



# **Final Disposition of the Enchanted Valley Chalet Environmental Assessment**



NPS, May 2020: Taken nearly six years after the chalet was moved 100 feet from the riverbank.

**Department of the Interior  
National Park Service  
Olympic National Park**

**May 19, 2020**

**Estimated cost for the development of this EA: \$116,000.00**

**We dedicate this project to the memory of our friend and colleague,  
Elizabeth Anne Gordon.**

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## Chapter 1: Purpose and Need

### Introduction

Olympic National Park is located on the Olympic Peninsula in Washington State. The park protects nearly one million acres of glacier-capped mountains, Pacific coast and old-growth temperate rain forest.

The Enchanted Valley Chalet is located 13 miles up the Quinault River from the Graves Creek Trailhead, at approximately 2030 feet (619 meters) elevation, within the Congressionally-designated Daniel J. Evans Wilderness (designated in 1988) (see figure 1). The two and a half story, 42' x 28' structure was built in 1930-31 by the Olympic Recreation Company, operated as a commercial business until 1943, and was used briefly as an Aircraft Warning Station for World War II. The chalet was purchased by the National Park Service in 1951 and had formerly been used for park administrative purposes. In 1953, the chalet reopened for public use, but limited maintenance and vandalism expedited the building's deterioration and it was once again closed to public use. The chalet was used as a ranger station from 1954 to the end of the summer season in 2013, and a small portion of it (a small corner room on the first floor with an exterior door) was open to the public as only an emergency shelter from 1995 until the end of the summer season in 2013. The chalet was listed on the National Register of Historic Places (NRHP) as a Category III (local significance) resource in 2007.

The chalet rests on the active floodplain of the Quinault River. The floodplain is comprised of unconsolidated sediment and channel migration across the floodplain is frequent and unpredictable. Over the decades since the park's establishment, the river has been eroding away the terrace upon which the chalet was constructed. According to the Site Flood Hazards Survey report (NPS 2018), channel movement has been toward the eastern side of the valley since 1990 and the average rate of bank erosion is 5 meters per year. In early 2014, the bank had come to within 18 inches of the chalet. At that time, the park prepared a concise EA for the "Temporary Relocation of the Enchanted Valley Chalet for the Protection of the East Fork Quinault River," which also included the development of a Memorandum of Agreement (MOA) with the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), and the Quinault Indian Nation (QIN). The MOA outlined several stipulations and states, "Once the chalet has been relocated, it will remain on temporary steel I-beams until a long-term decision can be reached through the NEPA and NHPA processes. Both NEPA and NHPA will include participation with consulting and interested parties. The NEPA/NHPA processes shall begin within one year of execution of this MOA and will be complete before the expiration of this MOA which is five years after the signature date." (NPS 2014a)

The chalet was temporarily moved approximately 100 feet from the riverbank in September 2014. The chalet currently remains on the steel I-beams that were used to move it and also remains closed to public and administrative use. As of March 2019, the bank has once again eroded to within approximately 5 feet of the nearest corner of the chalet, and the nearest portion of the river channel is about 10 feet from the bank.

This environmental assessment examines the environmental impacts associated with the proposal to determine the final disposition of the Enchanted Valley Chalet. This environmental

assessment was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR §1508.9), and the National Park Service Director's Order-12 (DO-12) (Conservation Planning, Environmental Impact Analysis, and Decision-Making) (2015).

NEPA requires federal agencies to fully consider the impacts of proposals that would affect the human environment prior to deciding to take action. NEPA also requires federal agencies to involve the interested and affected public in the decision-making process.

An interdisciplinary team comprised of park and National Park Service (NPS) Pacific West Regional Office (PWRO) staff, including a landscape architect, geologist, hydrologist, wilderness specialist, environmental protection specialists, and facilities maintenance and natural and cultural resources professionals determined the need for the project and identified the likely beneficial and adverse effects of the proposed actions compared to existing conditions as documented herein. Based on this information, the NPS has prepared this environmental assessment (EA).

## Project Need

The park's need in taking action is to determine the final disposition of the Enchanted Valley Chalet.

## Servicewide Laws and Policies

**NPS Organic Act.** The NPS Organic Act of 1916 (NPS 1916) provides the fundamental management direction for all units of the national park system:

*[P]romote and regulate the use of the Federal areas known as national parks, monuments, and reservations . . . by such means and measure as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.*

The National Park System General Authorities Act (NPS 1970) affirms that while all national park system units remain “distinct in character,” they are “united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage.” The Act makes it clear that the NPS Organic Act of 1916 and other protective mandates apply equally to all units of the system. Further, amendments state that NPS management of park units should not “derogate[d] . . . the purposes and values for which these various areas have been established.”

**Wilderness Act of 1964 and NPS Director's Order 41.** The purpose of the Wilderness Act of 1964 is "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." The Act defines wilderness as an area “where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain”, and “an area of undeveloped Federal land retaining its primeval character and

influence, without permanent improvements or human habitation.” The Act also states that wilderness is to be “protected and managed so as to preserve its natural conditions.” Wilderness is further defined as, “generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable”; and “has outstanding opportunities for solitude or a primitive and unconfined type of recreation” (section 2(c)). Wilderness areas, according to the Act, are to be “devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.”

To ensure an enduring resource of wilderness, the Wilderness Act (section 4(c)) prohibits certain uses within wilderness: “there shall be no temporary road, no use of motor vehicles, motorized equipment, or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.” The exception for utilizing these prohibited uses is only if they are “necessary to meet minimum requirements for the administration of the area for the purpose of this Act.”

NPS Management Policies require that all management decisions affecting wilderness be consistent with the minimum requirement concept. This concept is a documented two-step process to determine if administrative actions, projects, or programs proposed by the park with the potential to affect wilderness character, resources, or the visitor experience are necessary for administering the area as wilderness, and if necessary, how to minimize impacts related to implementation of the proposal (NPS 2006).

In addition to the 1964 Wilderness Act, NPS wilderness management legal direction and guidance is based on general provisions under Title 54 of the US Code governing the National Park System, 2006 NPS Management Policies, NPS Director’s Orders, legislation establishing individual units and other legislation including the 1973 Endangered Species Act and the 1966 National Historic Preservation Act.

**National Historic Preservation Act of 1966 and Secretary of the Interior’s Standards for the Treatment of Historic Properties.** “The National Historic Preservation Act (NHPA) expresses a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations, directing Federal agencies to assume responsibility for considering such resources in their activities. NHPA does not mandate preservation of such resources but requires Federal agencies to consider the impact of their actions on historic properties. The statute sets forth a multifaceted preservation scheme to accomplish these policies and mandates at the State and Federal levels” (ACHP 2001).

Section 106 (ACHP 2014) of the NHPA states:

*The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department of independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall*



*afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.*

Additionally,

*As passed in 1980, Section 110 established procedures for Federal agencies managing or controlling property. Among other things, agencies must assume responsibility for the preservation of historic properties under their jurisdiction and, to the maximum extent feasible, use historic properties available to the agency. Additionally, Federal agencies were directed to carry out their programs and projects in accordance with the purposes of NHPA. Further, Section 110(f) requires that, prior to the approval of any Federal undertaking that may directly and adversely affect any National Historic Landmark, agencies must undertake such planning and action as may be necessary to minimize harm to the landmark and obtain Council comments on the undertaking. The review required by Section 110(f) is similar to that required under Section 106 but involves a higher standard of care. Generally, Section 110(f) review is accomplished under the Council's procedures implementing Section 106. (ACHP 2001)*

Furthermore, the NPS utilizes *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 2017a) for guidance in the preservation maintenance of historic structures. The Standards are neither technical nor prescriptive but are intended to promote responsible preservation practices and provide philosophical consistency to the work. The treatments include Preservation, Rehabilitation, Restoration, and Reconstruction. Choosing the most appropriate treatment for a historic structure requires careful decision-making about its historical significance as well as its relative importance in history, physical condition, proposed use, and mandated code requirements.

**National Environmental Policy Act.** NEPA requires federal agencies to fully consider the impacts of proposals that would affect the human environment prior to deciding to take action. NEPA also requires federal agencies to involve the interested and affected public in the decision-making process (CEQ 1982).

**Wild and Scenic Rivers Act.** The Wild and Scenic Rivers Act “prohibits federal support for actions such as the construction of dams or other instream activities that would harm the river’s free-flowing condition, water quality, or outstanding resource values” (DOE 1968). The National Rivers Inventory (NRI) is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more ‘outstandingly remarkable’ natural or cultural values judged to be of more than local or regional significance and ultimately serves as the list of rivers determined eligible for Wild and Scenic River designation. Under a 1979 Presidential Directive and related Council on Environmental Quality procedures, all federal agencies must seek to avoid or mitigate actions that would adversely affect NRI segments or preclude inclusion in the Wild and Scenic Rivers System (NPS 1993).

**Executive Order 11988 (Floodplain Management).** If the site of a proposed action is located within a floodplain, the agency must take steps to prevent adverse effects on the floodplain.

**Endangered Species Act of 1973, as amended (16 USC § 1531 et seq.).** Section 7(a)(2) states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

## ***NPS Management Policies 2006***

### ***Chapter 5 - Cultural Resource Management***

Cultural resource management will be carried out in a manner that is consistent with the legislative and regulatory provisions that can be found in the Cultural Resource Management Handbook issued pursuant to Director's Order #28 and with implementing policies and procedures such as the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Register (FR) 44716-740), and *Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act* (63 FR 20497-508).

#### **5.3.5.4 Historic and Prehistoric Structures**

The treatment of historic and prehistoric structures will be based on sound preservation practice to enable the long-term preservation of a structure's historic features, materials, and qualities. There are three types of treatment for extant structures: preservation, rehabilitation, and restoration.

##### **5.3.5.4.5 Movement of Historic Structures**

Proposals for moving historic structures will consider the effects of movement on the structures, their present environments, their proposed environments, and the archeological research value of the structures and their sites. No historic structure will be moved if its preservation would be adversely affected or until the appropriate recovery of significant archeological data has occurred.

A historic structure of less-than-national significance may be moved if

- It cannot practically be preserved on its present site; or
- Its present location is not important to its significance, and its relocation is essential to public understanding of the park's cultural associations.

In moving a historic structure, every effort will be made to reestablish its historic orientation, immediate setting, and general relationship to its environment.

### ***Chapter 6 – Wilderness Preservation and Management***

The National Park Service will manage wilderness areas for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness. Management will include the protection of these areas, the preservation of their wilderness character, and the gathering and dissemination of information regarding their use and enjoyment as wilderness. The purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.



### **6.3.8 Cultural Resources**

Cultural resources that have been included within wilderness will be protected and maintained according to the pertinent laws and policies governing cultural resources using management methods that are consistent with the preservation of wilderness character and values.

### **6.3.10 Management Facilities**

Part of the definition of wilderness as provided by the Wilderness Act is “undeveloped federal land retaining its primeval character and influence, without permanent improvements.”

Accordingly, authorizations of NPS administrative facilities in wilderness will be limited to the types and minimum number essential to meet the minimum requirements for the administration of the wilderness area. A decision to construct, maintain, or remove an administrative facility will be based primarily on whether or not the facility is required to preserve wilderness character or values, not on considerations of administrative convenience, economic effect, or convenience to the public or park staff. Maintenance or the removal of historic structures will also comply with cultural resource protection and preservation policies and directives, and with the concept of minimum requirement management techniques for wilderness.

#### **6.3.10.1 Administrative Facilities**

Administrative facilities may be allowed in wilderness only if they are determined to be the minimum requirement necessary to carry out wilderness management objectives and are specifically addressed within the park’s wilderness management plan or other appropriate planning documents.

**NPS Director’s Order 28 (DO-28): Cultural Resource Management.** DO-28 states, “The NPS will protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the NPS Management Policies.” Additionally, “The NPS will comply with the substantive and procedural requirements described in the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation. Additionally, the NPS will comply with the 1995 Servicewide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers.”

**Olympic National Park General Management Plan 2008.** The Final General Management Plan (FGMP) (NPS 2008) and Record of Decision (ROD) (NPS 2008a) state that, “Cultural resources that have been included within wilderness would be protected and maintained according to the pertinent laws and policies governing cultural resources using management methods consistent with the preservation of wilderness character and values. Laws pertaining to historic preservation remain applicable within wilderness but must generally be administered to preserve the area’s wilderness character. The responsible decision-maker would include appropriate consideration of the application of the provisions of the Wilderness Act in analyses and decision-making concerning cultural resources” (NPS 2008) and “Wilderness would continue to be managed in accordance with the Wilderness Act and NPS policies” (NPS 2008).

## Decision to be Made

This Environmental Assessment (EA), which evaluates impacts of the proposed project on cultural and natural resources, wilderness character, and visitor use and experience, will be used to help the Regional Director, National Park Service (NPS), Interior Regions 8, 9, 10, and 12, based on a recommendation from the Superintendent of Olympic National Park, make a decision about the final disposition of the Enchanted Valley Chalet. The decision would be documented in the proposed Finding of No Significant Impact (FONSI) for this EA. Should the EA reveal significant impacts on park resources from the project, an Environmental Impact Statement and Record of Decision would be prepared.

## Summary of Public Scoping

In June 2016, OLYM released a scoping letter for the EVC EA. This scoping letter was updated in July 2016 to include an additional preliminary alternative concept. The letter provided background for the project, a description of the purpose and need, included preliminary alternative concepts for consideration, a tentative timeline for the planning process, and information on how to comment, including the public scoping open house schedule. The public was invited to submit comments on the scope of the planning process through August 31, 2016.

During the comment period, public meetings were held in three locations in Washington between June 27 and July 19, 2016. Meetings were held in Port Angeles (June 27 and July 19), Amanda Park (June 28 and July 12), and Aberdeen (June 29 and July 18). These meetings were conducted in an open house format with informational posters and maps, and staff available to discuss commenters' questions and concerns. A total of 83 people signed in at the public meetings. The public was invited to submit comments on the project. During the scoping period, 1,399 pieces of correspondence were received via hard copy form submitted at any one of the public meetings; the Planning, Environment, and Public Comment (PEPC) website, or via hand or USPS delivery to Olympic National Park headquarters in Port Angeles, Washington (all correspondence is ultimately entered into PEPC). Correspondence was received from people in at least 105 cities or communities in Washington State; 48 other states and Washington, D.C.; as well as from 12 foreign countries including Argentina, Australia, Canada, Costa Rica, Germany, Italy, Netherlands, South Africa, Spain, Sweden, Switzerland, and the United Kingdom. We also heard from state agencies and representatives.

These comment letters were analyzed and divided into several categories, from which 7 areas of concern were identified (including the alternative concepts, funding, wilderness, listing status on the National Register of Historic Places, history and personal connections, purpose and need, visitor use and experience, and data and information needs identified). There were comments that both supported or expressed a lack of support for each of the four preliminary alternative concepts. The majority of comments expressed either a general desire to "restore the area to natural conditions" or "save the chalet" without any further detail, ideas, suggestions that would help build out the current, or develop new, alternative concepts. Many comments offered additional details to the preliminary alternative concepts, some of which were not considered technically or economically feasible.

**Alternative Concepts:**

There were comments that both supported or expressed a lack of support for each of the four preliminary alternative concepts that were presented at the scoping phase of this process. The majority of comments expressed either a general desire to “restore the area to natural conditions” or “save the chalet” without any further detail, ideas, suggestions that would help build out the current, or develop new, alternative concepts. Many comments offered additional details to the preliminary alternative concepts. These details may or may not be considered technically or economically feasible, and they are noted below simply to describe what was stated.

- Concept 3, Option B: Commenters suggested that the structure or materials be removed using hand tools, pack stock, and backpacks to the extent practicable; avoid the use of helicopters. Burn burnable materials on site in an effort to reduce the number of trips to pack out the materials.
- Concept 3, Option C: Commenters suggested areas within the park’s frontcountry to move the chalet for easier access by all members of the public as well as a better opportunity to preserve the structure without the threat of natural processes. Some of these areas included visitor centers, trailheads, and other historic landscapes.
- Concept 3, Option D: Commenters suggested areas outside of the park’s boundary to move the chalet for easier access by all members of the public as well as a better opportunity to preserve the structure without the threat of natural processes. Some of these areas included private property and local museums.
- Concept 4: Commenters suggested that modifications be made to the landscape and natural processes in order to protect the chalet within the Enchanted Valley. Comments also suggested that the chalet be restored and utilized as a lodge, ranger station, research facility, or emergency shelter. Some commenters gave specific details on locations they believed the chalet should be moved where they believed it could be preserved in perpetuity within the Enchanted Valley.
- A couple of commenters suggested that the chalet be burned in place without any prior dismantling or removal of non-burnable materials.

**Funding:**

Many comments were made about funding. Most of the comments were in regard to concerns about the costs associated with preservation of the structure and appropriate spending of taxpayer dollars. Other commenters indicated a desire to see funding spent on other park, visitor, or resource needs. Many commenters made suggestions for the use of volunteers to move the structure or to utilize partnerships such as with universities or non-governmental organizations to preserve the structure. Several commenters also noted that funds could be raised to help move and preserve the chalet within the Enchanted Valley.

**Wilderness:**

Comments regarding wilderness related to the intent of the Wilderness Act, concerns about impacts to wilderness character, and the perceived conflict between the Wilderness Act and the National Historic Preservation Act.

**National Register of Historic Places Listing:**

Several commenters noted the listing status of the chalet on the National Register of Historic Places and its importance and local significance. A couple of these comments compared the

listing status of the chalet to the listing status of other nationally significant resources such as the Statue of Liberty, Washington Monument, Arlington National Cemetery, and Lincoln Home.

### **History and Personal Connections:**

Many commenters shared information about the history of the area and of the chalet as well as their own personal stories and connections to the chalet.

### **Purpose and Need:**

There were several comments made about the purpose and need. Some commenters were in support of the current purpose and need statement and some were in opposition and asked that the planning team revisit it, especially in light of the purpose and need statement provided in the 2014 Concise EA.

### **Visitor Use and Experience:**

There were a few comments concerned about the potential for reduced number of campsites should the chalet be moved to another location within the Enchanted Valley. Otherwise, comments regarding visitor use and experience were subjective in nature regarding why people visit the Enchanted Valley.

### **Data and Information Needs Identified:**

- Commenters suggested or asked that the park (some of which are already requirements per NEPA, NHPA, and the Wilderness Act):
  - include a detailed breakdown of the total cost to move the chalet in 2014 in the EA or otherwise make that information available to the public;
  - describe what actions would be necessary and what the cost would be to restore the chalet;
  - provide the costs of each alternative/full economic analysis in the EA;
  - consider developing an Environmental Impact Statement instead of an Environmental Assessment;
  - conduct a minimum requirement analysis in the EA;
  - evaluate the Wilderness Act in contrast with the National Historic Preservation Act in order to identify what legal obligations might exist for taking action to preserve the chalet, at the potential expense of the wilderness/wilderness character;
  - provide an explanation of the Wilderness Act, what it means and what its requirements are; as well as an explanation of the NHPA, what it means and what its requirements are; and explanation of minimum requirement analysis, what it means, why it is required;
  - identify whether the chalet meets the NRHP's criteria for qualification as a contributing resource, or if the chalet is considered a non-contributing resource;
  - explain the legal responsibilities under the Secretary's Standards for the Treatment of Historic Properties;
  - identify what the sources of funding would be for each alternative;
  - describe the role of cottonwoods in floodplain ecosystems;
  - whether the park may use Recreational Fee Demonstration funds to open the chalet to visitors; and

- address what the potential uses of the historic structure could be, if feasible, within an appropriate alternative.
- Evaluate the relative impacts to site recreation for each of the alternatives:
  - including the potential for reducing the number of existing campsites, and the potential for obstructing views at the remaining campsites;
  - whether there are similar sites that are more or equally accessible to visitors; and
  - whether there are other historic buildings that may be enjoyed, that do not pose a significant risk to the natural resources.
- Commenters also identified additional potential studies or information needs: soil survey, geological survey, hydrological survey, wetland delineation, historic avalanche activity, weather patterns, mapping and modeling, and a condition assessment of the structure

## Project Location

The Enchanted Valley Chalet is located 13 miles up the mainstem or “east fork” of the Quinault River (hereinafter referred to as “Quinault River”) from the Graves Creek Trailhead, at an approximate elevation of 2,030 feet, within the congressionally-designated Daniel J. Evans Wilderness (designated in 1988 as the Olympic Wilderness). See figure 1.

**Figure 1. Map of Project Location**



## Chapter 2: Alternatives

### Introduction

The *National Environmental Policy Act* (NEPA) requires federal agencies to explore a range of reasonable alternatives and analyze impacts that any of these alternatives could have on the human environment. “Reasonable alternatives” are those alternatives that meet the purpose and need for action and are technically and economically feasible (46.420(b)). An alternative is not considered reasonable if technical, economic, or jurisdictional obstacles make the ability to implement the alternative remote and speculative (NPS 2015). In an Environmental Assessment, federal agencies are not required to include rationale for eliminating alternatives from detailed analysis.

The “Environmental Consequences” chapter of this Final Disposition of the Enchanted Valley Chalet/Environmental Assessment (EVC/EA) presents the results of the analyses. The alternatives under consideration in an EA must include a no-action alternative prescribed by 43 CFR 46.310, unless there are “no unresolved conflicts about the proposed action with respect to alternative uses of available resources” as applicable only to EAs. Alternative A in this EA is the no-action alternative because it is the continuation of current management as presented in the 2014 Concise EA (NPS 2014). The two action alternatives presented in this chapter were developed by the interdisciplinary planning team and through feedback received during the public scoping process (see “Chapter 4: Consultation and Coordination”).

### Overview of Alternatives

#### Alternative A - No Action

The chalet would remain in its current location and on top of the steel I-beams that were used to move it in 2014. Also, it would remain closed to public and administrative use. No action would be taken to protect the chalet from the river, or the river from the chalet, and no maintenance activities would occur. Should damage occur to the chalet from natural hazards (such as, but not limited to, river encroachment, avalanche, lightning strike, flooding, tree fall, or fire), the damage would not be repaired. Additional compliance (NEPA and wilderness minimum requirements analysis) and consultation would be necessary if river encroachment causes the building to fall into the river. The building materials and I-beams would be removed only if it can be done safely.

The 2014 Memorandum of Agreement (MOA) with the State Historic Preservation Office (SHPO) expired in August 2019. The park would continue to re-consult until a new MOA is completed. Remaining items of historic importance that were identified in the MOA may be packed out by staff or pack stock (NPS 2014a).

#### Alternative B - Dismantle and Remove the Chalet (Preferred Alternative)

Under Alternative B, the chalet would be dismantled and removed. Large, heavy materials would be removed by helicopter such as the steel I-beams, cribbing, dimensional lumber, chimney, and stove, as well as painted and non-native materials. The 48-ton building was constructed primarily from native materials. Because of the large amount of these materials, some may be placed in



small piles and burned onsite, and smaller portions would be removed by helicopter. The remainder of the materials would be left to decompose naturally. A Type 3 helicopter would be used to bring in tools and equipment and a Type 2 helicopter would be needed to fly out materials, the I-beams, and equipment. The Type 3 helicopter would be utilized during the summer (nesting) season to reduce potential effects on marbled murrelets and northern spotted owls. The larger, Type 2 helicopter would be utilized outside of murrelet and spotted owl nesting season to reduce the total number of flights that would otherwise occur. Overall, a maximum of 99 helicopter turns (approximately 11-12 days/80 hours of helicopter use) would be necessary. Equipment would include hydraulic jacks for lifting the chalet, various power tools (such as drills and reciprocating saws) for dismantling the internal temporary walls and shoring that provided rigidity in the chalet during the move in 2014, and a small suitcase generator would be required for power tool use, or to charge battery-operated tools. Other tools would include scaffolding, ladders, chainsaws, and rigging gear (such as a grip hoist, Lewis wrench and gas-powered wrenches).

Most of the chalet's important historic materials have already been removed from the building for safekeeping. Those that remain may be salvaged for the park's museum collections. The proposed action would be implemented over one year (approximately 24-26 weeks) by an NPS crew of 8 plus, intermittently, 1-2 packers and a string of 8 stock. Bunch Field, in the Quinault area, would be used as a helicopter staging area. Temporary closures would occur for trails and camp areas within the flight zone and Enchanted Valley during helicopter use. Work would not occur in the Quinault River.

### **Alternative C - Relocate the Chalet to another Location on the Terrace**

Under Alternative C, the chalet would be moved approximately 250 feet to another location on the surrounding terrace. The move would take place in two 125-foot increments over a 1- to 2-year period. The 2017 Site Flood Hazards Report (NPS 2017) suggests the site with the greatest chance for long term stability would be as close to the eastern valley-side terrace wall as is practical. The precise location would be selected to minimize damage to vegetation, particularly trees. This includes live, dead, fallen, and standing trees. At the new location the chalet would be placed on a new foundation and the chimney would be repaired. The foundation would be constructed of sustainable materials such as concrete and rock. Approximately 12 cubic yards of cement would be required and it may be possible to harvest some or all of the rock onsite. In this alternative, if hazards such as avalanche, fire, flooding, or treefall should damage or threaten the chalet, no action would be taken to relocate the structure again. If the river moves within 30 feet of the chalet's new location the building would be dismantled and removed as described in alternative B. This would be done only if park staff determine it is safe to do so.

The mechanism for moving the chalet would be similar to the process used to relocate the building in 2014. The relocation would be accomplished using hydraulic lifts, non-toxic soap, and the steel I-beams on which the chalet currently rests. The building would be moved in a direct line (it may be angled slightly to the right/east from its longest edge opposite the river toward the northeast) to the valley wall. The path the building would travel is located in the "area of interest" defined by the Site Flood Hazards survey (see figure 2). Approximately 12 cottonwood or alder trees of up to 72" in diameter would be removed. Some minor leveling of the landscape would be done by hand.



A Type 3 helicopter would be used to fly support materials such as additional cribbing, hydraulic jacks for lifting the chalet, various power tools such as drills, and reciprocating saws and a small suitcase generator for power tool use, or to charge battery-operated tools. A maximum of 60 helicopter turns (approximately 7 days/50 hours of helicopter use) would transport these materials in and out of the work site. Between year one and year two, some of this equipment would be stored onsite in the chalet or in the Knaack boxes that are currently on location.

The move would take 2 to 3 days each year and require the support of a 3-person crew, one string of 8 stock, and a packer. Construction of the new foundation would require 7 NPS staff, one packer, and one string of 8 stock, for 6-8 weeks in one season. Temporary closures would occur for trail and camp areas within the flight zone and Enchanted Valley during helicopter use. Bunch Field would be used as a helicopter staging area. This action would occur over one summer season (6-8 weeks).

The chalet would require periodic maintenance that would be completed in accordance with the *Secretary's Standards for the Treatment of Historic Properties* and within all applicable wilderness and historic preservation laws. Maintenance activities would be completed with traditional hand tools and stock support. A portion of the chalet may be designated an emergency shelter. The chalet may also be used administratively.

**Figure 2: Site Flood Hazard Analysis Area (which includes the potential move sites)**



## Mitigation Measures

See appendix B for applicable mitigation measures.

## Alternatives Considered but Dismissed

**Burn the chalet in place as is, or dismantle the chalet, remove unburnable materials via pack or pack stock, and burn *all* burnable materials in place.** While removing the chalet via burning would be conducted under a controlled burn, there would be the potential that high winds or other factors could cause the fire to inadvertently spread to adjacent areas within the floodplain forest. There is also potential that the chalet would not burn all the way down to the ground, which would leave a standing remnant of the chalet that could become an attractive nuisance. Also, this alternative would have too great of impacts on air quality, vegetation, soils, threatened and endangered species, water quality, and wilderness character.

**Set the chalet in place in its current location on a new, natural foundation.** This alternative was the original alternative B at the scoping phase, however, given that the riverbank is currently within five feet of the chalet, this alternative is no longer technically feasible. The costs and staff time that would be required to construct the new foundation and to fly out the support beams would be too great for the short-term benefit this alternative would provide prior to the chalet eroding into the river.

**Move the chalet to the forested low ridge surface upslope of the proposed location in alternative C.** A location beyond the 250' recommended in the Site Flood Hazards Report, was identified by park staff, where the chalet could be placed for an indefinite amount of time. However, moving the chalet to this area would require significant landscape modifications (tree removal and site leveling) that are well beyond those considered and analyzed under alternative C. Moving the chalet to this location would also increase the chalet's exposure to tree-fall hazards and susceptibility to avalanches. It would also still be an adverse effect on the chalet.

**Move the chalet to another wilderness location outside the Enchanted Valley OR dismantle the chalet and rebuild it in another location within the Enchanted Valley, but not on the river terrace upon which it currently rests.** Section 4(c) of the Wilderness Act prohibits structures within designated wilderness except as necessary to meet minimum requirements for the administration of the area for the purpose of the Act. Historic structures that are present at the time of wilderness designation, may be allowed to remain in place. However, moving the chalet from its current location to an entirely different location in another part of designated wilderness or to another location within the Enchanted Valley (other than elsewhere on the terrace upon which it currently rests) would essentially be a "new" development in its new location. Also, the chalet would lose its listing status in the National Register of Historic Places and therefore would no longer maintain the level of historic significance to support its public purpose of "historical use" identified in section 4(b) of the Wilderness Act. Lastly, while moving the chalet from one area of wilderness to an entirely different area of wilderness within the park would have long-term beneficial effects on the natural and undeveloped qualities of wilderness character in its current location, there would be significant long-term adverse impacts on the same qualities of wilderness character in its new location. Reconstruction of a historic structure would require approval from the NPS Director.

**Move the chalet to Kestner Homestead or to another historic district within the park.**

Kestner Homestead is a designated historic district listed in the National Register of Historic Places. Moving the chalet to the Kestner Homestead or any other designated historic district in the park would have a long-term adverse impact on that historic district by introducing a structure that is not associated with that district. The chalet would lose its listing status in the National Register of Historic Places. Reconstruction of a historic structure would require approval from the NPS Director.

**Dismantle and reconstruct the chalet in a frontcountry location in the park.** Dismantling the chalet, moving it to a frontcountry location, and rebuilding it in the park would be cost prohibitive. The chalet would lose its listing status in the National Register of Historic Places. Reconstruction of a historic structure would require approval from the NPS Director.

**River channel modification or bank stabilization.** River channel modification or bank stabilization activities within the Enchanted Valley would be contrary to the provisions of the Wilderness Act as the vast majority of the Quinault River within the park is located within designated wilderness. Additionally, the Quinault River is eligible for Wild and Scenic River (WSR) designation and, given its eligibility, the river must be maintained in accordance with the Wild and Scenic Rivers Act for the protection of the “outstandingly remarkable values (ORVs)” for which it is eligible. The Quinault River is also designated critical habitat for the federally listed threatened bull trout, contains Essential Fish Habitat for federally listed threatened Chinook and coho salmon, and is an important tribal fisheries resource for the Quinault Indian Nation.

**Use the structure for recreational purposes.** The structure has not been open for recreational use (including overnight lodging) since 1953 due to vandalism and deterioration. It has not been open for administrative or emergency use since late 2013 due to staff and visitor safety concerns. Section 4(c) of the Wilderness Act prohibits certain uses, including structures and installations, except as necessary to meet minimum requirements for the administration of the area for the purposes of the Act. The closure of the chalet to administrative and emergency use in late 2013 has had no effect on the level of visitation in the Enchanted Valley; visitors continue to recreate in the valley on a year-round basis. Overnight backcountry visitor use numbers, despite no available lodging facility, have been on the increase since 2014. These numbers suggest that minimum requirements for the administration of the wilderness do not warrant the need for a lodging structure in the Enchanted Valley. Also, the recreational experience offered in a wilderness setting is vastly different than the experience of staying in a hotel or lodge. The wilderness setting attracts users who are seeking a more primitive and self-reliant experience. Additionally, this action would have to be associated with alternative C, as the chalet would first need to be moved from the riverbank to elsewhere on the terrace. In a new location, closer to the eastern valley wall, the chalet would not only be threatened by continued erosion of the terrace, but would also then be subject to increased risk from avalanches or tributary stream fans (debris flows) and may be less safe for staff or visitor use. There would be additional costs associated with the need to rehabilitate and maintain the condition of the chalet in order to be open for public or administrative use.

## Chapter 3: Affected Environment and Environmental Consequences

This section describes the resources that could be impacted, the methods used for evaluating impacts, and provides an assessment of the impacts (i.e., environmental consequences) associated with the alternatives. It is organized by impact topic, which allows a standardized comparison between alternatives based on issues. The analysis considers context, intensity, and duration of impacts, the indirect and cumulative impacts, and measures to mitigate impacts.

### Methodology

The environmental consequences for each impact topic were defined based on the following information regarding context, type of impact, duration of impact, area of impact, and the cumulative context. Unless otherwise stated in the resource section in *Environmental Consequences*, analysis is based on a qualitative assessment of impacts. Impacts are described in terms of context, type, and duration.

#### a. Context of Impact

The context is the setting within which impacts are analyzed – such as the project area or region, or for cultural resources – the area of potential effects (APE).

#### b. Type of Impact

The type of impact is a measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time.

- **Beneficial:** Reduces or improves impact being discussed.
- **Adverse:** Increases or results in impact being discussed.
- **Direct:** Caused by and occurring at the same time and place as the action, including such impacts as animal and plant mortality, damage to cultural resources, etc.
- **Indirect:** Caused by the action, but occurring later in time at another place or to another resource, including changes in species composition, vegetation structure, range of wildlife, offsite erosion or changes in general economic conditions tied to park activities.

#### c. Duration of Impact

Duration is a measure of the time period over which the effects of an impact persist. The duration of impacts evaluated in this EA may be one of the following:

- **Short-term:** Often quickly reversible, associated with a specific event, and lasting up to five years.
- **Long-term:** Reversible over a much longer period, or may occur continuously based on normal activity or for more than five years.

#### d. Impact Analysis

Impacts on various resource topics are compared among alternatives by describing qualitative or quantitative differences. Special Status Species and Cultural Resources impact determinations are formally determined under the Endangered Species Act (ESA) (Section 7) and the National Historic Preservation Act (Section 106), respectively. In accordance with *Management Policies* (NPS 2006), the analysis in this Environmental

Assessment fulfills the responsibilities of the NPS under Section 106 of the National Historic Preservation Act.

### Special Status Species

Conclusions drawn for impacts to special status species adhere to the following definitions under the U.S. Fish and Wildlife Service (USFWS) effects determinations for threatened and endangered species and designated critical habitat:

- **No Effect:** The project (or action) is located outside suitable habitat and there would be no disturbance or other direct or indirect impacts on the species. The action will not affect the listed species or its designated critical habitat (USFWS 1998).
- **May Affect, Not Likely to Adversely Affect:** The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely to be entirely beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial. Insignificant effects would not result in take. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur (USFWS 1998).
- **May Affect, Likely to Adversely Affect:** The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (USFWS 1998).

Conclusions drawn for impacts to essential fish habitat (EFH) adhere to the following definitions under the National Marine Fisheries Service (NMFS) effects determinations for designated EFH:

- **No Effect:** The appropriate determination when the proposed action will have no effect on listed species or designated critical habitat. For this determination, the effects of the action should be temporally or spatially separated from the listed species.
- **Adverse Effect:** Any impact which reduces the quality and/or quantity of essential fish habitat. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. (50 CFR 600.810; USFWS 1998)

### Cultural Resources

Conclusions drawn for impacts to cultural resources adhere to the following definitions:

- **No effect:** There are no historic properties present within the Area of Potential Effect (APE) or there are historic properties present but the undertaking would have no effect upon them. The undertaking would have an assessment of effects determination of “no historic properties affected” (36 CFR Part 800.4(d)(1)).



- **No adverse effect:** The undertaking would have an effect on historic properties, but the effects do not meet the criteria in 36 CFR Part 800.5(a)(1) or conditions are imposed to avoid adverse effects. The undertaking would have an assessment of effects determination of “no adverse effect” (36 CFR Part 800.5(b)).
- **Adverse effect:** The undertaking will alter, directly or indirectly, the characteristics of a historic property that qualify it for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. The undertaking would have an assessment of effects determination of “adverse effect” (36 CFR Part 800.5(d)(2)).

## Cumulative Effects Analysis Methodology

The Council on Environmental Quality (CEQ) describes a cumulative impact as follows (Regulation 40 CFR 1508.7):

*A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (CEQ 2005).*

Cumulative actions are evaluated in conjunction with the impacts of an alternative (including existing conditions) to determine if they have any additive effects on a particular resource.

## Cumulative Impact Scenario

Past, present, and reasonably foreseeable future projects or plans at the park and, if applicable, the surrounding area or region were identified to provide the cumulative impact scenario. The geographic area of analysis for cumulative impacts varies slightly by affected resource and may include areas outside of park jurisdiction (such as the airspace above the park, or tribal waterways/fisheries).

For the purposes of conducting the cumulative effects analysis, NPS identified the following projects, plans, or actions described according to the resource potentially affected.

### Past Projects

**Emergency Action to Temporarily Relocate the Enchanted Valley Chalet for the Protection of the East Fork Quinault River/Environmental Assessment (2014).** The purpose of this action was to protect the Quinault River and its associated natural resources from imminent environmental harm. The structure’s foundation had been undercut 8 feet by the Quinault River. The structure was in imminent danger of collapse. The need for the proposed action was to prevent the Enchanted Valley Chalet from collapsing into the Quinault River and adversely impacting the streambed, hydrology, water quality, fisheries, other associated natural resources, and wilderness character. In September 2014, the chalet was moved approximately 100 feet from its previous location. In the 2014 EA, an MOA was drafted with and signed by the SHPO and QIN. The MOA provided stipulations for the temporary move, its wilderness location, documentation, interpretation for the public, historic fabric protection/salvage, post-review discoveries/archeology, and monitoring and reporting. It also stipulated that the subsequent

NEPA/NHPA processes for a long-term decision for the chalet would begin within one year of execution of the MOA and would be complete prior to the MOA's expiration in August 2019.

#### Current Planning Projects

**Fire Management Plan/Environmental Assessment and Operations.** Fire management operations are required to utilize the benefits of fire to achieve desired natural resource conditions while protecting park resources and surrounding lands from fire. Fire management may include fire suppression, fires for multiple objectives, manual or mechanical treatment, or prescribed fire/debris burning. Fire management actions may involve limited use of helicopters, chainsaws, water pumps, hose lays, bucket drops, and construction of fireline. Stock and helicopters may be utilized to transport fire crew and equipment to locations in wilderness when applicable. The time it takes to complete fire management actions may vary depending on fire behavior, fire management objectives, and fire progression. Minimum Impact Strategies and Tactics are emphasized to limit long-term effects on wilderness. While wildfires in the Olympic Mountains are not normal occurrences due to the mesic forest types, there were approximately 250 and 100 hours of flight time for fire-related activities in 2015, and 2016, respectively. Given changing climate conditions, it is uncertain what to anticipate for fire management operations over the next several years. If fire suppression is needed during chalet project implementation activities, the chalet project management activities would be postponed.

#### Future Planning Projects

**Wilderness Stewardship Plan/Environmental Impact Statement.** *NPS Management Policies 2006* states, "The superintendent of each park containing wilderness resources will develop and maintain a wilderness management plan or equivalent planning document to guide the preservation, management, and use of these resources. The wilderness management plan will identify desired future conditions, as well as establish indicators, standards, conditions, and thresholds beyond which management action will be taken to reduce human impacts on wilderness resources." Issues that will be addressed in the Wilderness Stewardship Plan include, but are not limited to, food storage, waste management, day and overnight use, group size, stock use, commercial services, traditional use, research activities, wildlife management, cultural resources management, infrastructure maintenance (trails, bridges, etc.), and camping and campsites.

#### Proposed Implementation of Park Management Plans

**Olympic National Park (ONP) 2008 General Management Plan.** The GMP provides park managers with long-term direction for achieving the resource protection and visitor experience goals of ONP. The GMP also establishes broad direction for managing designated wilderness and historic structures within designated wilderness. Actions generally covered by the GMP, which may occur in or adjacent to the project area, include (and are not limited to) those related to trail maintenance, research, monitoring, wildlife management, and search and rescue activities. These types of projects may require the use of helicopters if determined to be the minimum tool, temporary installations, use of motorized tools and mechanized transport, use of pack stock, temporary closures, revegetation, wildlife collaring, and wildlife hazing. Helicopter use for trail maintenance activities generally occurs over 5-6 days a year and typically September through March.



**Mountain Goat Management Plan/Environmental Impact Statement.** The Record of Decision for the Mountain Goat Management Plan/FEIS was signed on June 18, 2018. Implementation began in September 2018. This plan calls for two 2-week periods of helicopter use (July and August/September) every year for 3-5 years. The valley wall opposite the chalet is high density goat range. Helicopter flights for goat removal could occur within the wilderness and possibly within the Enchanted Valley at the same time as helicopter flights that may be necessary for the Enchanted Valley Chalet.

#### Other Current and Ongoing Actions

**Military, Commercial, and Private Overflights.** Overflights of the project area by military, commercial, tribal, and private aircraft would occur for the duration of management activities. Most military, commercial, and private overflights are not low-level events, generally occurring between 10,000 feet and 35,000 feet above mean sea level. Military flights tend to be less of an occurrence over the Enchanted Valley, however, these flights may increase in number and frequency, and sound associated with overflights of new aircraft may likely be louder in the future. Commercial overflights would likely occur daily and at high levels (above 30,000 feet), where they could affect the acoustic environment over large distances but likely not at levels that would be highly disruptive to humans or wildlife. Private overflights would occur less frequently and at the lower range of the above-referenced elevations (closer to 10,000 feet) and would be expected to have roughly similar impacts to commercial flights. The Quinault Indian Nation conducts periodic fisheries management flights in both the Queets (approximately 5 flights per year) and Quinault (approximately 3 flights per year) valleys.

## Cultural Resources

### Historic Structure

The Enchanted Valley Chalet is located 13 miles up the Quinault River from Graves Creek Trailhead, at approximately 2030 feet (619 meters) elevation, within the Congressionally-designated Daniel J. Evans Wilderness (designated in 1988) (see figure 1). The two and a half story, 42' x 28' structure was built in 1930-31 by the Olympic Recreation Company, operated as a commercial business until 1943, and was used briefly as an Aircraft Warning Station during World War II. The chalet was purchased by the National Park Service in 1951 and had formerly been used for park administrative purposes. In 1953, the chalet reopened for public use, but limited maintenance and vandalism expedited the building's deterioration and it was once again closed to public use in 2013. The chalet was used as a ranger station from 1954 to the end of the summer season in 2013, and a small portion of it (a small corner room on the first floor with an exterior door) was open to the public as only an emergency shelter from 1995 until the end of the summer season in 2013.

The chalet is located on the active floodplain of the Quinault River. The floodplain is comprised of unconsolidated sediment and channel migration across the floodplain is frequent and unpredictable. Air photos from the 1990s show the river about 400 feet from the chalet. In 2003, river avulsion (i.e., catastrophic channel shifting) began due to massive sediment loading up valley following heavy rains. By 2005, the river was within 10 feet of the chalet. Minor channel work and vegetation manipulation was done by park staff in fall 2005, this work included moving downed logs into more strategic positions, moving gravel and cobble material into banks

or dispersing some material to create a more level surface, cutting of some larger downed trees in the river bed into smaller sections enabling their movement with high flows, cabling of a couple downed logs together to slow the current and encourage gravel deposition, and removal of some small trees. The channel had migrated away from the chalet by 2006.

The chalet was added to the National Register of Historic Places (NRHP) in 2007 due to its local significance. The applicable National Register Criteria selected for the Statement of Significance were Criterion A “Property is associated with events that have made a significant contribution to the broad patterns of our history.” and Criterion C “Property embodies the distinctive characteristics of a type, period or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.” The Period of Significance is 1930-1943. (NPS 2007)

In October 2013, park staff on-site noted that the river channel was 9 feet from the northwest corner of the chalet. In winter of 2013/2014, the area experienced rainfall that was above average, storm events, and high flows that resulted in the Quinault River’s main channel shifting by at least 15 feet since the initial report of river movement in October 2013. In early January 2014 (see figure 3), photographs and visitor reports revealed that the Quinault River had migrated to within 18 inches of the chalet. Subsequent monitoring and aerial photos show that the river had undercut the chalet by approximately 6-8 feet and a small portion of the foundation had fallen into the river.

**Figure 3: Photos January 2014**



Park staff hiked to the chalet in mid-March 2014 to assess and document the chalet’s condition and remove equipment, supplies, hazardous materials (i.e., fuel) that were considered a threat to environmental conditions should they fall into the river (see figures 4, 5, and 6). The crew also removed the building’s windows to prevent glass from impacting the river and downstream natural resources, and to preserve elements of the historic building in case it was to collapse and fall into the river.



**Figure 4: Photos March 2014**



**Figure 5: Photos May 2014**



**Figure 6: Photos June 2014**





In July 2014 the NPS released the Finding of No Significant Impact (FONSI) for the “Emergency Action to Temporarily Relocate the Enchanted Valley Chalet for the Protection of the East Fork Quinault River/Concise Environmental Assessment.” The selected alternative was to move the chalet 50-100 feet from the bank of the river in an effort to protect the river and its associated natural resources from imminent environmental harm. In September 2014, the NPS hired a local contractor, and the chalet was moved approximately 100 feet from the bank of the Quinault River. While the moving of the chalet was determined to be an adverse effect, it did not cause the chalet to lose its listing status on the NRHP. In accordance with the 2014 MOA, a Historic American Buildings Survey (HABS) report (NPS 2017b) was completed on the chalet in 2014, the report was finalized in January 2017, and can be found on the park planning website at <http://parkplanning.nps.gov/EVCHABS>. Figure 7 shows a comparison of the amount of riverbank erosion that occurred between early 2014 and late 2015. The red line in both images depicts the location of the riverbank in 2014. The second photo was taken in late 2015, a little more than a year after the chalet had been moved 100’ from the riverbank. In this photo you can see the remnants of the foundation from where the chalet had been moved.

**Figure 7: Photo Comparison of Bank Location Relative to the Chalet**



As of May 2018 the nearest edge of the bank was approximately 10 feet from the chalet due to continued bank erosion, and then the river shifted northwest toward the valley wall and away from the alluvial bench on which the chalet currently resides. The chalet currently remains on the



steel I-beams that were used to move it in 2014 and remains closed to public and administrative use (see figure 8). As of March 2019 (see figure 9), the bank had once again eroded to within approximately 5 feet of the nearest corner of the chalet, and the nearest portion of the river channel is currently about 10 feet from the bank.

**Figure 8: Photos September 2018**



**Figure 9: Photos March 2019**



Aerial photo, looking southwest, downriver; orange arrows serve to help identify the structure.

Aerial photo looking west, the riverbank is more visible near the chalet in this photo.

### **Effects of Alternative A on the Historic Structure**

While there would be no direct actions taken under alternative A, implementation of this alternative would result in long-term adverse effects on the chalet due to lack of maintenance, as well as from the lack of an appropriate foundation as the chalet would remain on the steel I-beams. Implementation of this alternative would also result in long-term adverse effects if the chalet is taken by the Quinault River or damaged by other natural hazards. Mitigation measures

stipulated in the 2014 MOA would continue to be implemented until a new MOA is developed and signed to mitigate the adverse effects since the 2014 MOA expired in August 2019.

### **Cumulative Effects of Alternative A on the Historic Structure**

The past action of temporarily relocating the chalet approximately 100 feet from the riverbank and completion of HABS documentation, oral histories, and stories about peoples' experiences of the chalet as well as other measures stipulated in the 2014 MOA contributes to the short- and long-term beneficial impacts on the chalet. Since there would be no maintenance of the chalet, this contributes incremental impacts that in the long-term would be adverse. If the river eventually overtakes the chalet, this contributes an immediate long-term adverse impact. Alternative A would contribute long-term adverse cumulative effects that outweigh the long-term beneficial cumulative effects on the historic structure.

### **Effects of Alternative B (Preferred Alternative) on the Historic Structure**

Under this alternative, the chalet would be dismantled and removed. This would have an adverse effect on the chalet. An MOA would be developed and signed with measures that mitigate the adverse effects.

### **Cumulative Effects of Alternative B (Preferred Alternative) on the Historic Structure**

The completion of HABS documentation, oral histories, and stories about peoples' experiences of the chalet, as well as other measures stipulated in the 2014 MOA contributes to the long-term beneficial impacts on the chalet. Since the chalet would be dismantled and removed, alternative B would contribute adverse cumulative effects that outweigh the long-term beneficial cumulative effects on the historic structure.

### **Effects of Alternative C on the Historic Structure**

Implementation of this alternative would result in short-term and possibly long-term beneficial effects on the chalet because it would be periodically maintained in accordance with the *Secretary's Standards for the Treatment of Historic Properties* until major damage occurs from natural hazards or if it is taken by the Quinault River. However, moving the chalet to another location within the Enchanted Valley would further diminish the integrity of location, setting, feeling, and association which has already been diminished by the 2014 move. Also, once the riverbank is within 30 feet of the chalet, and park staff have determined it is safe, accessible, and economically feasible, the chalet would be dismantled and removed to keep it from going into the river. This would have long-term adverse effects on the historic structure. An MOA would be developed and signed with measures that mitigate the adverse effects.

### **Cumulative Effects of Alternative C on the Historic Structure**

The completion of HABS documentation, oral histories, and stories about peoples' experiences of the chalet, as well as other measures stipulated in the 2014 MOA contributes to the long-term beneficial impacts on the chalet. Since the chalet would not be moved again, alternative C would contribute long-term adverse cumulative effects that outweigh the long-term beneficial cumulative effects on the historic structure.

## **Conclusion**

All of the alternatives would have long-term adverse effects on the historic structure and would contribute long-term adverse effects to the overall cumulative long-term beneficial effects on the historic structure.

## **Ethnographic Resources**

According to the NPS *Management Policies 2006* (section 5.3.5.3), “ethnographic resources are the cultural and natural features of a park that are of traditional significance to traditionally associated peoples. These peoples are the contemporary park neighbors and ethnic or occupational communities that have been associated with a park for two or more generations (40 years), and whose interests in the park’s resources began before the park’s establishment” (NPS 2006).

The Queets and Quinault Indian tribes first inhabited the Lake Quinault area. The tribes established fishing and hunting villages on the shores of the lake and river that were in place for thousands of years. In 1859, the Enchanted Valley was ceded under the Quinault River Treaty. The streams within the Enchanted Valley are associated with treaty fishing rights. Therefore, these streams are ethnographic resources for the tribes associated with this treaty. The Quinault Indian Nation (QIN) currently monitors for the health of the drainage, which supports their downstream fisheries. The entire Enchanted Valley is within the QIN’s usual and accustomed area.

## **Effects of Alternative A on Ethnographic Resources**

While there would be no direct actions taken under alternative A, implementation of this alternative could result in short- or long-term adverse effects on ethnographic resources if the chalet is taken by the Quinault River. This alternative may also have short- or long-term adverse effects on tribal fisheries downstream because the chalet falling into the river could disrupt fish, fish habitat, and spawning due to increased turbidity, as well as creating other unnatural changes in channel migration and streamflow characteristics. Conditions, if feasible, may be imposed to avoid these adverse effects, so that there would be no adverse effects on ethnographic resources and tribal fisheries downstream.

## **Cumulative Effects of Alternative A on Ethnographic Resources**

The past action of temporarily relocating the structure approximately 100 feet from the riverbank contributes to the short-term and possibly long-term beneficial impacts on ethnographic resources and tribal fisheries downstream. Alternative A would contribute short- and long-term adverse effects to the overall short- and long-term beneficial cumulative effects on ethnographic resources.

## **Effects of Alternative B (Preferred Alternative) on Ethnographic Resources**

Under this alternative, the chalet would be dismantled and removed. This alternative would result in long-term beneficial effects on ethnographic resources since the chalet would be removed and would not be taken by the Quinault River.



### **Cumulative Effects of Alternative B (Preferred Alternative) on Ethnographic Resources**

The past action of temporarily relocating the chalet approximately 100 feet from the riverbank contributes to the short-term and possibly long-term beneficial impacts on ethnographic resources and tribal fisheries downstream. Alternative B would contribute additional beneficial effects to the overall long-term beneficial cumulative effects on ethnographic resources.

### **Effects of Alternative C on Ethnographic Resources**

Implementation of this alternative could result in short- or long-term adverse effects on ethnographic resources (tribal fisheries) downstream if the chalet falls into the river. This could disrupt fish, fish habitat, and spawning due to increased turbidity, as well as creating other unnatural changes in channel migration and streamflow characteristics. If park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed once the riverbank is within 30 feet of the structure. Therefore, it is anticipated that there would be no adverse effects on ethnographic resources and tribal fisheries downstream.

### **Cumulative Effects of Alternative C on Ethnographic Resources**

The past action of temporarily relocating the chalet approximately 100 feet from the riverbank contributes to the short- and long-term beneficial impacts on ethnographic resources and tribal fisheries downstream. Alternative C could contribute short- or long-term adverse or beneficial effects that outweigh the short- and long-term beneficial cumulative effects on ethnographic resources, due to either the removal of the chalet when the riverbank is within 30 feet (beneficial) or whether the chalet is taken by the river (adverse).

### **Conclusion**

All of the alternatives could have no adverse effects on ethnographic resources and tribal fisheries downstream if feasible conditions can be imposed. All alternatives contribute short- or long-term adverse effects that outweigh the short- and long-term beneficial cumulative effects.

## **Wilderness**

The Wilderness Act of 1964 established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as “wilderness areas.” By law these wilderness areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness” (16 U.S.C. §1131).

To ensure an enduring resource of wilderness, the Wilderness Act (section 4(c)) prohibits certain uses within wilderness: “there shall be no temporary road, no use of motor vehicles, motorized equipment, or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within such area.” The exception for utilizing these prohibited uses is only if they are “necessary to meet minimum requirements for the administration of the area for the purpose of this Act.”

In 1988 the Washington State congressional delegation introduced legislation for large portions of all three national parks in the state to be designated as wilderness areas. On November 16, 1988, President Ronald Reagan signed the Washington Park Wilderness Act (PL 100-668) into

law, designating 876,669 acres, approximately 95%, of Olympic National Park as Olympic Wilderness (renamed the Daniel J. Evans Wilderness in 2017) and another 378 acres as Potential Wilderness Additions. In 2012, the Quileute Tsunami Protection Act transferred park lands, including approximately 222 acres of the Daniel J. Evans Wilderness, to the Quileute Tribe. The 876,477 wilderness acres remaining still encompass about 95% of the park.

The Daniel J. Evans Wilderness is extremely diverse, with glacier-covered mountains, subalpine lakes and meadows, heavily forested glacier-carved river valleys, old-growth coniferous forests, and a stretch of wild Pacific Ocean coastline (NPS 2017c).

Day hiking and backpacking are principal activities in the Daniel J. Evans Wilderness, and the park's trails and campsites are the most conspicuous human imprint on the wilderness. There are over 600 miles of maintained trails and more than 1,300 campsites. A variety of structures and installations are maintained for wilderness management purposes, primarily along trail corridors or in camp areas. This includes four ranger station cabins, several temporary ranger station tents, 18 shelters, over 80 toilets, and other facilities such as radio repeaters and research equipment.

The Daniel J. Evans Wilderness has some of the highest overnight use of any NPS-managed wilderness or backcountry area, with 15,008 parties, 43,325 visitors, and 95,045 user nights (i.e., the number of visitors multiplied by the number of nights that visitors stay in wilderness) in 2014. The overnight wilderness use within the interior of the park accounted for approximately 55% of the total overnight wilderness use in 2014. The much smaller coastal wilderness portion (3.2% of the total wilderness acres), accounted for 45% of total overnight wilderness use, its popularity largely due to the uniqueness of the experience which provides year-round, snow-free access to rare ocean coast wilderness.

The Graves Creek Trailhead is a wilderness entry point and provides access to the Enchanted Valley, which is located approximately 13 miles up the Quinault River from the trailhead.

### **Wilderness Character**

The primary management mandate of the Wilderness Act for the federal agencies administering wilderness is to preserve the wilderness character of the area (Use of Wilderness Areas, section 4(b)). This legal requirement is also addressed in section 2(a) of the Wilderness Act: "a National Wilderness Preservation System...shall be administered...so as to provide for the protection of these areas, the preservation of their wilderness character." In addition, section 4(b) states that while administering the area for other purposes for which it may have been established, the agencies are directed to preserve the wilderness character of an area.

Wilderness character is not explicitly defined in the Wilderness Act. An interagency effort to provide direction related to wilderness character monitoring was developed, and the definition of wilderness character was derived from the statutory definition of wilderness in section 2(c) of the Wilderness Act. Wilderness character, as described in the interagency strategy *Keeping It Wild 2* (USDA 2015), is "a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection

with nature. Taken together, these tangible and intangible values define wilderness character and distinguish wilderness from all other lands”

### **The Qualities of Wilderness Character**

According to *Keeping It Wild* 2, the conceptual definition of wilderness character cited previously is linked to a practical meaning of wilderness character by using a framework of “qualities,” based on the Wilderness Act. Together, the qualities represent the primary tangible aspects of wilderness character. They link the statutory definition of wilderness to both on-the-ground conditions in wilderness and the outcomes of wilderness stewardship. Monitoring the condition of these qualities over time assesses how attributes of wilderness character may be changing and whether the agencies are ensuring that wilderness character is preserved. Four of the wilderness character qualities apply to all wilderness areas: untrammeled, natural, undeveloped, and solitude or primitive and unconfined recreation. A fifth quality, other features of value, may or may not apply within a wilderness. The qualities of wilderness character are described below (USDA 2015).

#### ***Untrammeled***

The Wilderness Act defines wilderness as “an area where the earth and its community of life are untrammeled by man.” Wilderness is essentially unhindered and free from the intentional actions of modern human control or manipulation. The untrammeled quality of wilderness character is preserved or sustained when actions to intentionally control or manipulate the components or processes of ecological systems inside wilderness (e.g., fire suppression) are not taken. The untrammeled quality is degraded by actions that intentionally manipulate the biophysical environment (e.g., interference in natural processes and energy flows).

The wildness and untamed nature of the Olympic Mountains was renowned for many years before the area was established as a national park. The area has been called wilderness long before its congressional designation as such, and its untrammeled quality was valued and emphasized before the adoption of the term by the writers of the Wilderness Act. About 95% of the park was designated as the Olympic Wilderness in 1988, formally and legally recognizing the value of its wilderness character. To this day, the 876,447 acres of the park’s wilderness (renamed the Daniel J. Evans Wilderness in 2017) has remained largely unhindered and free from modern human control. Although Native Americans have lived in the wilderness for thousands of years and we do not fully understand the influence they had on the landscape, the wilderness of the Olympic Peninsula has received little noticeable anthropogenic manipulation.

#### ***Natural***

The Wilderness Act states that wilderness is “protected and managed so as to preserve its natural conditions.” It is an area where wilderness ecological systems are substantially free from the effects of modern civilization. The natural quality of wilderness character is preserved when there are only indigenous species and natural ecological conditions and processes, and may be improved by controlling or removing non-indigenous species or by restoring ecological conditions. The natural quality is degraded by human-caused change to the natural environment (i.e., human-caused effects on plants, animals, air, water, ecological processes, etc.).

All of the Daniel J. Evans Wilderness lies within Olympic National Park, thus the natural ecological conditions, processes, and indigenous species described under the natural resources issues and impact topics described in this EA also apply to the natural quality of wilderness character.

Various anthropogenic factors are affecting the Olympic ecosystem and thus affect the natural quality of wilderness character. These include habitat fragmentation from logging on surrounding lands; the poaching of cedar, salal, and moss; aircraft overflight noise that impacts the natural soundscape; and commercial fisheries that affect anadromous fish return to spawn in the wilderness. Wolves were extirpated in the early 1900s, which would have had top-down effects on the abundance and distribution of their primary prey of elk, as well as indirect influences on faunal and floral communities at lower trophic levels (NPS 2018a).

### ***Undeveloped***

The Wilderness Act defines wilderness as “an area of undeveloped Federal land...without permanent improvements or habitation.” Wilderness is essentially without permanent improvements or the sights and sounds of modern human occupation. The undeveloped quality is preserved or sustained when modern structures, installations, habitations, motor vehicles, motorized equipment, or other mechanical transport is not used in wilderness. It is improved when these prohibited uses are removed or reduced.

While Olympic ranger patrols, trail maintenance, resource monitoring, and scientific research are important for responsibly managing the wilderness, the associated structures and installations are evidence of modern human occupation and influence. The administrative use of motorized equipment and mechanical transport for management activities, although permitted when it is the minimum requirement, in turn degrades the primitive nature of wilderness areas through the development, occupation, or modification of the land by humans (NPS 2018a).

### ***Solitude or Primitive and Unconfined Types of Recreation***

The Wilderness Act defines wilderness as having “outstanding opportunities for solitude or a primitive and unconfined type of recreation.” Wilderness provides outstanding opportunities for recreation in an environment that is relatively free from the encumbrances of modern society, and provides benefits and inspiration derived from self-reliance, self-discovery, physical and mental challenge, and freedom from societal obligations. The solitude or primitive and unconfined recreation quality of wilderness character is preserved or improved by management activities that reduce visitor encounters, reduce signs of modern civilization inside wilderness, remove agency-provided recreation facilities, or reduce management restrictions on visitor behavior. The solitude or primitive and unconfined recreation quality is degraded by sights and sounds of human activity (solitude), and by facilities that decrease self-reliant recreation and management restrictions on human behavior (primitive and unconfined).

The ecological diversity of the Olympic National Park wilderness provides an array of wilderness-supported opportunities. Within rainforest valleys, along coastal beaches, by high mountain lakes, and on glacier-covered peaks, visitors may experience solitude and enjoy personal challenge and self-reliance. However, lights from surrounding urban areas affect the night sky in wilderness, and overhead aircraft, whether military, commercial, or administrative

flights, are ongoing reminders of civilization. The presence of researchers and research installations in the wilderness impact visitors' solitude and sense of remoteness. Bridges, toilets, and technology reduce opportunities for self-reliance. Designated campsites, signs, and other recreational infrastructure in the wilderness protect valuable park resources but simultaneously confine recreational experiences (NPS 2018a).

### ***Other Features of Value***

The Wilderness Act states that wilderness “may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.” This quality captures important elements or “features” of a particular wilderness that are not covered by the other four qualities, and is truly unique and essential to the character of that wilderness. Typically, other features of value occur in a specific wilderness location, such as archeological, historical, or paleontological features; some, however, may occur over a broad area such as an extensive geological or paleontological area, or a cultural landscape. This quality is preserved when these “other features of value” are preserved. The other features of value quality is degraded by deterioration or loss of integral site-specific features of value.

The designated wilderness areas on the Olympic Peninsula have been part of the homeland to American Indians for over 14,000 years. Eight tribes continue to recognize a relationship to the park based on traditional land use, origin, beliefs, and ethnographic landscapes: the Lower Elwha Klallam Tribe, Jamestown S’Klallam Tribe, Port Gamble S’Klallam Tribe, Skokomish Indian Tribe, Quinault Indian Nation, Hoh Tribe, Quileute Nation, and Makah Tribe (NPS 2018a).

While American Indian ties to this land are ancient and the designation of the area as wilderness is a modern concept, the relationship between American Indians and wilderness areas is an important component of the area’s cultural heritage. Thus, American Indian resources associated with Olympic Peninsula tribes represent the other features of value within the park’s wilderness. American Indian resources include archeological resources, ethnographic resources, and traditional cultural properties (Note: there are currently no listed Traditional Cultural Properties in the park).

Plants and animals, landscapes, and spiritual aspects that are fundamental to the culture of the surrounding tribes are vital elements of the park’s wilderness character. Impacts on American Indian resources in the wilderness include illegal harvest, high visitation in sensitive areas, park operations, rising sea levels, and other natural events such as floods and fires that could threaten American Indian resources and their associated sites.

A minimum requirement analysis (MRA) has also been developed for this plan and can be found in appendix C.

### **Effects of Alternative A on Wilderness Character**

While there would be no direct actions taken under alternative A, implementation of this alternative would result in impacts on wilderness character. The chalet remaining in place is a long-term adverse effect on the undeveloped quality of wilderness character. The opportunities for solitude as well as the natural qualities of wilderness character would be adversely affected by the presence of a work crew and pack stock as historic fabric is salvaged from the chalet as

well as from the river, if park staff determine it is safe, accessible, and economically feasible. If the chalet is taken by the river, the natural and other features of value qualities of wilderness character would experience short- and long-term adverse effects due to potential disruptions to fish, fish habitat, and spawning due to increased turbidity, direct impact (such as the chalet landing on fish, redds, and either damaging or occupying fish habitat), and creating other unnatural changes in channel migration and streamflow characteristics.

### **Cumulative Effects of Alternative A on Wilderness Character**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term adverse impacts on the undeveloped quality of wilderness character; as well as long-term beneficial impacts on the natural and other features of value qualities of wilderness character due to keeping the chalet from entering the river and disrupting natural processes and fish species. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on the natural, undeveloped, and opportunities for solitude or primitive and unconfined types of recreation qualities of wilderness character. Alternative A would contribute a considerable long-term adverse increment to the overall long-term beneficial and short-term adverse cumulative effects.

### **Effects of Alternative B (Preferred Alternative) on Wilderness Character**

Under this alternative, the chalet would be dismantled and removed. Removal of the chalet would have overall long-term beneficial effects on all qualities of wilderness character except for untrammeled, on which it would have no effect. This is due to the enhancement of these qualities and elimination of the potential for the chalet to fall into the river and disrupt fish, fish habitat, and spawning due to increased turbidity, and direct impacts such as the chalet landing on fish, redds, and either damaging or occupying fish habitat; creating other unnatural changes in channel migration and streamflow characteristics; and the continued presence of a built structure. The opportunities for solitude or a primitive and unconfined type of recreation quality of wilderness character would have short-term adverse effects due to helicopter noise and due to temporary area closures during removal of the chalet, and the presence of work crews (8 personnel, 1-2 intermittent packers, one string of 8 stock) during removal which would take approximately 24-26 weeks to complete in one year. Helicopter use would have short-term adverse effects on the undeveloped quality of wilderness character. Helicopter use would also have a short-term adverse effect on the natural quality of wilderness character due to the noise disturbance to area wildlife and the natural soundscape.

### **Cumulative Effects of Alternative B (Preferred Alternative) on Wilderness Character**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term adverse impacts on the undeveloped quality of wilderness character; as well as long-term beneficial impacts on the natural and other features of value qualities of wilderness character due to keeping the chalet from entering the river and disrupting natural processes and fish species. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for

administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on the natural and opportunities for solitude or primitive and unconfined types of recreation qualities of wilderness character. Alternative B would contribute an overall considerable beneficial increment to the overall long-term beneficial and short-term adverse cumulative effects on wilderness character.

### **Effects of Alternative C on Wilderness Character**

Implementation of this alternative would result in short- or long-term beneficial and adverse effects on all qualities of wilderness character. Being moved closer to the eastern valley wall would have increased exposure of the chalet to avalanches and alluvial processes. If the chalet is damaged by these or other natural hazards, it would be left in place and managed as a ruin. Moving the chalet to another location on the river terrace would have a long-term adverse effect on the undeveloped quality of wilderness character due to the continued existence of a built structure, a new foundation built under the structure, as well as the use of a helicopter to deliver and remove materials, tools, and equipment, to include the steel I-beams. However, once the riverbank is within 30 feet of the chalet, and park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed to keep it from going into the river. This would have a beneficial effect on the undeveloped and natural qualities of wilderness character. Such a move would also have short- and long-term adverse effects on the natural quality of wilderness character due to the need to remove approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72" in diameter (though only one or two at or near this size may be removed) along with other low-level vegetation using a chainsaw; potential leveling of the landscape in order to move the chalet as well as to set it down in a new location; and helicopter noise temporarily disrupting area wildlife and natural soundscape. The untrammeled quality of wilderness character would be adversely affected during tree removal. Contractor presence of 10 personnel over 2-5 days with a packer and one string of 8 stock to move the chalet, and the presence of 7 park staff, one packer, and one string of 8 stock for approximately 6-8 weeks to construct the new foundation, along with noise while hiking in as well as while conducting the move would have short-term adverse impacts on the natural and opportunities for solitude qualities of wilderness character. Additionally, given the continued erosion of the river terrace, the chalet may eventually be taken by the Quinault River which would have short- or long-term adverse effects on the natural, undeveloped, and other features of value qualities of wilderness character due to the disruption of fish, fish habitat, and spawning due to increased turbidity, and direct impacts such as the chalet landing on fish, redds, and either damaging or occupying fish habitat; and creating other unnatural changes in channel migration and streamflow characteristics. The opportunities for solitude or a primitive and unconfined type of recreation quality of wilderness character would have short-term adverse effects due to helicopter noise, crew presence, and temporary area closures during implementation of this alternative; and long-term adverse effects on the primitive recreation quality if the chalet were to be used as an emergency shelter as this decreases self-reliant recreation.

### **Cumulative Effects of Alternative C on Wilderness Character**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term adverse impacts on the undeveloped quality of wilderness character; as well as long-term beneficial impacts on the natural and other features of value qualities of wilderness character due to keeping the chalet from entering the river and disrupting natural



processes and fish species. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes and river processes unaffected by the chalet, however, the river continues to erode the terrace. In 10-20 years the river may still overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on the natural and opportunities for solitude or primitive and unconfined types of recreation qualities of wilderness character. Alternative C would contribute a considerable short- and long-term adverse increment to the overall long-term beneficial and short-term adverse cumulative effects on wilderness character.

## **Conclusion**

No direct action would be taken under alternative A to protect the chalet from the encroaching river or the river from the chalet, however, this would have a long-term adverse effect on the natural, undeveloped, and other features of value qualities of wilderness character as the chalet would eventually be taken by the river. This alternative would contribute a considerable long-term adverse increment to the overall long-term beneficial and short-term adverse cumulative effects of having temporarily relocated the chalet in 2014.

Implementation of alternative B would result in an overall beneficial effect on all qualities of wilderness character, except for untrammeled (which would have no effect), due to dismantling and removal of the chalet. Alternative B would contribute an overall considerable beneficial increment to the overall long-term beneficial and short- and long-term adverse cumulative effects. Alternative C would have long-term adverse and beneficial effects on wilderness character as the chalet would be moved approximately 250 feet from the river, however, it is estimated that the river terrace may be completely eroded away, and the chalet would either enter the river within 10-20 years, or would be dismantled and removed if park staff determine it is safe, accessible, and economically feasible to do so, once the riverbank is within 30 feet of the chalet. Also, the move would occur over a 1- to 2-year timespan, at 125 feet per year, which would adversely impact the opportunities for solitude and a primitive and unconfined type of recreation quality of wilderness character due to crew presence onsite and while traveling on the trail to and from the valley. This alternative would contribute an overall considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects.

## **Natural Resources**

### **Fish and Wildlife**

Mammals commonly seen in the Quinault area include Roosevelt elk, black-tailed deer, black bear, raccoon, spotted skunk, Douglas squirrel, beaver and snowshoe hare. Less common, but regularly present, are coyote, mountain lion, and bobcat. Smaller, less conspicuous or nocturnal mammals are numerous. Conspicuous birds in the area include great blue heron, osprey, Steller's jay, kingfisher, water ouzel (dipper), crow, raven, varied thrush, robin, winter wren and several warblers, woodpeckers, kinglets, and sparrows. (NPS 2014)

The mainstem Quinault River, as well as numerous side channels and tributaries, provide excellent spawning and rearing areas for salmonids and other native fish. Fish species known to

inhabit the Quinault River in Enchanted Valley include steelhead/rainbow trout, bull trout (federally listed as threatened), and Dolly Varden. This is one of the few locations where bull trout and Dolly Varden are observed together. Numerous other fish species inhabit the river at or below the Enchanted Valley, including Chinook salmon (both spring and fall populations), coho salmon, sockeye salmon, and cutthroat trout. A complete list of fish species observed in the river is maintained by the Olympic National Park fisheries staff and can be obtained by contacting park headquarters. Impacts to bull trout are addressed under the Special Status Species section. While Chinook and coho salmon are in the Quinault River, none of the actions considered would propagate downstream, so no further assessment is provided for Essential Fish Habitat. Impacts to all other fish species found in the Quinault River are addressed under this section. (NPS 2014)

### **Effects of Alternative A on Fish and Wildlife**

While there would be no direct actions taken under alternative A, implementation of this alternative would result in long-term adverse effects on fish and wildlife as the chalet would eventually be taken by the Quinault River. The chalet falling into the river may disrupt fish, fish habitat, and spawning due to increased turbidity, have direct impacts such as the chalet landing on fish, redds, and either damaging or occupying fish habitat; and creating other unnatural changes in channel migration and streamflow characteristics which may affect wildlife and wildlife habitat within and downstream of the Enchanted Valley.

### **Cumulative Effects of Alternative A on Fish and Wildlife**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on fish and wildlife. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short-term adverse effects on wildlife. Alternative A would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on fish and wildlife.

### **Effects of Alternative B (Preferred Alternative) on Fish and Wildlife**

Under this alternative, the chalet would be dismantled and removed. This would have a long-term beneficial effect on fish and wildlife as it would eliminate the potential for the chalet to be taken by the river and therefore would not disturb fish, fish habitat, and spawning; also eliminating the potential to create other unnatural changes in channel migration and streamflow characteristics which could otherwise have an adverse effect on wildlife and wildlife habitat within and downstream of the Enchanted Valley. Helicopters would be utilized to bring in necessary materials, tools, and equipment, and would also fly out these items as well as the I-beams, stove, and non-native as well as some native materials. This would have a short-term adverse effect on area wildlife due to noise disturbance. There would be a crew presence of 8 park staff, 1-2 intermittent packers, and one string of 8 stock, onsite over 24-26 weeks in one year.

### **Cumulative Effects of Alternative B (Preferred Alternative) on Fish and Wildlife**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on fish and wildlife. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on wildlife. Alternative B would have overall beneficial effects on fish and wildlife, this alternative would contribute an overall considerable long-term beneficial increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on fish and wildlife.

### **Effects of Alternative C on Fish and Wildlife**

Implementation of this alternative would result in a short- or long-term beneficial effect on fish and wildlife as the chalet would be moved further away from the river though it would remain on the river terrace with a new foundation built underneath. The landscape would require modification to include the removal of approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72" in diameter, though only one or two at or near this size may be removed. This would have a short- or long-term adverse effect on area wildlife due to chainsaw noise and potential habitat removal. However, aside from increased exposure to avalanches and alluvial processes, it is estimated that the entire river terrace may be completely eroded by the Quinault River within 10-20 years. The chalet falling into the river would have short- and long-term adverse impacts on fish and wildlife as the structure falling into the river may disrupt fish, fish habitat, and spawning due to increased turbidity, have direct impacts such as the structure landing on fish, redds, and either damaging or occupying fish habitat; creating other unnatural changes in channel migration and streamflow characteristics which may affect wildlife and wildlife habitat within and downstream of the Enchanted Valley. However, if park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed once the riverbank is within 30 feet of the chalet. Hydraulic tools would be employed and helicopters would be utilized to bring in necessary materials, tools, and equipment and fly out these items as well as the I-beams and potentially other items (such as, but not limited to the stove). These actions would have short- and long-term adverse effects on area wildlife due to noise disturbance from helicopter use as well as from the presence of 10 contractor personnel, one packer, and 8 head of stock 2-5 days, annually for 1-2 years; as well as a park crew of 7 staff, one packer, and 8 head of stock over the course of 6-8 weeks.

### **Cumulative Effects of Alternative C on Fish and Wildlife**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on fish and wildlife. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the structure. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on wildlife. Alternative C would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on fish and wildlife.

## Conclusion

No direct action would be taken under alternative A to protect the structure from the encroaching river or the river from the chalet, however, this would have short- and long-term adverse effects on fish and wildlife as the chalet would eventually be taken by the river. This alternative would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects. Implementation of alternative B would result long-term beneficial effects on fish and wildlife due to dismantling and removal of the chalet. Alternative B would contribute an overall considerable long-term beneficial increment to the overall long-term beneficial and short- and long-term adverse cumulative effects. Alternative C would have long-term adverse and beneficial effects on fish and wildlife as the chalet would be moved approximately 250 feet from the river, however, it is estimated that the river terrace may be completely eroded away, including the chalet, within 10-20 years. This alternative would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on fish and wildlife.

## Special Status Species

Federally-listed threatened species that are potentially located within or near the project area include bull trout (*Salvelinus confluentus*), marbled murrelet (*Brachyramphus marmoratus*), and northern spotted owl (*Strix occidentalis caurina*). There are no known occurrences of federal- or state-listed rare, sensitive, or threatened plants. While Chinook and coho salmon are in the Quinault River, none of the actions considered would propagate downstream to the area(s) where Chinook or coho have been documented, so no further assessment is provided for Essential Fish Habitat.

### Bull Trout

Bull trout occur year-round in the Quinault River Basin. In November 1999, the U.S. Fish and Wildlife Service designated threatened status for bull trout, and, in 2005, designated the mainstem/East Fork Quinault and North Fork Quinault as critical habitat for bull trout. (NPS 2014)

The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices, and the introduction of non-native species (NPS 2014).

### Northern Spotted Owls

Suitable habitat for northern spotted owl must provide for the nesting, roosting, and foraging needs of the bird as well as for dispersal. Suitable habitat is characterized by moderate to high canopy closures (60-80%); a multi-layered, multi-species canopy with large (>30" dbh) overstory trees; a high incidence of large trees with various deformities, cavities, broken tops, or mistletoe infestation; large snags; large accumulations of down trees and other woody debris on the ground; and sufficient open space below the canopy for owls to fly (Thomas et al. 1990). The breeding season for spotted owls is March 1 through September 30.

Because of extensive habitat loss throughout much of western Washington, the Olympic Peninsula population of spotted owls is effectively isolated from birds occurring in the Cascades

and the Oregon Coast Range. Spotted owls are resident throughout ONP, though the population is declining. The spotted owl sites that have been most affected by barred owl expansion have been those positioned on lower elevation slopes and river terraces (NPS 2014).

The potential staging area for the helicopter, Bunch Field, is an unlikely area for spotted owls to occur based on landscape position as well as habitat. Westside floodplain areas at low elevations typically are occupied by barred owls, which exclude spotted owls from these sites. Barred owls have been documented in the forest adjacent to Bunch Field. The forest type within several hundred meters of Bunch Field is alder with scattered large conifers which is not a suitable nesting or roosting habitat for spotted owls in this area (NPS 2014).

#### Marbled Murrelet

The murrelet is a seabird that nests in old growth forests. Murrelets nest on large limbs (limbs greater than or equal to 4”) at heights at least 33 feet or greater above the ground (71 FR 53840). They may also nest in smaller trees if thick moss or deformity creates a platform that is effectively large enough. Suitable nesting habitat for the marbled murrelet is generally thought of as typical old growth coniferous stands (multi-storied with moderate to high canopy closure) within approximately 50 miles of saltwater feeding areas. In the Pacific Northwest, most nests are located on a large branch with a moss substrate and canopy cover over the nest. Murrelets will nest in younger stands with remnant large trees or deformities that provide nesting opportunities (NPS 2014). The breeding season for murrelets is April 1 through September 23.

Olympic National Park contains the largest contiguous area of marbled murrelet nesting habitat remaining in the lower 48 states. There are approximately 402,785 acres of forested area below 3,000 feet elevation within the park. Based on surveys conducted within the park (1997-1999), it is possible that up to 100% of that habitat could have murrelets present during nesting season, with about 83% of nesting habitat classified as occupied (NPS 2014).

Suitable habitat in the area of Bunch Field has not been surveyed, however it has been determined that both the Graves Creek and the North Fork campgrounds were occupied by murrelets in the late 1990s (NPS 2014).

#### **Effects of Alternative A on Special Status Species**

While there would be no direct actions taken under alternative A, implementation of this alternative *may affect, is likely to adversely affect* bull trout and bull trout critical habitat as the chalet would eventually be taken by the Quinault River. The chalet falling into the river may disrupt fish, fish habitat, and spawning due to increased turbidity, have direct impacts such as the chalet landing on fish, redds, and either damaging or occupying fish habitat; and creating other unnatural changes in channel migration and streamflow characteristics which may affect bull trout, and bull trout critical habitat within and downstream of the Enchanted Valley. There would be *no effect* on marbled murrelets or northern spotted owls.

#### **Cumulative Effects of Alternative A on Special Status Species**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on bull trout and bull trout critical habitat. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes,

and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on marbled murrelets and northern spotted owls. Alternative A would contribute a considerable short- or long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on special status species.

### **Section 7 Determination Summary**

Under alternative A, the effects determination for bull trout and bull trout critical habitat is *may affect, likely to adversely affect*. There would be *no effect* on marbled murrelets or northern spotted owls.

### **Effects of Alternative B (Preferred Alternative) on Special Status Species**

Under this alternative, the chalet would be dismantled and removed. This would have beneficial effects on federally listed fish species and related critical habitat as it would eliminate the potential for the disruption of fish, fish habitat, and spawning; and would not create other unnatural changes in channel migration and streamflow characteristics which may have adversely affected habitat within and downstream of the Enchanted Valley. There would be a crew presence of 8 park staff, 1-2 intermittent packers, and one string of 8 stock, onsite over 24-26 weeks in one year, whose presence and noise *may affect, like would not adversely affect* special status species. Helicopters would be utilized to bring in necessary materials and *may affect, likely would not adversely affect* marbled murrelets and northern spotted owls due to noise disturbance.

### **Cumulative Effects of Alternative B (Preferred Alternative) on Special Status Species**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on threatened and endangered species. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have a short- and long-term adverse effects on marbled murrelets and northern spotted owls. Alternative B would have overall long-term beneficial effects on federally listed fish species, short-term adverse effects on marbled murrelets, and no effect on northern spotted owls. This alternative would contribute an overall considerable beneficial increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on special status species.

### **Section 7 Determination Summary**

Under alternative B (the preferred alternative), the effects determination for bull trout and bull trout critical habitat would be *no effect*. The preferred alternative *may affect, is not likely to adversely affect* marbled murrelets and northern spotted owls.

### **Effects of Alternative C on Special Status Species**

Implementation of this alternative would result in short- or long-term beneficial and adverse effects on federally listed fish and related critical habitat as the chalet would be moved further

away from the river though it would remain on the river terrace with a new foundation built underneath. While the landscape would require modification to include the removal of approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72” in diameter, though only one or two at or near this size may be removed, these are not tree types that are suitable for marbled murrelet or northern spotted owl nests. Aside from increased exposure to avalanches and alluvial processes, it is estimated that the entire river terrace may be completely eroded by the Quinault River within 10-20 years. The chalet falling into the river would have an effects determination of *may affect, would likely adversely effect* on federally listed fish species and related critical habitat as the chalet falling into the river may disrupt fish, fish habitat, and spawning due to increased turbidity, have direct impacts such as the chalet landing on fish, redds, and either damaging or occupying fish habitat; creating other unnatural changes in channel migration and streamflow characteristics which may affect habitat within and downstream of the Enchanted Valley. However, if park staff determine that it is safe, accessible, and economically feasible, the chalet would be dismantled and removed once the riverbank is within 30 feet of it. This alternative would have short- and long-term adverse effects on special status species due to noise disturbance and the presence of 10 contractor personnel, one packer, and 8 head of stock 2-5 days, annually for 1-2 years; as well as a park crew of 7 staff, one packer, and 8 head of stock over the course of 6-8 weeks in one season. The presence and actions of personnel *may affect, would not be likely to adversely affect* special status species. Helicopters would be utilized to bring in necessary materials and *may affect, would not be likely to adversely affect* marbled murrelets and northern spotted owls.

### **Cumulative Effects of Alternative C on Special Status Species**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on federally listed threatened fish species and their related critical habitat. The use of helicopters would have a short-term adverse effect on marbled murrelets and no effect on northern spotted owls. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on marbled murrelets and northern spotted owls. Alternative C would contribute a short- and long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on special status species.

### **Section 7 Determination Summary**

Under alternative C the effects determination for bull trout and bull trout critical habitat would be *may affect, likely to adversely affect*. The proposed action *may affect, is not likely to adversely affect* marbled murrelets and northern spotted owls.

### **Conclusion**

No direct action would be taken under alternative A to protect the chalet from the encroaching river or the river from the chalet, however, this *may affect, would be likely to adversely affect* bull trout and bull trout critical habitat as the chalet would eventually be taken by the river. Alternative A would have *no effect* on marbled murrelets or northern spotted owls. This alternative would contribute a considerable long-term adverse increment to the overall long-term



beneficial and short- and long-term adverse cumulative effects. Implementation of alternative B (the preferred alternative) would result in *no effect* on threatened and endangered fish species and related critical habitat due to dismantling and removal of the chalet. The effect would be long-term and beneficial and special status fish species. This alternative *may affect, would not be likely to adversely affect* marbled murrelets and northern spotted owls. Alternative B would contribute an overall considerable long-term beneficial increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on special status species. Alternative C *may affect, would likely adversely affect* bull trout and bull trout critical habitat. The effects would be long-term adverse and beneficial as the chalet would be moved approximately 250 feet from the river, however, it is estimated that the river terrace may be completely eroded away, including the structure, within 10-20 years. Alternative C *may affect, would not be likely to adversely affect* marbled murrelets and northern spotted owls. This alternative would contribute a long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects.

### **Natural Soundscapes**

The natural soundscape is defined as the natural ambient sound conditions. Natural ambient sound is sound absent human presence. Ambient sound in general would include those sounds expected from nature plus sounds due to the presence of humans. Ambient sound, including natural sounds, as found in Enchanted Valley include the noise of visitors on trails and camping, aircraft overflights, wildlife sounds, including birds and elk, and the sounds of wind, snow, and rain (NPS 2014).

Natural quiet is the absence of any discernable noise source (especially manmade). It is important to the feeling of solitude. Natural ambient quiet allows visitors to enjoy the intermittent sounds of nature. Based on the location's susceptibility to wind, proximity to vegetation and water sources, the ambient sound levels can vary drastically throughout the valley. In general, 10-20 decibels is the average level of noise experienced by visitors in the wilderness regions of Olympic National Park. The sound of human voices, creaking packs, pots and pans, and crunching of gravel can raise the noise level to peak levels of 50 or 60 decibels on a very intermittent basis. Extremely low ambient levels of sound means that visitors to remote sections of the park are likely to hear aircraft, even if aircraft sound levels are low (NPS 2014).

### **Effects of Alternative A on the Natural Soundscape**

While there would be no direct action taken under alternative A, implementation of this alternative would result in a short-term adverse effect on the natural soundscape due to noise the chalet may make if it is taken by the river.

### **Cumulative Effects of Alternative A on the Natural Soundscape**

Past, present, and reasonably foreseeable actions of intermittent administrative helicopter use and commercial, military, and private overflights would continue to contribute short- and long-term adverse impacts on the natural soundscape. Alternative A would contribute a very small increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

### **Effects of Alternative B (Preferred Alternative) on the Natural Soundscape**

Under this alternative, the chalet would be dismantled and removed. This would have a short-term adverse effect on the natural soundscape due to the use of hydraulic equipment as well as helicopter use to bring in necessary equipment, tools, and materials, as well as to fly these out along with the I-beams, equipment, and other materials such as the stove, non-native material as well as some native material. There would be a crew presence of 8 park staff, 1-2 intermittent packers, and one string of 8 stock, onsite over 24-26 weeks in one year which would also have an adverse effect on the natural soundscape.

### **Cumulative Effects of Alternative B (Preferred Alternative) on the Natural Soundscape**

Past, present, and reasonably foreseeable actions of intermittent administrative helicopter use and commercial, military, and private overflights would continue to contribute short- and long-term adverse impacts on the natural soundscape. Alternative B would contribute a considerable increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

### **Effects of Alternative C on the Natural Soundscape**

Implementation of this alternative would result in short-term adverse effects on the natural soundscape as the chalet would be moved further away from the river though it would remain on the river terrace with a new foundation built underneath. This action would utilize hydraulic tools, and helicopter use would be necessary to transport equipment, tools, and materials to and from the Enchanted Valley. The I-beams and potentially other materials (such as, but not limited to, the stove) would also be flown out. There would also be an increased presence of park and contractor staff which would also contribute to the short-term adverse effects on the natural soundscape. The landscape would require modification to include the removal of approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72" in diameter, though only one or two at or near this size may be removed. This would have a short-term adverse effect on the natural soundscape from the use of chainsaws. Also, aside from increased exposure to avalanches and alluvial processes, it is estimated that the entire river terrace may be completely eroded by the Quinault River within 10-20 years. However, if park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed once the riverbank is within 30 feet of it. The chalet falling into the river, or being dismantled and removed, would have a short-term adverse impact on the natural soundscape.

This alternative would have short- and long-term adverse effects on the natural soundscape due to noise disturbance from the presence of 10 contractor personnel, one packer, and 8 head of stock 2-5 days, annually for 1-2 years; as well as an NPS crew of 7 staff, one packer, and 8 head of stock over the course of 6-8 weeks.

### **Cumulative Effects of Alternative C on the Natural Soundscape**

Past, present, and reasonably foreseeable actions of intermittent administrative helicopter use and commercial, military, and private overflights would continue to contribute short- and long-term adverse impacts on the natural soundscape. Alternative C would contribute a modest increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

## **Conclusion**

No direct action would be taken under alternative A to protect the chalet from the encroaching river or the river from the chalet. This would have a short- or long-term beneficial effect on the natural soundscape. However, the chalet would eventually be taken by the river and this would have a short-term adverse effect on the natural soundscape. This alternative would contribute a very small increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

Implementation of alternative B would result in short-term adverse effects on the natural soundscape due to noise disturbances during the dismantling and removal of the chalet to include helicopter use to transport materials, tools, and equipment to and from the Enchanted Valley, as well as from the presence of park staff. Alternative B would contribute a considerable increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

Alternative C would have short-term adverse effects on the natural soundscape as the chalet would be moved approximately 250 feet from the river. This action would include helicopter use to transport materials, tools, and equipment to and from the Enchanted Valley; and there would also be noise from park and contractor staff. Also, it is estimated that the river terrace may be completely eroded away, including the chalet, within 10-20 years. This alternative would contribute a modest increment to the overall short- and long-term adverse cumulative effects on the natural soundscape.

## **Water Resources**

The Quinault River (North Fork and mainstem/East Fork) drains from the glaciated Olympic Mountains in northwest Washington State, with a total drainage area above the outlet of Lake Quinault of 264 square miles. Enchanted Valley is located on the mainstem Quinault River and has a drainage area of approximately 90 square miles. The Quinault River is listed on the National Rivers Inventory and is therefore been determined eligible for Wild and Scenic River designation.

In the Quinault drainage, precipitation amounts increase with elevation. Near sea level, average annual precipitation is over 130 inches. At the Graves Creek Ranger Station, the average annual precipitation is 146 inches. In the lower elevations, precipitation typically comes in the form of rain. Winter storms can average three inches of rain in a 24-hour period.

Testing for cuprinol was conducted on the exterior of the chalet in 2014 and for lead-based paint on the interior of the chalet in 2018 and 2019. Cuprinol is a clear, colorless general-purpose solvent that is used to protect wood against decay, mold, and blue-staining fungi. No remaining cuprinol was detected in any of the samples collected.

In 2018, paint chip samples were taken from eight sites within the chalet - the kitchen cupboard, a window sill, a shutter, the floor, the mural, stairs, door, and the kitchen wall/bead board to conduct lead-based paint testing. The first round of lead-based paint testing in 2018 was conducted using two tests. The first test was for total lead. For this test, a strong acid solution was applied to a subsample of each paint chip to determine the total amount of lead that will leach into solution. The second test conducted was the TCLP (Toxicity Characteristic Leaching

Procedure), which is used for industrial and/or hazardous materials to determine whether they can be disposed of at a municipal landfill or must be taken to a hazardous waste disposal facility. Again, a subsample of each paint chip was used for this test. This test is similar to the total lead test except that it involved applying a milder acid solution to each subsample. However, the results from the TCLP test do not represent the natural conditions (i.e., rainwater) present in the Enchanted Valley. As a result, a third test, the Synthetic Precipitation Leaching Procedure (SPLP), was conducted in 2019, which does mimic the natural conditions in question. This test is performed to determine the potential of material (i.e., wood with lead-based paint) left on the ground to impact ground or surface water.

As expected, the lead concentrations from the SPLP test were less than those from the TCLP test. The results for the TCLP test ranged from less than 0.025 mg/L up to 0.85 mg/L with two of the samples below the detection limit (0.025 mg/L). The results of the SPLP test ranged from less than 0.025 mg/L up to 0.12 mg/L with four of the samples below the detection limit. Using the results of the SPLP test, the concentrations of lead present in all eight areas tested are a third or less of the chronic freshwater dissolved lead concentration criteria (0.42 mg/L) and all are well below the acute freshwater dissolved lead concentration criteria (10.79 mg/L). These criteria are dependent on water hardness, which averaged about 20 mg/L based on the limited water quality data that was available for the upper reaches of the Quinault River. Additionally, if the chalet were to be taken by the river, the concentrations of lead leached from the paint into the river would be even less than the SPLP test results due to the dilution effect of the river.

#### Hydrology and Streamflow Characteristics

The Quinault River near the headwaters of the basin is strongly influenced by snow melt and glacial run-off. Natural fluvial processes within the channel migration zone create river bars and sloughs on an annual basis. The upper watershed is steep and deeply eroded. It carries high sediment loads from the natural mass wasting that occurs in the upper watershed. Potential activities associated with the alternatives could result in impacts to hydrology and streamflow characteristics.

#### Water Quality

Water quality in the Quinault River drainage within ONP is excellent. The Quinault River and its tributaries are classified by the Washington Department of Ecology as Class AA waters, signifying “extraordinary” quality.

Overall, the Quinault River has relatively low concentrations of dissolved and suspended sediment loads, nutrients and organics. However, the Quinault River near the headwaters of the basin is strongly influenced by snow melt and glacial run-off. Upstream of the Enchanted Valley, summer flows may be clouded by glacial silt. During low flow periods, the river immediately upstream of the valley runs sub-surface for nearly 500 meters through the run-out of a historic debris torrent before reemerging free of sediment.

Suspended sediment concentrations throughout the Quinault River Basin may be periodically elevated during high flow events due to bedload mobilization and bank erosion associated with natural shifts in the river channel. Below Graves Creek, the natural water quality regime may be

further affected by stream bank alterations from logging and agricultural practices as well as those intended to protect infrastructure and residential development.

The western side of the Olympic Peninsula is notorious for its steep, unstable slopes and heavy winter precipitation, resulting in winter and spring high water events that cause high amounts of natural siltation in streams. During the wet season, water quality suffers only from naturally occurring processes such as erosion or streambank avulsions.

Natural fluvial processes within the channel migration zone create river bars and sloughs on an annual basis. The upper watershed is steep and deeply eroded. It carries high sediment loads from the natural mass wasting that occurs in the upper watershed.

### **Effects of Alternative A on Water Resources**

While there would be no direct action taken under alternative A, implementation of this alternative would result in short- or long-term adverse effects on water quality and hydrology and streamflow characteristics as the chalet would eventually be taken by the Quinault River. The chalet falling into the river may cause increased turbidity and create other unnatural changes in channel migration and streamflow characteristics.

### **Cumulative Effects of Alternative A on Water Resources**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on water resources. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the structure. Alternative A would contribute a considerable long-term adverse increment to the overall long-term beneficial cumulative effects on water resources.

### **Effects of Alternative B (Preferred Alternative) on Water Resources**

Under this alternative, the chalet would be dismantled and removed. This would have a long-term beneficial effect on water quality, and hydrology and streamflow characteristics as it would eliminate the potential for unnatural changes in channel migration and streamflow characteristics if the chalet were to remain in place and was taken by the river.

### **Cumulative Effects of Alternative B (Preferred Alternative) on Water Resources**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on water quality and hydrology and streamflow characteristics. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet. Alternative B would have long-term beneficial effects on water quality, and hydrology and streamflow characteristics. This alternative would contribute a considerable increment to the overall long-term beneficial cumulative effects on water resources.

### **Effects of Alternative C on Water Resources**

Implementation of this alternative would result in short- or long-term beneficial effects on water quality and hydrology and streamflow characteristics as the chalet would be moved further away from the river though it would remain on the river terrace with a new foundation built underneath. The landscape would require landscape modifications to include the removal of approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72" in diameter, though only one or two at or near this size may be removed. Also, aside from increased exposure to avalanches and alluvial processes, it is estimated that the entire river terrace may be completely eroded by the Quinault River within 10-20 years. If park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed once the riverbank is within 30 feet of it again. If it is unable to be removed at that time, the chalet falling into the river would have long-term adverse impacts on water quality and hydrology and streamflow characteristics as the structure falling into the river may create unnatural changes in channel migration and streamflow characteristics.

### **Cumulative Effects of Alternative C on Water Resources**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial impacts on water quality and hydrology and streamflow characteristics. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet. Alternative C could contribute a considerable long-term adverse increment to the overall long-term beneficial cumulative effects if it is taken by the river, otherwise, this alternative would contribute a long-term beneficial increment to the overall beneficial cumulative effects on water resources.

### **Conclusion**

Under alternative A, no direct action would be taken to protect the chalet from the encroaching river or the river from the chalet. This would have long-term adverse effects on water quality and hydrology and streamflow characteristics as the structure would eventually be taken by the river. This alternative would contribute a considerable long-term adverse increment to the overall long-term beneficial cumulative effects. Implementation of alternative B would result in long-term beneficial effects on water quality, and hydrology and streamflow characteristics due to dismantling and removal of the structure which would eliminate the potential for the chalet to fall into the river. Alternative B would contribute a considerable increment to the overall long-term beneficial cumulative effects. Alternative C would have short- and long-term adverse and beneficial effects on water quality, and hydrology and streamflow characteristics as the chalet would be moved approximately 250 feet from the river, however, it is estimated that the river terrace may be completely eroded away within 10-20 years. If park staff determine it is safe, accessible, and economically feasible, the chalet would be dismantled and removed when the riverbank is within 30 feet of it. Alternative C could contribute a considerable long-term adverse increment to the overall long-term beneficial cumulative effects if it is taken by the river, otherwise, this alternative would contribute a long-term beneficial increment to the overall beneficial cumulative effects.

## Visitor Use and Experience

The Quinault Valley of ONP is open to year-round public use. Annual visitation to the Quinault District was estimated at 229,523 visitors in 2016 and 220,462 in 2017 (NPS 2018b). A full range of visitor activities, including hiking, fishing, wildlife viewing, camping, and access to the wilderness, is available in the area. Facilities at Graves Creek include an administrative cabin, campground, roads, trailhead, and numerous access points to the river.

According to Olympic National Park 2014 Wilderness Permit Data (the most current permit data analyzed), there were 843 parties with 2,456 overnight visitors to the Enchanted Valley that year. This included 12 stock parties and 20 commercial parties. The average time visitors stayed in the valley was between one and two nights (1.5 nights). The 3,699 visitor use nights for the area (# of visitors multiplied by # of nights stayed) represent 3.9% of all Olympic National Park overnight backcountry use and is the fifth most used camp area in the wilderness. The average party size for overnight visitors to the Enchanted Valley was 2.9 visitors, with 3.6% of the parties visiting in groups of 7-12 individuals.

Visitor overnight parties to Enchanted Valley in 2014 were predominantly from western Washington (67.8%), with 10% from the Olympic Peninsula, 8.5% from the Kitsap Peninsula and 32.5% from Seattle and vicinity. Visitors coming from other U.S. states represented about 26% of the parties.

The East Fork Quinault River Trail is one of the more popular trails on the southern portion of the park. There are numerous campsites located along the trail between the trailhead and Enchanted Valley that are used primarily during the summer months.

### Effects of Alternative A on Visitor Use and Experience

While there would be no direct actions taken under alternative A, implementation of this alternative would result in mainly long-term adverse effects on visitor use and experience for visitors who may be in support of the chalet remaining in the Enchanted Valley, as the chalet would eventually be taken by the Quinault River. Some visitors may not support the continued existence of the chalet and would prefer to see it removed, however, the aesthetic of seeing the chalet resting within the river, as well as possibly recognizing the potential impacts it could cause to federally threatened fish species, bull trout critical habitat, and on the hydrology and streamflow characteristics would still likely have an adverse effect on the experience of these visitors. Also, while the chalet remains in place, it would continue to be supported on the steel I-beams, rather than a new foundation. This may have short- and long-term (depending on how long before the terrace erodes where the chalet currently resides) adverse effects on visitor use and experience due to the aesthetics of seeing a historic structure in wilderness atop steel I-beams rather than on a built foundation.

### Cumulative Effects of Alternative A on Visitor Use and Experience

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial and adverse impacts on visitor use and experience, depending on whether the visitor supports the continued existence of the chalet in its current location. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river



continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on visitor use and experience. Alternative A would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

### **Effects of Alternative B (Preferred Alternative) on Visitor Use and Experience**

Under this alternative, the chalet would be dismantled and removed. This would have long-term beneficial and adverse effects on visitor use and experience as some visitors would prefer to see the chalet removed and others would prefer to see it remain. Helicopters would be utilized to transport equipment, tools, and materials into and out of the valley. There would also be a crew presence of 8 park staff, 1-2 intermittent packers, and one string of 8 stock, onsite over 24-26 weeks in one year. These would have a short-term adverse effect on visitor experience due to helicopter use and increased human presence and noise disturbances for those visitors seeking solitude or a more primitive experience. Other visitors may welcome the presence of park staff or work crews as they may prefer to witness the project and ask questions about it. This would have a short-term beneficial effect on visitor use and experience for these particular visitors.

### **Cumulative Effects of Alternative B (Preferred Alternative) on Visitor Use and Experience**

The past action of temporarily relocating the chalet 100 feet from the riverbank would continue to contribute long-term beneficial and adverse impacts on visitor use and experience until it is dismantled and removed, depending on whether the visitor supports the continued existence of the chalet in its current location. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on visitor use and experience. Alternative B would contribute a considerable increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

### **Effects of Alternative C on Visitor Use and Experience**

Implementation of this alternative would result in short- or long-term beneficial and adverse effects on visitor use and experience as the chalet would be moved further away from the river though it would remain on the river terrace with a new foundation built underneath. Some visitors would prefer to see the chalet moved to another location within the valley, and others would prefer for the chalet to be removed from the valley entirely. The landscape would require modification to include the removal of approximately 12 cottonwood or alder trees with sizes ranging up to approximately 72" in diameter, though only one or two at or near this size may be removed. This would have a short- or long-term, adverse effect on visitor use and experience due to vegetation removal in wilderness for the accommodation of a historic structure as well as noise from chainsaw use. Aside from increased exposure of the chalet to avalanches and alluvial processes, it is estimated that the entire river terrace may be completely eroded by the Quinault River within 10-20 years. This may have long-term adverse effects on visitor use and experience for those who wish for the chalet to remain in the valley. While some visitors may not support

the continued existence of the chalet and would prefer to see it removed, however, the aesthetic of seeing the chalet resting within the river, as well as possibly recognizing the potential impacts it could cause to federally threatened fish species, bull trout critical habitat, and on the hydrology and streamflow characteristics would still likely have an adverse effect on the experience of these visitors. Helicopters would be utilized to bring in necessary materials for the construction of a new foundation, as well as to dismantle and remove the chalet, if park staff determine it is safe, accessible, and economically feasible, when the riverbank is within 30 feet of it. This alternative would have short-term adverse effects on visitor use and experience due to noise disturbance from helicopter use as well as from the presence of 10 contractor personnel, one packer, and 8 head of stock 2-5 days, annually for 1-2 years; as well as a park crew of 7 staff, one packer, and 8 head of stock over the course of 6-8 weeks. These disturbances would adversely affect those visitors seeking solitude or a more primitive experience. Other visitors may welcome the presence of park staff or work crews as they may prefer to witness the project and ask questions about it. This would have a short-term beneficial effect on visitor use and experience for these particular visitors.

### **Cumulative Effects of Alternative C on Visitor Use and Experience**

The past action of temporarily relocating the chalet 100 feet from the riverbank would, until the chalet is dismantled and removed, continue to contribute long-term beneficial and adverse impacts on visitor use and experience, depending on whether the visitor supports the continued existence of the chalet in its current location. Since the temporary relocation in 2014, the chalet has remained in place and unaffected by river processes, and river processes have remained unaffected by the chalet, however, the river continues to erode the bank adjacent to the chalet and will eventually overtake the chalet. Ongoing intermittent helicopter use for administrative purposes as well as commercial, military, and private overflights would continue to have short- and long-term adverse effects on visitor use and experience. Alternative C would contribute a considerable increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

### **Conclusion**

No direct action would be taken under alternative A to protect the chalet from the encroaching river or the river from the chalet. The chalet would remain on the steel I-beams, however, this would have short- and long-term adverse effects on visitor use and experience given the aesthetics of visitors seeing a historic structure in wilderness resting atop the I-beams, and also given that the chalet would eventually be taken by the river. This alternative would contribute a considerable long-term adverse increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

Implementation of alternative B would result in long-term beneficial and short- and long-term adverse effects on visitor use and experience, depending on whether the visitor supports the continued existence of the chalet in its current location, or would prefer the chalet to be dismantled and removed. Also, there would be noise disturbances from crew presence onsite over 24-26 weeks as well as from helicopter use. Alternative B would contribute a considerable increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

Alternative C would have short- and long-term adverse and beneficial effects on visitor use and experience as the chalet would be moved approximately 250 feet from the river, however, it is estimated that the river terrace may be completely eroded away, including the structure (unless park staff determine it is safe, accessible, and economically feasible to dismantle and remove the chalet when the riverbank is within 30 feet of it again), within 10-20 years. Some visitors would be pleased to see the chalet have a longer lifespan in the Enchanted Valley, whereas others may prefer to have the chalet removed entirely. There may also be short-term adverse effects from the use of helicopters to remove the chalet, if park staff determine it is safe, accessible, and economically feasible to do so, either once the riverbank is within 30 feet of it, or if it is eroded into the river. Noise disturbance from, and presence of, contractor and park staff would also add to the short-term adverse effects. This alternative would contribute a considerable increment to the overall long-term beneficial and short- and long-term adverse cumulative effects on visitor use and experience.

## Chapter 4: Consultation and Coordination

### Agencies, Organizations, and Individuals Consulted

#### U.S. Fish and Wildlife Service

In accordance with section 7 of the ESA, the NPS will seek USFWS concurrence with the effects determinations presented in chapter 3 (under the “Special Status Species” section) regarding potential effects on federally listed species.

#### Washington State Historic Preservation Officer and Section 106 Consulting Parties Consultation

A letter initiating consultation with the WA SHPO on the project, asking for early input during the public scoping period and notification of any additional parties interested in participating in the consultation was sent to the Department of Archeology and Historic Preservation (DAHP) on July 15, 2016. The DAHP provided comments and recommendations on August 24, 2016 and suggested that other Olympic Peninsula tribal governments and Jeff Monroe (of Monroe House Moving) be invited to participate as consulting parties on this project.

Letters initiating consultation on the project, asking for early input during the public scoping period and notification of any additional parties interested in participating in the consultation were also sent on July 15, 2016 to the Advisory Council on Historic Preservation (ACHP), Back Country Horsemen of Washington (BCHW), Friends of Olympic National Park (FONP), Lake Quinault Museum and Historical Society, National Trust for Historic Preservation (NTHP), The Olympians, Polson Museum, Quilcene Historical Museum, and Washington Trust for Historic Preservation (WTHP). Comments were received from BCHW, FONP, NTHP, The Olympians, Polson Museum and WTHP during the public scoping period. A comment submitted by David Galyean during the public scoping period about his family’s (the Criswell Family) involvement in the construction and maintenance of the chalet, prompted the park to include him as a consulting party for the project; as well as Keith Olson of the Olson Family who were also involved in the construction and maintenance of the chalet. The Olympic Park Associates requested to be a consulting party on the project September 27, 2018.

Section 106 consultation with the WA SHPO, the ACHP, and other consulting parties is ongoing and will continue throughout the EA process on alternative B, the preferred alternative.

#### American Indian Consultation

A letter initiating consultation with the QIN on the undertaking, asking for early input during the public scoping period and notification of any additional parties interested in participating in the consultation was sent to the DAHP on July 15, 2016. On May 9, 2018 a letter was sent to the Hoh, Jamestown S’Klallam, Lower Elwha Klallam, Makah, Port Gamble S’Klallam, Quileute, and Skokomish Tribes inviting them to participate in the consultations for the project, provide comments and concerns about the project and notification of any additional parties interested in participating in the consultation. The Quileute responded on July 24, 2018 that they defer to the QIN at this time. On July 24, 2019, the Jamestown S’Klallam also responded saying they defer consultation on this project to the Quinault and more proximal tribes.

Additional consultation with tribes will continue throughout the EA process on alternative B, the preferred alternative.

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- Paul Kennard, Regional Geomorphologist, Mount Rainier National Park
- Jon Riedel, Geologist, North Cascades National Park
- Kerensa King, Contaminants Specialist, NPS Water Resources Division

## Chapter 5: References

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