with a size greater than 256 millimeters.

Cobble. Using the Wentworth scale, sediment with a grain size greater than 64 millimeters and up to 256 millimeters; second to boulders in largest sediment size.

Dissolved oxygen. The concentration of oxygen dissolved in water, expressed in milligrams per liter (mg/l) or as a percent saturation, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

Nephelometric Turbidity Unit (NTU). A standard unit of measure used for quantifying turbidity levels in water.

Silt. Using the Wentworth scale, sediment with a size less than 0.0625 millimeter and down to about 0.003 millimeter.

Suspended sediment. Particles such as sands, silts, and clays that become suspended in the water column are suspended sediments or suspended solids. Whether a particle becomes suspended and how long it stays in suspension varies by the size of the particle and settling velocities. Sands settle most rapidly (a few minutes) followed by silts (minutes to hours) and lastly by clays (days to weeks).

Total Maximum Daily Load (TMDL). A total maximum daily load (TMDL) is a numerical value representing the highest amount of pollutant a surface water body can receive and still meet water quality standards. TMDL is a science-based approach for setting limits on how much of a pollutant can be discharged to a water to clean it up so that it meets the state water quality standards for that parameter.

Turbidity. Not clear or transparent because of stirred-up sediment or the like; clouded; opaque; obscured. According to Washington Annotated Code 173-201A-020 definitions, “turbidity” means the clarity of water expressed as nephelometric turbidity units (NTU) and measured with a calibrated turbidimeter.

WAC. Washington Administrative Code.

Appendix A. Project Plans

See the separate Project Plans document under the Document Content list.

Appendix B. Biological Evaluation

See the separate Biological Evaluation under the Document Content list.

Appendix C
Water quality criteria for water resources in the proposed project area

Parameter	Water Quality Criteria
Bacteria	Fecal Coliform organism levels must not exceed a mean value of 50 colonies/100 ml with not more than 10% of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies/100 ml
Dissolved Oxygen	Lowest 1-Day Minimum: *Char Spawning and Rearing: 9.5 milligrams per liter (mg/l)* *Core Summer Salmonid Habitat:* 9.5 mg/l *Salmon and trout spawning, rearing, and migration*: 8.0 mg/l
	For lakes/reservoirs, human actions considered cumulatively may not decrease the dissolved oxygen concentration more than 0.2 mg/l below natural conditions.
Temperature	Maximum 7-day average of daily maximum temperature (7-DADMax): *Char Spawning:* 9°C (48.2°F) *Char Spawning and Rearing (summer)*: 12°C (53.6°F) *Salmon and trout spawning: 13°C (55.4°F)* *Core summer salmonid habitat (June 15 to Sept 15)*: 16°C (60.8°F) *Salmonid spawning, rearing, and migration (Sept 15 to June 14)*: 17.5°C (63.5°F) *Salmonid rearing and migration only*: 17.5°C (63.5°F)
	For lakes/reservoirs, human actions considered cumulatively may not increase the 7-DADMax temperature more than 0.3°C (0.54°F) above natural conditions.
Total Dissolved Gas	Not to exceed 110% of saturation at any point of sample collection.
pH	Within 6.5 to 8.5 pH units with human caused variation of: less than 0.2 units for char spawning and rearing, and core summer salmonid habitat less than 0.5 units for salmon and trout spawning, rearing, and migration
Turbidity	Shall not exceed either a 5 nephelometric turbidity unit (NTU) increase over background when the background is 50 NTU or less; or a 10% increase in turbidity when the background is more than 50 NTU

Source: WAC 173-201A

Appendix D
Plant species recorded within the Diablo Tour Dock Project Area

Species Common Name (*Scientific Name*)	**Present within Construction Footprint**
Black cottonwood (*Populus balsamifera*)	
Douglas-fir (*Pseudotsuga menziesii*)	x
Lodgepole pine (*Pinus contorta*)	x
Red alder (*Alnus rubra*)	x
Western hemlock (*Tsuga heterophylla*)	x
Shrubs	
Oceanspray (*Holodiscus discolor*)	
Red huckleberry (*Vaccinium parvifolium*)	x
Trailing blackberry (*Rubus ursinus*)	
Vine maple (*Acer circinatum*)	x
Willow (*Salix* sp.)	x
Kinnikinnick (*Arctostaphylos uva-ursi*)	
Herbaceous	
Bracken fern (*Pteridium aquilinum*)	x
Licorice fern (*Polypodium glycyrrhiza*)	x
Low Oregon grape (*Mahonia nervosa*)	x
Rattlesnake plantain (*Goodyera oblongifolia*)	x
Salal (*Gaultheria shallon*)	x
Sword fern (*Polystichum munitum*)	x

Appendix E
Fish surveys on Diablo Lake

				Total Length (mm)		
Year	**Taxa***	**Age**	**(n)**	**Minimum**	**Average**	**Maximum**
2005	BT	Unaged	1	300	300	300
	DV/BT	2	1	205	205	205
	DV/BT	3	1	297	297	297
	DV/BT	5	1	574	574	574
	DV/BT	6	1	520	520	520
	DV/BT	Unaged	2	211	226	241
	DV/EBT	2	2	246	274	302
	DV/EBT	Unaged	3	176	241	276
	Unidentified	2	1	275	275	275
	Unidentified	5	1	730	730	730
	Unidentified	Unaged	5	115	172	212
2010	BT	2	5	200	219	247
	DV/BT	3	1	396	396	396
	DV/BT	4	1	456	456	456
	Unidentified	2	2	183	220	257
	Unidentified	4	1	505	505	505
2013	BT	2	1	261	261	261
	BT	5	2	521	523	524
	BT	6	1	549	549	549
	BT	7	1	609	609	609
	BT	Unaged	3	450	485	514
	DV/BT	2	4	189	220	260
	DV/EBT	2	2	223	249	274
	Unidentified	Unaged	1	480	480	480

BT = bull trout; DV/BT = Dolly Varden/bull trout; and EBT = eastern brook trout.