



United States Department of Agriculture  
Forest Service

# Stevens Pass Mountain Resort

## Phase III Projects

### Environmental Assessment

Skykomish Ranger District, Mt. Baker-Snoqualmie National Forest, King and Chelan Counties,  
Washington

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COVER: View of vegetated slopes and bike trails at Stevens Pass.

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## ACRONYMS AND ABBREVIATIONS

APE	area of potential effect
BLM	Bureau of Land Management
BMP	best management practice
BMU	Bear Management Unit
BPA	Bonneville Power Administration
CCC	Civilian Conservation Corps
CCT	Cascade Crest Trail
CFR	Code of Federal Regulations
dbh	diameter at breast height
EA	environmental assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
Forest Plan	Land and Resource Management Plan
Forest Service	U.S. Department of Agriculture, Forest Service
GIS	geographic information system
GLO	General Land Office
KOP	key observation point
LWD	large woody debris
MBS	Mt. Baker-Snoqualmie National Forest
MIS	Management Indicator Species
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit
OW	Okanogan-Wenatchee National Forest
PCNST	Pacific Crest National Scenic Trail
PCT	Pacific Crest Trail
PHS	Priority Habitats and Species
R6	Region 6
ROS	Recreation Opportunity Spectrum
SHPO	State Historic Preservation Office
SPMR	Stevens Pass Mountain Resort
SWPPP	stormwater pollution prevention plan
TMDL	Total Maximum Daily Load
TES	threatened, endangered and sensitive
VQO	Visual Quality Objective
WSDOT	Washington State Department of Transportation
WDFW	Washington Department of Fish and Wildlife



# 1 INTRODUCTION

Stevens Pass Mountain Resort (SPMR) proposes to implement projects identified in its Master Development Plan (BHA 2007) to expand year-round resource-based recreation and summer facilities, upgrade the Kehr's and Brooks chairlifts, and increase parking capacity at the base to better match the current use level of the mountain. This environmental assessment (EA) documents the analysis of the construction and operation of the proposed Phase III projects to determine whether implementation may significantly affect the quality of the human environment. Proposed projects included in Phase III include expansion of the bike park, replacement of Kehr's and Brooks chairlifts, installation of a new rope tow adjacent to Brooks chairlift, and development of a new parking area north of U.S. Highway 2.

This EA fulfills agency policy and direction to comply with the National Environmental Policy Act (NEPA). For more details of the Proposed Action, see the Proposed Action and Alternatives section of this document.

In 2008, the Forest Service issued a new rule that regulates the content and preparation of EAs: the agency's implementing regulations for the National Environmental Policy Act (NEPA) at 36 CFR 220 (July 24, 2008). Under this rule, EAs must be concise and primarily serve as a basis for determining whether there are any effects that would require the preparation of an Environmental Impact Statement (EIS). Unlike traditional EAs: 1) There may or may not be issues that drive the analysis; 2) It is possible to have only one action alternative, the proposed action; 3) The no action alternative can be analyzed as the baseline in the proposed action's discussion and; 4) Alternatives, including the proposed action, may be modified during the analysis process, provided the modifications are documented. Minor changes to the proposal may include modifications and incremental design features developed through the analysis process.

Under the 36 CFR 220 rule, the environmental impacts of the proposal and alternative shall briefly provide sufficient evidence and analysis to determine whether to prepare either an EIS or a Finding of No Significant Impact. The EA shall describe the impacts of the proposed action and any alternatives in terms of context and intensity as described in the definition of "significantly" at 40 CFR 1508.27. The EA may discuss the direct, indirect, and cumulative impact(s) of the proposed action and any alternatives together in a comparative description or describe the impacts of each alternative separately.

## 1.1 Proposed Project Location

SPMR is located on Stevens Pass, U.S. Highway 2, in the Cascade Mountain Range of Washington State, in King and Chelan Counties (Figure 1.1-1). SPMR operates on lands managed by the Mt. Baker-Snoqualmie National Forest (MBS), Skykomish Ranger District, and the Okanogan-Wenatchee National Forest (OW), Wenatchee River Ranger District (Figure 1.1-2). The MBS administers activities at SPMR. The Project is located within Township 26 North, Range 13 East, Sections 13, 14 and 23.

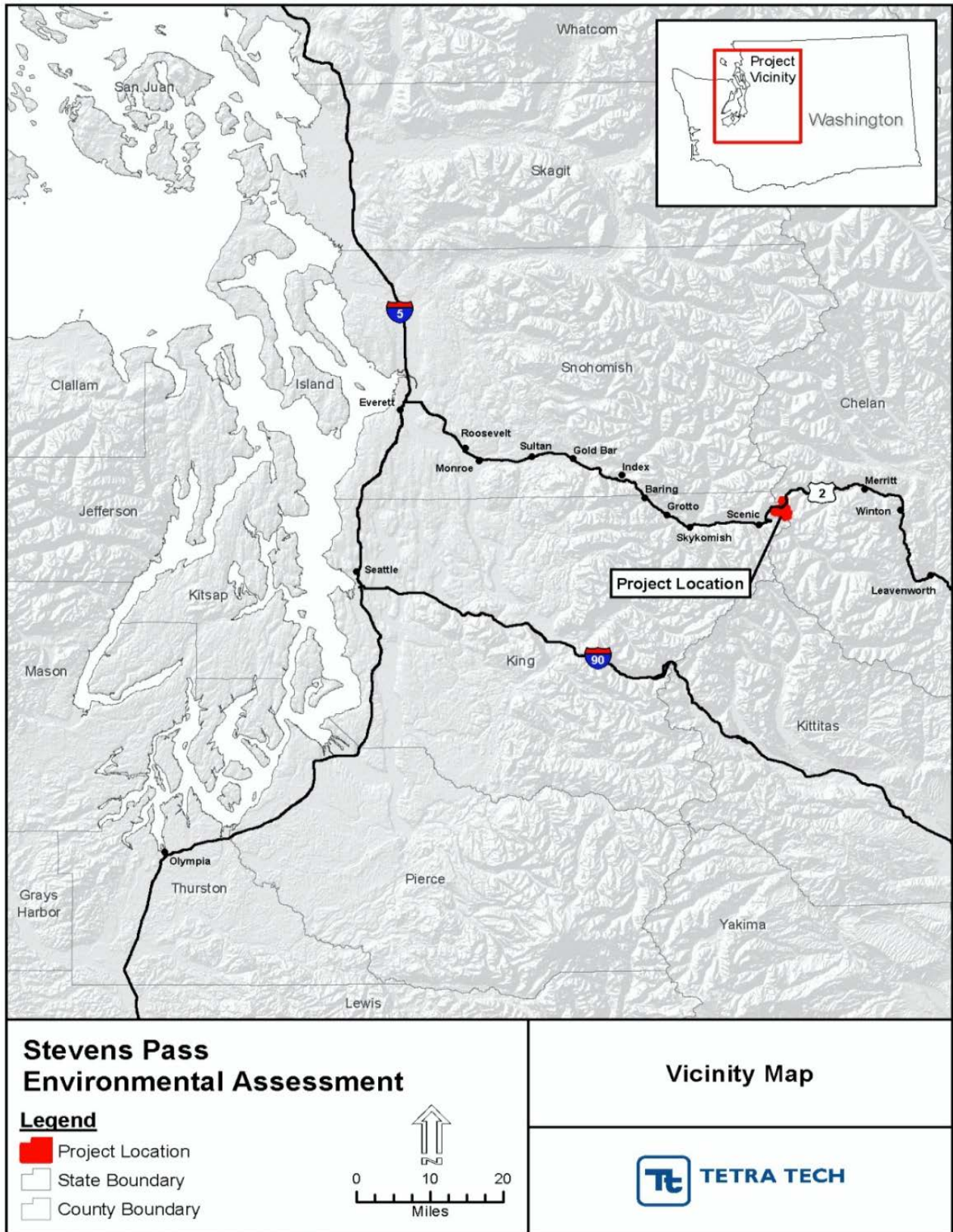
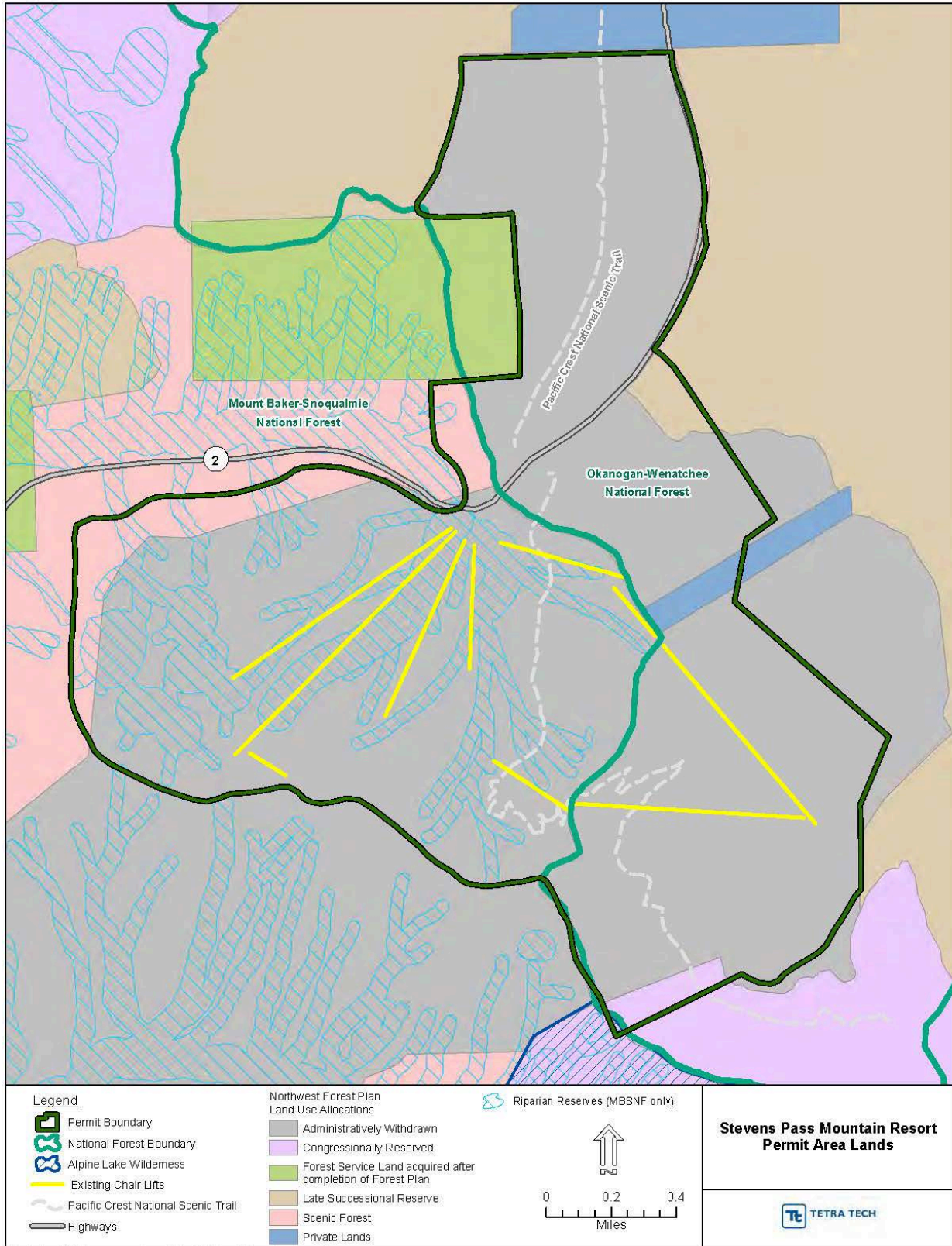


Figure 1.1-1. Vicinity Map





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Figure 1.1-2. Land Allocations

## 2 PURPOSE AND NEED FOR ACTION

There is a need for a variety of recreational opportunities at SPMR that are consistent with the MBS Land and Resource Management Plan (Forest Plan), as amended. The MBS Forest Plan anticipated alpine ski areas to expand “to meet a market demand for higher quality skiing experience” (2-5) and to “add development facilities...commensurate with expected improvements in service” (4-21). MBS Forest Plan Standards and Guidelines also direct the Forest Service to encourage year-round recreation use at winter-sport sites (4-85). The purpose of this project is to allow SPMR to expand their year-round recreation opportunities and facilities. Currently, there are approximately 7 miles of mountain bike trails at Stevens Pass. SPMR would like to increase its summer recreational offering by expanding the bike park. SPMR also desires to replace both the Kehr’s chairlift and Brooks chairlift, which were both installed in the 1960s and do not meet the expectations of today’s guests, to improve services and provide a higher quality skiing experience. SPMR wants to improve access to beginner terrain by installing a rope tow. The 2007 Master Plan identified SPMR’s intent to increase parking capacity at the base to better match the current use level of the mountain. The existing parking capacity of 2,290 cars, 35 buses, and 124 recreational vehicles equates to approximately 7,440 guests. This is not sufficient to meet demand on peak days throughout the season. As a result, overflow and satellite parking is used, and guests are sometimes turned away. SPMR needs to provide additional parking to improve access to the resort.

## 3 PUBLIC INVOLVEMENT AND TRIBAL CONSULTATION

The Forest Service is consulting the following individuals, Federal, State, tribal, and local agencies during the development of this EA:

### **Federal, State, and Local Agencies**

- U.S. Fish and Wildlife Service
- Washington State Department of Archaeology and Historic Preservation

### **Tribes**

- Tulalip Tribes
- Snoqualmie Tribe
- Confederated Tribes of the Colville Reservation

### **Public and Non-Governmental Organizations**

The project scoping letter was mailed to 41 individuals and organizations and e-mailed to 252 potentially interested parties. A Notice of Intent was published in the *Everett Herald*, the newspaper of record, on September 13, 2013, initiating a 30-day scoping period. Project documents were available online for public viewing at <http://www.fs.usda.gov/projects/mbs/landmanagement/projects>. The Project was published on the Schedule of Proposed Actions in October 2013. No concerns were raised during the scoping period or tribal consultation.

## 4 ISSUES

Significant issues are defined as those that are used to develop alternatives, develop mitigation measures, or track environmental effects. No significant issues were developed during external and internal scoping. During the course of cultural and environmental surveys conducted as part of this assessment, however, five A-frame cabins that could be affected were preliminarily determined to be as eligible for the National Register of Historic Places (NRHP). As a result, the following issue has been identified:

**Issue:** Development of the proposed parking lot would directly and indirectly affect cabins preliminarily determined to be eligible for the NRHP.

## 5 PROJECT RECORD

This EA hereby incorporates by reference the Project Record (40 Code of Federal Regulations [CFR] 1502.21). The Project Record contains Specialist Reports and other technical documentation used to support the analysis and conclusions in this EA. These Specialist Reports are for Soil, Hydrology, and Wetlands; Fish; Wildlife; Botany; Recreation; Visual; and Heritage and Treaty resources for the Phase III projects. The reports contain the Affected Environment section of the environmental analysis, which helps establish the basis for the environmental effects section in Chapter 7 of this EA. Although an Affected Environment chapter is not a requirement of an EA (40 CFR 1508.9), a summary of affected environment is included for each resource. This EA also incorporates by reference the Stevens Pass Master Development Plan (BHA 2007) and the MBS Land and Resource Management Plan, as amended by the Northwest Forest Plan (Forest Service and BLM 1994). The Project Record is available for review at the MBS National Forest Supervisor's Office.

## 6 PROPOSED ACTION AND ALTERNATIVES

SPMR proposes to expand year-round resource-based recreation and summer facilities, replace Kehr's and Brooks chairlifts, install a rope tow adjacent to Brooks chairlift, and increase parking capacity at the base to better match the current use level of the mountain.

The Proposed Action has been modified since the scoping period. The proposed parking lot design is smaller than the originally proposed lot and increases vegetative screening, decreases visual impacts in the Stevens Pass Scenic Byway, reduces the number of historic properties affected, and avoids potential effects to existing utilities. Additionally, a rope tow has been added to the proposed action.

### 6.1 Proposed Action

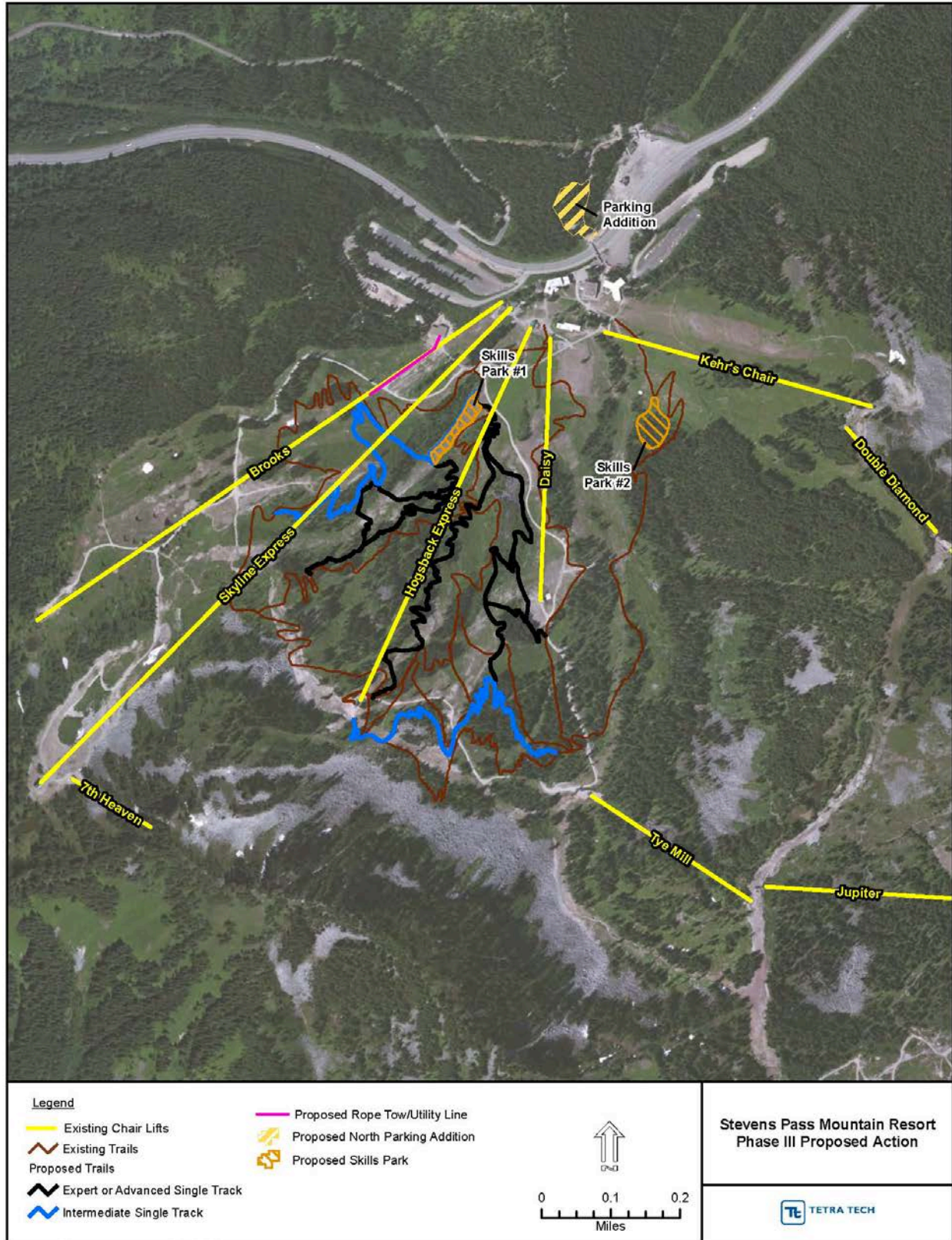
#### 6.1.1 Bike Park Expansion

SPMR proposes to construct additional mountain bike trails with short connecting trails and two skills parks (Figure 6.1-1). The proposed trails are single track at the intermediate, advanced, and expert skill levels. Single-track bike trails are narrow trails, only wide enough for one rider at a time. Connecting trails would also be single track and provide riders the opportunity to travel between named trails. These trails and skills parks, described below, would all be built within the existing Hogsback chairlift pod; that is, all proposed trail segments would be accessible from Hogsback chairlift. The approximate total length of all new trails and area of the skill parks would be:

Bike Trails:	3.7 miles
Connecting Trails:	0.6 mile
Skill Parks:	2.3 acres

Approximately 4.3 miles of new single-track bike trails and connecting bike trails would be constructed by brush clearing and soil grading. Construction disturbance for single track and connecting trails is approximately 4 feet for the track itself, but with rock walls and side berms and bridges, soil disturbance can average 9 feet and, in certain areas such as banked turns and bridges, can be up to 18 feet wide. Figure 6.1-2 shows a trail feature on an existing single-track bike trail at SPMR. The areas disturbed





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Figure 6.1-1. Proposed Action





**Figure 6.1-2. Single-Track Trail (curve)**

adjacent to the operational track footprint would be replanted with native vegetation, reducing the operating disturbance to 4 feet in straight areas to approximately 10 feet at curves. Water bars, culverts, and bridges are installed along the trails to control drainage and runoff. Emergency access points and evacuation paths are generated during the course of operations and developed with use. SPMR would work with the Forest Service, as it does for the existing bike park, to identify where and how many emergency access points and paths are needed based on operational experiences and input from bike park patrol. At that time, the Forest Service would evaluate the locations, environmental effects, and determine what level of environmental review would be required.

Skills Park 1 would be located within a ski run west of Hogsback chairlift and would consist of wood or dirt trail features (Figure 6.1-3). The trail features may be removed and leveled at the end of each biking season and re-built at the beginning of each season from wood and stockpiled dirt obtained from local sources. As this area is already maintained as an open ski run, no new forest vegetation removal would be needed; however shrubs and ground cover would be cut and buried where dirt features are created. Soil disturbance would occur along the approaches to each feature and then leading from the features back to the trail.





**Figure 6.1-3. Skills Park 1 Example Dirt Features (located in mountain bike skills park in Green Lake Park, Seattle, WA)**

Skills Park 2 would be located in a forested area adjacent to an existing beginner excavated trail. Features placed in the skills park would consist of 4- to 6-foot-wide wooden bridges placed on the ground surface (Figure 6.1-4). Large trees would be left in place resulting in no canopy disturbance. Small vegetation (less than 6 inches diameter at breast height [dbh]) would be cleared as necessary to construct trails to approach each wooden feature and then to return to the established excavated beginner trail. Construction methods and disturbance for trail segments would be as discussed above for single track bike trails, including erosion and runoff controls.





Figure 6.1-4. Skills Park 2 Example Elevated Wood Feature

### 6.1.2 Kehr's Chairlift Replacement

SPMR would replace Kehr's chairlift (formerly named Big Chief), and the existing loading area and infrastructure would be removed. The alignment and location of the unloading area would remain unchanged while the loading area (lower terminal) would be lowered by moving the terminal downslope to improve loading efficiency and guest comfort by allowing skiers and snowboards to slide downhill to the loading area.

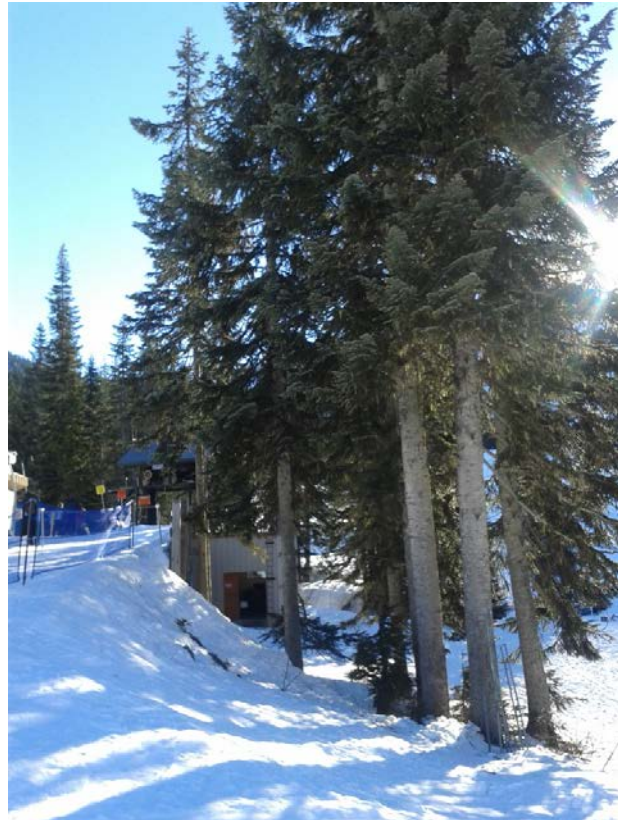
The old towers (Figure 6.1-5) would be removed down to the ground surface, with the concrete footings remaining to minimize ground disturbance. Approximately 20 new towers would replace the old towers. Each new tower would be placed at new locations within the existing alignment. The new towers would be transported to the site by ground equipment or helicopter and installed by crews on the ground. Where there is no road access, materials would be transported over the snow with snow cats to prevent ground disturbance. Ground equipment would operate on existing roads, within the lift corridor, and over vegetated areas in order to access tower locations. Some disturbance may occur along ground equipment travel routes and within temporary work areas, including temporary construction access routes and pads. Prior to construction, SPMR would identify all construction access routes, stream crossings, and construction locations for Forest Service review. To dig tower foundations, a spider excavator would be used on higher gradient slopes, and on lower gradient slopes a tracked excavator would be used. Excavated material would be hauled to an existing storage area and reused for road and bike trail surfacing. Topsoil and small organic material would be distributed near tower site as revegetation material. Following construction, the sites would be restored to original grade and revegetated; localized soil treatments (ripping) may be required if soil compaction is observed. Holes for each concrete footing would be 12 to 15 feet in diameter resulting in temporary ground disturbance of approximately 3,750 square feet (50 feet x 75 feet) with a permanent footprint of approximately 4 feet in diameter. Concrete for the tower footings would be transported by helicopter.





Figure 6.1-5. Existing Kehr's Chairlift

The existing access road to Kehr's chairlift base terminal would be used for construction of the new loading terminal. Approximately one acre of land would be disturbed during construction. This area includes previously disturbed land where the existing access road, terminal structures, and water treatment facilities are presently located. The water plant building would remain; however the water tank, ramp structure, and building will be removed. The chair loading area would be lowered to the level of the existing access road, approximately in the same footprint of an existing building below the loading area. Some grading and tree removal would be needed (about ½ acre) to allow for skier flow to the new loading area. Approximately nine trees ranging from 10 to 19 inches diameter would be removed (Figure 6.1-6). During operation, the new base terminal would have a disturbance area similar to the existing permanent footprint of about 0.05 acre for no net difference in permanent disturbance.



**Figure 6.1-6. Trees That Would Be Removed for Construction of the Lower Terminal of Kehr's Chairlift**

### **6.1.3 Brooks Chairlift Replacement**

SPMR would replace Brooks chairlift (Figure 6.1-7). The alignment would remain unchanged; however, the length may shorten.

A minimum of 10 and up to 20 new towers would replace the old towers. The old towers would be removed down to the ground surface, with the concrete footing remaining in the ground. Each new tower would be placed at new locations within the existing alignment. The new towers would be transported to the site by ground equipment or helicopter and installed by crews on the ground. Where there is no road access, materials would be transported over the snow with snow cats to prevent ground disturbance. Ground equipment would operate on existing roads, within the lift corridor, and over vegetated areas in order to access tower locations. Some disturbance may occur along ground equipment travel routes and within temporary work areas, including temporary construction access routes and pads. Prior to construction, SPMR would identify all construction access routes, stream crossings, and construction locations for Forest Service review. To dig tower foundations, a spider excavator would be used on higher gradient slopes, and on lower gradient slopes a tracked excavator would be used. Excavated material would be hauled to an existing storage area and reused for road and bike trail surfacing. Topsoil and small organic material would be distributed near the tower sites as revegetation material. Following construction, the sites would be restored to original grade and revegetated; localized soil treatments (ripping) may be required if soil compaction is observed. Holes for each concrete footing would be 12 to 15 feet in diameter resulting in temporary ground disturbance of approximately 3,750 square feet (50 feet x 75 feet) with a permanent footprint of approximately 4 feet in diameter. Concrete for the tower footings would be transported by helicopter.





**Figure 6.1-7. Existing Brooks Chairlift (Chairs were painted black in 2013)**

The replacement would include removal of the existing upper and lower terminals and wood ramps. The locations for the new upper and lower terminals may move depending on final design but they would remain within the existing lift corridor (the lift may be shortened). For this reason, resource specialists surveyed the entire lift corridor to sufficiently cover any potential lift terminal location, and the Forest Service will review final designs prior to construction approval. Some grading would be needed with a temporary construction disturbance of approximately 0.5 acre at each terminal. During operation, the new terminals would have a disturbance area similar to the existing permanent footprints of about 0.05 acre for the upper terminal and approximately 0.05 acre for the lower terminal for no net difference in permanent disturbance.

### 6.1.4 Rope Tow

Since the scoping period, SPMR has amended their Proposed Action to include installing a new rope tow near the base of the Brooks chairlift to provide access to beginner terrain and the existing terrain park. The rope tow would consist of a single-rope line and two supporting towers with bullwheels (pulleys). The rope tow would be approximately 600 feet long. The total temporary disturbance would be less than 0.2 acre and the total permanent disturbance would be about 0.1 acre. An underground power line would be installed, coming from the existing maintenance shop approximately 100 feet away, to deliver power for the rope tow. The rope tow would be located about 15 feet off-center from the Brooks chairlift for safety purposes.

The existing rope tow near the ski school building is shown in Figure 6.1-8. The proposed rope tow would be similar but have only one rope line.

### 6.1.5 Parking Area Expansion

Parking capacity would be increased by developing a new parking area near the existing Lot C north of U.S. Highway 2 (Figure 6.1-9). The parking area would be west of the existing lot and north of the pedestrian bridge over U.S. Highway 2. The new parking area would occupy about 2 acres and accommodate approximately 200 passenger vehicles. A portion of this area is already disturbed by the parking area for existing cabins, an existing road, a remnant access road and several buildings. The trees as well as some buildings would be removed. The soil would be regraded for the parking area expansion. A gravel walkway would lead from the new parking area to the existing pedestrian bridge that crosses U.S. Highway 2. Trees along the south side of the lot on the hillslope northwest of the pedestrian bridge would remain. The parking lot would be designed to control runoff, such that there would be no alteration of peak and base flows in area streams and sediment would be captured. As needed during operations, snow would be plowed or blown off into adjacent forest or developed areas. During heavy snow periods, snow could be plowed to other existing lots.



Figure 6.1-8. Existing Rope Tow



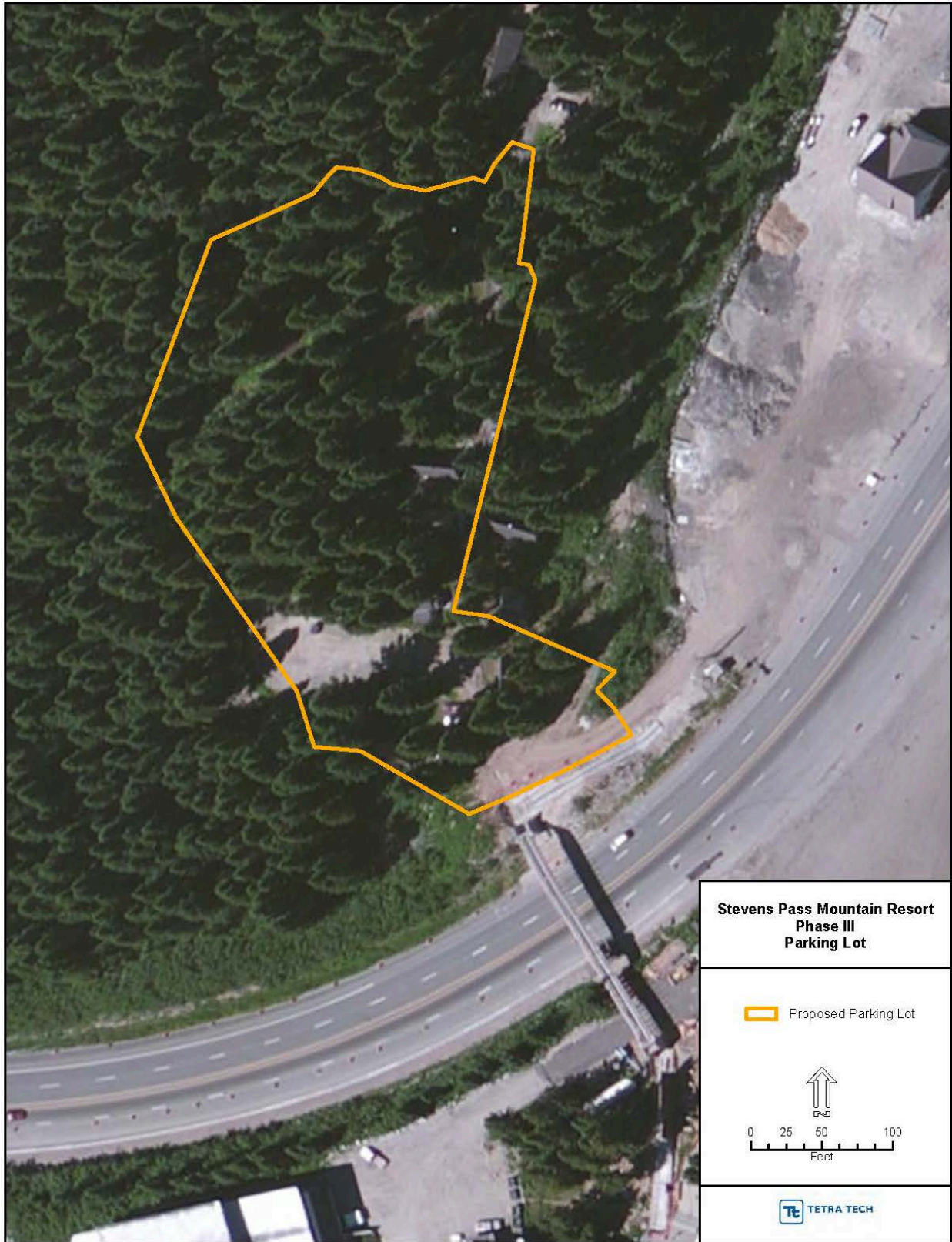


Figure 6.1-9. Proposed Parking Area

## 6.2 Alternative 1 (No Action)

Under the no action alternative, there would be no construction of the proposed features (new bike trails and skills parks, lift replacements, rope tow, and new parking lot). Resources within the SPMR would be exposed to the existing levels of disturbance resulting from normal operation and maintenance activities at the resort. This includes recreation associated with winter sports, summer recreation associated with current bike trails and hikers along the Pacific Crest National Scenic Trail (PCNST), and year-round use of parking lots.

## 7 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

This section summarizes the potential direct, indirect, and cumulative impacts of the no action alternative and the Proposed Action, organized by each resource. Resources that were not impacted and therefore not further analyzed include air quality, socioeconomics, minerals, geologic hazards, land use, agriculture, public safety, roadless areas, and noise. Each resource addressed in detail includes a description of the existing condition. As the No Action alternative would not alter the existing condition, the following existing condition descriptions also describe the result of the No Action alternative.

A cumulative effect is the effect on the environment that results from the incremental effect of the action, when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the other actions occur. An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other past, present, and reasonably foreseeable future actions, the effects may be significant. They can occur when small, incremental amounts of habitat are lost (or gained) over time through a variety of management activities across a landscape (40 CFR 1508.7).

The cumulative effects analysis presented in the following subsections discusses the contributions of other past, present, and reasonably foreseeable projects that overlap with the Proposed Action in space and time, which could affect the human environment. The analysis area for cumulative effects is within the SPMR Special Use permit boundary (Permit Area, Figure 1.1-2). Effects on resources are related to actions that may displace or degrade resources. The time span used for this analysis is the remaining SPMR permit term (34 years). It is assumed that as long as the ski area and bike trails are operating, the potential effects from the Proposed Action would continue.

Past projects within the Permit Area include the development of the resort with base area facilities and bike skills park and newly constructed bike trails, parking lots, pedestrian bridge, the PCNST, a new water storage tank, replacement of the Jupiter chairlift, and highway and electrical transmission corridors.

Current and reasonably foreseeable projects within the Permit Area were determined by reviewing the Schedule of Proposed Actions for the MBS and OW, Washington State Department of Transportation (WSDOT) project information websites, and input from SPMR. WSDOT projects include work on unstable slopes along U.S. Highway 2 west of the SPMR Permit Area and continued operation and maintenance of the highway. Current projects within the SPMR Permit Area include the construction of permitted bike trails, and ongoing operations and maintenance of the year round resort. Future projects that have already been permitted include, renovations to the Granite Peaks and Pacific Crest lodges, expansion of the Pacific Crest Lodge plaza area, and a realignment of a short segment of the PCNST in the SPMR base area. See Table 7.0-1.



**Table 7.0-1. Reasonably Foreseeable Actions**

Reasonably Foreseeable Projects	Description	Effects Overlap in Time and Space with Effects of the Proposed Action?
Tye Creek Lodge Resort Services/Ski School Addition	There is preliminary planning to build an addition onto the Tye Creek Lodge for the purpose of improving the Resort Services, which include ski and snowboard school. The addition would expand the lodge from the current ski service and ski rental portion of the building out into the plaza to incorporate ski school. This addition would expand the footprint of the Tye Creek Lodge in an already disturbed area currently used for foot traffic and ski storage.	Yes.
Ski School Building Removal	The building currently used as a ski school would be removed. The area would be cleared for additional ski terrain to be used for teaching. Impacts to soil and hydrologic resources would be minimized during construction with best management practices (BMPs) to reduce the risk of sediment in storm water runoff getting into any nearby stream. The area would be re-graded and mowed similar to the ski area surrounding it that is currently used for teaching.	Yes.
West Entrance Ski Patrol Building	A new building would be constructed on the slope adjacent to the lower parking lot by the west entrance to house the ski patrol and a ticket kiosk. Impacts to resources would be minimal within the developed base area.	Yes.
Plaza Expansion	A heated plaza at ground level would connect the current plaza around Granite Peaks Lodge to extend in front of Tye Creek Lodge.	Yes.
Hogsback Zip Line	This zip line would start at the top of the Hogsback chairlift and run through the trees to the base with construction of associated platforms and towers.	Yes.
Reroute of the Pacific Crest National Scenic Trail (PCNST)	The PCNST would be rerouted in the SPMR base area to utilize the recently constructed U.S. Highway 2 pedestrian overpass.	Yes.

Reasonably foreseeable projects located within SPMR Permit Area and proposed within the next 7 years include an addition to the Tye Creek Lodge, removal of the existing ski school building, construction of a new West Entrance Ski Patrol building, extension of the heated plaza between the Granite Peaks Lodge and Tye Creek Lodge, and Hogsback zip line.

In the July 2011 through June 2012 operation year, SPMR had 392,940 visitors to use the year-round facilities (SPMR 2013a). Summer-time recreation includes a 60-day operating season for the existing bike park from July through early October 4 days a week. The number of visits to the bike park in 2012 was approximately 6,657, and in 2013 that increased to 7,157 visits. During the 2014 summer season, SPMR had over 10,600 visitors, including mountain bikers, scenic chair riders, hikers, and disc golfers. SPMR anticipates that use of the park during the summer season over the next 3 years would be as follows (SPMR 2013b):

- Summer 2015 – over 10,000 visits for the season, or 167 per day
- Summer 2016 – 13,500 visits for the season, or 225 per day
- Summer 2017 – 18,000 visits for the season, or 300 per day

SPMR implements a sustainability plan to monitor the annual impacts and consumption, identifying goals for energy and waste reduction. Mitigation for climate impacts from transportation and energy use is

accomplished by paying for carbon offsets. Waste is managed by implementing recycling, composting, and reuse/surplus programs.

## **7.1 Recreation**

This section describes the potential effects to recreation resources from the proposed projects at SPMR. The project setting was characterized and evaluated using previously published reports in combination with site visits. Management direction was identified in relevant planning documents.

### **7.1.1 Existing Conditions**

#### **7.1.1.1 Background and Recreation Context**

SPMR began as a skiing facility in the winter of 1937-38, offering a single rope tow and very limited facilities. Its growth since that time has mirrored the growth of the Puget Sound area. SPMR is one of four ski resorts on the MBS that offer winter sports for all experience levels and ages, providing quality alpine skiing, snowboarding, and Nordic skiing. With an average visitation of approximately 400,000 wintertime guests, SPMR provides winter recreation for a sizeable portion of the region's residents. There are currently 2,480 acres within the Permit Area, approximately 1,125 acres of which are currently used for downhill skiing. The main trail use at SPMR is along the PCNST that traverses the eastern side of the ski area.

#### **7.1.1.2 Bike Trails and Skills Parks**

In 2009, SPMR received authorization to develop a lift-serviced summer mountain bike program. Construction began in 2011 and a late summer opening date brought about 1,400 riders. The first full season of operation was the summer of 2012, which brought over 6,600 riders, and the summer of 2013 brought approximately 7,150 riders (Meriwether 2013). During the 2014 summer season, SPMR had over 10,600 visitors, including mountain bikers, scenic chair riders, hikers, and disc golfers. Currently, SPMR provides mountain bike lift service on Hogsback chairlift, and all of the 7 miles of trails originate at the upper terminal of Hogsback chairlift. The existing bike trails and the routes of those bike trails permitted but not yet constructed are almost entirely sited between Brooks chairlift (a small portion of a trail called Rock Crusher crosses under Brooks) and the PCNST (Figure 6.1-1). The trails consist of two types: excavated and single-track. In general, excavated trails are 5 to 10 feet wide and are built using equipment such as small excavators and earth movers, which also allows for the construction of larger earthen obstacles within the trail. Single-track trails are typically around 4 feet wide, and are built using hand tools. Currently, there are 3.0 miles of permitted single-track trails, of intermediate and advanced skill levels, and 4.7 miles of permitted excavated trails, of beginner, intermediate and advanced skill levels. About nine free-standing wood and metal obstacles are situated in the base lodge area for bikers to practice and become familiar with some of the skills required to ride the trails on the mountain.

#### **7.1.1.3 Kehr's Chairlift**

Kehr's chairlift currently supports a comfortable carrying capacity of 305 guests per hour, lower than the trail capacity of 367 guests per hour. From its bottom elevation of 4,089 feet, it rises 820 feet over 2,295 feet slope length. From the unloading area at the top of Kehr's chairlift, guests can access intermediate or advanced runs or the Double Diamond chairlift for further vertical rise. Built in 1964, Kehr's chairlift was identified in the 2007 Master Development Plan as being in need of replacement or upgrade.

#### **7.1.1.4 Brooks Chairlift**

The Brooks chairlift currently supports a comfortable carrying capacity of 521 guests per hour, which is below the trail capacity of 570 guests per hour. The Brooks chairlift is a fixed grip double chair built in

1968. From its bottom elevation of 4,052 feet, it rises 815 feet over 4,426 feet slope length. It provides access to intermediate runs and a large freestyle terrain area. The 2007 Master Development Plan identified this lift as in need of replacement or upgrade.

#### **7.1.1.5 Rope Tow**

The area that would be accessed by the proposed rope tow includes beginner terrain and a winter terrain park. The area is already maintained as open, non-forested ski terrain. There is currently one other rope tow (a double-line rope tow) within the resort, located in the base area between the Tye Creek Lodge and Ski School building.

#### **7.1.1.6 Parking Area**

The existing parking capacity of SPMR is 2,290 cars, 35 buses, and 124 recreational vehicles, which approximates a total of 7,440 guests daily during winter. The 2007 Master Plan identified SPMR's intent to increase parking capacity at the base to better match the current use level of the mountain (nearly 400,000 guest annually), thus reducing the number of days that off-site overflow parking is needed and full lot days ("turn away" days) when guests are turned away that would otherwise have used SPMR facilities.

#### **7.1.1.7 Other Recreation at Stevens Pass**

##### ***Developed Recreation Opportunities***

Before the SPMR Bike Park facilities were opened in 2011, the only developed recreation facility at Stevens Pass available for summer use was the PCNST, including its two trailheads located on the both sides of U.S. Highway 2. The north trailhead is on the edge of an existing parking lot, where SPMR provides parking spaces for trail users. The south trailhead is near the Stevens Pass Ski Club cabin where a restroom facility is provided along with parking for trail users. PCNST users can cross U.S. Highway 2 either by crossing its surface directly or more safely by using the pedestrian bridge near Granite Peaks Lodge. Further, Granite Peaks Lodge has opened some of its dining and rest facilities for year-round use, which is expected to draw some hikers to the base area.

Other designated trails in the vicinity of Stevens Pass include Smithbrook Trail accessing the PCNST and Lake Valhalla via Smith Brook road along Nason Creek, about 6 miles east of Stevens Pass, and the Iron Goat Trail with trailheads at Scenic, Martin Creek and Wellington on the west side of Stevens Pass. Other than the PCNST, the next closest trail to SPMR is the Iron Goat Trail at Wellington, approximately 4 miles to the west down the Old Stevens Pass Highway (Forest Service Road #6099). Use of the Iron Goat Trail, in particular, the trail near Wellington, is estimated at about 3,000 users per year.

##### ***Pacific Crest National Scenic Trail***

The visitor use numbers collected or available for the PCNST at Stevens Pass are estimates based on periodic samples taken by Forest Service personnel from recent years. The typical use of the southern PCNST segment, which passes through approximately one section in the upper Tye Creek portion of SPMR, is estimated at 4,000 users a year. Many of these users are on day trips and therefore those users experience the sights and sounds of SPMR twice in one day. User counts for the northern trailhead out of Parking Lot D indicate lower visitation than that of the southern trailhead, and are estimated to be approximately 1,225 users annually. It is estimated that 32 percent of these users on the northern segment are overnight users, staying an average of 2.6 days. In 2000, it was estimated that less than 1 percent of all users brought stock animals.

### ***Recreation Opportunity Spectrum***

The Recreation Opportunity Spectrum (ROS) category from the 1990 MBS Forest Plan for SPMR is Rural. The Rural ROS class includes those areas within small communities, campgrounds, developed ski areas, and administrative sites. These areas are characterized to be substantially altered environments. Modifications are directed at enhancing specific recreation activities. Sights and sounds of humans are readily evident. User concentration in the area is moderate to high.

### ***Relationship to the Alpine Lakes Wilderness***

The Alpine Lakes Wilderness is located within 1 mile of the southeastern-most portion of the SPMR permit boundary. None of the proposed projects or any SPMR improvements are located within the designated wilderness area. However, as an adjoining use, activities within the ski area can affect the quality of the recreation experience of users accessing and using the Alpine Lakes Wilderness. The primary goal of the Alpine Lakes Wilderness is to preserve and protect the wilderness character of the area, allowing for naturalness and providing opportunities for solitude, challenge, and inspiration.

At Stevens Pass, recreationists access the Alpine Lakes Wilderness from the PCNST as well as from dispersed points along Mill Creek Road and Bonneville Power Administration (BPA) transmission line corridor on the back side. During the summer season, wilderness users near Stevens Pass are close enough to possibly see and hear sights and sounds of activities surrounding construction and operation of bike park facilities and chairlift upgrade construction, including the sound and visibility of a helicopter. The number of users passing through the SPMR would be some subset of the total of 4,000 estimated users accessing the south trailhead of the PCNST.

### ***Other Recreational Uses***

A newly introduced recreational activity is the SPMR disc golf course. The 18-hole course is accessible by the Hogsback chairlift and rental equipment is available at Granite Peaks Lodge.

Snowmobiles are allowed in the Mill Valley portion of SPMR under the BPA transmission lines (Gemini ski trail) in the late spring after the ski season closes. However, this motorized use is prohibited on the front side of the ski area (upper Tye Creek drainage). Backside snowmobile use often continues into June, depending on snow conditions.

Other summer users at SPMR engage in activities such as day hiking, sightseeing, and berry picking (dispersed recreation). Most of these users are thought to be motorists crossing the mountains on U.S. Highway 2 who stop at the pass for a rest stop, occasionally using the restroom facility at the south PCNST trailhead and/or picnicking in the base area complex at the ski area. In 2013, the Granite Peaks Lodge opened some of its dining and rest facilities for daily public use, and scenic chairlift tours are also offered at the base area in the summer. An estimated 5 to 15 users per year partake in searching for money and artifacts left by snow sports users from the winter season. Most of these users do not venture out far past the confines of the immediate base area; however, some explore the ski area trails and lift corridors. Assuming 150 days in the summer and fall season, with 15 users a day, the total use could be as high as 2,250 users annually engaging in summertime hiking, picnicking, and general sightseeing.

## **7.1.2 Direct and Indirect Effects**

### **7.1.2.1 No Action Alternative**

Under the no action alternative, there would be no change to recreation because there would be no construction of the proposed features (new bike trails and skills parks, lift replacements, rope tow, and new parking lot). Current conditions and trends associated with recreation in the Project area would

continue. There would be no change to developed recreation, the PCNST, the ROS classification, the Alpine Wilderness, or other recreational uses at SPMR. Because the no action alternative represents the continuation of existing activities, with no change to recreation opportunities or facilities, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

Ongoing operation and maintenance activities at the resort would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Winter sports recreation and summer recreation associated with current bike trails and hikers along the PCNST and year-round use of parking lots may increase, but there would be no change to the existing condition or trends. Services and facilities at Stevens Pass would not be improved and guests would not benefit from added bike trails, upgraded lifts, increased access to beginner terrain via the proposed rope tow; and additional parking to reduce turn-away days. Based on continued increase in population, this alternative may also result in an increase in turn-away days and greater dissatisfaction of winter recreationists.

### **7.1.2.2 Proposed Action**

#### ***Bike Trails and Skills Parks***

The introduction of 4.3 additional miles of mountain bike trails and the Skills Parks to the Stevens Pass Bike Park would diversify the range of challenges offered in bike trails and enhance the experience of bike park users. The addition of skill building features along the permitted beginner trail (Skill Park #2) would allow skill development for novice mountain bikers. Improved recreation experience would draw more summertime guests to the SPMR. Current estimates for future ridership reach 18,000 riders by the summer of 2017 (SPMR 2013b).

The proposed bike trails and skills parks may enhance or detract from the quality of some of the existing dispersed user's experiences. However, it is unlikely the expansion of mountain biking at Stevens Pass would displace many of the existing dispersed users of the area; such users are already coming to a highly developed facility and their expectations would not likely preclude use just because additional recreationists are in the area. Increased noise during construction of the new trails and skill facilities could impact other users (e.g., hikers, sightseers, and berry pickers). Such impacts are temporary in nature and would not have a significant impact on the recreation resource overall.

#### ***Kehr's and Brooks Chairlift Replacements***

Bringing the Kehr's and Brooks chairlifts up to modern ski resort expectations would increase guest enjoyment. Improvements to the Kehr's chairlift loading zone would allow guests to slide downhill directly to the loading area, reducing guest discomfort of walking uphill, and improving the overall experience. By improving users' experience on these chairs, usage may increase, helping to better distribute guests on the ski area slopes and decrease crowding.

There would be no increase in area or expansion outside the SPMR, so replacing Kehr's and Brooks chairlifts would have negligible impact on other recreational users. The only anticipated adverse impact would be increased noise during removal of the old equipment and construction of the new chairlifts. Such impacts are temporary in nature and would not have a significant impact on the recreation resource overall.

#### ***Rope Tow***

Adding a new rope tow would increase access to beginner terrain and increase guest enjoyment without expanding the developed area of the resort. The rope tow would allow novice skiers to access the

relatively gentle slopes near the base of Brooks chairlift. It would also allow skiers to access terrain park features without the need to ascend Brooks chairlift.

### ***Parking Area***

The new parking area would service guests on very busy days at the resort, specifically during the winter season. Since this would keep some later-arriving guests from being turned away when the current parking areas are at capacity, the availability of a new parking area would increase the access to and enjoyment of the SPMR among such guests.

### ***Other Recreation Resources***

#### **Pacific Crest National Scenic Trail and Other Area Trails**

Users of the PCNST are already confronted by a very developed area at SPMR, which includes having to cross under a chairlift and experience visual and auditory contact with the lodge and other activities in the area, including an existing beginner level bike trail just downslope of the PCNST near Kehr's chairlift.

During construction of the Kehr's chairlift replacement, segments of the trail beneath and adjacent to Kehr's chairlift alignment and terminals may be closed or rerouted for short periods of time during helicopter operations, affecting trail hikers. Closures would be limited to 2 hours when hikers are present. Trail users would be detoured around construction where safe to do so. SPMR will post signage at the Stevens Pass trailhead during construction, and guards will be posted on each side of the closed segment during closures.

Other area trails would not be impacted at all as a result of the proposed Project facilities.

#### **Recreation Opportunity Spectrum**

The ROS would not be affected. None of the Project components would fall outside of the Rural classification.

#### **Relationship to the Alpine Lakes Wilderness**

None of the proposed projects or any SPMR improvements are located within the Alpine Lakes Wilderness, which is located within 1 mile of the top terminal of Hogsback chairlift, just over 1 mile from the nearest planned bike trail. However, the implementation of the Project could affect the number of summer users of the Alpine Lakes Wilderness by improving facilities near the trailheads, as well as their experience (presence or absence of noise above normal) during and after construction.

Stevens Pass is one of several ski areas on National Forest System (NFS) lands that are close to established Wilderness Areas. Congress recognized the continued existence of uses and activities that are similar to a ski area in the U.S. Senate's statements in the Congressional Record of October 2, 1984 (S126622, Section 9 Buffer Zones):

“The Congress does not intend that the designation of a wilderness area under this act lead to the creation of protective perimeters or buffer zones around such wilderness areas. The fact that non-wilderness activities or uses can be seen or heard from areas within a wilderness shall not preclude such activities or uses up to the boundary of the wilderness area.”

Therefore, at Stevens Pass the ski area operation is not expected to serve as a buffer; rather, the Wilderness Area itself has a buffer because experiences on the edge are not to be expected to provide a wilderness experience. The Wilderness Area includes a transition zone, adjacent to major trailheads,

where visitors make the transition from roadways to foot or horse travel and are first introduced to the Wilderness area. The transition zone may extend up to 3 miles and at least 500 feet either side of the travel route. An exception to the 3-mile limit is the 72 miles of the PCNST. Day users mixed with those traveling to and from the Wilderness interior predominate in the transition zone.

### **Other Recreational Uses**

The disc golf course would not be adversely affected by the proposed Project elements because signage and trail markers create safe points for pedestrians, including disc golfers, to cross the mountain bike trails. While it should be noted that the disc golf course overlaps with some of the current and proposed mountain bike trails, which could lead to user conflict if unmanaged, SPMR has successfully managed both activities to date.

Permitted snowmobile usage in the Mill Valley portion of SPMR under the BPA transmission line would not be adversely affected by the proposed Project elements because the activities do not overlap.

There would be no appreciable change in the recreational experience of those engaged in activities such as picnicking, day hiking, sightseeing, and berry picking because those participating in these activities are already subject to activities at the year-round resort.

### **7.1.3 Cumulative Effects**

The SPMR Permit Area has been established as the analysis area for the purposes of this cumulative effects analysis. Effects on recreation resources are related to actions that may displace or degrade the recreational experience. The time span used for this analysis is the remaining SPMR permit term (34 years). It is assumed that as long as the ski area and bike trails are operating, the potential effects from the Proposed Action would continue.

The addition of the Tye Creek Lodge Resort Services/Ski School Addition would be an improvement to recreation services of the resort as a whole, and removal of the ski school building would improve the open space available to recreational users. The Plaza expansion would improve the conditions for participants of seasonal sports as well as for visitors year-round, whereas the new Ski Patrol Building at the west entrance would have minor effects to recreation, as there is no proposed change to the service. The zip line at Hogsback may have a slight negative impact to some summer recreational users due to crowding and user conflict with bike park and disc golf users through either distraction or space overlap; however, these effects could be avoided through project siting and management controls. The impact to the physical recreation resource would be minor since little obvious infrastructure would be required. Cumulatively, the development of the base lodge area and PCNST realignment as described above would have minor and often positive effects on the recreation resource. Together, the Proposed Action and these activities would expand and improve the recreational opportunities at SPMR year round.

### **7.1.4 Forest Plan Consistency**

The proposed resort improvements would be consistent with Forest Plan Standards and Guidelines, as amended, for recreation resources:

- Recreation Desired Future Conditions (Forest Service 1990a, p. 4-21): A desired future condition on the MBS is that “all ski areas that have expansion capacity under approved Ski Area Master Plans are expected to add development facilities...commensurate with expected improvements in service and permitted on the basis of actual public need.” The addition of mountain bike trails and skills parks would help Stevens Pass meet this expectation by enhancing the existing recreation use at the ski area. Upgrading the two chairlifts and adding the rope tow as proposed would increase the service

level of the associated ski runs, improving user levels and satisfaction. Developing a new parking area would satisfy the need for additional parking on heavy visitation days.

- Developed Recreation (Forest Service 1990a, p. 4-85): The enhancement of the Stevens Pass Bike Park would further encourage year-round recreation use at the SPMR, otherwise a primarily winter-sports site. The new bike trails and skills parks would be compatible with natural resource-based recreation opportunities in that they would not limit current summertime use of the PCNST or disc golf facilities, the other organized forms of summer recreation in the SPMR Permit Area. In addition, there would be no change in the SPMR ROS designation of Rural or in uses that define that designation. The expansion of mountain biking facilities would be consistent with the current Rural designation for the area because the use would continue the altered environment with modifications directed at enhancing specific recreation activities. Upgrading the two chairlifts and developing a new parking area as proposed would not change the summertime recreational experience in the long term.

## **7.2 Visual Resources**

The project setting was characterized and evaluated on-site for visual impact analysis.

### **7.2.1 Existing Conditions**

The Project area for the new mountain bicycle trails, skills parks, rope tow, and Kehr's and Brooks chairlift replacements is within the existing footprint and area of influence of the SPMR Permit Area. The new parking lot, proposed for development on the north side of U.S. Highway 2, would be the only element of this project that would be visually apparent to travelers on the highway.

The base area can be characterized as an alpine village-inspired commercial and recreational development set among small stands of mature evergreen trees. The base area has dirt roads, a series of connected outdoor plazas, large signs, a free-standing clock tower, small outbuildings, and herbaceously vegetated spaces. The upper slope is characterized by irregular openings forming the ski runs, bike trails, and chairlift corridors that cut through the more densely forested sections of Upper Tye Creek watershed.

The proposed parking area expansion on the north side of U.S. Highway 2 is currently a disturbed forest stand. Among the trees can be found felled trees and tire ruts, abandoned utility cables and equipment, disturbed boulders, and some general household refuse. The proposed parking area currently consists of an access road and smaller parking area and several existing cabins. It is bordered to the north, west, and south by forest and an electrical transmission line to the north.

Three key observation points (KOPs) were selected to represent views of the most visually intrusive elements of the proposed improvements (Skills Park 2, both chairlifts, and the parking area), from locations commonly traveled through or occupied by casual observers. The location and orientation of each of the KOPs are indicated in Figure 7.2-1 and discussed below.



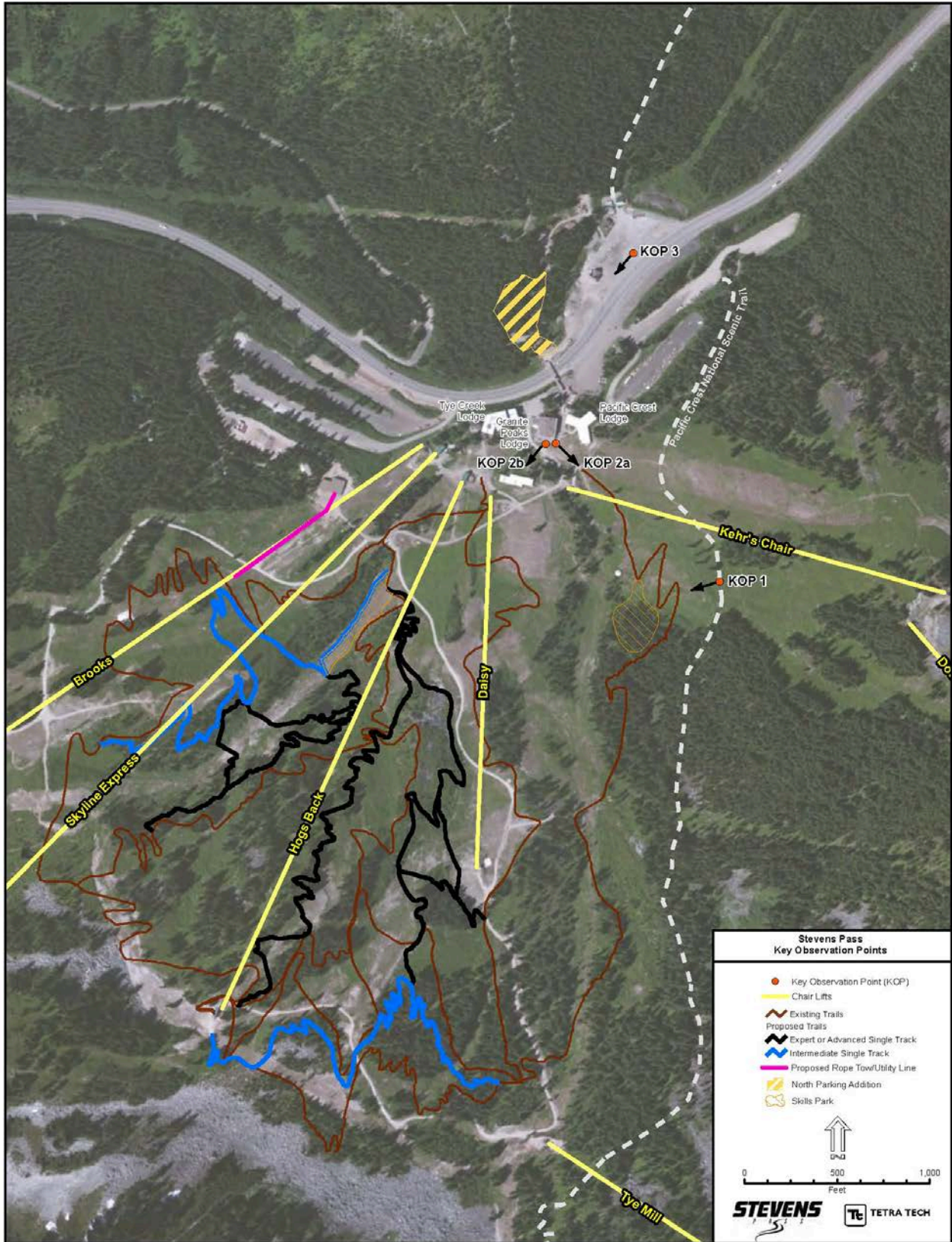


Figure 7.2-1. Key Observation Points



### 7.2.1.1 KOP 1—Bike Skills Park 2

KOP 1 is located along the PCNST as it traverses the slope under Kehr’s chairlift and upslope of the proposed Skills Park 2. This location was selected for analysis for its representation of the wide view of PCNST users of the Tye Creek watershed portion of the SPMR generally, and the proposed bike skills park, in particular. The site of the proposed Skills Park 2 is within the middleground forested stand, which occupies the lower left quadrant of Figure 7.2-2.

From this oblique view across much of the Upper Tye Creek watershed that makes up the SPMR, much of the chairlift equipment and cleared trails are partially or entirely obscured by trees or landform, providing an overall naturalistic setting for a casual observer on the PCNST. The forested stand described above has been thinned of trees under an existing forest management regime.



Figure 7.2-2. KOP-1. View from PCNST

### 7.2.1.2 KOP 2a—Kehr’s Chairlift Replacement

Both KOPs 2a and 2b are located on the upper patio of the Granite Peaks Lodge—the newest and most popular of the base area lodges. From this visually unobstructed viewpoint, the majority of the mountain bike and snow sport trails can be seen, but because views of the proposed changes and developments to the SPMR would occur in different areas, two distinct views must be considered from this single location. KOP 2a faces southeast towards Kehr’s chairlift and the proposed Skills Park 2, and KOP 2b faces southwest, towards Brooks chairlift.

KOP 2a represents the view to the southeast from the upper deck of Granite Peaks Lodge and captures the visible portion of Kehr’s chairlift as it climbs the slope from lower right to upper left of Figure 7.2-3, moving from middle to background. The forested stand within which Skills Park 2 is proposed is also visible in the middleground of Figure 7.2-3, approximately halfway between the lower chairlift terminal and the clouds in the photo.



**Figure 7.2-3. KOP 2a. Southeast View from Granite Peaks Lodge**

From this viewpoint, the base area is moderately cluttered with ski operations facilities and equipment and miscellaneous signage and utilities. Other than Kehr’s chairlift, the upper slope is free of such visual clutter and appears largely natural, as a forested slope and intervening meadow-like clearings. During the winter season, this area is also full of motion: people sliding down the slopes, walking around the base and relaxing on the patio below, as well as the movement of Kehr’s chairlift itself. During the summer season when the bike park is open, there are hikers, sightseers, and bicycle riders moving through the area, but Kehr’s chairlift is not typically in operation.

### **7.2.1.3 KOP 2b—Brooks Chairlift Replacement and Rope Tow**

KOP 2b represents the view to the southwest from the upper deck of Granite Peaks Lodge and captures, in the background, the Brooks chairlift, which is the chairlift furthest to the right in Figure 7.2-4.

From this viewpoint, the base area is cluttered with chairlift terminals, a signage kiosk, the snowboard school building, and miscellaneous equipment. During the winter season, this area is full of motion: people sliding down the slopes, walking around the base and congregating at the signage kiosk and snowboard school, as well as the movement of the three visible chairlifts (Hogsback, Skyline, and Brooks) and the rope-tow themselves. During the summer season when the bike park is open, there are hikers, sightseers, and bicycle riders moving through the area, and when the bike park is open, Hogsback chairlift is in operation for mountain bike access and for scenic tours.





Figure 7.2-4. KOP 2b. Southwest View from Granite Peaks Lodge

#### 7.2.1.4 KOP 3—Parking Area Expansion

KOP 3 represents the view westbound motorists and bicyclists traveling over U.S. Highway 2 would have of the proposed parking area expansion, depicted in Figure 7.2-5.

As described earlier, a forested stand would be cleared to accommodate the parking area. To the east of the forested area and adjacent U.S. Highway 2 is a paved multi-use area (right side of Figure 7.2-5). The multi-use area is protected by concrete barriers and appears to serve as a temporary laydown and storage yard for equipment, construction materials and utility infrastructure, as well as additional parking. The northern end of the multi-use area also provides vehicular access to the Summit Substation, and pedestrian access to the PCNST trailhead. A parking and transit facility building is located in the middle of the multi-use area, and appears in the right hand side of Figure 7.2-5. The pedestrian overpass can also be seen. Taken together, these features create a visually cluttered scene, drawing a viewer's eye in many directions at once, and hindering the natural landscape.



Figure 7.2-5. KOP 3. View from Westbound U.S. Highway 2 towards Proposed Parking Area

## 7.2.2 Direct and Indirect Effects

### 7.2.2.1 No Action Alternative

Under the no action alternative, there would be no additional impact to visual resources associated with construction of the proposed features. Ongoing operation and maintenance activities at the resort would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Winter sports recreation and summer recreation associated with current bike trails and hikers along the PCNST and year-round use of parking lots may increase over time, but there would be no change to the existing condition or trends due to developments under the Proposed Action. The current visual condition, as described in the preceding Existing Condition section of this analysis, would be retained.

### 7.2.2.2 Proposed Action

In general, under the Proposed Action, newly constructed bike trails would be visually evident due to freshly disturbed soils and abrupt vegetation edges, but these characteristics fade with time and while they remain visually detectable, the trails would appear to recede into the landscape, especially when viewed from inferior positions, such as the village area at the base of the resort. In other words, while a newly constructed trail might be eye-catching to a PCNST user, in time the visual contrast of the new trail would fade within the overall scene and the once-new trail would blend into the established natural setting and visual patterns. Built elements of the trails are also likely visually obvious initially, but as the wood (already a natural material, as opposed to metal or plastic) fades from exposure, they become less visually obvious and blend into the landscape.

***KOP 1—Bike Skills Park 2***

Examination of the interior of the forested stand suggested that it has already been thinned of smaller trees, presumably as part of previously permitted, ongoing forest maintenance by SPMR. With the exception of a very few individual trees removed to accommodate individual skill structures, it is unlikely that this forested stand would be subjected to any further thinning. The stand of trees would still dominate this portion of the view from KOP 1, resulting in no substantial change to the visual resource, in either the short or long term.

***KOP 2a—Kehr's Chairlift Replacement***

KOP 2a is located at the outdoor seating area of the second level of the Granite Peaks Lodge, representing the southeast-facing view of those seated on the deck or inside the lodge. From this location, the chairlift terminal structure is partially obscured by a small patch of mature trees, though the lighter-colored ancillary structures can be identified. Some of these structures would be removed as part of the proposed chairlift replacement, including the light-colored box-shaped structure that can be seen in Figure 7.2-3 to the right of the small patch of trees. The slant-roofed structure to the left of the trees may be removed and rebuilt, but would occupy the same general footprint. The lift line gate (galvanized steel structure in front of the slant-roofed structure) would remain. The cluster of trees that partially obscures the existing terminal may be removed, which would eliminate the visual screening from KOP 2a.

The relative vertical mass and dark color make the towers seem somewhat tree-like and are not wholly unsympathetic to the forested setting. Placement of the new towers may vary from that of the current towers, in which case there would likely be some visible soil disturbance, but this would fade over a year or two, as those disturbed areas would be revegetated.

Approximately 1 acre of surface disturbance would occur during construction, including grading of the soil to improve the chairlift loading area. In the short term, the visual impact would be moderate as construction is carried out and construction materials, equipment, signage, and personnel are apparent. Once construction has been completed, the area would be revegetated and the visual impact of construction would subside, and the visual impact would be low. Further, due to the removal of the old structures, the visual clutter of the terminal area would be abated somewhat and the overall visual conditions from KOP 2a would be improved.

***KOP 2b—Brooks Chairlift Replacement and Rope Tow***

KOP 2b is geographically similar to KOP 2a, and is again representative of those seated on the deck or inside the lodge, but where the viewer is facing southwest. From this location, a number of the chairs (although the chairs appear green they were later painted black in 2013) and black towers of the Brooks chairlift are distant but plainly visible, and both the upper portion of the chairlift and lower terminal are completely obscured by trees.

The relative vertical mass and dark color make the towers seem somewhat tree-like and are not wholly unsympathetic to the forested setting. Placement of the new towers may vary from that of the current towers, in which case there would likely be some visible soil disturbance, but this would fade over a year or two, as those disturbed areas would be revegetated. The proposed rope tow would be obscured by trees.

In the short term, the visual impact would be moderate as construction is carried out and construction materials, equipment, signage, and personnel are apparent. Once construction has been completed, the area would be revegetated and the visual impact of construction would subside, and there would be no visual impact. Further, due to the reduction of tower density and the change of chair color, the Brooks

chairlift would further recede into the landscape and the overall visual conditions from KOP 2b would be improved.

### ***KOP 3—Parking Area Expansion***

The proposed parking lot expansion on the north side of U.S. Highway 2 would cover approximately 2 acres. A narrow stand of evergreen trees would be retained between the proposed parking lot and KOP 3 to protect the existing visual condition.

The expanded parking area would be situated in the general location of the current residential cabins and associated loop road. From KOP 3, the expanded parking area would be almost entirely screened by existing evergreen trees, reducing the visual impact to a glimpse down a short corridor at the entrance of the proposed expansion.

It should be remembered that KOP 3 is intended to represent the view from an observer in motion along U.S. Highway 2. The majority of these observers would fall into two groups, those travelling over Stevens Pass, moving at highway speeds (the speed zone at this location is variable, but under good conditions is typically 60 mph), and those travelers for whom SPMR is their destination. At KOP 3, the first of these groups would see the entrance to the expanded parking area only briefly as they transit the space quickly, and with many existing features—the pedestrian bridge and area signage, for instance—reducing their sense of visual impact. In contrast, the second group might be better served by being able to see the entrance to the parking area, though it should be noted that the existing lower parking areas (lots 1-4) are successfully utilized while still being visually screened from the highway by vegetation. Once a visitor has pulled off the highway, navigation to the proposed parking area would be eased by reduced speed and signage.

### **7.2.3 Cumulative Effects**

Effects on visual resources are related to actions that may displace or degrade the visual experience, either in duration or quality. An excavated beginner-level trail has already been permitted between KOP 1 and the proposed Skills Park 2. Bicycle traffic on this trail would draw the attention of a PCNST user to the forested stand where Skills Park 2 is proposed. Because both user groups are relatively sparse and would not overlap in space and only occasionally in time, the cumulative visual impact would be minor.

The visual impact due to Tye Creek Lodge Resort Services/Ski School Addition would be minor, as the area is already developed. Indeed such a development could offer an opportunity to give Tye Creek Lodge building a façade upgrade, bringing it into line with MBSNF design guidelines that urge the application of Cascadian architecture to bring visual harmony to the SPMR's base lodge area. Impacts to visual resource from the ski school building removal would be a net improvement, as the ski school building is very large compared other ancillary structures in the vicinity, and removing it would reduce the visual clutter of the outer base lodge area. Visual impacts due to the west entrance ski patrol building would be minor, as this would be a relatively small building, and in an area that is already developed. The plaza expansion would visually tie Granite Peaks Lodge to the Tye Creek Lodge, which would have dual visual impacts: it could make the space easier to “read” visually, which would increase navigation by guests, but it could also make the buildings appear larger due to the extended ground plane, exaggerating the developed appearance of the base lodge area. Visual impacts from the base lodge area due to the zip line would be negligible.

The ground where the base area proposed projects are located has been previously disturbed and landscaped during the construction of the base area lodges, plazas, pathways, and infrastructure. The area is partly vegetated with few small trees along with minor shrubs and grasses. Most of these reasonably



foreseeable projects are located at the base lodge area, which can visually absorb some new structural elements, especially when balanced with the removal of other structures.

Cumulatively, the development of the base lodge area would have negligible to minor visual impacts.

#### **7.2.4 Forest Plan Consistency**

##### **Mount Baker-Snoqualmie National Forest Plan**

Portions of SPMR-leased land within the MBS are allocated as *Administratively Withdrawn Alpine Lakes Management Area 27 – Developed Site*. The Developed Site designation recognizes the substantial modification of the area for use as a ski area and that sights and sounds of people will be evident because concentration of users is often high. The Proposed Action is consistent with this land allocation.

Being within the Stevens Pass Scenic Viewshed, the existing visual condition for the base area of SPMR is Moderately Altered (Forest Service 1990a). Moderately Altered landscapes are easily noticed by the average visitor and may attract attention; disturbances are apparent and correspond to a Visual Quality Objective (VQO) of Partial Retention and Modification (Forest Service 1990a). This means that while casual viewers might notice changes to the landscape, the landscape's natural appearance dominates the viewshed. The proposed project is consistent with the VQO of Partial Retention and Modification.

##### **Okanagan-Wenatchee National Forest Plan**

Being visible from the Stevens Pass/U.S. Highway 2 travel corridor, the existing visual condition for the land proposed for clearing to expand the parking area north of the highway is Altered (Forest Service 1990b). Altered landscapes are easily noticed by the casual observer and may attract attention; disturbances are apparent and correspond to a VQO of Partial Retention and Modification (Forest Service 1990b). This means that while casual viewers might notice changes to the landscape, such changes follow naturalistic patterns and the landscape's natural appearance continues to dominate the viewshed. The proposed project is consistent with the VQO of Partial Retention and Modification.

##### **Pacific Crest National Scenic Trail**

The Comprehensive Management Plan for the PCNST (Forest Service 1982) clarifies the relationship between the trail and management of adjacent lands. Specifically pertaining to NFS lands outside of Wilderness, the management plan states:

“The entire landscape and its scenic quality are important to the purposes of the Pacific Crest National Scenic Trail. Viewing and understanding resource management and other cultural activities are considered to be part of the normal character of the trail. The management of various resources will give due consideration to the existence of the trail and trail users within the multiple-use concept.” (Forest Service 1982)

From the north, PCNST users cross the highway using the pedestrian bridge, then meet up with the trail again at the trailhead in the upper parking lot on the south side of the highway. The PCNST heads into the forest at this point, then emerges in the Tye Creek Basin and crosses the Big Chief Ski Run area, affording trail users an unobstructed view of the Tye Creek Basin portion of the resort. The PCNST then crosses under Kehr's chairlift and heads back into a dense forested area until it crosses the ridge near the upper Jupiter Chairlift terminal and traverses southward and eastward through Mill Valley towards Josephine Lake and out of the viewshed of the proposed Project elements.

The Proposed Action is consistent with the Comprehensive Management Plan for the PCNST.



## 7.3 Water Resources

Hydrologic resources could be affected by construction of the Proposed Action and SPMR operation. Effects on hydrologic resources are related to actions that may affect water quantity and quality, including the timing, duration, frequency, or intensity of stream flow, and sediment loads. Riparian Reserves geographic information system (GIS) data provided by the Forest Service were modified based on field observations of stream segments locations and wetlands present within the survey area to more accurately represent the designated Riparian Reserves.

### 7.3.1 Existing Conditions

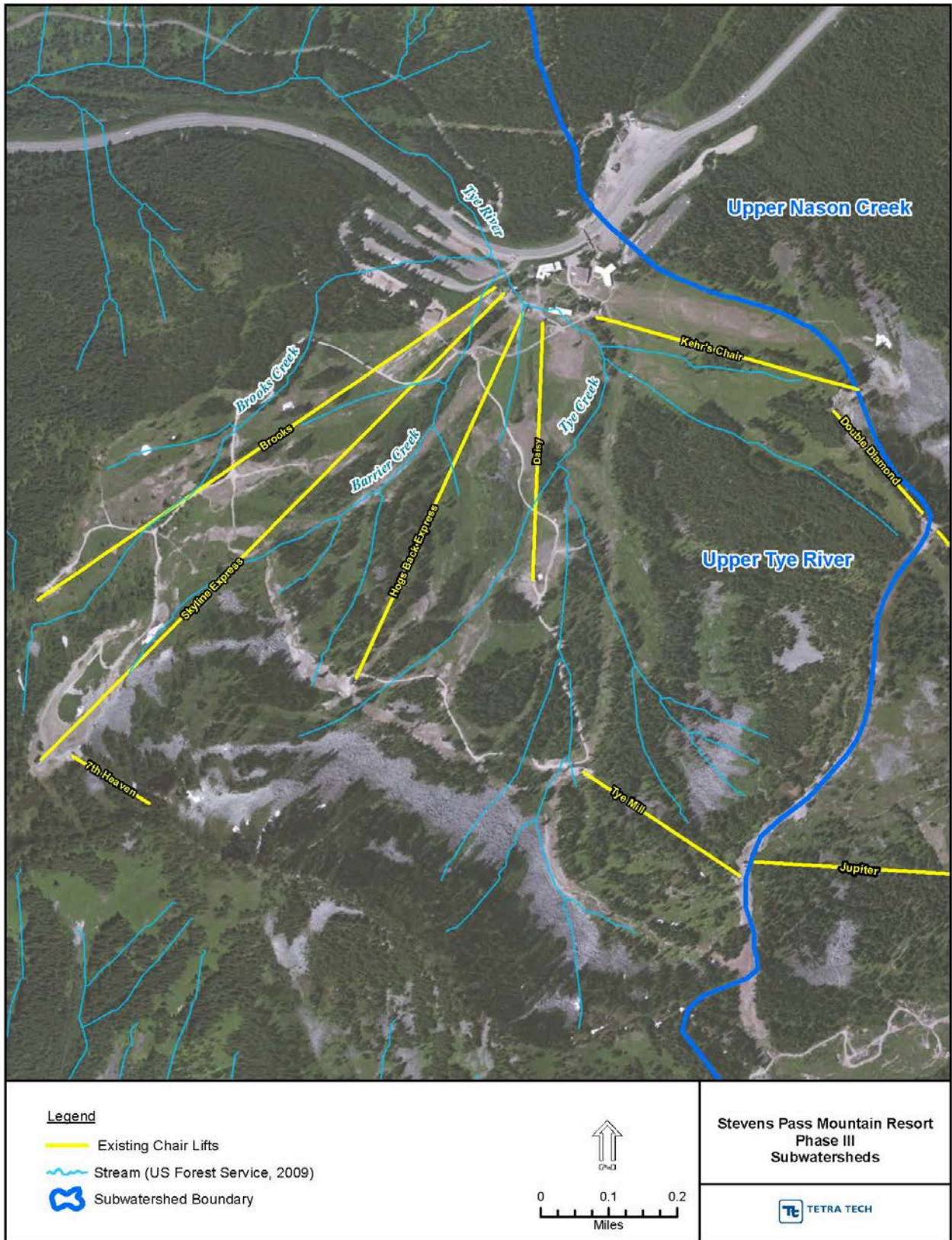
SPMR is located within the Cascade Mountain Range in Washington State. The elevation at the base of SPMR is approximately 4,060 feet, and the highest point lies at 5,853 feet on Cowboy Mountain (above the top terminal of the Seventh Heaven ski lift). The mountain crest forms a divide between drainage basins.

Most of the developed facilities are within the Upper Tye River subwatershed, including 8 of the 10 chairlifts, three day lodges, a maintenance shop, parking areas, most of the ski area roads, a ski school building, most of the base facilities, and all of the existing bike trails and skills park (otherwise known as the “front side” of SPMR). The Upper Tye subwatershed has three first-order streams within the permit area: Tye Creek (above the confluence with Barrier Creek), Barrier Creek, and Brooks Creek. Brooks Creek flows along the western edge of the permit area until it flows under Highway 2 and enters the Tye River (see Figure 7.3-1). The drainage areas of these creeks compose the front side of the ski area. The Upper Tye River subwatershed is part of the greater Tye River Watershed, a designated Tier 1 Key Watershed. In turn, the Tye River watershed is part of the Skykomish River subbasin. The Skykomish River is a primary tributary of the Snohomish River in the Puget Sound Basin.

On the east slopes, the SPMR area drains into the larger Wenatchee River system, which is a contributor to the Columbia River, east of the Cascade Mountains. Within the Upper Nason Creek subwatershed, there are two parking lots and staff residential units located on the north side of Highway 2, opposite the base area. Two chairlifts and extensive terrain also are within the Mill Creek drainage on the “back side” of SPMR, also within the Upper Nason Creek subwatershed. The Upper Nason Creek subwatershed is part of larger Nason Creek watershed. Mill Creek and Stevens Creek are the only creeks within the ski area boundary that drain to Nason Creek.

The proposed bike park expansion and chairlift replacements and most of the proposed parking area would be located in the Upper Tye River subwatershed. Only a small portion of the proposed parking area and the upper extent of Kehr’s chairlift replacement would be located in the Upper Nason Creek subwatershed.

Overall, the Tye River watershed is in a healthy condition with respect to water, although sedimentation and road density were cited as concerns in the lower watershed (Forest Service 1994, 2004).



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Figure 7.3-1. Watersheds

### 7.3.1.1 Geomorphology

The steep slopes in the Upper Tye subwatershed are dissected by intermittent and ephemeral channels, and lie within the snow-dominated rain-on-snow zone (Forest Service 2004). Major rain-on-snow events occur fairly frequently in the Upper Tye subwatershed. The SPMR receives annual average of 81.5 inches of precipitation, of which about 10 inches occur as rain in the summer (Western Regional Climate Center 2014). Previous development of the ski area (ski runs, parking lots, roads, and facilities) has relocated some stream channels, brushed and cleared much of the riparian vegetation (greater than 50 percent), and graded ski runs across channel courses and wetlands. In many places, streams have been redirected through culverts and their associated riparian vegetation removed. This is especially evident in the lower reaches of Barrier Creek; this creek was relocated from its original course decades ago and now passes through a graded ski run with no riparian buffer in places (Forest Service 2004). Small, unnamed streams occur throughout the permit area with active channels generally less than 2 feet (0.6 meter) wide at bankfull, with gradients ranging from 4 to over 40 percent, and channel bank heights varying from less than 1 foot to 8 feet (2.4 meters or less; Forest Service 1996a). These streams in the upper drainages flow through thin sandy soils, talus, or granitic rocks (Forest Service 2004).

A field survey in July and August 2013 mapped the locations of stream segments within the Phase III survey area to document stream crossings along the proposed bike trails. The location of portions of Barrier Creek and Tye Creek and various tributaries are shown on Figure 7.3-1. Near the lower terminal of Kehr's chairlift, Tye Creek is conveyed through a culvert under an access road and is approximately 10 feet wide at bankfull. Upstream in the vicinity of the bike trails, the channel is much narrower and less defined. Barrier Creek, at the locations where the proposed bike trails would cross, has two channels 4 to 5 feet wide at bankfull. Most of the small, unnamed tributary stream segments were in disturbed areas of managed ski runs and were shallow ephemeral channels in thin sandy soils approximately 1 to 2 feet wide at bankfull with 10 to 20 percent gradient. Several stream segments within ski slopes showed evidence of alteration to increase drainage and were identified as ditches (Figure 7.3-2). Some stream segments with minimal channel features had areas with subsurface flow, surfacing periodically with minimal channel features. Areas that were mapped as streams from the Forest Service GIS stream layer that drained snowmelt but did not show channel features or a change in vegetation are considered forest floor and not included on Figure 7.3-2 as a stream.



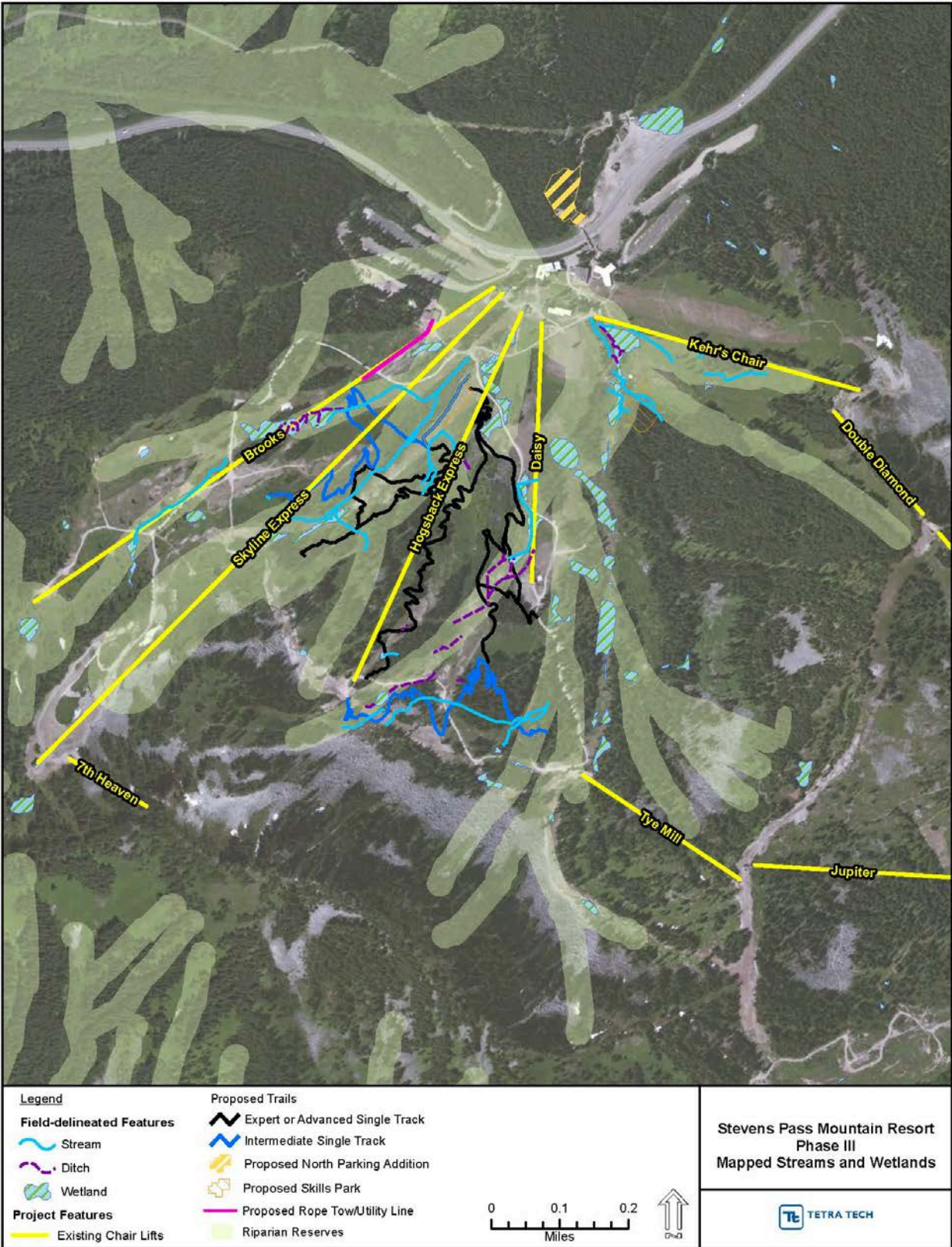


Figure 7.3-2. Mapped Streams and Wetlands

### 7.3.1.2 Sediment Sources and Transport

The high density of streams efficiently delivers sediment from surface erosion, bank slumping, and mass failures (mostly small) downstream to the valley floors where debris fans are common (Forest Service 2004). Surface erosion from exposed soils on ski runs and existing bike trails contribute to the total sediment loading of the Tye River, but their relative contribution to the entire load is negligible. Roads within the Tye River watershed appear to be one of the major sources of sediment, as evidenced by road surveys and past mass failures in Alpine and Martin creeks, and drainages on the south side of Beckler Peak and Alpine Baldy (Forest Service 2004). Sand and rock are applied to Highway 2 during winter and some of this material enters the river acting as a chronic source of input, resulting in high amounts of silt in the upper reaches of the mainstem of the Tye River (Forest Service 2004). Access roads within the ski area are likely the primary source of sediments from within the ski area.

Within the ski area, snow and debris avalanches are the major natural contributors to sediment (Forest Service 2004); additionally, avalanche control occurs within the SPMR. The only major avalanche tracks in the developed ski area stem from Tye Bowl and Cowboy Ridge and do not reach either Tye Creek or Barrier Creek (Forest Service 2004). Minimal stream buffers, surface erosion from ski trails, and bank slumping are all potential sources for sediment delivery to the streams within this subwatershed (Forest Service 2004). Based on field observations, the existing bike trails are a source of fine sediments as direct runoff from the trail surface delivers fine pulverized soil to nearby stream crossings. Use of the bike trail results in dust, and rain events produce surface runoff that deliver the dust to streams.

### 7.3.1.3 Water Quality

The Washington State Department of Ecology is currently drafting the Freshwater Water Quality Assessment with data collected prior to May 1, 2011. The Freshwater Water Quality Assessment will result in the candidate 303(d) list for freshwater. The previous Water Quality Assessment that included freshwater data was approved by the U.S. Environmental Protection Agency in 2009. This “integrated report” was prepared to meet the Clean Water Act requirements of sections 305(b) and 303(d). Category 5 represents the state’s 303(d) list of impaired waters needing a Total Maximum Daily Load (TMDL). There are no Category 5 waterbodies within the survey area or within SPMR Permit Area; however, 303(d) listing would only occur as a result of monitoring and does not guarantee that there are no water quality problems. A Category 4a stream has a TMDL in place and is actively being implemented.

Nason Creek, downstream of the Permit Area on the east side, has been listed as a Category 4a for temperature exceedances (Ecology 2008, 2012). This listed segment of Nason Creek is approximately 2 miles downstream of the proposed parking lot.

Water quality in the Tye River watershed is largely considered to be in good condition with a few identified limiting conditions. Historic logging and road building in the area are the historic sediment sources while roads are the contemporary sediment source. The nearest listed west-side waterbody segment is approximately 54 miles downstream of the Permit Area near Monroe where the Skykomish River has been listed as Category 5 for temperature and dissolved oxygen exceedances (Ecology 2008, 2012). Temperature is a concern in the middle reaches of the mainstem Tye (between Alpine and Deception Falls, approximately two river miles), where riparian vegetation has been removed by timber harvest, powerline corridor maintenance, and highway construction (Forest Service 2004).

The risk of increasing turbidity in streams located within the SPMR was a concern during construction and operation of the existing bike trails. As a result, turbidity was monitored in Brooks Creek and Tye Creek in four locations near the base area from 2010 to 2013 during summer and fall (SPMR 2013c). One location was on Brooks Creek upstream of the confluence with Tye Creek, and a second location was at the confluence of Tye Creek and Brooks Creek. The other two locations were on Tye Creek; one just

northwest of the ski school and the other east of the ski school. Data were collected prior the start of construction in October 2010 to establish baseline turbidity in the creeks. Turbidity in October 2010 ranged from less than 1 nephelometric turbidity unit (NTU) to 4.5 NTUs during weekly monitoring of all four locations. Monitoring during construction of the bike trails was collected weekly from July to October 2011 and turbidity ranged from less than 1 NTU to 3.6 NTUs. Turbidity data was collected weekly during operation of the bike park in 2012 and 2013. Turbidity levels ranged from less than 1 NTU up to 1.8 NTUs in 2012 and from less than 1 NTU up to 2.4 NTUs in 2013. Notably, turbidity levels prior to, during, and after construction have remained below 5 NTUs during summer and early fall months in Tye Creek and Brooks Creek. These levels remained below the Washington State water quality standards for freshwater streams (for salmonid habitat) during construction and operation of the bike park.

#### **7.3.1.4 Wetlands**

Several palustrine emergent and scrub-shrub wetlands occur in the SPMR Permit Area. While some are relatively undisturbed; the majority of wetlands in the Permit Area have been disturbed or altered due to ski trail and ski area development. Specifically, grading for ski run development appears to have spread out surface hydrology and increased the surface area of poorly developed wetlands (Tetra Tech and Battelle 2005). The majority of wetlands in the area are rated as Category III wetlands indicating that they are wetlands that have generally been disturbed in some way, often are less diverse or more isolated from natural resources (than Category I or II wetlands), and have moderate level of functions (Tetra Tech and Battelle 2005).

Field surveys in August 2013 verified the locations of previously mapped wetlands by Tetra Tech in 2008, adjusted the boundary of existing wetlands to document changes, and identified new areas of new palustrine emergent/scrub-shrub wetlands. The locations of wetlands are shown on Figure 7.3-2. There are wetlands in the vicinity of the proposed bike trails that are not directly crossed but are adjacent and within the construction disturbance zone. There are wetlands within the bike skills park 2 along a stream, and wetlands within the Kehr's and Brooks chairlift survey areas. All wetlands are highly disturbed due to ski-run maintenance and are classified as Category III wetlands.

#### **7.3.1.5 Riparian Reserves**

Within the Tye River watershed, there are over 30,000 acres of Riparian Reserves. The extent of vegetative disturbance in the Upper Tye subwatershed is largely due to permanent facilities associated with U.S. Highway 2 and SPMR. Much of the riparian reserve system associated with Tye and Barrier Creeks lacks adequate shading and large woody debris (LWD) recruitment, and is fragmented mainly due to ski area development and ski area maintenance (Forest Service 2004). The locations of aquatic features were defined through the field surveys, and the Riparian Reserves were mapped within the survey area. Riparian Reserves were mapped based on criteria in the Northwest Forest Plan (Forest Service and BLM 1994). There are approximately 141 acres of Riparian Reserves within the permit area, although about 113 acres (80 percent) of these Riparian Reserves are currently developed or modified.

### **7.3.2 Direct and Indirect Effects**

#### **7.3.2.1 No Action Alternative**

Under the no action alternative, ongoing maintenance operations would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Managed winter recreation would continue along with ongoing summer maintenance programs and recreational use on hiking and bike trails. There would be no change to the existing condition or trends.

Because activities and facilities would remain as they currently exist, the current flow regime and water quality and temperature conditions would be expected to continue. Soil and vegetation disturbances would remain similar to what they are today throughout the analysis area and the stream network would continue to effectively transport sediments to lower reaches. Because the no action alternative represents the continuation of existing activities, with no additional acres of disturbance to Riparian Reserves, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

### **7.3.2.2 Proposed Action**

The Proposed Action has the potential to affect water quantity or quality. Effects may be temporary (ranging from hours or days to a couple of years) or permanent (lasting throughout the remainder of the permit term [34 years]) and potentially beyond. Temporary impacts may occur from increased sediment and turbidity as a result of construction disturbance. Permanent impacts are those that retard or prevent the attainment of the Aquatic Conservation Strategy Objectives (Northwest Forest Plan, p. B-11).

#### ***Bike Trails***

There would be no modification to the stream network resulting from bike trail construction. While there are 24 proposed stream crossings, all perennial streams would be crossed using wood bridges. On water courses where seasonal flow is expected but permanent water is not present, culverts or bridges would be used based on site-specific conditions (e.g., width of watercourse and riparian habitat, entrenchment, and bike course considerations). New bridges and culverts would be designed to accommodate at least the 100-year flood, including associated bedload and debris. Crossings would be constructed near perpendicular to the stream to minimize impacts and be maintained to prevent diversion of streamflow out of the channel. Trail drainage would be managed on the approaches to stream crossings to prevent sediment-laden water from entering streams by routing drainage to the forest floor.

Small vegetation (under 6 inches dbh) would be cleared for trail construction; however, the 4- to 9-foot-wide trail would be built around larger vegetation. This minimal amount of clearing would not measurably alter the forest canopy, flow regimes, sediment transport, stream temperatures, or LWD supply in the analysis area; effects to the watershed as a whole would be far less. These processes would remain within the existing range of natural variability.

**Table 7.3-1. Acres of Habitat in the Proposed Action**

Habitat Type	Acres of Disturbance												
	Bike Trails		Skills Park <sup>1/</sup>	Skills Park <sup>2/</sup>	Kehr's Chairlift		Brooks Chairlift		Rope Tow		Parking Lot	Total	
	Const <sup>2/,3/</sup>	Oper <sup>1/</sup>	Const/Oper <sup>5/</sup>	Const/Oper <sup>5/</sup>	Const <sup>3/</sup>	Oper	Const <sup>3/</sup>	Oper	Const <sup>3/</sup>	Oper	Const/Oper <sup>5/</sup>	Const <sup>3/</sup>	Oper
Forest <sup>4/</sup>	4.7	1.8	0	0.8	0.7	<0.1	0.3	<0.1	--	--	1.7	8.2	4.5
Shrub-natural	0.8	0.3	--	--	--	--	--	--	--	--	--	0.8	0.3
Shrub-modified	5.4	2.0	0.9	0.5	1.5	<0.1	1.8	<0.1	<0.1	<0.1	<0.1	10.2	3.4
Wetland	<0.1	<0.1	--	<0.1	--	--	0.1	<0.1	--	--	--	0.2	<0.1
Talus	<0.1	0	--	--	--	--	--	--	--	--	--	<0.1	--
Developed	0.7	0.3	<0.1	--	0.3	<0.1	0.6	<0.1	<0.1	<0.1	0.3	2.0	0.7
<b>Total</b>	<b>11.7</b>	<b>4.4</b>	<b>0.9</b>	<b>1.3</b>	<b>2.5</b>	<b>0.1</b>	<b>2.7</b>	<b>0.1</b>	<b>0.2</b>	<b>&lt;0.1</b>	<b>2.1</b>	<b>21.4</b>	<b>8.9</b>
Late Successional Forests <sup>6/</sup>	4	1.5	0	1.1	0.5	<0.1	0.2	<0.1	0	0	0.8	6.7	2.6

## Notes:

<sup>1/</sup> Acres of permanent disturbance due to mountain bike trails assumed an average width of 9 feet for single-track trails based on conservative measurements of existing trails.

<sup>2/</sup> This is the maximum area in which temporary disturbance would occur, based on conservative construction corridor estimates of 25 feet. Actual disturbance would be less in places.

<sup>3/</sup> Construction disturbance includes the footprint for operation disturbance. Permanent disturbance is a subset of the construction disturbance, and the two values should not be summed. Does not include unmapped temporary construction access roads and pads that would be determined during final design and reviewed by Forest Service specialists prior to approval of construction plans.

<sup>4/</sup> Approximately 6.7 acres of forest in the Proposed Action is late successional.

<sup>5/</sup> Assumes equal construction and operation disturbance.

<sup>6/</sup> Approximately 6.7 acres of forest in the Proposed Action is late successional; however, 4 acres would be for bike trail construction which would require minimal tree clearing.



There are two wetlands located within the proposed advanced trail disturbance area. Both wetlands are emergent/scrub-shrub wetlands that are mowed annually as part of the ski slope maintenance. Review of the preliminary trails as laid out indicates minimal disturbance to wetlands (less than 0.1 acre). To avoid impacts to these wetlands, the bike trails would be rerouted outside of the wetland boundary but still located within the survey corridor. Wetlands along the proposed bike trail routes can also be avoided by spanned bridges; thus, no permanent disturbance to wetlands would occur due to the proposed bike trails. Indirect effects to wetlands would be minimized by routing drainage from the trail into upland areas and not directly into wetlands.

Indirect impacts from bike trail clearing and construction, including the operation of light and heavy equipment and trail use, would include an increase in soil erosion potential throughout the affected area, which could increase fine and suspended sediment loads in streams if allowed to enter the waterbodies. Many of the mitigation measures and project design features identified in Appendix A would minimize Project-generated sediments from reaching streams, including the development of a Project-specific stormwater pollution prevention plan (SWPPP) to be submitted to and approved by the Forest Service prior to any ground-disturbing activities. During construction, Project design features would minimize effects to water quality, and minor effects occurring during construction would be temporary. Minor impacts to water quality may occur during operation due to sediment generated from trail use; however, trail drainage would be managed to prevent sediment-laden water from entering streams by routing drainage to the forest floor. Any residual sediment that could potentially reach waterbodies as a result of operations would be indistinguishable from background sediment, within the range of natural variability, and no measurable direct or indirect effects are anticipated.

### ***Skills Parks***

Skills Park 1 does not include any stream channels within the survey area; however, Barrier Creek is located just west of Skills Park 1 and the adjacent proposed intermediate trail (Figure 7.3-2). The slope to Barrier Creek is steep and reinforced by boulders, with riparian vegetation remaining consisting of shrubs and trees. Best management practices (BMPs) would be implemented to minimize erosion and sediment transport into the stream during and after construction. Skills Park 2 encompasses an area with stream channels and wetlands as well as ephemeral drainages without established channels (not mapped). Less than 0.1 acre of wetlands could be disturbed due to construction of features in Skills Park 2. However, trails leading to and from skills park features would be built to avoid or span stream channels and wetlands, thus avoiding direct impacts to wetlands and streams. BMPs and mitigation measures would be implemented to minimize indirect effects to wetlands by routing stormwater to the forest floor rather than to a stream or wetland.

### ***Kehr's Chairlift Replacement***

There are several ephemeral streams located within the Kehr's chairlift survey corridor. However, these can be easily avoided during construction for placement of towers to avoid impacts to streams. There is a palustrine emergent/scrub-shrub wetland located within the Kehr's chairlift survey corridor adjacent to the lower terminal. It is within the area that is mowed annually as part of the ongoing ski slope maintenance. However, it is not anticipated that temporary construction disturbance (nor permanent disturbance) would extend into the wetland area.

### ***Brooks Chairlift Replacement***

Approximately 0.1 acre of wetland is located within the Brooks chairlift temporary disturbance area due to new tower placement. If possible, the new towers will be located outside of the wetland boundary to avoid impacts. If wetland disturbance is unavoidable, SPMR would notify the Forest Service and is required to demonstrate compliance with the CWA. For impacts less than ½ acre, Nationwide Permit

Number 42, Recreational Facilities, would apply and require preconstruction notification to the U.S. Army Corps of Engineers.

Impacts to palustrine emergent /scrub-shrub wetlands are considered temporary in nature as topsoil would be preserved, hydrology would not be altered, and herbaceous vegetation would generally regenerate within one to three years. A wetland vegetation seed mix would be distributed on all disturbed wetlands to facilitate herbaceous growth. Thus, the disturbed wetlands would rapidly transition back into wetland communities with vegetation and functionality similar to the original wetlands prior to construction activities. The effects to wetlands would be greatest during and immediately following construction. Typically it could take several years for a scrub-shrub wetland to reach functionality similar to preconstruction conditions due to a longer vegetative recovery for shrubs versus non-woody wetland vegetation); however, the wetlands that would be crossed occur along graded ski trails. Vegetation in these wetlands is highly modified due to ski area maintenance. This maintenance includes trimming shrubs on a yearly or biennial basis so that their height does not exceed 18 inches. Thus, with facilitated regrowth, palustrine scrub-shrub wetlands disturbed by proposed construction would be expected to return to a state similar to that prior to construction within 3 years; however, this could take longer depending on growing conditions.

### ***Rope Tow***

Development of the rope tow would temporarily disturb less than 0.1 acre for two towers located within an existing ski slope and an underground utility line leading from the utility building. No wetlands would be directly disturbed by construction and operation of the rope tow because the tow is mostly located in the developed ski run or parking area for the utility building. Although a minimal area of vegetation within the riparian buffer of an existing wetland would be disturbed during construction of the towers, existing vegetation within the buffer area is already disturbed by annual mowing for ski slope maintenance. Mitigation measures would be implemented to minimize effects to nearby wetlands by routing stormwater to the forest floor and away from the wetland.

### ***Parking Lot***

During winter, the parking lot would be extensively utilized and likely reach capacity during peak use periods. Snow would be blown off into adjacent forest or plowed to existing cleared areas. Some underlying material (such as sand and gravel) could be removed from the area along with the snow. As the snow melts, any sand and gravel that was removed from the parking area with the snow would run off. There are no nearby streams that would receive the sediment-laden runoff. The parking lot would be designed to control runoff, such that there would be no alteration of peak and base flows in area streams and sediment would be captured. There are no wetlands or streams located within the parking area expansion, and therefore there would be no impacts to these resources as a result of the construction and operation of the parking area.

### ***Water Quality***

The use, maintenance, and refueling of heavy and light equipment has the potential to impact water quality should fuels, oils, or other chemicals be spilled or mishandled. To prevent degrading water quality, there would be no refueling of equipment within Riparian Reserves unless it occurs in an existing facility already approved for such a use for ongoing maintenance and operations. A project-specific spill prevention and response plan would be developed and included in the SWPPP. Implementation monitoring by SPMR and the Forest Service would include monitoring compliance with these plans.

Stormwater runoff from parking lots can contain metals and petroleum-based contaminants from car engine leaks. These contaminants adhere to fine soil particles, which then get carried away by stormwater flows. The parking lot design will include a catch basin to collect sediments and allow for settling out of

solids so that any water running out into the forest floor would not contain contaminants. There are no streams adjacent to the parking lot that would be at risk to receiving parking lot runoff directly.

Stormwater runoff from cleared areas adjacent to streams such as bike trails could increase turbidity in streams, thereby degrading the water quality. Prior monitoring of stream turbidity has indicated that the streams near the base area of SPMR have turbidity levels below 5 NTUs. Bike trails would be designed to either avoid streams or use a bridge or culvert to cross streams or ditches. During construction, project design features would minimize effects to water quality, and minor effects occurring during construction would be temporary. Minor impacts to water quality may occur during operation due to sediment generated from trail use; however, trail drainage would be managed to prevent sediment-laden water from entering streams by routing drainage to the forest floor. Any residual sediment that could potentially reach waterbodies as a result of operations would be indistinguishable from background sediment, within the range of natural variability, and no measurable direct or indirect effects are anticipated.

Small short-term increases in suspended sediment are expected following culvert placement with the first rain event. Many of the BMPs and mitigation measures presented in Appendix A would prevent or limit Project-generated sediments from reaching streams, including the development of a Project-specific SWPPP to be submitted to and approved by the Forest Service prior to any ground-disturbing activities. The SWPPP would identify erosion and stormwater control measures for construction of the proposed project.

The nearest 303(d) listed waterbody segments are approximately 2 miles downstream in Nason Creek and approximately 54 miles downstream in the Skykomish River, far outside the influence of this Project. Therefore, the Proposed Action would have no effect on 303(d) listed waterbody segments.

### **7.3.3 Cumulative Effects**

The ground where the base area proposed projects are located has been previously disturbed and landscaped during the construction of the base area lodges, plazas, pathways, and infrastructure. There are approximately 36 acres of bare ground due to existing access roads, parking lots, hiking trails, and biking trails within the SPMR Permit Area. The area is partly vegetated with few small trees along with minor shrubs and grasses. The reasonably foreseeable projects located at the base area (lodge, ski school, ski patrol building, and plaza) are located outside of the Northwest Forest Plan Riparian Reserves. One other project is identified within Riparian Reserves of the Tye River watershed, the Alpine Falls Trail Construction project. Surface water drainage in the open mowed areas is dispersed across the ground to allow capture of sediment by vegetation and debris prior to reaching surface water or wetlands. Due to the amount of clearing and impervious surface added at the base area from prior development, there has been a change in runoff characteristics from pre-development conditions. The addition of impervious surface due to the increase in building or heated plaza at the base area from the proposed project and reasonably foreseeable projects would not result in a substantial difference to the already altered stormwater conveyance. The addition of a zip line within the trees and associated platforms will have a nominal effect on hydrological resources.

Use of the exposed earth bike trails can result in increased sediment transport and runoff into stream systems. The Proposed Action would create about 4.4 acres of additional bike trails, much of which would be bare ground and would contribute to erosion and sedimentation to some degree; however, implementation of the mitigation measures presented in Appendix A would prevent or limit Project-generated sediments from reaching streams, and no measurable direct or indirect permanent effects are anticipated from the Proposed Action.

The area of Riparian Reserves in the Proposed Action covers about 0.01 percent of the of Riparian Reserves within the Tye River Watershed. The Alpine Falls Trail Construction project would be located

several miles downstream of SPMR and involves development of about 220 feet of accessible trail, 535 feet of hiking trail, two small viewing platforms, and stairs, most of which would be within Riparian Reserves. Cumulatively, the construction of trails within the ski area and increase of bare ground acreage creates an increase of sediment loading into nearby streams and conveyance of water creates a more extreme flow regime. As more trails and roads are built, the stream network is extended, conveying more water downhill through culverts rather than allowing for sheeting and infiltration. As a result, there is a potential for an increase in high water flows during storms and lower flows in summer without the same volume of groundwater available for recharge. However, the change in flows would likely be immeasurable at the watershed scale (352 square miles). Disturbance would be minimized by revegetating disturbed areas alongside constructed trails, and BMPs would be implemented to minimize effects to water quality by reducing the potential sediment input into streams.

### **7.3.4 Forest Plan Consistency**

The Proposed Action would be consistent with MBS Forest Plan standards and guidelines, for soil and hydrology resources as follows:

- Maintain the bank, flood plain, and shore stability of all wetlands, streams, lakes, and other bodies of water (Forest Service 1990a, p. 4-119). Maintained by the measures identified in Appendix A, including measures to protect stream bed and banks, avoid wetlands disturbance where feasible, and cross water bodies using culverts or bridges.
- Large woody material (plus trees) needed to meet the desired condition shall be maintained and managed to: (1) maintain water quality in streamside management units of all streams at existing levels, and (2) maintain fish habitat at existing levels (Forest Service 1990a p. 4-119). While the current condition provides low potential for large woody material for recruitment, the proposed developments would not alter this. Requirements to avoid or minimize tree removal associated with bike trail development and leave cut trees in Riparian Reserves would maintain current conditions.
- Maintain in-channel and streambank stability for upper and lower channels in the Forest watersheds in order to provide stable, high-quality habitat for salmon and trout, and provide high quality water for other in-stream beneficial uses (Forest Service 1990a, p. 4-119). Beneficial uses include aquatic life, recreation, water supply, and miscellaneous uses (Washington Administrative Code 173-201A-200). Existing uses would be maintained by the mitigation measures identified in Appendix A, including measures to protect stream bed and banks, limit erosion/sedimentation, and cross waterbodies using bridges.
- Water quality shall be maintained or enhanced through application of BMPs (Forest Service 1990a, p. 4-126), and by the measures identified in Appendix A, including measures to limit erosion/sedimentation and require spill prevention and stormwater control plans.
- Key Watersheds (Forest Service and BLM 1994, p. C-7): Watershed analysis is required prior to management activities within key watersheds, except minor activities such as those Categorically Excluded under NEPA. The Tye River watershed was the first drainage on the MBS to have watershed analysis completed. The Tye River Watershed Analysis (Forest Service 1994) compares historic and more recent conditions, describes how these ecosystems have functioned through time, and describes how they are likely to function in the future. The proposed parking lot is within the Upper Tye subwatershed, part of the Tye River Tier 1 Key Watershed; however, the Proposed Action would not cause a net increase of roads because the increase in road from proposed parking lot is offset by previously decommissioned roads within the watershed.
- Recreation Management (Forest Service and BLM 1994, p. C-34): New recreational facilities within Riparian Reserves, including trails and dispersed sites, shall be designed to not prevent meeting Aquatic Conservation Strategy objectives. The Aquatic Conservation Strategy objectives will be attained by implementing actions with the measures identified in Appendix A, including measures to



limit erosion/sedimentation and require spill prevention and stormwater control plans. By designing trails within Riparian Reserves to maintain vegetation over 6 inches dbh (thus preserving forested canopy), cross streams perpendicular, bridge perennial streams, and shed runoff onto the forest floor before reaching streams, the objectives would be maintained.

- General Riparian Area Management (Forest Service and BLM 1994, p. C-37): Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives. To the extent practicable, any trees that must be felled during trail construction will be left in place.

See Section 7.7.4 for a review of Aquatic Conservation Strategy objectives.

## 7.4 Soils

This section describes the soil resources within the survey area. The survey area includes a minimum of 100-foot buffer surrounding all proposed features. Soil types within the survey area were identified using Natural Resources Conservation Service (NRCS) soil classification, NRCS Paths and Trails Suitability rating, and GIS.

The disturbance area is the area of surface disturbance associated with construction of proposed features. The actual extent of soil disturbance would be limited to the area directly affected by Project construction. Soil disturbance, for the purpose of this analysis, is measured in acres of temporary disturbance due to construction and acres of permanent disturbance due to operational features including bike trails, skills parks, chairlift towers, and parking lot. Existing mountain bike trails at SPMR were surveyed to determine trail footprints.

### 7.4.1 Existing Conditions

Stevens Pass was glaciated by mountain glaciers, and the river and stream valleys are lined with fine and coarse deposits from glacial drift and till. Most of the soils within the SPMR are very shallow and subject to frequent abrasion by avalanching (Forest Service 1994). Some of these glacial soils are highly erosive and susceptible to slumping and failures (Forest Service 2004). Soils within the SPMR are generally thin, rocky, sandy loams developed in a parent material of weathered granodiorite and granitic metamorphic rock, colluvium, and minor glacial till. The resistant colluvium and rock limit the impact from altered channel courses which minimizes gully formation.

The NRCS provides a suitability rating for paths and trails for hiking and horseback riding throughout the survey area (NRCS 2013). The suitability for paths and trails ratings considers development of trails based on soil properties that affect trafficability and erodibility (NRCS 2013). These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer. Another suitability rating provided by the NRCS is for off-road motorcycle trails. Off-road motorcycle trails require little site preparation and are not covered with surfacing material or vegetation, and considerable compaction of the soil material is likely (NRCS 2013). The soil properties considered for motorcycle paths are the same as those considered for the rating for hiking paths (stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer). However, soil properties are also considered for dustiness and ease of vegetation. Table 7.4-1 describes each soil type within the Project area and lists the suitability ratings.

**Table 7.4-1. Soils That May Be Affected by the Proposed Action**

Map Unit No.	Main Soil Type	Typical Slopes (%)	Hiking Path Suitability /Reason	Motorcycle Suitability/ Reason	Features
4	Altapeak Gravelly Sandy Loam	8-30	Very limited / slope	Not Limited	Rope Tow, Bike Trails, and Chairlifts
5	Altapeak Gravelly Sandy Loam	30-65	Very limited / slope	Very limited / slope	Rope Tow, Bike Trails, and Chairlifts
37	Chinkmin Sandy Loam, cold	0-15	Not limited	Not Limited	Brooks chairlift
223	Rock Outcrop-Rubble Land-Serene Complex	45-90	Very limited / slope, large stone content	Very limited / slope, large stone content	Bike Trails
232	Serene Gravelly Sandy Loam	8-30	Somewhat limited / slope	Not Limited	Bike Trails and Chairlifts
233	Serene Gravelly Sandy Loam	30-65	Very limited / slope	Very limited / slope	Parking Lot and Bike Trails
246	Rubble Land-Rock Outcrop Complex	-	Not Rated	Not Rated	Kehr's chairlift
265	Serene gravelly sandy loam	30-60	Not Rated	Not Rated	Parking Lot
266	Serene-Rock outcrop complex	45-90	Not Rated	Not Rated	Kehr's chairlift

Source: NRCS 2013

These ratings are appropriate for mountain bike trail development because the physical impact of mountain bike riding on trails is similar to that of hiking and off-road motorcycle riding. Path and trail suitability in the area includes “not limited,” “somewhat limited,” and “very limited” ratings. Off-road motorcycle trail suitability in the survey area includes “not limited” and “very limited”. “Not limited” indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. “Somewhat limited” indicates the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation; fair performance and moderate maintenance can be expected. “Very limited” indicates the soil has one or more features that are unfavorable for the specified use and may require special mitigation measures; poor performance and high maintenance can be expected (NRCS 2013).

The steep slopes of the ski area are the primary reason for the limited suitability ratings, along with large stone content. While these ratings indicate potential soil concerns with trail development, existing trails also within “very limited” soil units, including mountain bike trails and the PCNST, are managed effectively using standard design and mitigation measures to prevent erosion.

Ground disturbance has occurred and persists throughout the SPMR. Based on the extent of trails, gravel roads, and parking facilities, there is currently an estimated 5.7 acres of bare ground within the survey area. This does not include the talus, bedrock, cliffs, or other localized areas of bare ground that may exist.

## 7.4.2 Direct and Indirect Effects

### 7.4.2.1 No Action Alternative

Under the no action alternative, there would be no additional impact to soils associated with construction of the Proposed Action. Soil resources within the survey area would be exposed to the existing levels of

disturbance resulting from normal operation and maintenance activities at the resort, including recreation associated with winter sports and summer recreation associated with current bike trails and hikers along the PCNST, and year-round use of parking lots. Existing bare ground within the survey area (about 5.7 acres) would persist due to ongoing operations. Because the no action alternative represents the continuation of existing activities, with no additional acres of soil disturbance, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

#### **7.4.2.2 Proposed Action**

The Proposed Action involves several different project components. Table 7.4-2 lists the disturbance by feature and soil type.

- Construction of 4.3 miles of mountain bike trails (3.7 miles of single track and 0.6 mile of connecting trails) would result in temporary construction disturbance of approximately 11.7 acres based on a 25-foot disturbance width (approximate based on past experience at SPMR). Permanent operation disturbance would be approximately 4.4 acres based on an average 9-foot disturbance width.
- Construction of two mountain bike skills parks would result in a temporary construction disturbance of approximately 2.3 acres for both areas. As the dirt and wooden features would likely need to be adjusted and moved from season to season, the operation disturbance is conservatively estimated to be the total area of 2.3 acres.

**Table 7.4-2. Acres of Disturbance to Soil Units and Soil Ratings**

Soil Unit <sup>1/</sup>	Acres of Disturbance													Off-Road Motorcycle Suitability / Reason <sup>1/</sup>	Paths and Trails Suitability / Reason <sup>1/</sup>
	Bike Trails		Skills Park 1	Skills Park 2	Kehr's chairlift		Brooks chairlift		Rope Tow		Parking Lot	Total			
	Const <sup>2/3/</sup>	Oper <sup>4/</sup>	Const/Oper <sup>5/</sup>	Const/Oper <sup>6/</sup>	Const <sup>7/</sup>	Oper <sup>8/</sup>	Const <sup>7/</sup>	Oper <sup>8/</sup>	Const <sup>9/</sup>	Oper <sup>10/</sup>	Const/Oper <sup>11/</sup>	Const <sup>12/</sup>	Oper		
4	1.1	0.4	0.5	<0.1	0.2	<0.1	0.8	0.1	0.1	<0.1		2.8	1.1	Not limited	Very limited / slope
5	2.4	0.9		1.3	1.8	<0.1	0.3	<0.1	0.1	<0.1		5.8	2.2	Very limited / slope	Very limited / slope
37							0.3	<0.1				0.3	<0.1	Not limited	Not limited
223	<0.1	<0.1	0.4									0.5	0.4	Very limited / slope, large stone content	Very limited / slope, large stone content
232	<0.1	<0.1					1.4	<0.1				1.5	<0.1	Not limited	Somewhat limited - slope
233	8.0	3.0			<0.1						2.0	10	5.0	Very limited - slope	Very limited - slope
246					0.2	<0.1						0.2	<0.1	Not rated	Not rated
265											0.2	0.2	0.2	Not rated	Not rated
266					0.3	<0.1						0.3	<0.1	Not rated	Not rated
<b>Total</b>	<b>11.6</b>	<b>4.4</b>	<b>0.9</b>	<b>1.3</b>	<b>2.5</b>	<b>0.1</b>	<b>2.7</b>	<b>0.1</b>	<b>0.2</b>	<b>&lt;0.1</b>	<b>2.1</b>	<b>21.4</b>	<b>8.9</b>		

Notes:

<sup>1/</sup> NRCS (2013)

<sup>2/</sup> Includes areas that would remain disturbed permanently.

<sup>3/</sup> Assume construction/temporary width of bike trails is 25 feet.

<sup>4/</sup> Assume permanent/operational width of bike trails is 9 feet.

<sup>5/</sup> Assumes Skill Park 1 has 100% construction and operation disturbance.

<sup>6/</sup> Assumes Skills Park 2 has 100% temporary and 100% permanent soil disturbance.

<sup>7/</sup> Assumes 3,750 square feet per tower construction disturbance for each of the 20 towers. Does not include unmapped temporary construction access roads and pads that would be determined during final design and reviewed by Forest Service specialists prior to approval of construction plans.

<sup>8/</sup> Assumes 4-foot diameter permanent footprint for each of the 20 towers.

<sup>9/</sup> Assumes 3,750 square feet per tower construction disturbance for each of the 2 towers.

<sup>10/</sup> Assumes 4-foot diameter permanent footprint for each of the 2 towers foundations.

<sup>11/</sup> Assumes equal construction and operation disturbance for parking lot.

<sup>12/</sup> Construction disturbance includes the footprint for operation disturbance.



- Replacement of Kehr's chairlift and loading terminal: The temporary construction disturbance would be approximately 2.5 acres. This includes about 0.5 acre for construction of the lower loading terminal, and installing approximately 20 towers (3,750 square feet per tower). The permanent operation disturbance would be less than 0.1 acre for 20 towers (4-foot diameter per tower). The new loading terminal area would not have an increased permanent footprint compared to the current loading area (less than 0.1 acres) for a net of zero acres.
- Replacement of Brooks chairlift and loading terminal: The temporary construction disturbance would be approximately 2.7 acres. This includes about 0.5 acre for construction of each terminal and installing approximately 20 towers (3,750 square feet per tower). The permanent operation disturbance would be less than 0.1 acre for 20 towers (4-foot diameter per tower). The new loading and unloading terminals would not have an increased permanent footprint compared to the current terminals (less than 0.04 acre for the upper terminal and 0.05 acre for the lower terminal) for a net change of zero acres.
- Development of a new rope tow would result in a construction disturbance of about 0.2 acre for two towers (3,750 square feet per tower) and a 3-foot-wide trench (20-foot-wide temporary disturbance) for a utility line. The permanent operation disturbance would be less than 0.1 acre.
- Development of the new parking lot would result in a permanent operation disturbance of 2.1 acres, equal to the temporary construction disturbance area.

Clearing and construction in vegetated areas can result in some displacement, compaction, and erosion of soil; changes in organic matter content; and alteration of the natural sediment regime. Development of the mountain bike trails, skills parks, chairlift replacement, rope tow and parking lot would increase permanent disturbance by approximately 8.9 acres, of which approximately 6.5 acres would be bare ground due to bike trails and the parking lot. This would increase the area of soil subject to erosion. However, the implementation of the mitigation measures and project design features identified below and in Appendix A would greatly reduce impacts due to soil erosion. Regardless of mitigation measures, areas disturbed would also exhibit reduced long-term soil productivity, which would only be of consequence if returning the area back into productive forest land.

### ***Bike Trails***

Construction of the mountain bike trails would result in direct impacts to soils resources by creating up to 4.4 acres of permanent bare ground (as long as the trails are in use and have not been decommissioned and restored). Where the trails would be elevated on bridges or boardwalks wetland or other sensitive areas, vegetative groundcover would be retained, thereby reducing the total acres of exposed soil. The total estimate of soil disturbance includes elevated trail areas because their locations have not been identified and would be determined during final design and trail construction; thus, the total estimated acres of disturbance is conservatively high. Additional temporary disturbance may occur outside of the permanent disturbance area as a result of grading and mechanical equipment operation and maneuvering, but these would not be widespread and would be re-vegetated following construction. While re-vegetation to existing conditions could take several years, effective ground (natural or artificial cover that protects soil from erosion) cover for erosion control would be re-established following construction and maintained through the first year or two while vegetation is re-established. In the time between construction and when effective ground cover could be restored by revegetation, temporarily disturbed areas would be treated by applying erosion control measures such as mulch or other temporary noxious weed-free ground cover. The maximum area in which temporary disturbance could occur would be about 11.6 acres, which includes the anticipated permanent disturbance. This assumes a construction disturbance corridor of up to 25 feet along single-track trails.

Most of the soils in the survey area are rated as “very limited” for trail construction for off-road motorcycle or hiking trail suitability (Table 7.4-1). As noted above, the very limited suitability for trails rating is largely based on terrain slope and soil rock content. Exposed soils on steep slopes are more susceptible to erosion and revegetation may be difficult. Most of the trails would generally be located within 30 to 65 percent sloped terrain. By applying industry accepted construction and design standards and mitigation measures in Appendix A, the limited trail suitability due to slope would likely be overcome and no adverse short- or long-term effects are anticipated due to soil instability (mass wasting or chronic erosion).

SPMR would be required to revegetate temporarily disturbed areas following construction, thus reducing soil erosion by establishing effective ground cover, and report the effectiveness of revegetation efforts in annual reports to the Forest Service. Based on the results of effectiveness monitoring, revegetation efforts could be supplemented or modified until all temporarily disturbed areas have been re-vegetated to acceptable levels and the Forest Service gives final approval. Localized areas of short-term erosion lasting a couple of years could occur in the temporary disturbance area, but it would be mitigated by the application of mulch or other temporary noxious weed-free ground cover. In the long term (as long as the trails are in use), some erosion could occur along the exposed surfaces created by the bike trails. This erosion can be minimized through trail design techniques that route surface water off trails and away from aquatic resources. During operations, SPMR and the Forest Service would periodically monitor trail conditions and address developing erosion issues (e.g., drainage control or trail resurfacing). With the implementation of mitigation and monitoring measures in Appendix A and the requirement for demonstration of successful revegetation, the soil erosion risks would be mitigated.

Localized, shallow compaction of the soil would occur along the permanently disturbed trails that would be subject to mountain bike traffic, similar to other developed recreation trails. Localized compaction could also occur where heavy equipment is operated for trail construction or maintenance, especially during wet conditions. Compaction would be minimized by restricting heavy equipment use during wet periods. Soil compaction due to mountain bike traffic would not occur where the trail incorporates elevated structures, bridges, pathways, boulders, or other similar features that remove the mountain bike traffic from the soil surface.

Periodic monitoring during construction and operation of the trails would allow for early detection and control of soil erosion. Monitoring would be conducted during construction and operation by a Forest Service hydrologist, fisheries biologist, the SPMR permit administrator, or their representative. This monitoring would determine if all of the mitigation measures required were properly enacted and completed, and would trigger corrective actions if all measures are not properly in place or if unplanned deficiencies are identified. Mitigation measures are included in Appendix A, including the requirement for drainage structures to adequately control runoff and erosion.

### ***Skills Parks***

The proposed skills parks would be placed in the lower gradient slopes near the resort facilities and would require new ground disturbance for the placement of skills parks features. Skills Park 1 would primarily consist of dirt features constructed from soil brought in and placed on top of the existing ground, which is currently a ski run. Due to the need to move in dirt to create the features, flatten out the features at the end of the season, and build up the dirt features at the start of each season, it is assumed that the entire area within the skills park would be disturbed, if not in the first year, in subsequent years. As a result, approximately 0.9 acre would be disturbed for Skills Park 1. BMPs would be maintained annually to control sediment transport.

Skills Park 2 would primarily consist of elevated wooden features that would remain in place during the ski season. Skills Park 2 is located in a forested area that has been cleared of small trees and shrubs for glading (skiing). Ground disturbance in this area for approaches to features and back to the beginner trail would result in soil disturbance and removal of vegetation. Due to the potential need to relocate wooden features between seasons, this analysis assumed that the entire area may be disturbed after subsequent years of use for the purpose of estimating the disturbance area; however, the forested stand would be maintained throughout operations and much of the area may not be affected by bike trails at all. Therefore, this analysis assumes that up to approximately 1.3 acres may be disturbed through several years of bike park operation (maximum extent). Stormwater and erosion control measures would be included in design and operation of the skills parks to minimize effects.

### ***Kehr's Chairlift Replacement***

Replacement of Kehr's chairlift and loading terminal would temporarily disturb approximately 2.5 acre, including the 0.5 acre to reconstruct the lower loading terminal. Soils disturbed during tower placement and loading area construction would be restored and revegetated immediately following construction. No permanent impacts are anticipated beyond the direct effects of shallow excavation and the placement of the structures themselves, which would result in less than 0.1 acre of permanent ground disturbance for the towers, and no net difference for the terminal, which currently has a permanent footprint of less than 0.1 acre.

### ***Brooks Chairlift Replacement***

Replacement of Brooks chairlift and terminals would temporarily disturb approximately 2.7 acres, which includes temporary construction disturbance at each of the terminals (less than 0.04 acre for the upper terminal and 0.05 acre for the lower terminal). Soils disturbed during tower placement and loading and unloading area construction would be restored and re-vegetated immediately following construction. No permanent impacts are anticipated beyond the direct effects of shallow excavation and the placement of the structures themselves, which would result in less than 0.1 acre of permanent ground disturbance, with no net difference in the permanent footprint of the terminals compared to the existing terminals.

### ***Rope Tow***

Development of the rope tow would temporarily disturb approximately 0.2 acre for two towers and an underground utility line leading from the utility building. Soils disturbed during tower placement and trenching for the utility line would be restored and revegetated immediately following construction. No permanent impacts are anticipated for the utility trench, so permanent operation disturbance for the two towers would be minimal at less than 0.1 acre.

### ***Parking Lot***

Development of the new parking lot would disturb approximately 2.1 acres during construction, which will remain permanently disturbed during operation. Stormwater and erosion control measures would be included in design and operation of the parking lot.

Indirect effects to soil may result from increase soil erosion where runoff flows from the parking lot is concentrated and not adequately controlled. Measures included in Appendix A, notably the requirement for drainage structures, are expected to adequately control runoff, erosion, and delivery of sediment-laden water to aquatic resources. Monitoring during construction and operation of the parking lot would allow for early detection and control should problems develop.

In all aspects of construction, the successful implementation of the measures in Appendix A is essential to limiting impacts to soils resources. While it is anticipated that there would be some impacts (e.g., compaction, rutting, and erosion), the impacts would be minimized through the implementation of BMPs.

Implementation monitoring by SPMR and the Forest Service would identify areas where project design features need to be modified or where additional measures would be required.

In total, the Project would result in up to 21.4 acres of temporary disturbance and up to 8.9 acres of permanent disturbance. Soils disturbance due to Project construction would be temporary and restoration would limit the disturbance to a couple of years following construction (when effective ground cover would be restored by revegetation) or less considering the application of temporary ground cover. Very minor soil disturbance would continue while the Project facilities are in use, but the effects would be limited and be addressed with operational maintenance.

### **7.4.3 Cumulative Effects**

The ground where the base area proposed projects are located has been previously disturbed and landscaped during the construction of the base area lodges, plazas, pathways, and infrastructure. The area is partly vegetated with few small trees along with minor shrubs and grasses. The reasonably foreseeable projects located at the base area (lodge, ski school, ski patrol building, and plaza) are located outside of the Northwest Forest Plan Riparian Reserves. Surface water drainage in the open mowed areas is dispersed across the ground to allow capture of sediment by vegetation and debris prior to reaching surface water or wetlands. Due to the amount of clearing and impervious surface added at the base area from prior development, there has been a change in runoff characteristics as compared to predevelopment conditions. The addition of impervious surface due to the increase in building or heated plaza at the base area from the Proposed Action and reasonably foreseeable projects would be a small percentage of the existing impervious surface and would be designed to control erosion and runoff; therefore, hydrologic conditions would be within the normal range of variability and not result in a substantial difference to the already altered stormwater conveyance.

The ground disturbance in the areas of the existing bike trails and ski slopes is large compared to the ground disturbance that would be added by the Proposed Action and reasonably foreseeable projects such as the zip line. The addition of a zip line within the trees and associated platforms would have a nominal effect on soil resources because the footprint would be very small and therefore the cumulative effects would not be substantially different from the effects discussed for the Proposed Action.

There are approximately 36 acres of bare ground due to existing access roads, parking lots, hiking trails, and biking trails within the SPMR Permit Area. Use of the bike trails can result in increased runoff into channelized system, with an increase in sedimentation into streams. The Proposed Action would result in 6.5 additional acres of permanent bare ground. Cumulatively, the construction of trails within the ski area and an increase of bare ground acreage could potentially create an increase in soil erosion. Short-term effects to the distribution of sediment during construction would be avoided with the proper application of BMPs to be included in the SWPPP (see Appendix A). No trees would be dropped in or across stream channels and no fallen trees would be yarded across waterbodies. Stream crossings would be constructed near perpendicular to the stream to minimize impacts and maintained to prevent diversion of streamflow out of the channel. Trail drainage would be managed on the approaches to stream crossings to prevent sediment-laden water from entering streams by routing drainage to the forest floor. All stream crossings would be designed to accommodate at least the 100-year flow, including associated bedload and debris.

### **7.4.4 Forest Plan Consistency**

The proposed Project would be consistent with Forest Plan Standards and Guidelines, as amended, for the soil resource:

- Soil Standard and Guideline (Forest Service 1990a, p. 4-117): “Plan and conduct land management activities so that soil loss from surface erosion and mass wasting, caused by these activities, will not



result in an unacceptable reduction in soil productivity and water quality.” With implementation of BMPs and mitigation measures listed in Appendix A, soil loss would be maintained in the existing condition, within the natural range of variability.

## 7.5 Botany and Vegetation

The survey area for botanical resources includes all land disturbed by the proposed activities, plus a buffer of 100 feet from the edge of all proposed activities<sup>1</sup>. Prior to conducting field surveys, a list of target plant species was compiled for the proposed Project area. This list includes plant species on the Forest Service Region 6 (R6) Regional Forester’s Sensitive Species List documented or suspected on the MBS and OW (Forest Service 2011), and species from the Forest Service R6 Survey and Manage Categories A and C lists (Forest Service 2001). Target lists can be found in Appendix A of the Botanical Resource Report as part of the Natural Resource Information System plant survey form for the Project area. In addition, a pre-field review of the proposed Project area, based on MBS Botany Program GIS layers and the most recent update of the Forest Service’s Natural Resource Information System Threatened, Endangered, and Sensitive Plants database, was completed by Laura Potash on August 9, 2013, and provided to the survey botanists. This pre-field review included four plant species known from near the Project area. A full list of vascular and non-vascular plants encountered during the survey is provided in Appendix B of the Botanical Resource Report.

### 7.5.1 Existing Conditions

The bike park expansion and chairlift replacements would be located within or adjacent to areas currently utilized as ski runs or chairlifts. The new parking area would be located near the existing Lot C north of U.S. Highway 2. A portion of this new parking area has already been disturbed from an existing transmission line right-of-way and an existing parking area for cabins.

#### 7.5.1.1 General Vegetation

Vegetation within the proposed Project area includes montane mixed forest, wetlands, riparian areas, talus and cliff, human-modified shrub communities along ski runs, and disturbed areas (roads, equipment storage areas, other trails, and areas near buildings and chairlift bases).

Patches of montane mixed forest, dominated by Pacific silver fir (*Abies amabilis*), mountain hemlock (*Tsuga mertensiana*), as well as scattered Alaska yellow cedar (*Callitropsis nootkatensis*) and subalpine fir (*Abies lasiocarpa*), occur throughout the proposed Project area, with an open or shrub-dominated understory. Common understory species include several huckleberry species (*Vaccinium* spp.), fool’s huckleberry (*Menziesia ferruginea*), and white rhododendron (*Rhododendron albiflorum*). Although larger conifers are scattered in the proposed Project area, most conifers are less than 20 inches dbh.

Small emergent wetlands occur widely throughout the Project area, often in areas where existing ski runs has altered the hydrology. Dominant species in wetlands include dagger-leaf rush (*Juncus ensifolius*) and other rush species (*Juncus* spp.), as well as a wide diversity of sedge species (*Carex* spp.), slender bog orchid (*Platanthera stricta*), and sticky false-asphodel (*Triantha occidentalis*). Some wetlands also support shrubby willows (*Salix* spp.). In more disturbed wetlands at lower elevations within the proposed Project area, reed canarygrass (*Phalaris arundinacea*), a Washington State list C noxious weed<sup>2</sup>, is common.

<sup>1</sup> The survey buffer for the proposed parking area expansion was approximately 125 feet from the edge of the proposed parking area.

<sup>2</sup> A “Class C” weed is a weed for which control is recommended but not required in the state or in King and Chelan Counties.

Vegetation in open riparian area includes Sitka alder (*Alnus viridis* ssp. *sinuata*), purple and yellow monkey-flower (*Mimulus* spp.), Sitka valerian (*Valeriana sitchensis*), and sedges (*Carex* spp.). There are also riparian corridors in densely forested areas.

Areas of talus and cliff near the top of the Hogsback chairlift (see Figure 7.5-1), at the highest elevations within the proposed Project area, support patches of partridge foot (*Luetkea pectinata*), ferns (e.g., *Blechnum spicant* and *Cystopteris fragilis*), saxifrage (*Saxifraga* spp.) species, and a diversity of mosses and lichens.

Human-modified shrub communities along ski runs, which are regularly mowed to keep vegetation low, include huckleberries, mountain-ash (*Sorbus sitchensis*), Sitka alder, white rhododendron, fool's huckleberry, and spiraea (*Spiraea* spp.). In less shrubby areas, early seral species such as fireweed (*Chamerion angustifolium*), pearly everlasting (*Anaphalis margaritacea*), red fescue (*Festuca rubra*), and several species of bentgrass (*Agrostis* spp.) are common. Cultivars of red fescue and other grass species that have been used for revegetation also occur in this area.

Disturbed areas consist of bare dirt and gravel, or support the early seral species mentioned above. Areas on the lower portions of the ski runs are typically highly disturbed.

#### **7.5.1.2 Noxious Weeds**

Five Washington State listed noxious weeds were observed in the proposed Project area. Four of these are Class C weeds<sup>2</sup>: reed canarygrass, oxeye daisy (*Leucanthemum vulgare*), common tansy (*Tanacetum vulgare*), and common catsear (*Hypochaeris radicata*). All but common catsear were commonly found on the lower third to quarter of the ski runs, and around the base area. Common catsear occurred in these areas, but in lower numbers. A large population of oxeye daisy was also observed at the top of the Brooks chairlift.

Several populations of tall hawkweed (*Hieracium piloselloides*), a Class B noxious weed designated for control in Chelan and King Counties, were found in the proposed Project area. This species appears to be rapidly colonizing the ski area, since it was not detected during surveys of the area in 2009 (Brimacombe 2009). This highly invasive, short-rhizomatous noxious weed can spread from the root systems of parent plants or from seed. Flowering can take up to four years after germination, during which time this species remains in the basal rosette form; however, once flowering, it is a prolific seed producer (Stone 2011). Tall hawkweed is still not widely established in Washington and was listed as a Class B weed in 2013 (Washington State Noxious Weed Control Board 2013).

All patches of tall hawkweed found within the proposed Project area were mapped (see Figure 7.5-1). More detailed data can be found in Appendix C of the Botanical Resource Report. Most of the patches of this species were observed at the base of the ski runs, with the largest infestation at the base of the run between the Hogsback and the Skyline chairlifts. Patches were also seen near the upper portion of the Brooks chairlift and in the OW across the highway above the parking area. The total number of individuals of this species observed was estimated to be in the thousands.

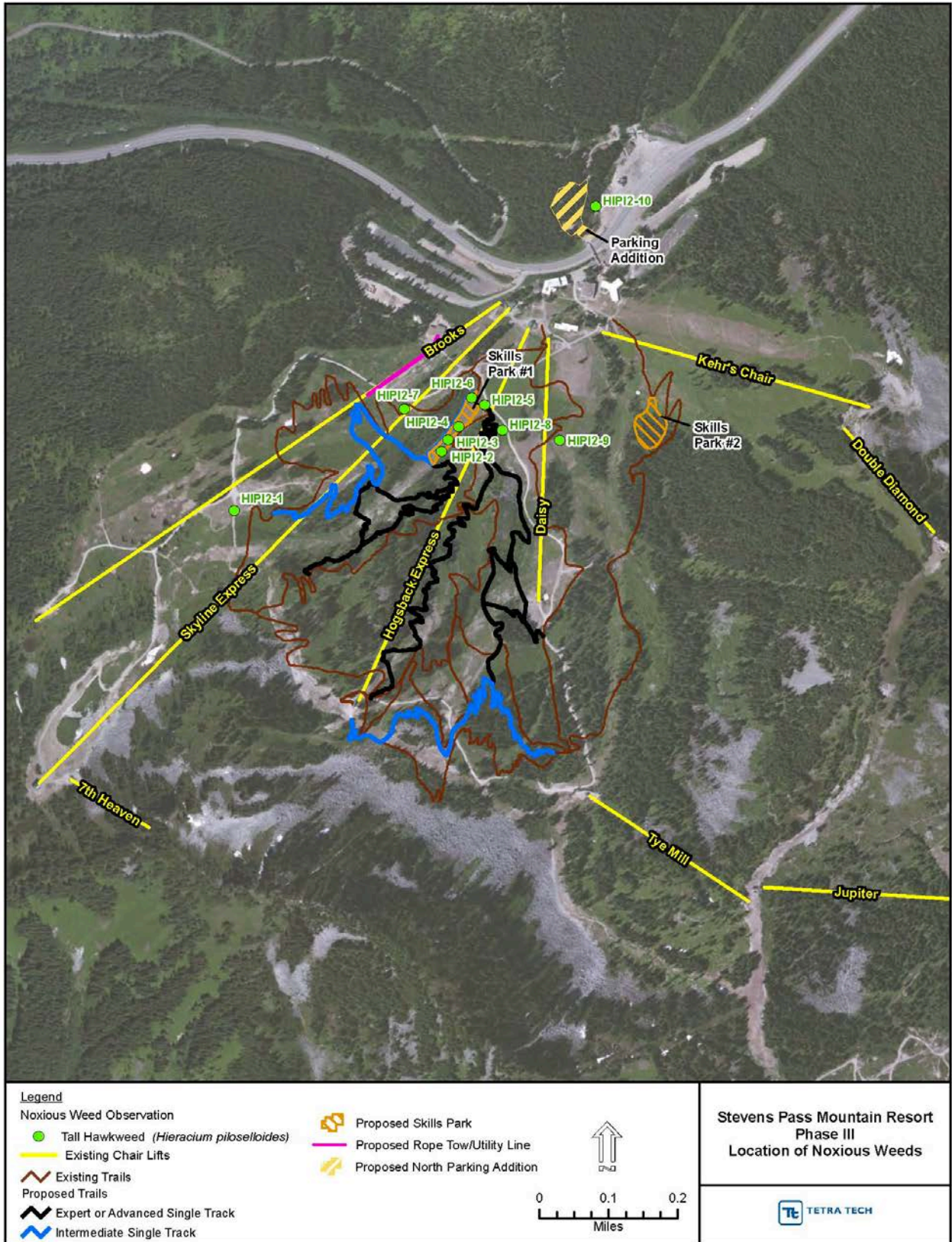


Figure 7.5-1. Location of Noxious Weeds

## 7.5.2 Direct and Indirect Effects

### 7.5.2.1 No Action Alternative

Under the no action alternative, the bike park expansion, chairlift replacement, installation of a new rope tow, and parking area expansion would not occur. These areas would continue to be used in accordance with their current designs and plans (e.g., the parking area would continue to be used by people occupying the existing cabins). Ongoing vegetation management activities associated with these existing areas would continue, and mitigation measures directly related to the Proposed Action would not occur. Noxious weed control measures would be required as part of ongoing management and operation of the resort. Thus, under this alternative, the vegetation would remain the same, with expected improvements with noxious weed control.

### 7.5.2.2 Proposed Action

The following vegetation communities are discussed in this section:

**Forest:** These are areas that are dominated by a mix of deciduous and coniferous tree species.

**Shrub-Modified:** Areas where ski area maintenance activities have modified the original forest and shrub communities. Many of these areas are cleared, mowed, and graded for maintenance of the ski runs, which maintains these areas as predominantly herbaceous and shrub communities.

**Shrub-Natural:** This type includes shrub areas that have not been modified from their natural conditions. Shrub species are typically taller and denser in these areas compared to the modified-shrub communities, and therefore tend to have limited herbaceous understories.

**Wetland:** These are areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support a prevalence of vegetation adapted for life in saturated soil conditions.

**Talus:** Slopes that have less than 10 percent vegetation cover, and may contain large areas of bare rock.

**Developed:** Developed areas include roads running through the ski area, parking areas, and other areas kept clear of vegetation such as at the top and bottom of chair lifts.

Table 7.3-1 lists the acreage of disturbance that would occur to various vegetation types as a result of the Project's construction and operation. Under the Proposed Action, approximately 21.4 acres of land would be disturbed by construction activities. Of these 21.4 acres, 8.9 would be permanently disturbed during operation of the Project (i.e., would be encompassed by permanent Project components).

Of the vegetation types disturbed by the Project, the forest and shrub-modified vegetation types would have the largest acreage of disturbance, with 8.2 and 10.2 acres of initial construction disturbance, respectively (4.5 and 3.4 acres of which would be permanently disturbed by project components). Currently developed areas would have the next largest acreage of disturbance (with 2.0 acres of initial construction disturbance, 0.7 acre of which would be permanently disturbed). All other vegetation types would experience less than 1 acre of disturbance.

The majority of the Project's disturbance would occur as a result of the bike trails (i.e., 11.7 acres of initial disturbance). Construction of the new parking lot would result in 2.1 acres of disturbance. Each of the remaining portions of the Project (i.e., modifications to existing chairlifts, rope tow installation and construction of each skills park) would result in approximately 2.7 acres of initial disturbance, or less, each.



Although approximately half of the initial disturbance would be restored to preconstruction conditions, there would be a time lag between the end of construction and the final restoration of temporarily disturbed areas. The length of time necessary for temporarily disturbed areas to return to preconstruction conditions would depend on the vegetation type disturbed, as well as the active measures that are implemented to restore the area. Of the vegetation types disturbed, forested areas would have the longest time-lag between initial disturbance and final restoration. In order to minimize the extent of disturbance to forested areas, as well as the length of time necessary to restore temporarily disturbed areas, the Project would be designed to 1) avoid impacting forested areas by micro-siting project bike trails and features to avoid trees to the extent practical, 2) limit the removal of mature or large trees with a dbh greater than 6 inches (outside of the parking lot area), and 3) conduct revegetation efforts in areas disturbed by construction in accordance with Forest Service standards and requirements.

### ***Noxious Weeds***

Vegetation removal and soil disturbance associated with construction of the Project could create optimal conditions for the establishment or spread of noxious weeds. As these species often produce an abundance of seed, thrive in disturbed areas, and are typically free of pests and diseases that may control their populations in areas they are indigenous to, once they become established they can quickly spread to new areas and can overtake native plant communities. Vehicles and construction equipment traveling from areas that contain noxious weeds into “weed-free areas” could disperse weed seeds and propagules, resulting in their establishment in previously undisturbed areas, as well as increasing the distribution or abundance of existing populations in previously disturbed areas. Furthermore, disturbed areas may be seeded by airborne seeds originating from plants within adjacent areas; therefore, direct contact between infested areas and construction equipment is not required for noxious weeds to spread to new areas. In addition, the transportation of materials into areas disturbed by construction (e.g., construction materials, mulch, gravel, as well as seed mixtures and/or saplings used during revegetation efforts) may contribute to the spread of noxious weeds. If measures are not taken to prevent and control newly established infestations resulting from construction, then noxious weeds can persist in disturbed and reclaimed areas, and those that are present in the construction area may spread into adjacent areas, including the adjacent PCNST. If weeds spread into the adjacent PCNST, recreationists accessing the Alpine Lakes Wilderness from the PCNST could potentially introduce weed seeds or propagules into the wilderness area. Additionally, small wind-borne noxious weed seeds could potentially spread into the Alpine Lakes Wilderness area via wind.

Operation of the Project could also increase the risk of noxious weed spread. The parking area, rope tow, and modified chairlifts will not likely contribute to weed expansion during the Project’s operation as these facilities would be primarily used during winter (when snow levels would preclude the spread of weed species). However, use of the bike trails and skills park during spring and summer months by bicyclists could result in the continued spread of noxious weeds along the trail.

As discussed in Section 7.5.1.2, the extent of noxious weeds has been expanding in the Project area since 2008. Noxious weeds, including tall hawkweed (a Class B weed) are currently found in areas proposed for construction. Without proper implementation of preventative measures, these species are likely to spread to currently uninfested areas. Therefore, proper weed management measures should be implemented prior to and during construction, as well as during operation of the project. These measures include: 1) treatment and eradication of all tall hawkweed within the Ski Park permit area (infested areas adjacent to and within construction zones should be treated prior to construction); 2) ensuring that all construction materials are free of weed propagules; 3) cleaning construction equipment after exiting known infestations of tall hawkweed, and keeping them free of weed propagules; 4) revegetating disturbed areas as soon as practical in order to minimize bare soils; 5) maintaining existing bike washing stations at the base area to minimize the risk of bikes serving as a vector for weed spread; 6) monitoring

the Project area for weeds as well as the rate/success of revegetation efforts; 7) developing a weed management plan that includes corrective measures that can be implemented if monitoring determines that weeds continue to spread in the area or if revegetation is not successful; and 8) increased educational awareness, which may include but is not limited to internal education of Ski Park staff on identification of invasive plants, and increased signage and posters about invasive plant identification, ecology, and prevention measures. Appendix A contains additional details regarding the measures that would be implemented in order to minimize the spread or establishment of noxious weeds.

### ***Forest Service Sensitive and Survey and Manage Species***

No vascular plant, bryophyte, lichen, or fungi species on either the Regional Forester's Sensitive Species List (Forest Service 2011) or on the Forest Service R6 Survey and Manage Categories A and C lists (Forest Service 2001) were found within the proposed Project area. Therefore, there will be no direct impacts to threatened, endangered, and sensitive (TES) or Survey and Manage plants.

The pre-field review indicated that *Botrychium pedunculosum*, *Botrychium montanum*, *Carex stylosa*, and *Lobaria linita* occur within the SPMR Permit Area, though outside the area of direct effects. Since these species are present in areas adjacent to the Project (i.e., in areas that have not been surveyed), they could be indirectly impacted by the Project via the potential for weed spread. The measures listed in Appendix A would be implemented in order to minimize the risk of noxious weeds spreading to new areas, thereby minimizing the risk of indirect impacts to any unidentified TES or Survey and Manage plants adjacent to the Project area.

### **7.5.3 Cumulative Effects**

This cumulative effects analysis discusses the contributions of other past, present, and reasonably foreseeable projects that overlap with the proposed Project in space and time, which could affect botanical resources. An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other past, present, and reasonably foreseeable future actions, the effects may be significant. The analysis area for the botanical cumulative effects is the extent of the Permit Area. Effects on botanical resources are related to actions that may directly or indirectly impact vegetation. The time span used for this analysis is the remaining SPMR permit term (34 years). It is assumed that as long as the ski area and bike trails are operating, the potential effects from the Proposed Action would continue. Past projects within the Permit Area that may have impacted vegetation include the development of the resort including base area facilities and a bike skills park and newly constructed bike trails, parking lots, pedestrian bridge, the PCNST, and highway and electrical transmission corridors.

Impacts to botanical resources due to the Tye Creek Lodge Resort Services/Ski School Addition would be minimal, as project related disturbance would be located within an already disturbed area currently used for foot traffic and ski storage. Removal of the ski school building would result in short-term disturbance to vegetation related to disturbances associated with building removal (e.g., disturbance to areas directly adjacent to the building during removal), as well as a long-term beneficial impact resulting from additional vegetated areas once the disturbed area has revegetated. Impacts to botanical resources due to the West Entrance Ski Patrol Building, plaza expansion, and PCNST reroute would be minimal because the area is already disturbed. Some short-term impacts would result from disturbances to adjacent areas used during the building's construction. Long-term impacts would be limited to the loss of vegetation that would be encompassed by the building's permanent footprint. Vegetation disturbance due to the Hogsback zip line would be minimal. No large trees would be removed during construction; however smaller trees may be removed and some larger trees may be trimmed in order to create necessary clearances around the zip-line course.

The location of the base area where proposed projects are located has been previously disturbed during the construction of the base area lodges, plazas, pathways, and infrastructure. The area is partly vegetated with few small trees and shrubs and grasses. Impacts resulting from the reasonably foreseeable projects in this area would primarily impact grass species. The probability of impacting TES, Survey and Manage, or rare plants in this area is very low. As these areas are highly disturbed and currently contain species that thrive in disturbed environments, including several non-native species, any project-related soil disturbance could increase the rate of noxious weed spread and/or establishment, and ongoing management of noxious weeds would be required in these areas. The Proposed Action would incrementally increase the potential for impacts to TES, Survey and Manage, or other rare plants to occur, or for noxious weed spread. However, this increase is not significant because no TES, Survey and Manage, or other rare plants were identified during botanical surveys and measures would be implemented to control noxious weeds.

### 7.5.4 Forest Plan Consistency

The Proposed Action would be consistent with the Forest Plan, as amended, for botanical resources assuming all mitigation measures and project design features are implemented. Each applicable mitigation measure and project design feature included in the Forest Plan is addressed in Table 7.5-1.

**Table 7.5-1. Consistency with the Forest Plan**

Standard and Guideline from the Forest Plan, as amended	Consistent with the Forest Plan?	Rationale for Finding
Mt. Baker-Snoqualmie (MBS) National Forest Land and Resource Management Plan, as amended (Forest Service 1990a), p. 4-127: All proposed management actions which have the potential to affect habitat of endangered, threatened, or sensitive species will be evaluated to determine if any of these species are present.	<b>Yes</b>	The pre-field review and field survey took these species into account. TES and other uncommon species were surveyed for during botanical field surveys.
Forest Service 1990a, p. 4-127: All proposed management actions which have the potential to affect habitat of TES species will be evaluated to determine if any of these species are present.	<b>Yes</b>	The pre-field review and field survey took these species and their habitats into account. TES and other uncommon species were surveyed for during botanical field surveys. No TES or other rare or uncommon species were found during surveys.
Forest Service 1990a, p. 4-127: When sensitive species are present, a Biological Evaluation shall be completed as described in Forest Service Manual 2670. Habitat for sensitive plants and animals shall be managed to ensure that management activities do not contribute to these species becoming threatened or endangered.	<b>Yes</b>	Same as rows above. The Botanical Resources Report for the Project (SPMR 2014) serves as the Biological Evaluation because no TES or other rare or uncommon species were found during surveys.
Aquatic Conservation Strategy, Objective #8 and 9 (Forest Service and BLM 1994). See Section 7.7.4.	<b>Yes</b>	Vegetation disturbance along stream areas would be minimized by the use of bridges to cross these areas.  Any wetlands that may not be able to be avoided would be spanned using bridges.  Any required permits would need to be obtained prior to construction for the <0.15 acre of wetland that would be permanently disturbed by the Project.

**Table 7.5-1. Consistency with the Forest Plan (continued)**

Standard and Guideline from the Forest Plan, as amended	Consistent with the Forest Plan?	Rationale for Finding
		Compensatory mitigation for permanent disturbance within wetlands would be implemented, if required.  Protection of native plant communities would occur through mitigation; in addition, all areas of bare soil exposed by Project activities that are at risk for noxious weed invasion would be re-vegetated.
Forest Service 2005. All applicable Regionally mandated standards and guidelines.	<b>Yes</b>	All measures listed in Table 4 would meet the intent of this document.
2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage Standards and Guidelines p-21 (Forest Service and BLM 2001)	<b>Yes</b>	Surveys have been conducted for Survey and Manage species, and no detections within the Project area were made.

## 7.6 Wildlife

The Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (Forest Service and BLM 1994) include the requirement to conduct surveys for particular species prior to all ground-disturbing activities. For the Proposed Action, Forest Service/Bureau of Land Management (BLM) Survey and Manage surveys were required for two amphibians (Larch Mountain salamander [*Plethodon larselli*] and Van Dyke's salamander [*Plethodon Vandykei*]) and five mollusk species (*Megomphix hemphilli*, *Prophysaon coeruleum*, *Cryptomastix devia*, *Deroceras hesperium*, *Hemphillia glandulosa*) that have the potential to occur in the Permit Area. Surveys were conducted in September and October 2013, according to the most recent protocol including Survey and Manage Protocols for Amphibians Under the Survey and Manage Provision of the Northwest Forest Plan (Version 3.0, Olson 1999) and Survey Protocol for Survey and Manage Terrestrial Mollusk Species Under the Northwest Forest Plan (Version 3.0, Duncan et al. 2003). A pre-field review was also conducted for the shiny tightcoil (*Pristiloma wascoense*), Johnson's hairstreak (*Callophrys johnsoni*) and valley silverspot (*Speyeria bremnerii*), which are Forest Service R6 sensitive species that have a low likelihood of occurring in the Permit Area.

The analysis area for direct and indirect effects to wildlife consists of several scales:

- For species with low to moderate mobility, specific habitat requirements for effective movement, or smaller home ranges (northern spotted owl, Townsend's big-eared bat, great gray owl, Larch Mountain salamander, Van Dyke's salamander, mountain goat, American marten, Rocky mountain elk, mule deer, pileated woodpecker, other primary cavity excavators, pika, and migratory landbirds that may use the Project area for nesting), impacts were assessed within the SPMR Permit Area.
- For wider ranging species, impacts were assessed at larger spatial scales including Bear Management Units (BMU; grizzly bear) and 5th-field watersheds (gray wolves, lynx, and wolverines).



## 7.6.1 Existing Conditions

### 7.6.1.1 Wildlife Habitat

Table 7.6-1 summarizes existing wildlife habitat within the SPMR Permit Area. A more detailed description of habitat types is provided in Section 7.5 (Botany and Vegetation), and fish species are addressed in Section 7.7.

**Table 7.6-1. Summary of Wildlife Habitat within the SPMR Permit Area**

Habitat Type	Acres
Forest	1,344.3
Shrub-natural	267.6
Shrub-modified	481.0
Talus	111.1
Wetland	34.7
Developed <sup>1/</sup>	90.4
<b>Total</b>	<b>2,329.0</b>

<sup>1/</sup> Includes transmission line corridors

Wildlife habitat in the SPMR Permit Area and vicinity has been altered by human-related activities including timber harvest, road and railroad construction, clearing for transmission line corridors, and fires resulting from railroad construction activities in the early 1900s, as well as vegetation clearing and development associated with the existing ski area. Vegetation within the SPMR Permit Area consists of a mosaic of forest and shrub (both natural and modified) habitats. Shrub communities dominate ski runs and other cleared areas; however, in areas that are surface graded, more sparse herbaceous or shrub communities exist.

Many special status wildlife species are associated with late-successional (mature or old-growth) forests which possess habitat features used for nesting, roosting, and foraging. In the Pacific Northwest, late-successional forests are characterized by complex canopies; an interspersed of trees of multiple age classes; the presence of snags, decadent trees, and fallen trees; and variation in the amounts and distribution of live trees. These features create intricate habitat niches that support many plant and animal species (Spies 2004). In the Pacific Northwest, mature forest conditions typically begin around 80 years of age, whereas old-growth conditions are typically reached around 150 years of age (Franklin et al. 2002; Spies and Martin 2006).

On the west side of the SPMR Permit Area, late-successional forest was mapped using a combination of stand year of origin data (selecting stands initiated before 1929 so at least 80 years in age) and canopy cover data (selecting stands with at least 70 percent cover per the MBS Forest Plan definition of late-successional forest; Forest Service 1990a). On the east side of the SPMR Permit Area (OW National Forest), late-successional forest was identified using an existing forest-wide GIS layer. There are approximately 574 acres of late-successional forest in the SPMR Permit Area, most of which are located at the peripheries of the SPMR Permit Area (Table 7.6-2).

**Table 7.6-2. Late-Successional Forest within the SPMR Permit Area and Surrounding Fifth-Field Watersheds**

Existing Acres of Late-Successional Forest <sup>1/</sup>	
SPMR Permit Area	574
Upper Tye	85,184
Nason	31,866

<sup>1/</sup> Mapped on the Mt. Baker-Snoqualmie National Forest as stands greater than 80 years old and with at least 70 percent canopy cover; mapped on the Okanogan-Wenatchee National Forest using an existing forest-wide GIS layer.

Talus slopes are located at the upper elevations within the SPMR Permit Area, and are primarily non-forested. Riparian Reserves are variable within the SPMR Permit Area and most have been modified by ski area development. Most intermittent streams occur within ski runs, roadside ditches, culverts, and other developed areas, and therefore provide limited riparian function for wildlife. Relatively undisturbed riparian areas occur along Brooks Creek, southwest of the west parking lot, and in the undeveloped area west of the ski area (i.e., the Grace Lakes area).

Landscape connectivity is defined as the degree to which the structure of a landscape helps or hinders the movement of wildlife species (Taylor et al. 1993). A landscape with a high degree of connectivity is one in which wildlife move readily between habitat patches over the long-term. Connectivity between areas of similar habitats (i.e., late-successional forest) or between high and low elevation habitats is important to maintaining well-distributed, viable wildlife populations. Vegetation removal increases habitat fragmentation and may result in edge effects such as changes in vegetation structure, plant and wildlife species composition, and predation rates (Chen et al. 1999; Jordan 2000). Remaining habitat patches become small and less suitable, particularly for species associated with interior forest conditions. Microclimatic changes are most likely to occur when vegetation removal opens up the forest canopy; however, other effects can occur in association with trails as narrow as 1 to 3 meters wide for some species (Miller et al. 1998; Hickman 1990, as cited in Jordan 2000). With fragmentation a continuously distributed population may become a series of small, subpopulations that rely on the ability of dispersing individuals for genetic interchange and re-colonization.

Within the developed portion of the SPMR Permit Area, remnant patches of forest are isolated by the existing roads, ski runs, and mountain bike trails, providing a limited amount of functional connectivity. However, larger patches of forest located along the eastern, western, and northern portions of the SPMR Permit Area provide connectivity between lower- and higher-elevation habitats. The forested areas flanking Stevens Pass along U.S. Highway 2 (a corridor extending roughly from Skykomish to Leavenworth) provide an important north-south connection for many wide-ranging wildlife species between the Alpine Lakes Wilderness to the south and the Glacier Peak Wilderness to the north (Singleton et al. 2002). Based on the dispersal habitat modeling analysis (See the Methods section above), the existing conditions in the SPMR Permit Area provides moderate and high dispersal habitat suitability for all four focal species, the greatest being for lynx and wolverine, followed by grizzly bear, and then marten (Table 7.6-3). The removal of forest due to past timber harvest and development and the presence of roads, trails, and buildings have reduced dispersal habitat suitability from baseline conditions (i.e., those prior to larger-scale land use and human development activities).

**Table 7.6-3. Distribution of High, Medium, and Low Dispersal Habitat Suitability Under Baseline and Existing Conditions Within the Connectivity Analysis Area and the SPMR Permit Area**

Species	Condition <sup>2/</sup>	Dispersal Habitat Suitability (%) <sup>1/</sup>					
		Connectivity Watershed Analysis Area (19 Sixth-field)			SPMR Permit Area		
		H	M	L	H	M	L
grizzly bear	baseline	94.8	5.2	0.00	98.7	1.3	0.0
	existing	45.5	53.5	1.03	5.7	93.1	1.1
lynx	baseline	86.5	12.5	1.04	93.3	6.6	0.1
	existing	74.1	24.5	1.39	47.9	52.8	0.3
wolverine	baseline	98.6	0.6	0.82	99.8	0.0	0.2
	existing	79.3	19.7	1.01	46.9	52.8	0.3
marten	baseline	44.1	38.3	17.58	50.4	24.5	25.1
	existing	42.2	39.1	18.70	38.1	35.5	26.4

<sup>1/</sup> H=high habitat suitability (values of 0.5-1); M = moderate dispersal habitat suitability (values 0.1-0.49); L = low dispersal habitat suitability (values < 0.1).

<sup>2/</sup> Baseline conditions represent dispersal habitat suitability without direct human influence (i.e., roads, buildings, other development removed); existing conditions represent current dispersal habitat suitability.

### ***Bike Trails and Skills Parks***

The proposed bike trails and skills parks are located in the developed ski area. Much of the area that the proposed bike trails cross consists of mown and natural *Vaccinium* shrubs within the existing ski runs. They traverse through small patches of conifer forest which are already isolated and/or fragmented by the existing ski runs, roads, existing bike trails, and other SPMR development. At the upper elevations (i.e., near the top of the Hogs Back chairlift) the proposed bike trails pass next to the bottom edge of a non-forested talus slope. The eastern skills park is located in an existing forest stand that has already been thinned as part of ongoing ski area maintenance. The western skills park is located in an existing ski run near the base area. Several small seeps run through the skills park and there are some decaying stumps and downed logs on the forest floor.

### ***Kehr's Chairlift***

Vegetation along the Kehr's chairlift corridor primarily consists of *Vaccinium* shrubs. There are several patches of conifer forest along either side of the cleared corridor that contain habitat features such as large downed logs and stumps. There is a small seep midway in the corridor.

### ***Brooks Chairlift***

Vegetation along the Brooks chairlift corridor is dominated by *Vaccinium* shrubs. Brooks Creek crosses through the corridor in several places. There are a few small patches of forest at the middle and lower elevations of the chairlift corridor.

### ***Rope Tow***

Vegetation in the area of the proposed rope tow is dominated by *Vaccinium* shrubs. There are no forested areas. This area is routinely mowed as part of ongoing resort operations.

### ***Parking Area***

The parking area expansion includes mature Pacific silver fir (*Abies amabilis*)/Douglas-fir (*Pseudotsuga menziesii*) forest bordered by an access road and the existing parking lot to the east. Understory vegetation is nearly absent with the exception of shrub patches along the forest edge. Decaying downed logs and boulders are common on the forest floor.

## **7.6.1.2 Species Accounts**

This section describes the wildlife resources within the SPMR Permit Area including federal threatened, endangered, and candidate species, Forest Service R6 Sensitive species (Forest Service 2011), Forest Plan Management Indicator Species (Forest Service 1990a, 1990b), and other species of concern. Special status species addressed in this report include those identified as being suspected to occur or documented on the MBS and/or the OW. The Biological Assessment/Biological Evaluation for this project (included in the project record) includes a full list of species and their likelihood of occurring within SPMR Permit Area. The following species addressed in detail are those that have the potential to occur in the SPMR Permit Area based on known range and the presence of suitable habitat. Those that are unlikely to occur within the SPMR Permit Area are not addressed further here.

### ***Threatened, Endangered, and Proposed Species***

There are five federally listed wildlife species and one species that is proposed for federal listing that have the potential to occur on the MBS and/or OW (See Appendix A in the Wildlife Resource Report). Of these, the marbled murrelet (*Brachyramphus marmoratus*) is not considered further here due to the lack of suitable habitat in the SPMR Permit Area (marine forage habitat is more than 50 miles away).

### Gray Wolf (*Canis lupus*)

The gray wolf is federally listed as endangered in the western two-thirds of Washington. On May 5, 2011, wolves were federally delisted in the eastern one-third of Washington (east of State Route 97 from the Canadian border to U.S. Highway 17, east of U.S. Highway 17 to State Route 395, and east of State Route 395 to the Oregon border). In June 2013, the USFWS announced a proposal to remove the gray wolf from federal listing across its entire range. The USFWS has not yet made a final ruling on this proposal. Throughout the entire state, gray wolves are listed as endangered by the State of Washington. Washington's Gray Wolf Conservation and Management Plan (Wiles et al. 2011) guides recovery of wolves as they naturally re-establish a sustainable population across the state, and authorizes management tools to address conflicts with livestock and other wildlife.

Field reports and aerial monitoring conducted by the Washington Department of Fish and Wildlife in 2013 confirmed the presence of at least 52 wolves in 13 wolf packs in Washington, with a total of 5 successful breeding pairs. This represents a 93 percent increase from the populations 2 years prior (27 wolves, 5 wolf packs and 3 breeding pairs; WDFW 2013a), indicating that the Washington wolf population is increasing. This has been attributed to natural reproduction as well as the continued influx of wolves from Idaho and Montana (WDFW 2015).

Gray wolves are wide ranging species that use a variety of habitat types and require a year-round prey base. Gray wolves are sensitive to human disturbance, particularly around denning and rendezvous sites. Security habitat for this species is defined as all habitat types containing an open road density of less than 1.0 mile/square mile and is typically evaluated at the scale of the fifth-field watershed (Gaines et al. 2003). Per Gaines et al. (2003), the existing level of human influence of a landscape, which may be used to assess habitat suitability for wolves, may be defined as:

- low = greater than 70 percent of watershed contains security habitat;
- moderate = 50 to 70 percent of watershed contains security habitat; and
- high = less than 50 percent of the watershed contains security habitat.

Both the Tye River and Nason watersheds, which encompass the SPMR Permit Area, are characterized by a high level of human influence, and there is no security habitat within or adjacent to the Phase III Project area (Table 7.6-4). There are also no known rendezvous or denning sites near the SPMR Permit Area (Figure 7.6-1). The closest known wolf packs are the Teanaway pack (confirmed in 2011), inhabiting the Teanaway Valley in northern Kittitas County south of Stevens Pass, and the Wenatchee pack (confirmed in 2013), inhabiting the Entiat Mountains of Chelan County southeast of Stevens Pass (WDFW 2013a).

**Table 7.6-4. Gray Wolf Security Habitat within the Fifth-Field Watersheds Encompassing the SPMR Permit Area**

Fifth-field Watershed	Total Acres	Acres Security Habitat <sup>1/</sup>	Percent Security Habitat	Level of Human Influence <sup>2/</sup>	Acres Security Habitat in Permit Area
Tye River	86,871	40,107	46.2	high	43
Nason	150,084	46,657	31.1	high	47

<sup>1/</sup> Security habitat defined as all habitat types with an open road density of less than 1.0 mile/square mile.

<sup>2/</sup> Categories based on Gaines et al. (2003): low (>70% of land area consisting of security habitat); medium (50-70% of the land area consisting of security habitat); high (<50% of the land area consisting of security habitat)



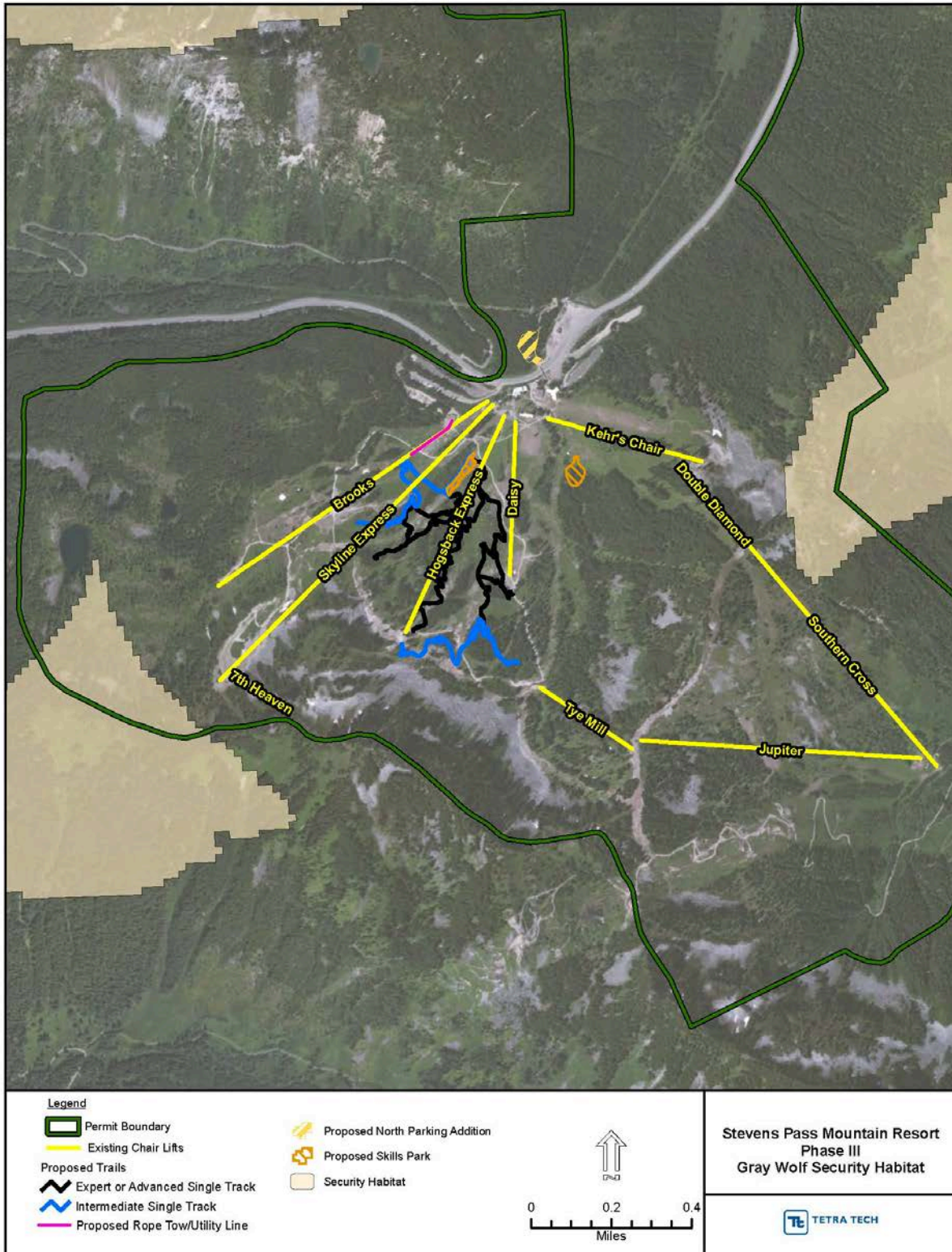


Figure 7.6-1. Gray Wolf Security Habitat

**Grizzly Bear (*Ursus arctos*)**

The grizzly bear is federally listed as threatened and listed as endangered by the State of Washington. The SPMR Permit Area occurs within the North Cascades grizzly bear recovery zone, which is thought to support a population of less than 20 grizzly bears (USFWS 1993; Servheen 1997; USFWS 2011). In 2011, the USFWS completed a 5-year review of the status of this species, concluding that while the very rugged and remote habitat of the North Cascades is capable of supporting a self-sustaining population of grizzly bears, only a "remnant" population remains whose persistence would require active recovery efforts (USFWS 2011). Thus, although up-listing this species to endangered status is warranted this action has been precluded by higher priority listing actions (USFWS 2011). No grizzly bears were detected during DNA hair-snare and camera sampling conducted from 2010 to 2013 in North Cascades National Park and adjacent national forests; however, in 2010 a probable grizzly bear sighting occurred in the Upper Cascades River drainage south of the Park. The last confirmed sighting of a grizzly bear in the American portion of the North Cascades was in 1996 (WDFW 2013b; Jesse Plumage, personal communication).

Contiguous, relatively undisturbed mountainous habitat with a high level of topographic and vegetative diversity is characteristic of most areas where grizzly bears exist (USFWS 1993). Floodplains and avalanche chutes are considered important foraging habitat during spring, while berry fields provide herbaceous forage in the spring and berries during late summer and autumn. In some areas, elk and deer winter range and calving areas provide habitat for grizzly bears because these species can be important prey items.

Threats to the species in this recovery zone include issues related to road access management, small population size, and population fragmentation resulting in genetic isolation (USFWS 1993). The Project area falls within BMU #36 (Beckler) and #37 (Lower Wenatchee). Grizzly bears are wide-ranging and based on what is known about the North Cascades population would be expected to occur only as transient individuals in the SPMR Permit Area.

Due to their sensitivity to human disturbance, core habitat for grizzly bears includes areas that are greater than 1,640 feet (500 meters) from open roads, motorized trails, and high use non-motorized trails (20 parties or more per week during seasons when bears are active). Core habitat can be further categorized as early season habitat (March 15 through July 15 corresponding with den emergence through early summer) and late season habitat (July 16 through October 31 corresponding with late summer and denning). Guidance from the North Cascades Ecosystem Grizzly Bear Habitat Assessment (NCGBETT 2001) was used to identify seasonal core habitats based on snow-free zones specific to areas east and west of the Cascade crest. In 1997, the North Cascades Grizzly Bear Management Committee, which consists of the Park Superintendent of the North Cascades National Park and the Forest Supervisors of the Wenatchee, Okanogan, and MBS National Forests, agreed to an interim standard of "No Net Loss" of grizzly bear core habitat until superseded by a Forest/Park Plan amendment or revision. The baseline for the no net loss policy was based on mapped status of road and trail systems occurring in BMUs as of July 31, 1997. There are approximately 508 acres of early season and 345 acres of late season core habitat within the SPMR Permit Area (Table 7.6-5; Figure 7.6-2).

**Table 7.6-5. Early- and Late-season Grizzly Bear Core Habitat within the SPMR Permit Area and Vicinity**

Area	Bear Management Unit		SPMR Permit Area
	Beckler (# 36)	Lower Wenatchee (# 37)	
Total area (acres)	145,554	218,253	2,327
Area on National Forest lands (%)	95	97	100
Early core habitat (Acres) <sup>1/,2/</sup>	82,126	208,919	508
Late core habitat (Acres) <sup>1/,3/</sup>	77,379	55,300	345

<sup>1/</sup> Includes only NFS lands.

<sup>2/</sup> Early season defined as March 15 to July 15. On the west side of the Cascade crest, the Douglas-fir, grand fir, western hemlock, pacific silver fir, and mountain hemlock zones are snow free and available for use; on the east side available habitat is defined by aspect category and elevation. Early season habitats include montane meadows, deciduous forests, and riparian forests. (Source: NCGBETT 2001)

<sup>3/</sup> Late season defined as July 16 to October 31. On the west side of the Cascade crest all vegetation zones are snow free or available for bear use during the late seasonal; on the east side all elevations considered available. Late season habitats include shrubfields, wet forest openings, montane meadows, and subalpine/alpine meadows. (Source: NCGBETT 2001)



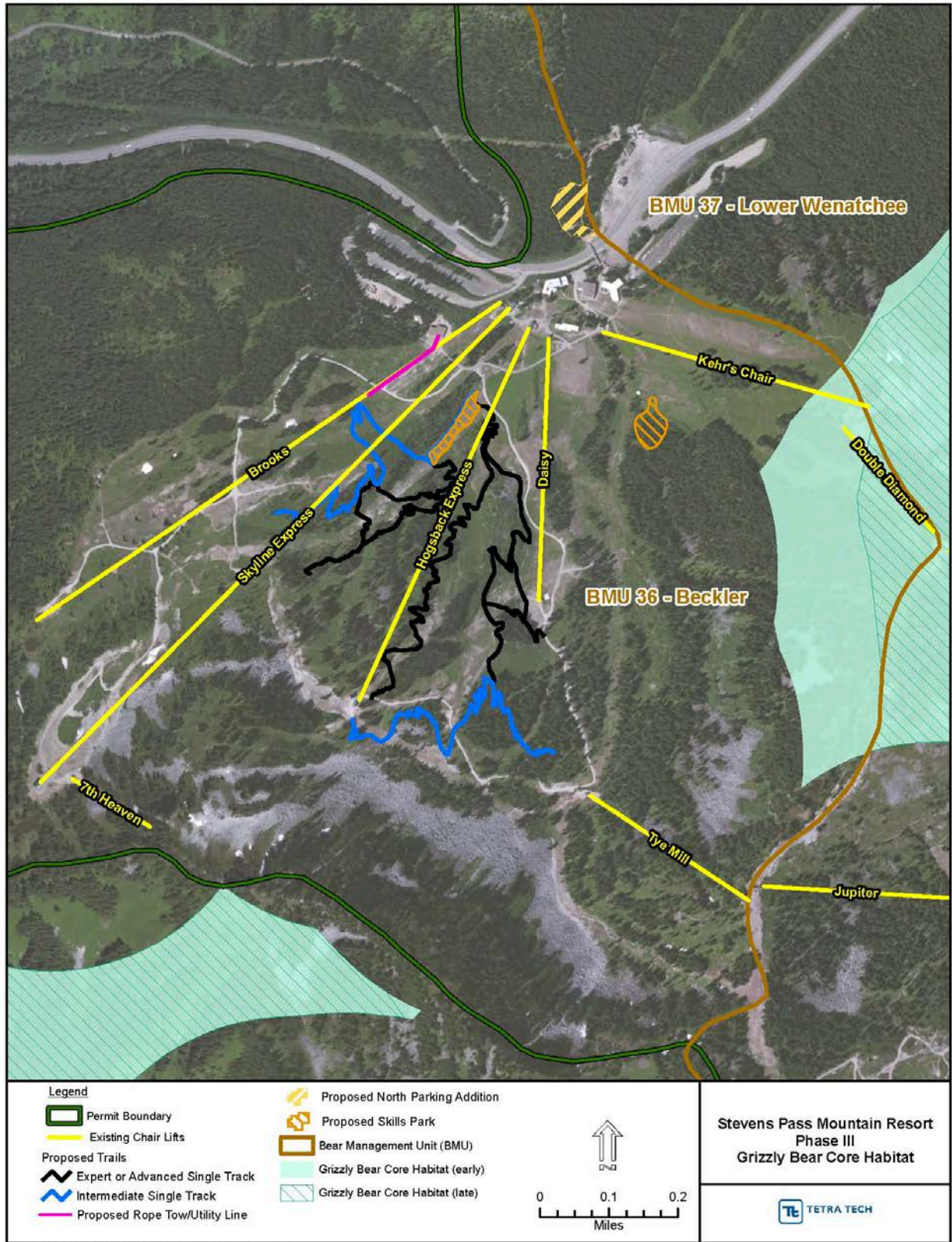


Figure 7.6-2. Grizzly Bear Core Habitat

### **Northern Spotted Owl (*Strix occidentalis*)**

The northern spotted owl (spotted owl) is federally listed as threatened and listed as endangered by the State of Washington. Critical habitat for the spotted owl was first designated in 1992, and revised in 2008, and again in 2012 (effective in 2013). Under the 2013 critical habitat ruling approximately 1,074 acres of the SPMR Permit Area are designated as critical habitat, although much of this area consists of the developed ski runs (natural and managed shrubs) and the base area facilities (Figure 7.6-3). Small patches of mature forest (less than 1 or 2 acres) are located in designated critical habitat within the developed portion of the ski area and in the proposed parking lot expansion on the north side of U.S. Highway 2. These areas do not possess characteristics of suitable spotted owl nesting habitat (e.g., large trees with broken tops, large snags, and trees with mistletoe).

Spotted owls occur on both slopes of the Cascade Range, occurring from sea level up to 5,100 feet, and are strongly associated with structurally complex forest. Spotted owls primarily inhabit late-successional forest (mature and old-growth forest) where they nest in snags and tree cavities; however, stands as young as 50 years old may be used if large-diameter trees and snags are present (Courtney et al. 2004). They are sensitive to habitat fragmentation, require large expanses of undisturbed mature forest and typically do not cross open habitats. On the east side of the Cascade Crest, forests used by spotted owls are typically younger and owls in these areas often nest in abandoned northern goshawk nests or clumps of branches infected by mistletoe (WDFW 2013b).

Results of long-term monitoring indicated that spotted owl populations in Washington are continuing to decline (Forsman et al. 2011). The primary threats to spotted owls are habitat loss, primarily due to timber harvest and catastrophic fire, and competition from barred owls which are a larger, more aggressive, and more adaptable species that have encroached into the spotted owl's range (Courtney et al. 2004). No detections of spotted owls have been reported in the vicinity of the SPMR Permit Area and the nearest activity center is more than 2 miles away from the Project area (WDFW 2006a).

### **Canada Lynx**

The Canada lynx is federally listed as threatened and is listed as threatened by the State of Washington. Canada lynx are typically associated with high elevation (above 4,000 feet) conifer forests, particularly lodgepole pine or Engelmann spruce-subalpine fir forests. Lynx den sites tend to be located in undisturbed mature forest stands (older than 150 years) that have abundant downed woody material and are located near natural travel corridors such as ridges and riparian areas (Brittell et al. 1989; Koehler 1991; WDW 1993). Optimal lynx foraging habitat is vegetated with dense young stands of lodgepole pine that support high numbers of snowshoe hares (WDFW 2013b). Primary threats to lynx are removal of habitat, particularly resulting from insect epidemics and fires associated with climate change.

In November 2006, critical habitat was designated in Montana, Minnesota, and Washington for the contiguous United States distinct population segment of lynx. The portion in Washington is in North Cascades National Park, well outside of the SPMR Permit Area. The Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) provides guidance to Federal agencies with respect to management of lynx habitat on Federal lands which includes the designation of Lynx Management Zones. The SPMR Permit Area is not within a Lynx Management Zone; however, suitable habitat for lynx in the SPMR Permit Area is located at the peripheries where there are larger stands of late-successional forest.



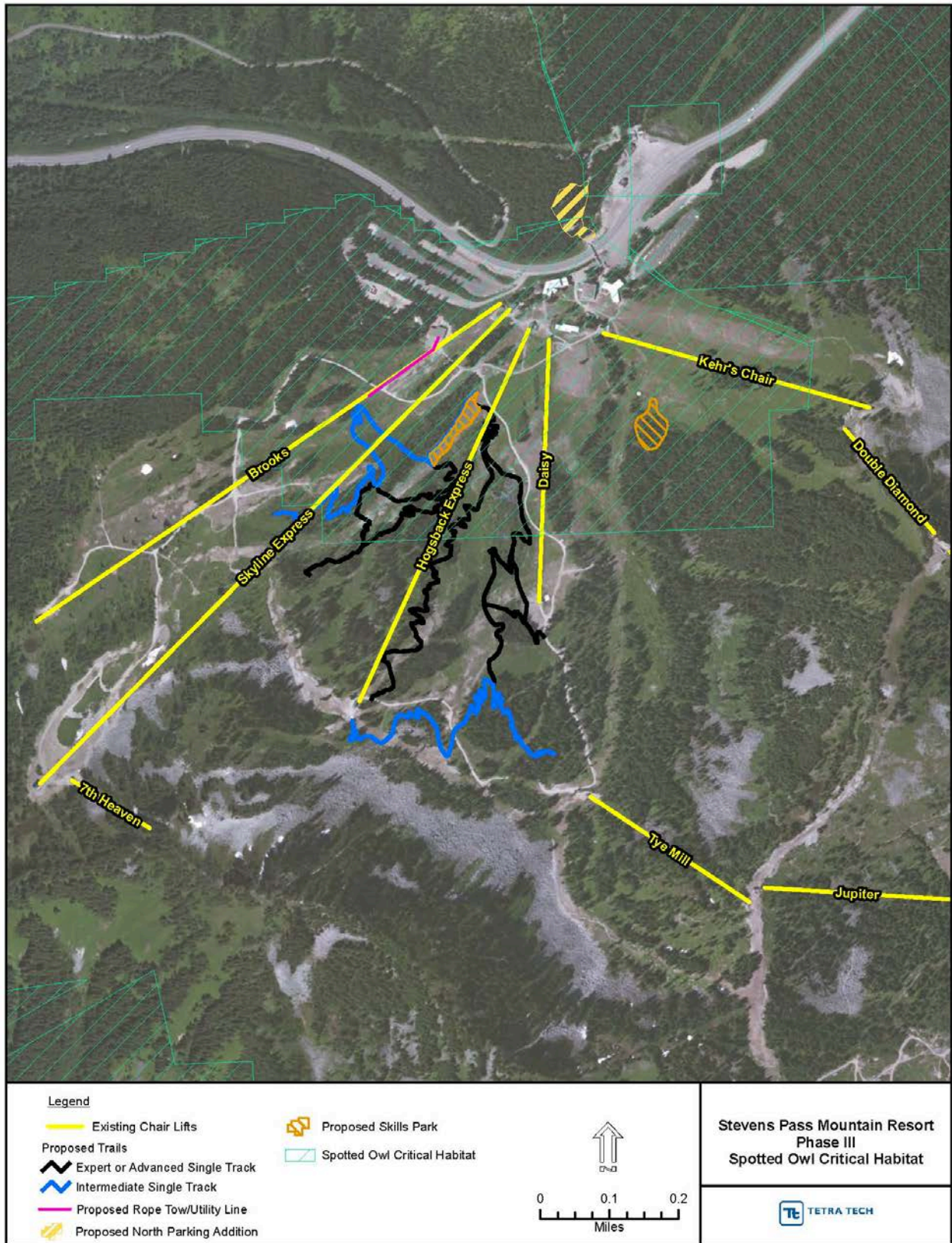


Figure 7.6-3. Spotted Owl Critical Habitat

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## **Forest Service Region 6 Sensitive Species**

### **North American Wolverine (*Gulo gulo luscus*)**

The North American wolverine is a candidate for listing by the State of Washington. It is also a Forest Service R6 Sensitive species. On February 4, 2013, the wolverine was proposed for federal listing as threatened based on the threat of climate change to the species' existence in the southern portion of its range (78 Federal Register 7864-7890). However, on August 13, 2014, the USFWS withdrew its proposal to list the wolverine, based on the determination that the effects of climate change are not likely to place the wolverine in danger of extinction now or in the foreseeable future (79 Federal Register 47522-47545).

In Washington, wolverines occur in the alpine and subalpine habitats of the Cascade Mountains, but will sometimes descend into valleys, particularly in winter where large game may be available (Aubrey et al. 2007). Den sites typically consist of long, complex snow tunnels which may be associated with large structures, such as fallen trees or boulders (Aubrey et al. 2007). Wolverines forage on carrion but are capable of killing their own prey, and in many areas are believed to be dependent on ungulates as a major food source. Persistent spring snow cover, which provides denning habitat, cool temperatures, and cold microsites for caching food such as winter-killed ungulates, is thought to be the best predictor of wolverine presence (Copeland et al. 2010; Inman et al. 2012).

Wolverines require large tracts of undisturbed land and are sensitive to human activity, particularly near den sites. Recent research indicates that many wolverine populations appear to be isolated, and for such populations persistence is dependent on dispersal between populations and suitable habitat (Ruggiero et al. 2007). The abundance of food and presence of human activity are thought to be more influential on wolverine habitat selection than plant associations or topography (Ruggiero et al. 1994).

During the winter of 2005-2006, Conservation Northwest initiated a radiotelemetry study of the wolverine in the North Cascades in Washington and to date have captured and radio tracked five wolverines occupying areas along the Cascade crest from the Canadian border south to Lake Chelan. Monitoring has confirmed that wolverines in the North Cascades occupy large home ranges (greater than 500 square miles; Conservation Northwest 2012). Using unique chest markings and DNA from hair snags, volunteers associated with Conservation Northwest's Citizen Wildlife Monitoring Project documented three previously undocumented wolverines in the Stevens Pass Area in 2012 (Citizen Wildlife Monitoring Project 2012). The SPMR Permit Area provides marginal habitat for wolverines due to the high level of human activity. Due to the wide-ranging nature of this species, wolverines are likely to occur in the SPMR Permit Area as transient individuals.

### **Townsend's Big-eared Bat (*Corynorhinus townsendii*)**

The Townsend's big-eared bat is a Forest Service R6 sensitive species documented on both the MBS and OW. The presence of suitable undisturbed roost, nursery, and hibernaculum (i.e., wintering hibernation) sites is the most important habitat component dictating the presence of this species (Perkins and Levesque 1987). Maternity and hibernation colonies typically occur in caves and mine tunnels, but may also occur in buildings and on the undersides of bridges (WDW 1991). These sites are also used for night roosts.

Primary threats to this species include changes in microclimate conditions due to human activities (e.g., removal of vegetation) that render roost, nursery, and hibernacula unsuitable to bats, and the direct disturbance of bats using these areas (Zeiner et al. 1990; WDW 1991). Buildings, bridges, and talus slopes provide potential roost, nursery, and (possibly) hibernacula sites, though bats are most likely to use the SPMR Permit Area for foraging.

**Great Gray Owl (*Strix nebulosa*)**

The great gray owl is a Forest Service R6 sensitive species documented on the OW National Forest (Forest Service 2011). It is a year round resident in Washington, known to breed in eastern Okanogan and western Ferry Counties. Great gray owls inhabit mature conifer forests adjacent to open areas such as wet meadows, bogs, clearcuts, and early successional forest used for foraging on small mammals (Forest Service and BLM 2012). Large broken-top snags, stumps, trees with large mistletoe clumps, man-made nesting platforms, and abandoned raptor and corvid stick nests are used for nesting (Forest Service and BLM 2012). Great gray owls hunt from low perches, and in winter will detect and capture prey under snow, by sound alone (Duncan and Hayward 1994). Most great gray owls breed in mountainous areas but may winter at lower elevations with thinner snow cover, an elevational migration which may be tied to prey abundance and/or snow depth. The primary threats facing great gray owls are habitat loss and fragmentation associated with timber harvest and development.

Great gray owls are most likely to use the open habitats in the SPMR Permit Area for foraging during the summer. They may nest in the large contiguous mature forest stands at the peripheries of the SPMR Permit Area for nesting, although nesting has not been documented in Chelan County. During the winter, recreation on groomed ski slopes and in other open areas compacts the snow, reducing below snow (subnivean) spaces used by small mammals (Gaines et al. 2003). This reduces or eliminates potential wintertime foraging opportunities for great grey owls.

**Larch Mountain Salamander (*Plethodon larselli*)**

The Larch Mountain salamander is a Forest Service R6 sensitive species documented on the MBS and OW. Larch Mountain salamanders are associated with talus in forested and non-forested environments, cave systems, and seeps. There are both forested and non-forested talus slopes along the eastern edge of the SPMR Permit Area and at upper elevations in the ski area that provide suitable habitat for this species. This species is also a Survey and Manage species and current survey protocol requires surveys south of U.S. Highway 2. No Larch Mountain salamanders were documented during surveys conducted in September and October 2013.

**Van Dyke's Salamander (*Plethodon vandykei*)**

The Van Dyke's salamander is a Forest Service R6 sensitive species suspected to occur on the MBS. The Van Dyke's salamander is associated with streams and seeps, but can occur in upland areas as well (Leonard et al. 1993). Van Dyke's salamanders often occur under rocks, logs, along stream banks, but also spend some time within large fallen, decaying logs. The main area of potential habitat within the Project area is within the mixed-conifer riparian habitat along Brooks Creek (under the Brooks chairlift). This species is also a Survey and Manage species and surveys for Van Dyke's salamanders were conducted concurrently with surveys conducted for Larch Mountain salamanders. No Van Dyke's salamanders were detected in the Project area during surveys conducted in September and October 2013.

**Management Indicator Species****Mountain Goat (*Oreamnos Americanus*)**

Mountain goats are a Management Indicator Species (MIS) on the MBS and OW, representative of big game habitat conditions (summer and winter range). They are also a Forest Service R6 sensitive species. Mountain goats occur in remote, rugged rock and cliff areas, usually near tree line. In western Washington, mountain goats summer above 5,000 feet (1,500 m) elevation. In winter, bands of goats move down to lower-elevation, south-facing late-successional forests that are interspersed with rocky outcrops which provide protection from winter conditions. Mountain goats are sensitive to disturbance, particularly when on their summer ranges.

There have been no confirmed sightings of mountain goats in the Project area. Summer range, however, has been identified at upper elevations within the SPMR Permit Area, northwest of Stevens Creek (approximately 1 mile across U.S. Highway 2 from the base area) and along the top of Big Chief Mountain (at its closest point, approximately 0.5 mile from the base area; WDFW 2006a). Based on aerial surveys conducted by the Washington Department of Fish and Wildlife (WDFW) from 2004 to 2007, the mountain goat populations within these areas include the East Stevens Pass population unit (along Nason Ridge) and the North Wenatchee Mountains Population Unit (extending southeast from Stevens Pass), estimated to consist of approximately 15 to 34 mountain goats and 50 to 75 mountain goats, respectively (Rice 2008).

### **American Marten (*Martes Americana*)**

Marten are an MIS on the MBS and OW, representative of species associated with late-successional (mature and old-growth) forests. Although marten may be found in all forested zones, higher densities of marten are found in the Pacific silver-fir and mountain hemlock forest zones. They use cavities in large trees, snags, stumps, logs, or burrows, caves, and crevices in rocky areas for denning. Marten are sensitive to human activity and will rarely cross large areas devoid of canopy cover; however, they will use open areas adjacent to these forests for hunting if they provide adequate hiding cover and food. A camera station monitoring project conducted in 2002 at the Heavenly Ski Resort near Lake Tahoe indicated that individual marten used a variety of forest stand types and were found not only to cross open areas such as ski runs and lifts, but to use them for foraging activity during the winter (Cablak and Spaulding 2003).

Within the SPMR Permit Area there have been numerous confirmed sightings of marten in the Mill Creek Valley and the WDFW Priority Habitats and Species (PHS) database identifies several areas in the Valley as areas of “regular concentration” for marten (WDFW 2006a). The west side of the developed portion of the SPMR Permit Area provides little suitable habitat because it contains very small, highly fragmented patches of mature forest, though marten may still forage in and disperse through these areas. There are approximately 574 acres of late-successional forest in the SPMR Permit Area (Table 7.6-2).

### **Elk (*Cervus elaphus*)**

Elk are an MIS on the OW, representative of big game habitat conditions. They require a juxtaposition of open and closed-canopy habitats to provide them with foraging areas in proximity to security cover. Elk, like other ungulate species, are sensitive to human disturbance. Responses to disturbance range from increased alertness to flight and depend on the local topography and cover type, the intensity of the disturbance, the existing level of disturbance, and other factors (Wisdom et al. 2004). These responses can result in temporary displacement, increased energy expenditure, and physiological stress. In developed recreation sites, elk may habituate to disturbance to some extent, reducing the potential energy expenditure associated with flight responses (Thompson and Henderson 1998).

Elk in the vicinity of the SPMR Permit Area are part of the Colockum herd. The core population of this herd resides south of the SPMR Permit Area (85 percent live in the Teanaway drainage) and most elk in this area exhibit a typical seasonal migration from high elevation summer ranges to lower elevation wintering grounds (WDFW 2006b). Within the SPMR Permit Area, portions of the Mill Creek Valley on the OW are identified by WDFW as calving grounds and a migration corridor for the Colockum elk herd (WDFW 2006b). Elk are expected to occur regularly within this portion of the SPMR Permit Area during the summer months. There are no recent occurrences of elk within the Tye Valley portion of the SPMR Permit Area (S. Paz, Forest Service District Biologist, personal communication).



**Mule Deer (*Odocoileus hemionus*)**

Mule deer are an MIS on the OW National Forest, representative of big game habitat conditions. They are associated with coniferous and hardwood forests with an interspersed early seral habitat consisting of shrub vegetation for foraging. Mule deer are an edge species and require areas where there is a juxtaposition of cover to escape predators and human disturbance, and open areas for foraging. They are also sensitive to human disturbance and exhibit similar responses as described above for elk (Wisdom et al. 2004).

Mule deer may use the SPMR Permit Area for fawning, but likely migrate to lower elevations during winter when snow makes forage unavailable. Riparian habitat along the main channel of the Tye River is within winter range for mule deer.

**Pileated Woodpecker (*Dryocopus pileatus*) and Primary Cavity Excavators**

Pileated woodpeckers are an MIS on the MBS and OW, representative of late-successional (mature and old-growth) forests. Other primary cavity excavators (e.g., woodpeckers, sapsucker, chickadees) are an MIS group on the MBS, representative of late-successional habitat features including snags, defective trees, and downed logs. Second-growth forests may also be used by all of these species if such features are present (Bull and Jackson 1995; Aubry and Raley 2002).

Pileated woodpeckers and other primary cavity excavators excavate hollow cavities in tree stems, usually in dead and decayed wood, as a part of regular nesting and courtship behavior (Bevis and Martin 2002). These cavities are critical for life history needs of other species of birds and mammals, known as secondary cavity users. For example, while excavating wood during foraging, primary cavity excavators accelerate the wood decay process and expose prey that can be consumed by other species (Aubry and Raley 2002). Abandoned cavities are also used by other species for nesting, denning and roosting. As such, they are considered “keystone habitat modifiers.”

Pileated woodpecker nests are typically found in hard snags of 25 inches dbh or larger. Other primary cavity excavators such as the downy woodpecker, hairy woodpecker, and northern flicker use soft snags of smaller size (e.g., 11 to 17 inches dbh; Bunnell 2013). The SPMR Permit Area provides limited foraging and nesting habitat for pileated woodpeckers and other primary cavity excavators because snags, defective trees, and large downed logs are generally lacking. Higher quality habitat is present in the forested areas to the east and west of the developed portion of the ski area and on the north side of U.S. Highway 2. There are approximately 574 acres of late-successional forest in the SPMR Permit Area (Table 7.6-2).

Activities that remove large, live trees and dead or dying trees reduce nesting and foraging habitat for these species (Hejl et al. 2002). Removal of forest cover may also reduce local habitat quality by creating fragmented forest patches, reducing the amount of interior forest habitat with which some of these species are associated.

***Other Species of Concern*****Pika (*Ochotona princeps*)**

Pikas are found at high elevations on rocky talus slopes. They forage on grasses and alpine vegetation in adjacent meadows. Recreation in alpine areas may affect pikas, although there are no published studies documenting this. However, studies have documented such impacts to marmots which inhabit similar habitats (Mainini et al. 1993). Pikas were observed in the talus slopes within the SPMR Permit Area during 2013 wildlife surveys.



## Migratory Landbirds

Executive Order 13186 provides for the conservation of migratory birds and their habitats and requires the evaluation of the effects of Federal actions on migratory birds, with an emphasis on species of concern. Agencies are required to support the conservation and intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Birds protected under the Migratory Bird Treaty Act include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows, and others, including their body parts (e.g., feathers, plumes), nests, and eggs.

The western slope of the Permit Area is located at the northern end of the Southern Pacific Rainforests physiographic area, the eastern slope of the Permit Area is within the Cascade Mountain physiographic province. Coniferous forest is the only priority habitat identified for these physiographic areas that occurs within the Permit Area. The *Habitat Conservation for Landbirds in the Coniferous Forests of Western Oregon and Washington Version 2* (OWPIF 2012) identifies 20 focal species of landbirds that are highly associated with coniferous forests of this region (Table 7.6-6). Many of these species are experiencing population declines attributed in part to habitat loss or modification (i.e., the loss of structural diversity due to land management practices).

**Table 7.6-6. Landbird Species Occurring in the Southern Pacific Rainforest Physiographic Province**

Species	Habitat Association (forest condition) <sup>1/</sup>	Important Attribute
Vaux's swift	old-growth/mature	large snags
brown creeper	old-growth/mature	large trees
red crossbill	mature	conifer cones
pileated woodpecker	old-growth/mature	large snags
varied thrush	old-growth/mature	mid-story tree layers
hermit warbler	mature/young	closed canopy
Pacific-slope flycatcher	mature/young	deciduous canopy trees
Hammond's flycatcher	mature/young	open mid-story
Wilson's flycatcher	mature/young	deciduous understory
Pacific wren	mature/young	forest floor complexity
black-throated gray warbler	pole forest	deciduous canopy trees
Hutton's vireo	pole forest	deciduous subcanopy
olive-sided flycatcher	early-seral/mixed conifer	residual canopy trees
western bluebird	early-seral	snags
orange-crowned warbler	early-seral	deciduous vegetation
rufous hummingbird	forest inclusion/unique	nectar producing plants
band-tailed pigeon	forest inclusion/unique	mineral springs
American Pipit	forest inclusion/unique	alpine
black Swift	forest inclusion/unique	waterfalls
Lincoln's sparrow	forest inclusion/unique	montane wet meadows

Source: OWPIF (2012)

<sup>1/</sup> Forest condition: mature (multilayered); pole (stem exclusion); young (understory reinitiation); early-seral (stand initiation)

Tree clearing can directly impact migratory birds through disturbance of adults or young through the removal of active bird nests or by causing nest abandonment. It also reduces the amount of available perching, foraging, and nesting habitat and results in habitat fragmentation. This may reduce the suitability of remaining forest for species associated with interior forest conditions, such as the brown creeper and Pacific wren. There are approximately 1,344 acres of forest within the SPMR Permit Area provides potential nesting and foraging habitat for these species, much of which consists of isolated patches within the developed ski area (Table 7.6-1).

## **7.6.2 Direct and Indirect Effects**

### **7.6.2.1 No Action Alternative**

Under the no action alternative, there would be no impact to wildlife associated with construction of the proposed bike trails and skills parks, upgrading existing chairlifts, and expansion of the parking area, or operation of the expanded bike park (i.e., there would be no habitat loss, no new sources of disturbance, no loss of landscape connectivity, and no additional traffic across the pass). Wildlife within the SPMR Permit Area would be exposed to the existing levels of disturbance which includes normal operation and maintenance activities associated with the resort, recreation associated with winter sports and the existing bike park and hikers along the Pacific Crest Trail, and year-round use of parking lots and vehicular traffic along U.S. Highway 2. The no action alternative would have no effect on federal listed species or species proposed for listing including the gray wolf, grizzly bear, lynx, northern spotted owl, and wolverine. The no action alternative would also have no effect on Forest Service R6 sensitive species, MIS, or migratory landbirds.

Because the no action alternative represents the continuation of existing activities, with no additional acres of disturbance to wildlife or wildlife habitat, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

### **7.6.2.2 Proposed Action**

#### ***Wildlife Habitat***

This section describes the potential overarching impacts of the Proposed Action on wildlife habitat. This includes the direct effects of vegetation removal/disturbance, as well as the indirect effects of temporary construction noise and permanent increases in noise or activity associated with operation of the bike park and ski area resulting from the addition of more bike trails, the rope tow, and chairlift upgrades. Impacts to individual wildlife species are addressed under separate subsections below.

#### **Vegetation Disturbance and Landscape Connectivity**

In total, the proposed Phase III projects would disturb approximately 21.4 acres during construction, of which about 8.9 acres would be permanently disturbed (Table 7.3-1). A majority of the disturbed acres would be forest (38 percent) and modified shrub vegetation (48 percent), followed by previously disturbed area (9 percent); the remaining percent would consist of natural shrub vegetation and wetland. No talus slopes would be directly disturbed.

The proposed mountain bike trails would be constructed within the developed portion of the ski area, in proximity to the existing bike trails within the Hogsback chairlift pod. They would cross through existing ski runs, which consist of modified and natural shrub habitats and a minor amount of forest consisting of small patches isolated by existing ski runs and roads. Approximately 4.4 acres would be permanently disturbed for the trails as vegetation would not be allowed to re-establish once the trails are constructed (Table 7.3-1). Of this, approximately 1.5 acres are forested and considered late successional. Additional ground disturbance would occur in the construction workspace along the trails that would be needed to

maneuver earth-moving equipment and grade the area for trails; however vegetation in these areas (primarily consisting of modified shrub vegetation) would be allowed to re-establish after construction. Trees over 6 inches dbh would not be removed to the extent practicable.

The two skills parks would also be located within the developed portion of the ski area. Skills Park 1 (located west of the Hogsback chairlift) would be within an existing ski run and no new forested vegetation removal would be required. Skills Park 2 (the eastern skills park) would disturb approximately 0.8 acre of forest and 0.5 acre of modified shrub habitat. However, there would be no reduction in canopy cover as large trees would be left in place. Small tree (less than 6-inch dbh) and brush clearing would be required for installation of structures.

The chairlift upgrades and rope tow would involve work conducted within the existing Kehr's and Brooks chairlift corridors, each resulting in less than one acre of permanent disturbance. All work including staging would be conducted within previously disturbed areas (i.e., the base area adjacent to the lodges or gravel chairlift terminals) or within the existing chairlift corridors. Minor, localized ground disturbance would occur within the existing lift alignment where individual chairlift towers are installed or removed.

The parking lot expansion would require additional permanent clearing of shrubs and trees on the north side of U.S. Highway 2. Approximately 2.1 acres would be permanently disturbed, including approximately 1.7 acres of forest. Approximately 0.8 acre of this forest is considered late successional; however, this small patch of forest does not provide suitable nesting habitat for species such as the northern spotted owl or great gray owl because it currently includes existing development (cabins, buildings, utilities, access roads and a small parking area) and has no broken top trees or trees with mistletoe. Individual stumps and larger trees provide potential habitat for primary cavity excavators. Removal of vegetation associated with the proposed Phase III projects would increase fragmentation within the SPMR Permit Area and may reduce the quality of the remaining forested and shrub habitats. These effects would last for the duration of the SPMR permit term (34 years). Cleared areas may act as barriers to the movement and dispersal of some low mobility species such as amphibians (Gibbs 1998), whereas others may use linear features such as trails as movement corridors (e.g., deer mice; Johnson 2000). Fragmentation also has the potential to result in changes to the distribution and abundance of species that are associated with interior forest conditions or that are sensitive to human activities. For example, Hickman (1990, as cited in Jordan 2000) found that some breeding bird communities exhibited decreased nesting near trails, decreased community composition, and increased rates of nest predation by bird and mammalian predators that used cleared areas as movement corridors even in areas where the trail did not substantially open the forest canopy. Given that the Phase III projects would be concentrated within the developed portion of the SPMR Permit Area, which is already highly fragmented, and would not involve substantial removal of the forest canopy, it is possible that the habitat use patterns or movements of individual animals with lower movement capabilities may be affected, but population-level effects (e.g., population isolation resulting in reduced genetic exchange or local extirpation) are not likely to occur.

As mentioned above, this analysis tiers to the analysis of full implementation of the Stevens Pass Master Development plan on dispersal habitat for wide-ranging species, which accounted for all of the Phase III projects (Forest Service 2009). This analysis indicated that with full implementation of the Master Development Plan there would be a minor shift in dispersal habitat suitability from high to moderate or moderate to low suitability for all species (ranging from approximately 2 percent to 5 percent of the acreage within the SPMR Permit Area). Much of this was in association with future expansion of ski terrain (Northern Exposure and Grace Lakes pods; see Cumulative Effects discussion in Tetra Tech [2009]). The analysis concluded that given changes to dispersal habitat were minor and concentrated within or adjacent to the ski area and that highly suitable dispersal habitat would be maintained to the east and west of the SPMR Permit Area on both sides of U.S. Highway 2, full implementation of the Master

Development Plan would not reduce the dispersal capabilities of wide-ranging species. Therefore, the construction and operation of Phase III projects alone would not preclude moderate to high mobility wildlife from dispersing across U.S. Highway 2.

### **Impacts Associated with Construction Noise, Disturbance, and Recreation**

Proposed construction activities would be integrated within existing spring and summertime maintenance activities that normally occur within the SPMR Permit Area, although noise would be temporarily elevated during construction. Temporary noise and disturbance would be associated with helicopter or ground equipment transport of chairlift towers.

Although the SPMR experiences an existing amount of summertime recreation, additional summer mountain bike trails and skills parks would result in increased human activity at the ski area during the summer and fall months. The addition of these facilities, in combination with the existing mountain bike trails, is anticipated to result in use by approximately 125 mountain bikers per day (7,500 mountain bikers per season) in 2014 to 300 mountain bikers per day (18,000 mountain bikers per season) in 2017 (SPMR 2013b). This represents a short-term increase of 11 percent and 5 percent over operation of the existing mountain bike park in 2012 (6,657 mountain bikers) and 2013 (7,157 mountain bikers), respectively.

Summer recreation has the greatest potential to affect wildlife species that are sensitive to human activity. The most common effect on wildlife of recreation on non-motorized trails is displacement and avoidance, which alters habitat use, or disturbance at the site of activity (Gaines et al. 2003). This increase in use would mostly affect lower mobility species including those that breed within the SPMR Permit Area. Wide-ranging species, many of which are sensitive to human activity (e.g., grizzly bears, wolves, and wolverines), would be less affected because the bike trails and skills parks would be located within an area that is already highly developed and which currently provides little security habitat. As noted above, use of the SPMR Permit Area by these species is already low to none, and these species would likely continue to avoid the developed portion of the SPMR Permit Area altogether during the summer recreation operating season. To minimize any potential wildlife-human conflicts due to increased human presence within the SPMR Permit Area, all food and garbage associated with construction activities and summer recreation use would be disposed of in bear-proof garbage cans.

Increased summer recreation also has the potential to result in an increase in the number of vehicles crossing Stevens Pass on U.S. Highway 2, and thus the potential for wildlife-vehicle collisions. Any increase would be expected to be minor in the context of the total volume of traffic passing between Skykomish and Leavenworth. For this reason, and because the portion of U.S. Highway 2 at Stevens Pass is not within summer or winter range for deer or elk, or within a major migratory corridor for either species, it is unlikely that there would be a measurable increase in wildlife-vehicle collisions along U.S. Highway 2 associated with the operation of the proposed mountain bike trails.

Chairlift upgrades may increase lift (uphill) capacity to better match existing and anticipated skier demand (i.e., to alleviate congestion in the base area, reduce ride times, and better access existing ski terrain); however, the upgrades themselves are not intended or expected to increase the number of skiers using the SPMR ski area (BHA 2007). Therefore, the effects of winter recreation on wildlife are not discussed further here because the existing level of use within the ski area would be expected to continue.

### ***Threatened, Endangered, and Proposed Species***

#### **Gray Wolf**

Gray wolves are unlikely to occur in the vicinity of the SPMR Permit Area other than in the form of transient individuals. These individuals could be exposed to temporary disturbance and noise associated

with construction, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. No security habitat would be affected by the proposed Phase III projects. Given the existing high level of human influence in the Tye River watershed, and the location of the Project within the developed ski area, the Proposed Action *may affect, but is not likely to adversely affect* gray wolves.

### **Grizzly Bear**

Given the high level of human activity within the SPMR Permit Area, grizzly bears are unlikely to occur in the vicinity of the SPMR Permit Area. Transient individuals passing could be exposed to temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. The only proposed project feature located within early season core grizzly bear habitat is one pole associated with Kehr's chair (located in the Beckler BMU). Pole placement would not alter core habitat. Given that the proposed Phase III projects would occur in an area that has an existing level of human use, the wide-ranging nature of this species, and the availability of both early and late season core habitat outside the SPMR Permit Area, the Proposed Action *may affect, but is not likely to adversely affect* grizzly bears.

### **Northern Spotted Owl**

Due to the lack of suitable habitat or documentation of northern spotted owls in the vicinity of the SPMR Permit Area, spotted owls are unlikely to nest in the vicinity of the proposed Phase III projects but may use some of the forest patches as dispersal habitat. Individual spotted owls transiting through the SPMR Permit Area could be exposed to temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term; however this would not be expected to affect this species. The proposed Phase III projects would disturb 6.7 acres of late-successional forest during construction, of which 2.6 acres would be permanently disturbed. This comprises less than 1 percent of the late-successional forest. With the exception of the proposed parking area expansion, large trees would be maintained and removal of small trees (those less than 6 inches) would be avoided to the extent practicable. Therefore, there would be little if any reduction in forest cover. The proposed parking area expansion, which would remove 0.8 acres of late-successional forest, is also designated critical habitat for the northern spotted owl. However, due to the minor amount of tree removal and the fact that forested areas within the SPMR Permit Area, including the affected area, are most likely used as dispersal habitat, the Proposed Action *may affect, but is not likely to adversely affect* the spotted owl or spotted owl designated critical habitat.

### **Canada Lynx**

Canada lynx are unlikely to occur within the SPMR Permit Area because it is not within an area (Lynx Management Zone) known to support lynx populations. Although transient individuals could occur in the habitat along the eastern periphery of the SPMR Permit Area on the OW. None of this high elevation late-successional forest habitat would be removed under the Proposed Action and all construction activities and recreational activity associated with the bike trails and the skills parks occur within the developed portion of the SPMR Permit Area where lynx do not occur; therefore, the Proposed Action would have *no effect* on Canada lynx.

## ***Forest Service Region 6 Sensitive Species***

### **North American Wolverine**

Wolverines have a low likelihood of occurring in vicinity of the SPMR Permit Area due to the existing level of human activity, though they do occasionally occur as transient individuals. Transient individuals passing through could be exposed to temporary construction-related noise and disturbance, as well as



seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. However, given the large home ranges occupied by wolverines, Project activities under the Proposed Action would have negligible impacts on this species. Therefore, the Proposed Action *may impact individuals, but is not likely to result in a loss of viability in the Planning area, nor cause a trend toward federal listing* of the wolverine.

### **Townsend's Big-eared Bat**

Townsend's big-eared bats are most likely to use the SPMR Permit Area for foraging. Foraging bats would not be affected by the construction or operation of proposed Phase III projects because these activities would not occur during dawn and dusk when bats are actively foraging. Additionally, no potential roost sites (buildings, caves, rock crevices) would be altered as a result of the proposed Phase III projects. Although construction noise in the vicinity of these areas could disturb bats, it would be temporary and not likely to preclude bats from using these areas. Noise associated with proposed bike trail use would not be expected to disturb roosting bats, particularly because of the ongoing level of noise associated with the use of the existing mountain bike trails and maintenance activities within the SPMR Permit Area. Therefore, the Proposed Action *may impact individuals, but is not likely to result in a loss of viability in the Planning area, nor cause a trend toward federal listing* for the Townsend's big-eared bat.

### **Great Gray Owl**

Great gray owls may use the open habitats within the SPMR Permit Area for foraging during the summer; however, because all construction and operation activities associated with the proposed Phase III project would occur during daylight hours they would not occur when owls are actively foraging. Potential nesting habitat, located at the periphery of the SPMR Permit Area, would also not be affected by the proposed Phase III projects as all activities would occur within the developed portion of the ski area. Clearing for the proposed bike trails and skills parks may create additional foraging habitat for this species. Therefore, the Proposed Action *may impact individuals, but is not likely to result in a loss of viability in the Planning area, nor cause a trend toward federal listing* for the great gray owl.

### **Larch Mountain Salamander**

The proposed Phase III projects would not disturb any talus slopes during construction of proposed facilities or bike trail operation. Therefore, the Proposed Action would have *no impact* on Larch Mountain salamanders.

### **Van Dyke's Salamander**

There is a minor amount of suitable habitat (stream banks along mixed conifer riparian forest) for Van Dyke's salamanders in the SPMR Permit Area and none would be removed. Indirect effect may include ground disturbance in areas where proposed trails cross streams; however effects to Van Dyke's salamanders are unlikely because stream crossings would be spanned and work would be conducted outside of stream channels. Therefore, the Proposed Action would have *no impact* on Van Dyke's salamanders.

## ***Management Indicator Species***

### **Mountain Goat**

Mountain goats that occur during the summer at the summit of Big Chief Mountain would be exposed to temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. However, the proposed mountain bike trails and the existing Kehr's chairlift are not located within or adjacent to areas identified as occupied summer range for this species. Further, proposed Phase III project activities would not block

mountain goat access to escape terrain. Therefore, impacts to mountain goats under the Proposed Action would be negligible and the Project would not impact mountain goat population viability.

### **American Marten**

Contiguous late-successional forest habitats with decadent wood are lacking in the SPMR Permit Area and the areas where Phase III project activities are proposed are already highly fragmented. Approximately 6.7 acres of late-successional forest would be affected during construction, of which 2.6 acres would be permanently disturbed. This comprises less than 1 percent of the late-successional forest. With the exception of the proposed parking area expansion, large trees would be maintained and removal of small trees (those less than 6 inches) would be avoided to the extent practicable. Therefore, there would be little if any reduction in forest cover. Therefore, the Proposed Action would have minor, localized impacts to marten. Given the very limited amount of marten habitat that would be affected, the Project would not impact marten population viability.

### **Rocky Mountain Elk**

Elk are not known to occur within the Tye Valley or known to cross U.S. Highway 2 at Stevens Pass. Thus, all proposed Phase III projects are not located in areas where this species is present and therefore would not affect forage or cover habitats used by this species. Although there would be some construction related noise and disturbance near the upper elevations of the SPMR Permit Area, it would not be expected to displace elk using the Mill Valley due to the high ridge that separates the Colockum herd's range from the proposed Phase III projects, which would act as a noise barrier. Therefore, the Proposed Action would have no effect on elk or elk population viability.

### **Mule Deer**

Shrub and forest habitats within the SPMR Permit Area provide potential foraging and cover habitat, respectively, for mule deer. Clearing for the proposed mountain bike trails would permanently affect 1.8 acres of forest and 2.3 acres of shrub vegetation (both natural and modified), resulting in a minor reduction in foraging habitat and hiding cover for deer in the Tye River watershed where these habitats are abundant.

Mule deer may be exposed to temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. These disturbances could temporarily displace mule deer; however, the extent of this effect depends on the topography, cover, and other environmental factors. Mule deer have been shown to exhibit higher movement rates and spend less time foraging when exposed to mountain biking, but rather than fleeing from the disturbance were more likely to seek cover (Wisdom et al. 2004). It should be noted that the primary periods of forage intake for mule deer occur at sunrise and sunset, outside of the time of day when most proposed activities would be expected to normally occur. Therefore, the Proposed Action would result in short-term displacement of individual mule deer but would not preclude mule deer from summering in the SPMR Permit Area. Given that mule deer would be expected to continue to use the Project area and the minor amount of habitat removal that would occur associated with Project features, the Project would not impact mule deer population viability.

### **Pileated Woodpecker and Other Primary Cavity Excavators**

Individual pileated woodpeckers and primary cavity excavators could be exposed to temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining years of the permit term. This could result in temporary displacement of these birds. Clearing within forested areas could reduce the number of key habitat features used by these species (e.g., snags and downed wood). With the exception of the proposed

parking area expansion, large trees and snags (e.g., greater than 25 inches dbh) and decadent trees would be maintained to the extent practicable, and less than 1 percent of the late-successional forest within the SPMR Permit Area would be affected (Table 7.3-1). Therefore, the Proposed Action would result in minor short-term and long-term effects to these species. Given that pileated woodpeckers and primary cavity excavators would be expected to continue to use the Project area and the minor amount of habitat removal that would occur associated with Project features, the Project would not impact pileated woodpecker and primary cavity excavator viability.

### ***Other Species of Concern***

#### **Pika**

None of the proposed Phase III projects would directly affect talus habitats or high-elevation meadows used by pikas for foraging. The upper most proposed bike trails, located closest to the Hogsback chairlift and existing mountain bike trails would cross near talus slopes where pikas were observed during 2013 wildlife surveys. Mountain bike activity may temporarily disturb summer foraging behavior in the immediate vicinity of these trails, though this has not been demonstrated in published literature. Therefore, the Proposed Action would have minor, localized effects to pikas.

#### **Migratory Landbirds**

Temporary construction related noise and disturbance, as well as seasonal disturbance associated with the increase in summer recreation use during the remaining permit term could temporarily displace individual migratory landbirds. Vegetation removal for the proposed Phase III projects could remove individual bird nests or remove nesting habitat. Habitat removal under the Proposed Action would primarily be linear, spread out over the length of the trails. Therefore, it is unlikely that individual bird territories would be removed; instead, habitat suitability would be locally reduced. Thus, given the minor amount of habitat removal, and the existing habitat fragmentation within the SPMR Permit Area, the Proposed Action would not be expected to impact population levels for any landbird species.

### **7.6.3 Cumulative Effects**

The analysis area considered for all wildlife species is the same as that described above for direct and indirect effects because these areas already extend beyond the project-related effects. Thus, they capture the effects of past, present, and reasonably foreseeable projects that may overlap in space and time with the effects of the Phase III projects on the same species/resource. Effects to wildlife are related to actions that may disturb individual animals and remove or fragment wildlife habitat. The temporal extent considered for cumulative effects to wildlife the remaining years of the Special Use Permit term (34 years). It is assumed that as long as the ski area and bike trails are operating, the potential effects from the Proposed Action would continue. As indicated above, the proposed Phase III projects would have no effect on the Canada lynx, Larch Mountain salamander, Van Dyke's salamander, mountain goat, and Rocky mountain elk; therefore, the proposed Phase III projects would not contribute to cumulative effects to these species and they are not addressed further here.

Past projects within the SPMR Permit Area include the development of the resort with base area facilities and mountain bike skills park and newly constructed bike trails, parking lots, pedestrian bridge, the Pacific Crest National Scenic Trail, and highway and electrical transmission corridors. Within the surrounding area (BMUs, fifth-field watersheds), past timber harvest, existing transmission line rights-of-way, and other human developments including U.S. Highway 2 have reduced and fragmented wildlife habitats.

The proposed Phase III bike trails would also result in additional disturbance to, and potentially displacement of, wildlife temporarily during construction and then seasonally during the summer

operating season. This effect would last during the remaining years of the permit term (34 years). The mountain bike park operating season would also coincide with noise and disturbance associated with the base area projects, the Hogsback zip line, and other ongoing and reasonably foreseeable projects listed above. Taken together, the proposed Project in combination with existing and planned activities would result in continued avoidance of the SPMR Permit Area by wildlife sensitive to human activity (e.g., grizzly bears, gray wolves, wolverines, marten, mule deer, pileated woodpeckers, and primary cavity excavators).

Past activities have reduced and fragmented wildlife habitats within the SPMR and surrounding 5th-field watersheds. This has reduced the amount of late-successional forests use by the northern spotted owl, great gray owl, marten, pileated woodpecker, other primary cavity excavators, and migratory landbird species. This has also reduced foraging and cover habitats used by mule deer, grizzly bear core habitat, and gray wolf security habitat. The base area has been previously disturbed and landscaped during the construction of the base area lodges, plazas, pathways, and infrastructure. It is partly vegetated with few small trees along with minor shrubs and grasses, providing little value to wildlife. Additional vegetation removal associated within the base area would have negligible impacts to wildlife. The ongoing and reasonably foreseeable projects located at the base area (lodge, ski school, ski patrol building, and plaza) are located outside of the Northwest Forest Plan Riparian Reserves. They would also not affect late-successional forest, and none would occur within grizzly bear core habitat or gray wolf security habitat. The addition of a zip line within the trees and associated platforms will have a nominal effect on vegetation other than very minor disturbance within the existing chairlift corridor for the installation of the platforms and towers. The proposed Phase III projects would make a very minor contribution to the reduction in late-successional forest and fragmentation of wildlife habitats within the SPMR Permit Area, but would make no contribution to cumulative reductions in grizzly bear core and gray wolf security habitat. Taken together, the Proposed Action in combination with past, ongoing, and foreseeable activities would result in moderate effects to wildlife habitat associated with vegetation removal and fragmentation. This analysis tiers to the dispersal habitat modeling analysis conducted for the Phase I projects, which took into account the full implementation of the Stevens Pass Master Development Plan. That analysis concluded that full implementation of the Master Development Plan would not reduce the dispersal capabilities of wide-ranging species across the U.S. Highway 2 corridor (Forest Service 2009).

### 7.6.4 Forest Plan Consistency

All alternatives would be consistent with the Forest Plan, as amended. Table 7.6-7 lists the relevant Forest Plan standards and guidelines and describes project consistency.

**Table 7.6-7. Consistency with Forest Plan Standards and Guidelines**

Standard and Guideline	Consistency
<b>Diversity and Productivity</b>	
Retain contiguous stands of later seral stages within drainages; link patches of later seral stages with patches... (MBS Forest Plan p. 4-122)	A very minor late seral habitat would be removed as a result of the Project (less than 1 percent of the SPMR Permit Area)
Conserve or enhance long-term site productivity including wildlife habitat, by maintaining throughout rotation, existing levels of large woody debris as well as small fine materials... (MBS Forest Plan p. 4-122)	Large woody debris would be retained to the extent practicable. Pieces moved during trail and skills park construction would be retained in adjacent forests.
Retain standing dead and standing green trees sufficient to maintain cavity nester habitat at or above 40% of minimum potential population levels, throughout the managed forest (80% in riparian areas)...where possible leave wildlife trees at levels which will be similar to those found in natural eco-systems of the appropriate type (MBS Forest Plan p. 4-122)	With the exception of the proposed parking area expansion, large trees and snags and decadent trees would be maintained to the extent practicable to provide habitat for cavity nesting species.

**Table 7.6-7. Consistency with Forest Plan Standards and Guidelines (continued)**

Standard and Guideline	Consistency
<b>Wildlife Habitat Management</b>	
As a minimum provide sufficient numbers and sizes of live and dead trees throughout the Forest to maintain primary cavity excavators at the 40% population level...(MBS Forest Plan p. 4-124)	See above.
In addition to snags, large dead and down logs will be left...(MBS Forest Plan p. 4-124)	Snags, large dead and down logs would be retained. If large dead and down logs are moved for construction, they would be retained in the adjacent forest.
Nest sites actively being used by raptors or other bird species of special concern will be protected from human disturbance until nesting and fledging is completed (MBS Forest Plan p. 4-124)	The analysis area does not contain any known nests of raptor species of concern. Should one be found, work in the area will stop and the area biologists would be contacted.
Cliffs, talus, and caves are recognized as relatively unique habitats of the Forest, and all potentially disturbing or altering management activities shall be carefully evaluated on the ground during the planning process to ensure their protection and proper management (MBS Forest Plan p. 4-124).	There would be no effects to talus slopes associated with Phase III Projects.
Programmed activities in calving, fawning, or kidding, areas should be discouraged. They shall be timed to minimize disturbance to the animals. (MBS Forest Plan p. 4-124)	No activities would occur in areas identified as calving, fawning, or kidding habitat.
Provide sufficient amount of forage and optimal thermal cover to maintain viable populations of mountain goat. (MBS Forest Plan p. 4-124)	Mountain goat habitat will not be removed or altered as a result of this Project.
Maintain a mix and distribution of successional stages that will support maintaining or enhancing diversity. (MBS Forest Plan p. 4-124)	Vegetation removal would be minor across the ski area and the existing mix of successional stages would remain.
Provide the highest level of deer and elk habitat capability possible while still meeting other primary resource objectives. (MBS Forest Plan p. 4-124)	Deer and elk habitat capability would not be reduced as a result of this Project, given the minor habitat removal.
During project design, surveys shall be made to determine the presence or absence of mountain goat winter range. (MBS Forest Plan p. 4-124)	The WDFW PHS database was queried to identify mountain goat habitat; none of the SPMR Permit Area is identified as winter range.
Activities that adversely affect mountain goats on their spring or summer range shall be identified and mitigated. (MBS Forest Plan p. 4-125)	The Project would have no effects on mountain goats on their summer range as activities do not occur within or adjacent to their occupied summer range.
Maintain areas that serve as connecting habitat or travel corridors for indicator species (MBS Forest Plan p. 4-125)	The Project would not affect landscape connectivity across the action area.
<b>Threatened, Endangered, and Sensitive Species</b>	
Proposed management actions that have the potential to affect threatened, endangered, or sensitive species will be evaluated to determine if these species are present. Biological evaluations will be completed...(MBS Forest Plan p. 4-127)	Effects to threatened, endangered, and sensitive species area addressed in this Wildlife Resource Report and the wildlife section of the EA for the Project. The USFWS concurred with our ESA effects determination.
<b>Survey and Manage</b>	
Survey prior to ground disturbing activities (Northwest Forest Plan [NWFP], p. C-4)	Surveys for former Survey and Manage (now ISSSP) amphibian and mollusk species were conducted in 2013.



**Table 7.6-7. Consistency with Forest Plan Standards and Guidelines (continued)**

Standard and Guideline	Consistency
<b>Recreation Areas</b>	
Manage recreation areas to minimize disturbance to wildlife species (NWFP p. C-6)	All proposed Phase III projects are within the developed ski area. Although summer use would increase under the Proposed Action, there is already an existing level of activity due to ongoing maintenance operations and use of the existing bike trails that would continue.
<b>Aquatic Conservation Strategy Objectives 8 and 9</b>	
New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives... (NWFP p. C-34)	See Section 7.7.4.
Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives... (NWFP p. C-34)	Phase III bike trails will span wetlands and minimize disturbance in riparian areas which will help meet Aquatic Conservation Strategy objectives.
Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives. (NWFP p. C-37)	Any trees that must be felled during trail construction will be left in place.

## 7.7 Fish

### 7.7.1 Existing Conditions

The analysis area for fisheries is the Upper Tye drainage (a drainage area within the Upper Tye River subwatershed) and down the Tye River approximately 2 miles to the west. This analysis area was selected because the Project would occur within the Upper Tye drainage and sediment transmitted out of the SPMR Permit Area (which can indirectly affect fish and fish habitat), if any, would travel down the Tye River some distance until it eventually became indistinguishable from background material (see Section 7.3.1.3 for discussion of turbidity monitoring). At approximately 2 miles downstream, an unnamed perennial stream joins the Tye River from the north providing additional dilution. While there would not be any measurable effects of the Project 2 miles downstream from the SPMR Permit Area, a conservative approach was taken for this analysis. Based on the previous resource discussions (Soils and Hydrology), Project-generated sediment could be delivered to streams within the analysis area, but they would be limited by project design and mitigation measures. Fish in drainages to the east are presented for information and context; however, no Project effects would occur in this habitat.

Nearly all of the Project would be located in the Upper Tye River subwatershed, a tributary to the South Fork Skykomish (See Figure 7.7-1). The Tye River joins the Foss River about 14 miles downstream of the ski area to become the South Fork Skykomish River. The Tye River watershed is designated as a Tier 1 Key Watershed, and hence is thought to contribute directly to the conservation of at-risk anadromous salmonids, bull trout, and resident fish species (Forest Service and BLM 1994; Forest Service 2004). The upstream extent of anadromous presence in the Tye River is Alpine Falls, which is located about 9 miles downstream of the Project area. Alpine Falls is approximately 30 feet (9 meters) high and is a permanent barrier to all upstream fish passage, including Chinook, chum, sockeye, and coho salmon, and sea-run cutthroat trout. It is also thought to be the upstream extent of bull trout (Forest Service 2004).

A small portion of the Project area lies within the Nason Creek watershed, draining east to the Wenatchee River system which is a contributor to the Columbia River, east of the Cascade Mountains. Within the Nason Creek watershed, there are two parking lots and staff residential units located on the north side of

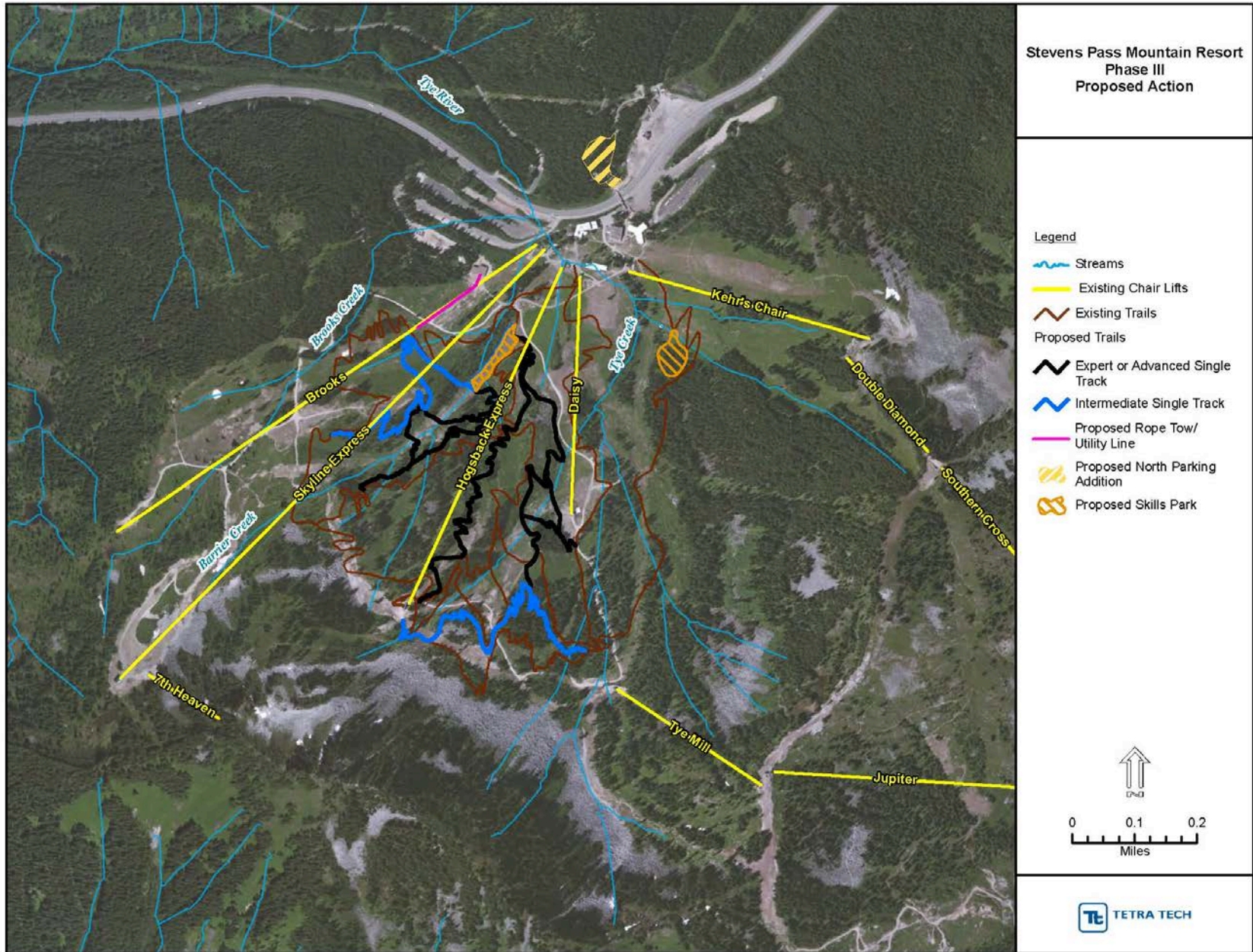


Figure 7.7-1. Project Area Streams and Components

Highway 2, opposite the base area. Two chairlifts and extensive terrain also are within the Upper Mill Creek portion of the larger Nason Creek watershed (otherwise known as Mill Valley or the “back side” of SPMR). Mill Creek and Stevens Creek are the only creeks within the ski area boundary that drain to Nason Creek. The Upper Mill Creek subwatershed of Mill Creek composes the back side of the ski area. Stevens Creek parallels U.S. Highway 2 east of the Stevens Pass summit. Figure 7.7-2 shows the eastside streams.

#### **7.7.1.1 Threatened and Endangered Fish Species**

There are no threatened and endangered fish species within the fisheries analysis area. The nearest occurrence of federally listed fish species to the west is below Alpine Falls, about 9 miles downstream of the SPMR Permit Area. Since the last glaciation, Sunset Falls, which is located on the South Fork Skykomish River approximately 33 miles downstream from the Stevens Pass Ski Area, formed a total barrier to upstream migration for fish. However, since 1958, the Washington Department of Fish (now Department of Fish and Wildlife) has operated a trap-and-haul facility to transport upstream migrating fish above the falls. This facility generally operates from July through December, and transports all fish species that are trapped. Currently, established runs of fall Chinook salmon, bull trout, and steelhead occur above Sunset Falls (Forest Service 1994). Alpine Falls, located about 4.5 miles upstream from where the Foss and Tye rivers join, is the upper extent of anadromous fish presence (Figure 7.7-2). No threatened or endangered fish occur in the Tye River system above Alpine Falls.

To the east, bull trout and steelhead distributions are mapped about 5.5 and 3.8 miles downstream from the existing parking area, respectively, but these species do not occur within the Project area (Figure 7.7-2). A report prepared by the Washington State Conservation Commission indicates that approximately 0.5 mile upstream of the confluence with Mill Creek, a natural bedrock falls and cascades in Nason Creek form a barrier to steelhead and bull trout (Andeonaegui 2001). This coincides with the extent of bull trout and steelhead distribution reported in the Nason Creek Watershed Assessment (Forest Service 1996b). Farther downstream, Chinook salmon occur below a falls near Whitepine Creek. Sockeye salmon occur in the Wenatchee River and coho salmon occur in the Columbia River, well outside of the Project area.

#### **7.7.1.2 Designated Critical Habitat**

Critical habitat is a term within the Endangered Species Act (ESA). It is defined as an area occupied by a fish species listed as Threatened or Endangered within which are found physical or geographical features essential to the conservation of the species, or an area not currently occupied by the species, which is essential to the conservation of the species.

There is no Designated Critical Habitat within the analysis area for fish. The nearest Designated Critical Habitat west of SPMR is below Alpine Falls, approximately 7 miles downstream from the analysis area and about 9 miles downstream of the SPMR Permit Area. On the east side, Designated Critical Habitat for steelhead, bull trout, and Chinook salmon occurs in Nason Creek approximately 3.8, 5.5, and 15.7 miles downstream, respectively (Figure 7.7-2).

#### **7.7.1.3 Essential Fish Habitat**

The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish requirements for Essential Fish Habitat (EFH) descriptions in federal fishery management plans and to require federal agencies to consult with the National Marine Fisheries Service on activities that may adversely affect EFH. EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” There is no EFH within the SPMR Permit Area, or within the upper Tye Creek or Stevens Creek subwatersheds. The nearest EFH to the Project area is below Alpine Falls to the west, about 9 miles downstream of the Project area, and about 5.5 miles to the east in Nason Creek.



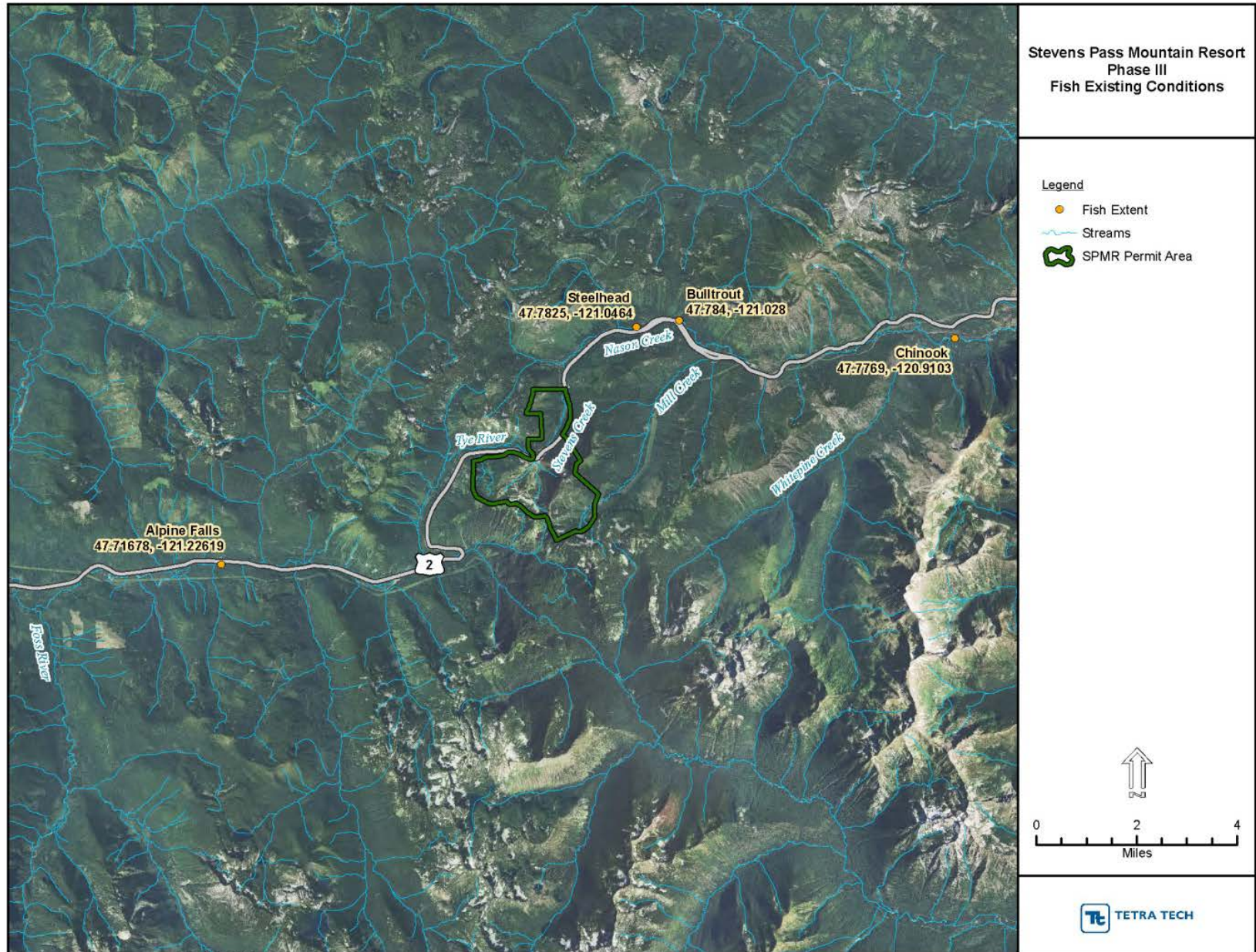


Figure 7.7-2. Streams and Fish Habitat in the Vicinity of Stevens Pass

#### **7.7.1.4 Sensitive Species**

The following sensitive fish species occur on the MBS or OW: coho salmon, Baker River sockeye salmon, coastal cutthroat trout, river lamprey, pygmy whitefish, and Umatilla dace. None of these species occur within the Project area.

#### **7.7.1.5 Management Indicator Species**

There are no anadromous MIS within the analysis area. Resident cutthroat trout were the only fish species found in the mainstem Tye River above Alpine Falls, and all tributaries that enter it above Alpine Falls, during surveys conducted in 1996 (Forest Service 2004), although there have been prior observations of rainbow trout in the Upper Tye subwatershed (Forest Service 2004). No bull trout occur within several miles of the Project area. Resident cutthroat trout are present in Tye and Barrier Creeks within the Project area; however, they are remnants of an introduced stock and are non-native to the area (Forest Service 2004).

#### **7.7.1.6 General Fish Species and Habitat within the Project Area**

A remnant population of cutthroat trout is known to be present within the analysis area, in both Tye and Barrier creeks. Cutthroat trout have been observed in Tye Creek within the analysis area, but none were found during electrofishing of its lowermost reach (immediately upstream of U.S. Highway 2) during the fall of 1995 (USDA Forest Service 1997, in Forest Service 2004). During a snorkel survey of the water supply pond on Tye Creek in September 2002, no fish were observed. However, two cutthroat trout were observed immediately downstream of the pond. Cutthroat trout may be present in Tye Creek up to the Tye Creek reservoir but are not believed to occur in or above the reservoir.

Cutthroat trout are known to occur within the first 300 to 400 feet (91 to 122 meters) of Barrier Creek upstream of the confluence with Tye Creek, near the base area (within the analysis area). Six cutthroat trout were captured and an additional 15 cutthroat trout were observed in the lower portions of Barrier Creek during surveys conducted in 1996 (Forest Service 1996a). Additionally, cutthroat trout were again observed in the lower portion of Barrier Creek during snorkel surveys in September 2002.

Brooks Creek passes through a forested area and flows in or near the western edge of the western ski area parking lot before passing under U.S. Highway 2 and eventually flowing into the Tye River. The stream is generally high gradient, but interspersed with short, low gradient segments. This is likely a non-fish-bearing stream within the ski area boundary because the steep gradient imposes barriers to upstream migration from downstream areas in the Tye River that are fish-bearing. Because fish are not likely to occur within Brooks Creek and there are no direct effects to Brooks Creek as a result of the Project, it is not discussed further in this section.

Cutthroat, rainbow, and brook trout have been observed downstream of the Permit Area in Tye Creek. Cutthroat trout were the only fish species found in the mainstem Tye River above Alpine Falls, and all tributaries which enter it above Alpine Falls, during surveys conducted in 1996 (Forest Service 2004). Rainbow and eastern brook trout were also found during work that surveyed other reaches in 1990 (Forest Service 2004).

### **7.7.2 Direct and Indirect Effects**

#### **7.7.2.1 No Action**

Under the no action alternative, there would be no additional impact to aquatic resources associated with construction of the proposed features. Aquatic resources within the survey area would be exposed to the existing levels of disturbance resulting from normal operation and maintenance activities at the resort,



including recreation associated with winter sports and summer recreation associated with current bike trails and hikers along the PCNST, and year-round use of parking lots. Existing populations of cutthroat trout in Tye and Barrier creeks would be maintained. Because the no action alternative represents the continuation of existing activities, with no additional acres of disturbance to Riparian Reserves or aquatic habitat, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

### **7.7.2.2 Proposed Action**

Cutthroat trout and its habitat could be affected by Project construction and operation near Tye and Barrier Creeks. Effects to fish are related to actions that may alter the timing, duration, frequency, or intensity of stream flow, sediment loads, and water quality. Other variables that may potentially be affected include future riparian recruitment of LWD, streambank stability and changes in channel morphology, canopy cover, and inputs of contaminants from motorized equipment. Riparian Reserves protect water quality and quantity as well as provide habitat for riparian-dependent species.

Development adjacent to streams has the potential to affect water quantity or quality. Effects may be temporary (ranging from hours or days to a couple of years) or permanent (lasting throughout the remainder of the permit term [34 years]). Temporary impacts may occur from increased sediment and turbidity as a result of construction disturbance. Permanent disturbance are those that would remain as long as the developments remain, such as vegetation removed for the bike trails within Riparian Reserves.

Clearing and construction in vegetated areas can result in soil erosion which could negatively affect cutthroat trout or its habitat within the Permit Area if allowed to reach Tye or Barrier Creeks. However, the implementation of the mitigation measures and project design features identified below and in Appendix A would greatly reduce soil erosion and sedimentation.

#### ***Bike Trails***

Trail clearing and construction, including the operation of light and heavy equipment, and trail use would increase soil erosion potential throughout the Project area, which could increase fine and suspended sediment loads in streams if allowed to enter the waterbodies. Under the Proposed Action, the mountain bike trails would be constructed within the developed portion of the ski area and would cross through existing ski runs, forested habitat, and riparian areas.

Under the Proposed Action, the amount of bike trails within Riparian Reserves would be minimized. Vegetation removal and ground disturbance within forested Riparian Reserves would be minimized by trail design and selective routing that would cross Riparian Reserves as directly as practical and not parallel streams. Where crossing of Riparian Reserves would be required, trails would be designed to minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. There would be no modification to the stream network resulting from bike trail construction. All perennial streams would be crossed using wood bridges. On water courses where seasonal flow is expected but permanent water is not present, culverts or bridges would be used based on site-specific conditions. Culverts would be designed to pass 100-year flows, including associated bedload and debris. Trails would be relocated to avoid wetland impacts or bridges would be used. In the location just southwest of Skills Park 1, the proposed intermediate trail crosses Barrier Creek where there are two channels with steep banks lined with boulders and alder trees. Bridges would be built to span Barrier Creek to minimize removal of riparian vegetation.

The vegetation cleared for single-track mountain bike trails in Riparian Reserves would result in a very small change in existing forest canopy. Vegetation clearing in Riparian Reserves that cannot be avoided would be in narrow and dispersed strips. Large tree removal would be avoided. No trees would be

dropped in or across stream channels and no fallen trees would be yarded across waterbodies. To the extent practicable, trees greater than 6 inches (15 centimeters) dbh will not be removed, cut trees and logs within Riparian Reserves will be left in place, and the removal of LWD from streams will be prohibited. This minimal amount of clearing would not measurably alter flow regimes, stream temperatures, or LWD supply in the analysis area; effects to the watershed as a whole would be far less. SPMR would be required to revegetate temporarily disturbed areas following construction, thus reducing soil erosion by establishing effective ground cover, and report the effectiveness of revegetation efforts in annual reports to the Forest Service. The area adjacent to the operational track footprint for bike trails would be replanted with native vegetation, reducing the operating disturbance to 4 feet in straight areas to approximately 10 feet at curves. Based on the results of effectiveness monitoring, revegetation efforts could be supplemented or modified until all temporarily disturbed areas have been revegetated to acceptable levels and the Forest Service gives final approval. Localized areas of short-term erosion lasting a couple of years could occur in the temporary disturbance area, but it would be mitigated by the application of mulch, fiber fabric, or other temporary ground cover. In the long term (as long as the trails are in use), some erosion could occur along the exposed surfaces created by the bike trails. With the implementation of mitigation and monitoring measures in Appendix A, and the potential for corrective actions and the requirement for demonstration of successful revegetation, the soil erosion risks would be mitigated.

Where the trails would be elevated on bridges or boardwalks (as in wetland or other sensitive areas), vegetative groundcover would be retained, thereby reducing the total acres of exposed soil. Additional temporary disturbance may occur outside of the permanent disturbance area as a result of grading and mechanical equipment operation and maneuvering, but these would not be widespread and would be revegetated following construction.

Project-generated sediments would be diverted away from stream crossings and deposited on the forest floor. Small short-term increases in suspended sediment are expected following culvert placement with the first rain event. Sedimentation can reduce the quality and quantity of spawning and rearing habitats by filling pools and spawning gravels and suffocating developing eggs; it can also reduce habitat for fish prey. Many of the mitigation measures and project design features presented in Appendix A would prevent or limit Project-generated sediments from reaching streams, including the development of a Project-specific SWPPP to be submitted to and approved by the Forest Service prior to any ground-disturbing activities. The SWPPP would identify erosion and stormwater control measures for construction of the proposed project. Additionally, SPMR would abide by provisions of the WDFW Hydraulic Project Approval, including in-water construction timing periods, July 15–October 31. Sediment generated outside of the Riparian Reserves is unlikely to be detectable in streams as it would be deposited on the forest floor (in uplands). Bare ground created within Riparian Reserves could be a source of limited sediment delivery to streams, but it would be limited by project design and mitigation measures (see Soils and Hydrology resource report and Appendix A).

During construction, project design features would minimize effects to water quality, and minor effects occurring during construction would be temporary. Minor impacts to water quality may occur during operation due to sediment generated from trail use; however, trail drainage would be managed to prevent sediment-laden water from entering streams. Any residual sediment that could potentially reach waterbodies as a result of operations would be indistinguishable from background sediment and no measurable direct or indirect effects are anticipated.

### ***Skills Parks***

The proposed skills parks would be placed in the lower gradient slopes near the resort facilities and would require minimal new ground disturbance for the placement of skills parks features. In places, removable

skills park features would elevate bike traffic off the ground, or soil from a local source would be brought in to create dirt features. Stormwater and erosion control measures would be included in design and operation of the skills parks.

Skills Park 1 does not include any stream channels within the survey area; however, Barrier Creek is located just west of Skills Park 1 and the adjacent proposed intermediate trail. The slope to Barrier Creek is steep and reinforced by boulders, with riparian vegetation remaining consisting of shrubs and trees. BMPs would be implemented to minimize erosion and sediment delivery into the stream during and after construction. Skills Park 2 encompasses an area with no fish habitat present. Thus, there would be no measurable effects to fish or fish habitat.

### ***Kehr's Chairlift Replacement***

Replacement of Kehr's chairlift and loading terminal would temporarily disturb approximately 2.5 acres. Soils disturbed during tower placement and loading area construction would be restored and revegetated immediately following construction. While there are several ephemeral streams located within the Kehr's chairlift survey corridor, no fish habitat is present. Thus, there would be no measurable effects to fish or fish habitat.

### ***Brooks Chairlift Replacement***

Replacement of Brooks chairlift and terminals would temporarily disturb approximately 2.7 acres. Soils disturbed during tower placement and loading and unloading area construction would be restored and revegetated immediately following construction. No permanent impacts are anticipated beyond the direct effects of shallow excavation and the placement of the structures themselves. No fish habitat is present within the Brooks chairlift corridor. Thus, there would be no measurable effects to fish or fish habitat.

### ***Rope Tow***

No aquatic resources would be affected by construction or operation of the proposed rope tow.

### ***Parking Lot***

Development of the new parking lot would disturb approximately 2.1 acres, which would remain permanently disturbed. The parking lot design will include measures for handling stormwater runoff and snow melt. The parking lot would be designed to control runoff, such that there would be no alteration of peak and base flows in area streams and sediment would be captured. SPMR anticipates that the lot would be designed to drain to the west. There is no fish habitat located within the parking area expansion. Thus, there would be no measurable effects to fish or fish habitat.

Indirect effects to aquatic resources could result from increased soil erosion where runoff flows from the parking lot are concentrated and not adequately controlled. Measures included in Appendix A, notably the requirement for drainage structures, are expected to adequately control runoff and erosion and protect downstream aquatic resources. Monitoring during construction and operation of the parking lot would allow for early detection and control should problems develop.

### ***Threatened and Endangered Species and Designated Critical Habitat***

A combined biological assessment, biological evaluation, and essential fish habitat assessment has been prepared for aquatic resources under separate cover and is available in the project record. The Project would have *no effect* on ESA listed species (Puget Sound Chinook salmon, Upper Columbia River spring run Chinook salmon, bull trout, Puget Sound steelhead [proposed Designated Critical Habitat] and Upper Columbia River steelhead) or their critical habitat because these fish species do not occur within the Project area and project design measures and BMPs would prevent off-site effects to listed species. The

nearest occurrences of listed species are 3 to 15 miles downstream, beyond the effects of the Proposed Action.

### ***Essential Fish Habitat***

The Proposed Action *would not adversely affect* EFH. There is no EFH within the SPMR Permit Area, or within the upper Tye Creek or Stevens Creek subwatersheds. The nearest EFH to the Project area is below Alpine Falls to the west, about 9 miles downstream of the Project area, and about 5.5 miles to the east in Nason Creek.

### ***Sensitive Species***

The Proposed Action would have *no impact* on the following sensitive species: coho salmon, Baker River sockeye salmon, coastal cutthroat trout, river lamprey, pygmy whitefish, and Umatilla dace because they do not occur within the analysis area and Project design measures and BMPs would be implemented to prevent off-site effects to these species.

### ***Management Indicator Species***

The MBS Forest Plan lists MIS, which are Chinook salmon, bull trout, coho salmon, pink salmon, chum salmon, steelhead, and rainbow trout, and sea-run and resident cutthroat. The Wenatchee Forest Plan lists MIS, which are spring Chinook salmon, summer Chinook salmon, sockeye salmon, steelhead, bull trout, and westslope cutthroat trout. Only resident trout utilize habitats in Upper Tye Creek and Barrier Creek near the Project area. The viability of fish MIS is addressed at the forest-level. While there are no specific “effect calls” for MIS, proposed project activities would affect neither Forest-wide viability of MIS fish populations nor the quality or quantity of their habitats in the Upper Tye River or Upper Nason Creek subwatersheds.

## **7.7.3 Cumulative Effects**

This cumulative effects analysis discusses the contributions of other past, present, and reasonably foreseeable projects that overlap with the proposed Project in space and time, which could affect aquatic resources. The time span used for this analysis is the remaining SPMR permit term (34 years). It is assumed that as long as the ski area and bike trails are operating, the potential effects from the Proposed Action would continue.

Impacts to aquatic resources due to the Tye Creek Lodge Resort Services/Ski School Addition, West Entrance Ski Patrol Building and plaza expansion would be minimal within the developed base area as no streams would be directly affected and stormwater control measures would be implemented. For the ski school building removal, impacts to aquatic resources would be minimized during construction with BMPs to reduce the risk of sediment in storm water runoff getting into any nearby stream. The area would be re-graded and mowed similar to the ski area surrounding it that is currently used for teaching. Construction of the Hogsback zip line would avoid waterbodies. BMPs would be used to minimize effects of sedimentation into nearby streams.

The base area where the base area proposed projects and reasonably foreseeable projects (lodge, ski school, ski patrol building, and plaza) are located has been previously disturbed and landscaped during the construction of the base area lodges, plazas, pathways, and infrastructure. The area is partly vegetated with few small trees along with minor shrubs and grasses. Surface water drainage in the open mowed areas is dispersed across the ground to allow capture of sediment by vegetation and debris prior to reaching streams. The addition of impervious surface due to the increase in building footprint at or heated plaza would require conveyance of stormwater runoff. The effects of proposed Phase III activities of fish or fish habitat could overlap in space and time with the effects from other projects at SPMR, primarily by the introduction of sediment into waterways. For the current Phase III projects and all foreseeable

projects, BMPs and mitigation measures would be implemented to control erosion and runoff, thus minimizing sedimentation.

#### **7.7.4 Forest Plan Consistency**

The Project would be consistent with standards and guidelines of the MBS Forest Plan for fish resources as detailed below.

- Fish Habitat Management (Forest Service 1990a, p. 4-126): There may be short-term sedimentation during and after construction. Any project-generated sediment should be flushed from the system during the next high flow. Disturbance would be limited within Riparian Reserves by trail construction measures (e.g., trail alignment, drainage and runoff control, and maintaining forest canopy). All instream work would abide by the conditions and timing restrictions imposed by the WDFW. With implementation of the required mitigation measures and BMPs to be included in the SWPPP (see Appendix A), water quality and fish habitat would be maintained in their existing condition.
- Threatened, Endangered, and Sensitive Species (Forest Service 1990a, p. 4-127): TES species were evaluated. No TES species occur within the analysis area. Thus, the Project would not contribute to these species becoming federally listed or to degrading their listing status.
- Key Watersheds Outside Roadless Areas—Reduce existing system and non-system road mileage (Forest Service and BLM 1994, p. C-7): The proposed parking lot is within the Upper Tye subwatershed, part of the Tye River Tier 1 Key Watershed. The Proposed Action would not cause a net increase of roads because the increase in road from proposed parking lot is offset by previously decommissioned roads within the watershed. The parking lot would be designed to control runoff, such that there would be no alteration of peak and base flows in area streams and sediment would be captured.
- Soil, Air, Water, and Riparian Resources (Forest Service 1990a, p. 4-119): These standards and guidelines address project effects to species associated with riparian habitats. All streams and wetlands that cannot be avoided would be spanned by the Project, thereby maintaining the bank, floodplain, and shore stability of these waterbodies. Effects associated with the Proposed Action would be temporary. With implementation of the required mitigation measures and BMPs to be included in the SWPPP (see Appendix A), riparian habitat would be maintained in the existing condition, within the range of natural variability.

The following is an assessment of the Project against the nine ACS Objectives.

**1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of aquatic systems to which species, populations, and communities are uniquely adapted.**

Short-term effects due to erosion and sediment during construction would be avoided with the use of BMPs specified in the SWPPP, and therefore measurable short-term effects to resident fish and fish habitat would be avoided. Long-term effects are not anticipated to be measurable considering the erosion and stormwater control design and mitigation measures that would be implemented. Vegetation removal and ground disturbance within forested Riparian Reserves would be minimized by trail design and selective routing. At the watershed scale, there would be no measurable effect on the aquatic ecosystem. The Proposed Action would maintain the distribution, diversity, and complexity of watershed and landscape-scale features.

**2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must**



**provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.**

Proposed trails would be constructed to maintain hydrologic connectivity within the watershed, including adequate culverts that are sized to accommodate at least the 100-year flood and associated bedload and debris. Trails would be designed to minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. Bike trails will be designed to avoid wetlands, where possible. Wetlands that cannot be avoided would be spanned using bridges (i.e., an elevated trail structure designed not to impede flows). No heavy equipment would be operated in wetlands. The Proposed Action would maintain spatial and temporal connectivity at the project and watershed scale, in the existing condition, within the range of natural variability.

**3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.**

There would be no modification to the stream network resulting from trail construction. At the project level, there would be short-term impacts due to culvert installation in intermittent and ephemeral streams. Short-term impacts would be minimized by installing culverts in the dry. Stream beds and banks in perennial waterbodies would be maintained by the installation of bridges outside of the stream channel to avoid altering stream beds or banks. Vegetation removal and ground disturbance within forested Riparian Reserves would be minimized by trail design and selective routing that would cross Riparian Reserves as directly as practical and not parallel streams. No trees would be dropped in or across stream channels and no fallen trees would be yarded across waterbodies. SPMR would be required to revegetate temporarily disturbed areas following construction, thus reducing soil erosion by establishing effective ground cover, and report the effectiveness of revegetation efforts in annual reports to the Forest Service. The area adjacent to the operational track footprint for bike trails would be replanted with native vegetation, reducing the operating disturbance to 4 feet in straight areas to approximately 10 feet at curves. The Proposed Action would maintain the physical integrity of the aquatic system at the project and watershed scale, in the existing condition, within the range of natural variability.

**4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.**

Long-term effects to water quality would be avoided through application of design measures. Short-term effects to water quality would be avoided through the application of BMPs to be included in the SWPPP (see Appendix A). Stream crossings would be constructed near perpendicular to the stream to minimize impacts and designed and maintained to prevent diversion of streamflow out of the channel. Trail drainage would be managed on the approaches to stream crossings to prevent sediment-laden water from entering streams by routing drainage to the forest floor. To prevent degrading water quality, there would be no refueling of equipment within Riparian Reserves unless it occurs in an existing facility already approved for such a use for ongoing maintenance and operations. A project-specific spill prevention and response plan would be developed and included in the SWPPP. The Proposed Action would maintain the water quality at the project and watershed scale, in the existing condition, within the range of natural variability.

**5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.**

At the project scale, short-term effects to the distribution of sediment during construction would be avoided with the proper application of BMPs to be included in the SWPPP (see Appendix A),

and therefore measurable short-term effects to resident fish and fish habitat would also be avoided. No trees would be dropped in or across stream channels and no fallen trees would be yarded across waterbodies. Stream crossings would be constructed near perpendicular to the stream to minimize impacts and maintained to prevent diversion of streamflow out of the channel. Trail drainage would be managed on the approaches to stream crossings to prevent sediment-laden water from entering streams by routing drainage to the forest floor. All stream crossings would be designed to accommodate at least the 100-year flow, including associated bedload and debris. The Proposed Action would maintain the sediment regime at the project and watershed scale, in the existing condition, within the range of natural variability.

**6. Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.**

Due to the amount of clearing and impervious surface added at the base area from prior development, there has been a change in runoff characteristics from pre-development conditions. The limited clearing of existing small vegetation (less than 6 inches dbh), combined with the linear nature of trail construction (riparian clearing would be in narrow and disbursed strips), would not measurably influence instream flows. Following restoration and revegetation, there would be no change to the hydrologic regime. Trails would be designed to minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. With the exception of the proposed parking area expansion, large trees would be maintained and removal of small trees (those less than 6 inches) would be avoided to the extent practicable. Therefore, there would be little if any reduction in forest cover. The Proposed Action would maintain instream flows at the project and watershed scale, in the existing condition, within the range of natural variability.

**7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.**

Short-term changes in wetland hydrology may occur for up to several years following construction while vegetation is reestablished. These changes are expected to be within the range of natural variability. Following restoration and revegetation, there would be no change to the hydrologic regime and no adverse change to the timing or variability of wetland inundation. Proposed trails would be constructed to maintain hydrologic connectivity within the watershed, including adequate culverts that are sized to accommodate at least the 100-year flood and associated bedload and debris. Trails would be designed to minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. Bike trails will be designed to avoid wetlands, where possible. Wetlands that cannot be avoided would be spanned using bridges (i.e., an elevated trail structure designed not to impede flows) to provide hydrologic connectivity. The Proposed Action would maintain the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands at the project and watershed scale, in the existing condition, within the range of natural variability.

**8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.**

Implementation of mitigation measures or Project design features would minimize disturbance in riparian areas and wetlands. Vegetation clearing in Riparian Reserves that cannot be avoided

would be in narrow and dispersed strips. The area adjacent to the operational track footprint for bike trails would be replanted with native vegetation, reducing the operating disturbance to 4 feet in straight areas to approximately 10 feet at curves. Vegetation greater than 6 inches dbh would not be removed, cut trees and logs within Riparian Reserves would be left in place, and the removal of LWD from streams would be prohibited.

Post-construction restoration of riparian and wetland areas would include salvaging native plants for use in revegetation, and revegetation of all areas of bare soil exposed by Project activities that are at risk for noxious weed invasion. The use of trails elevated on bridges or boardwalks (as in wetland or other sensitive areas) would allow shrubs and ground cover to continue to grow, continuing to provide the functions of nutrient filtering, preventing surface erosion, and sustaining physical complexity and stability of the plant communities. The Proposed Action would maintain the species composition and structural diversity of plant communities at the project and watershed scale, in the existing condition, within the range of natural variability.

**9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.**

Implementation of the mitigation measures in Appendix A as well as those found in the botany and wildlife resource reports (see project file) would minimize disturbance in Riparian Reserves. The proposed mountain bike trails would span streams and wetlands on elevated wooden bridges to allow for the continued growth of shrubs and groundcover. Restoration of native plant communities would include revegetation of all areas of bare soil exposed by Project activities that are at risk for noxious weed invasion, salvaging native plants for use in revegetation, limiting the removal of vegetation greater than 6 inches dbh, requiring that cut trees and logs within Riparian Reserves be left in place, and prohibiting the removal of LWD from streams. The Proposed Action would maintain habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species at the project and watershed scale, in the existing condition, within the range of natural variability.

## **7.8 Heritage Resources**

Heritage (or cultural) resources include any district, site, building, structure, or object that is generally older than 50 years, and that may be considered for inclusion in the NRHP. Historic properties are heritage resources that are eligible for and/or listed on the NRHP (meet the criteria of eligibility at 36 CFR 60.4). NRHP-eligible resources are those that the Forest Service has determined eligible and the State Historic Preservation Office (SHPO) has concurred with the agency determination.

The area of potential effect (APE) for the proposed project encompasses the geographic area proposed for the mountain bike trails, skills parks, chairlifts, rope tow, and parking lot as well as areas of equipment operation, material storage, and ingress and egress: approximately 108 acres. The archaeological APE extends to the maximum depth of ground disturbance (about 10 feet for chairlift tower footings) within the 108 surface acres. The APE for other resource types (e.g., historic buildings and the Stevens Pass Historic District) includes resources that may be affected by a change in the surrounding setting. Cultural resources information presented here is based on several surveys conducted for SPMR projects (Komen 2008; Komen and Emerson 2014; Stevens 2014).

### **7.8.1 Existing Conditions**

#### **7.8.1.1 Cultural Context**

The Project APE is located along a transitional boundary between ethnographical groups associated with the Interior Salish peoples and the Skykomish or Upper Snohomish groups; however, territorial boundaries overlapped in transitional areas. It is generally thought that the peoples of these groups used

the alpine environment, such as Stevens Pass, for seasonal hunting and gathering at meadows, huckleberry fields, and open slopes. Upper elevations also provided access along ridges and through passes for travel and exchange of goods and resources.

Early Euro-American use of the Stevens Pass area is generally associated with the railroad. General Land Office (GLO) maps from 1911 show existing railroad features, including an abandoned Great Northern Railway switchback, in the Stevens Pass area. None of the railroad features, however, are mapped within the Project APE. In 1912, the citizens of King County along the rail corridor formed a Good Roads Club to support a cross-Cascades automobile route across Stevens Pass. Begun in 1914, the road was not opened to traffic until 1925. A segment of this original road, designated a Heritage Corridor by King County, begins north of the Project area across U.S. Highway 2. It provides access to the Iron Goat Trail at Wellington. Parts of the Old Cascade Highway and the current route of U.S. Highway 2 were constructed on, or in very close proximity to, a former railroad grade (GLO 1911). While some land in the Stevens Pass area was retained by the railroad, most became part of the Washington Forest Reserve, a precursor to the National Forests (BLM 2007).

After World War I, with growing prosperity, more leisure time, and improved roads, there was an increased interest in recreation. During the 1920s and 1930s, the Forest Service was working to accommodate an expected boom of campers and hikers. Early skiing at Stevens Pass began in the 1930s and the development of the ski area started in 1936, when a group of interested citizens and local ski clubs banded together to work on developing a ski area. Lands were purchased from the railroad by the Wenatchee and Everett Chambers of Commerce and the Wenatchee Ski Club, and donated to the Forest Service to use as a ski area. The ski area began operating in the winter of 1937-38 with an 800-foot (approximately 244-meter) rope tow. The Great Northern Railroad provided service to Berne, from where skiers were bused to the summit.

By 1936, an improved Forest Service campground was located at the summit to provide for summer recreation. In 1936, the Stevens Pass Guard Station was constructed at the summit by the Civilian Conservation Corps (CCC) to regulate use in the backcountry and provide protection and assistance in areas of increased public use.

The origin of the trail running north-south along the crest of the Cascades can be traced to about 1928, with the idea of a continuous hiking trail from Canada to Mexico along the summits of the mountain ranges in Washington, Oregon, and California through scenic landscapes with a wilderness character. The Pacific Crest Trail System Conference was formed in the early 1930s. The section of the trail in Washington was known as the Cascade Crest Trail (CCT). Throughout the 1930s there were various efforts to establish such a trail using new as well as existing routes. Clinton C. Clarke of Pasadena, California, proposed a continuous trail from Canada to Mexico in the early 1930s, and formed the Pacific Crest Trail (PCT) System Conference promoting his idea. By 1935, he had published the first rough handbook/guide to the PCT. The Forest Service and other agencies and entities continued to develop the PCT in fits and starts using labor that was available, including the CCC. According to a 1965 U.S. Geological Survey Stevens Pass 7.5-minute map, the PCNST trail route at that time followed the Promenade ski run/utility corridor north to the Stevens Pass base area; earlier maps locate the CCT in a very general way, and it is not possible to identify the original trail configuration using historic maps (Komen and Emerson 2014). As a potential cultural resource, the CCT represents a significant theme in National Forest administration: the development of recreation as an asset of the public lands system (Hollenbeck 2003); however, in the vicinity of the Project, the current PCNST is not in the historic location, and the historic CCT route has been obscured by ski area developments. Subsequent to 1965, a portion of the trail in the Stevens Pass vicinity was realigned. The trail segment was moved to the east and currently crosses under Kehr's chairlift before turning northeast to enter the parking lot south of U.S. Highway 2. North of U.S. Highway 2, the PCNST trail begins north of the parking lot at a point north of

its possible former route along the cabin access road. The current PCNST trail route appears to be a result of rerouting the trail to avoid the center of the ski resort.

In the early 1950s, when the resort’s emphasis was transforming from ski club use to public recreational use, the Summit Inn was built on the north side of Highway 2, away from the previous development. This was later joined by a gas station, in 1960, and a ski shop, in 1961. Several cabins, employing A-frame designs, were constructed on the north side of the highway, as well, between 1959 and 1963 (Katzenberger and Katzenberger n.d.). These were intended for rental/employee occupation and are still used as such. Some older, rustic-style cabins probably constructed elsewhere in the 1930s were relocated to the area in the 1960s, also for employee housing. The Summit House and the ski shop burned in 1970 and were never replaced (Katzenberger and Katzenberger n.d.). Two other buildings, the Ski Patrol Building and the Shop Building, were moved from the south side of the highway to the north side, ca. 1988.

**7.8.1.2 Previously Recorded Heritage Resources**

Komen and Emerson (2014) conducted a file search for previously recorded cultural resources within the project’s APEs and surrounding area. Twelve resources were identified by the search (Table 7.8-1).

**Table 7.8-1. Previously Recorded Heritage Resources Within and Near the Project APE**

Resource	NRHP-Eligibility	Location
CCT/PCNST (Segment 1)	Not Eligible	Within APE
CCT/PCNST (Segment 2)	Potentially Eligible	Outside APE
McKenzie-Beverly 115-kV Transmission Line Segment	Eligible	Outside APE
Stevens Pass Guard Station	Listed	Outside APE
Stevens Pass Historic District (45DT46/USFS #0605060005)	Listed	Within APE
Cascade Railroad Tunnel (45KI233)	Contributing Element of Stevens Pass Historic District	Vertically Outside APE
Department of Highways Summitshed (Stevens Pass Parking Operations)	Not previously evaluated	Within APE
Great Northern Railroad segment (45DT46)	Contributing Element of Stevens Pass Historic District	Outside APE
Stevens Pass Snow Camp Superintendent’s Cottage	Not previously evaluated	Within APE
Stevens Pass Ski Clubs Historic District (45FS1732/USFS #06050600065)	Eligible	Outside APE
T-Bar Lodge/Day Lodge (FS1854/USFS #06050600075) (no longer extant)	Not Eligible (torn down and replaced by the Granite Peaks Lodge)	Outside APE
Wellington Stone Oven (FS1498) (no longer extant)	Not Eligible (destroyed in landslide)	Outside APE

Four resources were identified within the APE, including the Stevens Pass Historic District [45DT46/USFS#06050600054], a segment of the CCT/PCNST (Segment 1), the Department of Highways Summitshed (currently Stevens Pass Parking Operations), and the Stevens Pass Snow Camp Superintendent’s Cottage. The Stevens Pass Historic District is listed on the NRHP. The segment of the CCT/PCNST within the APE (Segment 1) is not in its original location and does not meet NRHP criteria. The Summitshed and the Superintendent’s Cottage have not previously been evaluated for NRHP eligibility.

Seven additional cultural resources were identified in the area surrounding the APE. These include the T-Bar Lodge/Day Lodge (FS1854, USFS#06050600075), the Stevens Pass Guard Station, Stevens Pass Ski Clubs Historic District (45FS1732, USFS#06050600065), an abandoned switchback of the Great Northern Railroad (45DT46), another segment of the CCT/PCT (Segment 2), the McKenzie-Beverly 115-



kV transmission line, and the Wellington Stone Oven (FS1498). One additional resource, the Cascade Railroad Tunnel (site 45KI233), passes beneath the APE. The tunnel is a contributing element of the Stevens Pass Historic District. The T-Bar Lodge/Day Lodge and Wellington Stone Oven have been determined ineligible for listing on the NRHP, and are no longer extant. The Ski Clubs Historic District is eligible for listing on the NRHP. Two buildings associated with this period in history in the SPMR base area, however, are not included in the District, and are not eligible for the NRHP (Kehr's Cabin and the Mountain Operations Office/Blue Jay Storage Building—SHPO concurred 3/20/2013). The Stevens Pass Guard Station is listed on the NRHP. The Great Northern Railroad switchback is a contributing element of the Stevens Pass Historic District. The CCT/PCT (Segment 2) appears to be ineligible, while the McKenzie-Beverly 115-kV transmission line may be eligible for listing on the NRHP. None of these nearby resources would be impacted by proposed project activities.

### ***Stevens Pass Guard Station***

The Stevens Pass Guard Station is a historic property listed on the NRHP since 1991. It is located west of the crest in the central base area of the Stevens Pass Ski Area, south of U.S. Highway 2 and outside of the APE for this project. Built by the CCC, it is representative of Depression-era utilitarian design combining rural vernacular with Arts and Crafts elements (Throop 1986).

### ***Stevens Pass Historic District***

The Stevens Pass Historic District is a historic property, listed on the NRHP since 1976. The proposed Project is located within the boundaries of this District, a rectangular area measuring 3.2 by 10.2 miles from Martin Creek on the western slope of the Cascades to the eastern railroad tunnel portal above Nason Creek on the eastern slope. The District is significant for its unique demonstration of the skill and intellect involved in constructing a railroad line over one of the most difficult mountain passes in the west. The construction effort took years and involved the construction of several unique tunnels and snow sheds. The accomplishment opened a direct route to the markets in the Puget Sound region. Additionally, the District is important for its association to engineer John Frank Stevens, who is known as one of the foremost engineers of his time. The Stevens Pass Historic District, including the second Cascade Railroad Tunnel (45KI233) constructed in 1929 under Cowboy and Big Chief Mountains, is also designated as a National Civil Engineering Landmark (1992).

### ***Stevens Pass Ski Clubs Historic District***

The Stevens Pass Ski Clubs Historic District comprises five ski lodges built between 1939 and 1947 associated with the development of winter ski sports recreation on NFS lands. These are located south of U.S. Highway 2, west of the developed ski runs. The SHPO concurred with the Forest Service in 1995 that the Ski Clubs were eligible for the NRHP as a historic district.

### ***Cascade Crest Trail***

The Forest Service has proposed the CCT be reviewed as a potential historic property due to its significant association with the theme of recreation development in National Forest Administration. However, additional research of the CCT is necessary to document whether it retains adequate integrity of location, feeling, design, setting, material, and workmanship from the 1930s to convey historic significance, particularly north of Snoqualmie Pass, where the route of the historic CCT is more difficult to discern. In an initial evaluation, the Forest Service recommended that the trail north of Snoqualmie Pass may not retain integrity of location to convey its significance, and may not be eligible for the NRHP. The original CCT segment through the Stevens Pass Ski Area does not retain the character of a wilderness trail through an unaltered alpine setting. The CCT/PCT has not been evaluated for NRHP eligibility in its entirety.

The current PCNST route crosses under Kehr’s chairlift. Review of MBS historic files and maps indicate that this particular PCNST alignment is not part of the CCT route. This PCNST segment does not exhibit evidence of CCC construction such as bridges or rock culverts.

### ***Old Cascade Highway***

The Old Cascade Highway, comprising three discontinuous remnants of the original 1914–1925 highway over Stevens Pass, has been designated as a Heritage Corridor by King County (45KI00715). Some segments are portions of the old tote road used during construction of the Great Northern Railway and may be considered a contributing element of the SPHD; however, inventoried segments of the Old Cascade Highway have been determined not eligible for the NRHP (SHPO concurred 2/23/2006).

#### **7.8.1.3 Results of Field Surveys**

A pedestrian field survey including subsurface archaeological probes was conducted in September 2013 and September 2014 (Komen and Emerson 2014; Stevens 2014), in accordance with the Forest Service Survey Strategy for high probability areas (Hearne and Hollenbeck 1996). Surveys of the proposed mountain bike trail routes, skills parks, rope tow, and chairlift replacements were conducted in two 100-foot-wide (30-meter) transects on either side of the centerline. The chairlift terminals and parking area were surveyed in transects no wider than 33 feet (10 meters), except for paved areas, where the natural ground surface was inaccessible.

A total of 14 previously and newly recorded resources were identified by the survey as within the APE (Table 7.8-2), in addition to the Stevens Pass Historic District. These include 12 historic buildings, one trail segment, and one historic structure. The Forest Service has reached a preliminary finding that 5 of these resources are eligible for the NRHP, and the remaining 9 are not. The Forest Service has not completed consultation with the SHPO regarding this undertaking. Consultation with the SHPO may result in additional information that would inform the Forest Services’ findings.

**Table 7.8-2. Previously and Newly Recorded Heritage Resources within the Project APE**

<b>Resource</b>	<b>NRHP-Eligibility– Forest Service Preliminary Determination</b>	<b>Location</b>
A-Frame Cabin 1 (USFS #06050600396)	Eligible	Parking Lot
A-Frame Cabin 2 (USFS #06050600395)	Eligible	Parking Lot
A-Frame Cabin 4 (USFS #06050600394)	Eligible	Parking Lot
A-Frame Cabin 6 (USFS #06050600393)	Eligible	Parking Lot
A-Frame Cabin 8 (USFS #06050600392)	Eligible	Parking Lot
Hogsback Avalanche Control Gun Mount (/USFS #06050600398)	Not Eligible	Hogsback Chairlift/Bike Park Expansion
Department of Highways Summitshed (USFS #06050600283) (DAHP #04-286)	Not Eligible	Parking Lot
Former Ski Patrol Building (USFS #06050600387)	Not Eligible	Parking Lot
PCNST Segment 1 (USFS #06050600088)	Not Eligible	Kehr’s Chairlift Replacement
Rustic Style Cabin 5 (USFS #06050600389)	Not Eligible	Parking Lot
Rustic Style Cabin 3 (USFS #06050600390)	Not Eligible	Parking Lot
Rustic Style Cabin 7 (USFS #06050600391)	Not Eligible	Parking Lot
Shop (USFS #06050600388)	Not Eligible	Parking Lot
Snow Camp’s Superintendent’s Cottage (USFS #06050600386)	Not Eligible	Parking Lot

### ***North Side of US Highway 2***

Twelve buildings were identified by the surveys in the Project APE north of Highway 2. Five of the buildings are A-frames built between 1959 and 1963, when the total number of cabins in the vicinity totaled 13 (Katzenberger and Katzenberger n.d.:151). These buildings were associated with the development of the Stevens Pass mountain resort as a commercial resort available for public use, development that reached a peak during the 1960s, following the era of ski clubs. Each of these five A-frame cabins is preliminarily determined NRHP-eligible as a representative of a distinctive style of architecture, and also for its association with the burgeoning popularity of the A-frame style in the 1960s. Consultation with the SHPO regarding these cabins is being initiated by the Forest Service. Each of these cabins is privately owned by SPRM and currently used for staff housing.

Two buildings, a shop and former ski patrol building, were originally constructed in 1959 and located south of Highway 2. They were moved north of the highway and re-located among other buildings associated with the Summit Inn in the late eighties. Three others are rustic-style cabins that were probably constructed elsewhere in the 1930s by the Chelan County Public Utility District or Washington Department of Transportation and re-located to their present positions in the 1960s (Katzenberger and Katzenberger n.d.:146, 151). Due to each building's lack of integrity of location, materials, and historic appearance (design), the Forest Service has reached a preliminary finding that none are eligible for listing in the NRHP.

The remaining two buildings north of Highway 2 are previously recorded resources discussed above: the Department of Highways Summitshed and the Snow Camp's Superintendent's Cottage. Both were constructed in 1947 on the north side of Highway 2. Each has been extensively modified, resulting in a loss of integrity of design, materials, workmanship, and feeling. The Forest Service has reached a preliminary finding that neither of these buildings are eligible for listing on the NRHP.

### ***South Side of US Highway 2***

One previously recorded PCNST segment and one newly recorded historic structure were identified by the surveys in the Project APE on the south side of Highway 2.

The current PCNST route crosses under Kehr's chairlift. Review of MBS historic files and maps indicates that this particular PCNST alignment is not part of the original CCT route, which is west of the current PCNST route in this area. No CCT segments were observed during the cultural resources surveys for this project due to extensive development related to the ski resort in the project APE. The PCNST segment in the Project APE has been recommended as a non-contributing element of the potentially NRHP-eligible CCT discontinuous linear resource.

Near the upper terminal of the Hogsback chairlift there is a poured concrete structure that previously served as an avalanche control gun mount. The gun has since been removed and the structure is no longer in use. The box-like structure was built in the 1970s and does not exhibit any particular architectural or engineering distinction to be considered under the NRHP criteria of eligibility.

#### **7.8.1.4 Prehistoric Site Probability**

Stevens Pass is a Cascade Mountain pass with a long history of human use, the topography providing a relatively easy passage between eastern and western Washington.

Despite the overall sensitivity of the area, no prehistoric archaeological sites have been recorded within one mile of the Project APE. Although travel routes likely existed in the vicinity, the Project APE is characterized by steep mountain slopes that are not conducive to the preservation of stratified prehistoric site formation. A North Cascades archaeology model notes that for similar landforms natural processes of

downslope material movement act to bury, scatter, or destroy evidence of archaeological sites. The Project APE is extensively disturbed as a result of historic activities in which existing topsoil has been mechanically scraped off exposing granitic or metamorphic bedrock, effectively erasing any potential archaeological evidence of ephemeral prehistoric sites that may have been present. Most of the parking lot portion of the APE has been disturbed by the construction of various buildings, roads, parking areas, installation of underground utility lines, and mechanical cutting and grading of sediments.

#### **7.8.1.5 American Indian Interest**

The Forest Service initiated government-to-government consultation with three federally recognized tribes which have expressed an interest in projects within the SPMR: Tulalip Tribes, Snoqualmie Tribe, and the Colville Tribes. Letters were sent to each tribe on September 5, 2013. The Snoqualmie Tribe responded with a letter (on September 18, 2013). The tribe expressed their “interest and desire to participate as a consulting party in the...project. Based on the information provided..., we do not have any cultural concerns at the moment. We ask to be kept up to date on this project, especially on any and all ground disturbing activities regarding this project.”

Traditional cultural properties are a specific type of historic property that have traditional cultural values to a living community, and that meet the NRHP criteria. These are typically identified through consultation with individuals and/or Tribal officials, and through ethnographic research. No traditional cultural properties have been identified within the Project APE during a search of available literature, during field surveys, or through tribal consultation.

Under Executive Order 13007 (May 24, 1996), federal land management agencies are directed to accommodate access to, and ceremonial use of, Indian sacred sites by religious practitioners, to avoid adversely affecting the physical integrity of sacred sites, and to maintain confidentiality of sacred sites where appropriate. This is to be done to the extent practicable permitted by law and to not be inconsistent with essential agency functions. Sacred sites are to be identified by Indian Tribes or individuals with authority to represent Indian religions. No sacred sites have been identified in the Project area.

#### **7.8.2 Direct and Indirect Effects**

This section describes effects to the heritage resources described above within the overall project APE (archaeological and historic built environment). Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties. The procedures for complying with Section 106 are outlined at 36 CFR 800. The effects the Project may have on properties of traditional religious and cultural importance to Indian tribes must also be considered in accordance with section 101(d)(6) of the NHPA and the American Indian Religious Freedom Act. Any human remains and associated grave goods encountered during the course of planning, construction, or operation of the Project would be subject to the Native American Graves Protection and Repatriation Act (NAGPRA).

Adverse effects to historic properties under Section 106 are typically considered significant impacts under NEPA, but may be mitigated to lessen the degree of significance. Following this, generally impacts on historic properties (NRHP-listed or eligible resources) or potential historic properties (unevaluated resources) would be considered significant impacts. Section 800.5 of 36 CFR 800 “Protection of Historic Resources” includes a discussion of assessing adverse effects on historic properties. Examples that would be applicable to the impacts of the proposed Project include physical destruction of or damage to all or part of the property; change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance; and introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features. Impacts on cultural resources are normally considered permanent because these resources are finite and alterations

are often irreversible. However, impacts on historic landscapes or the viewsheds of historic or other significant areas can be considered temporary if of short duration.

### **7.8.2.1 No Action Alternative**

Under the no action alternative, there would be no effect to historic properties. Since the railroad era, and also since the period of the early recreation developments, there have been changes to the historic setting, feeling, and associations over the years, such as construction and improvements of U.S. Highway 2, the developments in the ski area, and construction and maintenance of the Iron Goat Trail and associated facilities, plus the increase in use. Under the no action alternative, the existing facilities and normal operations and maintenance within the ski area, winter sports and summer recreation, and year-round use of the parking lots would continue. These effects were present at the time the historic properties within the APE were listed or determined eligible for the NRHP, and are not considered enough to diminish the integrity of the features to render them ineligible for inclusion on the NRHP.

Since the no action alternative represents the continuation of existing activities, with no additional disturbance to historic properties, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

### **7.8.2.2 Proposed Action**

The Forest Service has preliminarily determined that the Proposed Action would adversely affect historic properties. This determination is pending consultation with interested parties and concurrence from the SHPO.

The Forest Service has reached a preliminary finding that the Proposed Action would result in mitigable significant direct effects to two historic A-frame cabins in the parking lot area as well as insignificant direct and indirect effects to both the Stevens Pass Ski Clubs Historic District and Stevens Pass Historic District. There would be no effect to the Stevens Pass Guard Station. Effects to the historic districts would result from construction of the project as a whole, rather than a specific project component. In addition, direct effects to unidentified archaeological resources may occur as a result of ground disturbance associated with all of the project components.

Although the Proposed Action would directly affect the districts by adding modern elements within their boundaries, it would not change any of the features that contribute to the significance of the districts, nor would it introduce audio or visual elements that diminish the integrity of the properties. Therefore, the Proposed Action would not significantly affect the Stevens Pass Ski Clubs or the Stevens Pass Historic Districts.

The current setting of the NRHP-listed Stevens Pass Guard Station includes U.S. Highway 2 and the existing ski lodges, buildings, and lifts; however, the building is located with a back-drop of mature trees that provide the immediate setting for the property and block views of these SPMR features south of Highway 2. The essential historic characteristics of the Guard Station are the rustic architectural materials and design concepts adopted by the Forest Service Pacific Northwest Region and executed by the CCC, and the remote location representing field operations presence of the Forest Service at Stevens Pass. The Proposed Action would not alter the characteristics that qualify the building for the NRHP. Therefore, the Proposed Action would have no significant effects to the Stevens Pass Guard Station under NEPA, and no adverse effect under NHPA.

Although no archaeological resources have been identified within the APE, the APE is within areas of variable archaeological sensitivity. Any unidentified archeological resources within the APE would be considered a potential historic property. Disturbance of those potential resources by the Proposed Action



would be considered a significant effect to heritage resources. Such impacts may be reduced to less than significant with incorporation of the following mitigation measures:

- **Worker Education/Training**—Prior to Project implementation, all non-archaeological Project personnel will be briefed on the prehistoric and historic use of the Project area. Further, personnel may be briefed on the importance of, and the legal basis for, the protection of significant archaeological resources and how these resources contribute to modern society, in which personnel participate.
- **Unanticipated and Inadvertent Discoveries**—If an archaeological resource is discovered during project implementation, or if an identified resource is affected in an unanticipated way, SPMR shall stop the Project in the area of the find and make a reasonable effort to secure and protect the resource(s). The Forest Service Heritage Specialist shall be notified and the Forest would fulfill its responsibilities in accordance with the programmatic agreement and other applicable regulations outlined in an inadvertent discovery plan developed for the project. If human remains or cultural items specified in the NAGPRA are located, the MBS NAGPRA Protocol will be followed.

### ***Bike Trails***

The bike trails would be constructed above the previously recorded location of the Cascade Railroad Tunnel (45KI233), which is a contributing element of the Stevens Pass Historic District. However, development of the bike trails, including any grading or vibration from any heavy equipment, would not affect the resource.

### ***Skills Parks***

No heritage resources would be affected by the skills parks.

### ***Kehr's Chairlift Replacement***

Effects from replacement of the Kehr's chairlift would occur at the previously recorded segment of the PCNST. The Forest Service has preliminarily determined this segment of the PCNST not eligible for the NRHP; therefore, effects from replacement of the Kehr's chairlift are not considered significant under NEPA.

### ***Brooks Chairlift Replacement***

No heritage resources would be affected by the chairlift replacement.

### ***Rope Tow***

No heritage resources would be affected by the rope tow.

### ***Parking Lot***

Development of the parking lot would require demolishing two of the five A-frame cabins preliminarily determined eligible for the NRHP, and three rustic cabins preliminarily determined not eligible for the NRHP. The original parking lot design proposed by SPMR and included in the project scoping document was larger, extended farther east, and would have resulted in the removal of all five A-frame cabins as well as three rustic cabins. Since scoping, SPMR modified the proposed parking lot design, preserving three of the A-frame cabins. Should the SHPO concur with the eligibility determination, development of the parking lot would constitute direct adverse effect to the two NRHP-eligible cabins that would be demolished. The parking lot would also introduce physical, audio, and visual elements that would indirectly affect the remaining three A-frame cabins by altering the setting and feeling of the resources.

Pursuant to the NHPA and the Programmatic Agreement through which the Forest Service complies with the Act, the Forest Service will consult with the SHPO and other consulting parties to evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigation adverse effects, and notify the Advisory Council of Historic Preservation of the adverse effect. The adverse effects to the A-frame cabins may be mitigated with incorporation of measures developed in consultation with the SHPO. If the Forest Service and the SHPO agree on how adverse effects would be resolved, a memorandum of agreement would be developed with terms for implementation of the Project. Currently, the Forest Service proposes to implement a Washington Department of Archaeology and Historic Preservation Level II Mitigation Documentation (DAH 2014) of the two A-frame buildings that would be removed.

### **7.8.3 Cumulative Effects**

The analysis area for cumulative effects to Heritage Resources is the Stevens Pass Historic District. Since the District was listed on the NRHP in 1976, a number of changes have occurred within the boundaries, including improvements and maintenance on U.S. Highway 2, WSDOT stockpile site and avalanche control facilities building permit reissuance, Alpine Baldy trail and Kelly Creek trail projects, SPMR improvement and construction projects as well as use of the ski and bike park facilities, and the construction of the Iron Goat Trail and associated trailheads and interpretive sites (e.g., Scenic Rest Area and cross-over trail). Past projects have been determined to have not adversely affected the district under Section 106 of the NHPA or significantly impacted it under NEPA.

Since 1994, the MBS National Forest has been operating under the terms of a Programmatic Agreement among the MBS National Forest, the SHPO, and the Advisory Council on Historic Preservation to avoid adverse effects to the Stevens Pass Historic District during the construction and maintenance of the Iron Goat Trail and associated facilities.

Within the APE for this Project, there are five affected heritage resources: the five A-frame cabins. As stated above, there would be a direct adverse effect to two A-frame cabins, and the parking lot would also introduce physical, audio, and visual elements that would affect the setting and feeling of the remaining three A-frame cabins. All other resources discussed above, including the Stevens Pass and Stevens Pass Ski Clubs Historic Districts and the Stevens Pass Guard Station, would be affected by the Proposed Action, but not significantly. These would add to affects from past development and expansion of the resort over the approximately 50 years since the cabins were constructed. Other present or foreseeable projects within the Stevens Pass Historic District would contribute to the Project's effects by introducing elements into the Stevens Pass Historic District that are not part of the historic railroad period.

### **7.8.4 Forest Plan Consistency**

The Project is consistent with the MBS Forest Plan Standards and Guidelines for American Indian Religious and Cultural Uses (Forest Service 1990, p. 4-97) and Archaeological and Historical Properties (Forest Service 1990, p. 4-98), specifically including:

- Consider the effects of all National Forest Undertakings on significant cultural resources (Forest Service 1990, p. 4-98): Information specific to the Project APE as well as the surrounding area was gathered by reviewing environmental, geographical, ethnographical, and historical data, and by reviewing previously known or recorded archaeological and historical sites in the vicinity (Komen 2008, Komen and Emerson 2013; Stevens 2014). In completing pre-field review; field survey; and consultation with Indian Tribes, interested persons, and the SHPO, the effects on significant cultural resources were taken into account. The Forest Service has determined that construction of the parking lot constitutes an *adverse effect* to historic properties under Section 106 of the NHPA and in accordance with the Programmatic Agreement among the Forest Service R6, the SHPO, and the

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Advisory Council for Historic Preservation regarding Management of Cultural Resource on National Forest Lands in Washington (1997). Consultation with the SHPO is ongoing.

## **7.9 Reserved Treaty Rights and Tribal Policies**

### **7.9.1 Reserved Treaty Rights and Tribal Consultation**

The proposed Project is located on lands ceded to the United States under the Treaty of Point Elliott. The Tulalip Tribes is a federally recognized sovereign nation, and is the successor in interest to the Snohomish, Snoqualmie, and Skykomish people as well as other tribes and bands signatory to the Treaty of Point Elliott. Through this treaty, the Tulalip Tribes expressly reserved the right to hunt and gather on open and unclaimed lands. It has been determined that these rights are reserved on present-day Forest Service lands. In November of 2007, the Forest Supervisor signed a Memorandum of Agreement with the Tulalip Tribes to help foster greater communication and collaboration, and facilitate the exercise of treaty rights on the MBS National Forest. The Memorandum of Agreement was amended in 2009 with the provisions for cedar, huckleberry and other plant uses by the Tulalip Tribes on the MBS.

Treaty reserved rights reflect the subsistence, medicinal, ceremonial, and spiritual aspects of the traditional lifestyle of Northwest Indian people. They are as important to Indian Tribes today as they were when their ancestors reserved these rights in the Treaty, and require access to lands and resource availability where they are exercised. In the vicinity of the Project, treaty resources, particularly huckleberries, are present and obtained by Tribal members exercising their reserved treaty rights.

At the time the treaty was signed, the government intended to remove several western Washington Tribes and bands to a large reservation established for all western Washington Indians; however, this reservation was never established. Thus, the Tulalip Reservation established at the mouth of the Snohomish River became their home. Some Snoqualmie River people never moved to Tulalip, and some moved back to their traditional territory in the Cascade foothills. In 1999, the Snoqualmie Tribe received federal recognition, and has not established off-reservation rights.

The proposed Project has been listed in the MBS Quarterly Schedule of Proposed Actions since October 2013. Government-to-government consultation with the Tulalip Tribes, Snoqualmie Tribe, and the Colville Tribes was initiated in September 2013. Only the Snoqualmie Tribe responded by letter. The tribe did not identify any resources of concern, but requested to be kept informed of the project and to participate as a consulting party (see discussion in Section 7.8.1.5). To date, no additional Tribal involvement with the Project has occurred.

### **7.9.2 Direct and Indirect Effects**

#### **7.9.2.1 No Action Alternative**

Under the No Action Alternative, Treaty Rights would remain unchanged. The Tulalip Tribes have previously expressed interest in gathering huckleberries within the Stevens Pass Ski Area. The no action alternative would not alter the ability of the Tulalip Tribes to access NFS lands and exercise their treaty rights.

Because the no action alternative represents the continuation of existing activities, with no additional disturbance to historic properties, the preceding presentation of existing conditions thoroughly describes the conditions that would occur under this alternative.

### 7.9.2.2 Proposed Action

Treaty Rights remain unchanged and are not affected under the Proposed Action. The Tulalip Tribes have previously expressed interest in gathering huckleberries within the SPMR, and the Forest recognizes this as a reserved right under the Treaty of Point Elliott. The Proposed Action would result in the removal of huckleberry plants from both the temporary and the permanently cleared acres. To compensate for impacts and to enhance the production of big leaf huckleberry (*V. membranaceum*), SPMR would salvage or propagate plants for revegetation (see Appendix A – Management Requirements and Mitigation Measures).

### 7.9.3 Cumulative Effects

Tribal Treaty Rights reserved under the Point Elliott Treaty are unchanged. Reserved rights within NFS lands include the rights to hunt and gather, and to fish at usual and accustomed grounds and stations. Any indirect or cumulative effects to the quality of the Tribal hunting, fishing, and gathering experience would be related to changes in access, and the effects to fish wildlife and plant resources. Project -specific effects and cumulative effects to species that may be hunted or fished by Indian Tribes are addressed in the specific resource sections of this EA (e.g., Fisheries and Wildlife). The proposed Project would not alter Tribal access to NFS lands, so there would be no cumulative effects to access to NFS lands.

The affected area for cumulative effects to *V. membranaceum*, the species of huckleberry of greatest interest to the Tulalip Tribes, was determined to be the SPMR Permit Area. As stated in Section 7.5 (Botany and Vegetation), this Project would temporarily affect 11.0 acres and permanently affect 3.9 acres of natural and modified shrub habitat, where the dominant species are huckleberries. With the mitigation measure to salvage and enhance regeneration of *V. membranaceum*, possible negative effects to the Tribal gathering experience would be mitigated. Potential projects within the SPMR Permit Area would contribute to the disturbance or loss of *V. membranaceum* species within the Permit Area. With the implementation of the mitigation measure developed to address this interest, the effects would be lessened. In addition, the removal of forest canopy may enhance the productivity of huckleberry in those clearings.

### 7.9.4 Forest Plan Consistency

Each alternative would be consistent with the Forest Plan, as amended.

- Present information about planned project activities in all management areas (i.e., protected and otherwise) to religious and political leaders of tribal groups whose traditional practices might be affected (Forest Service 1990a, p. 4-97): The Forest Service sent government-to-government letters to the Tulalip Tribes, Snoqualmie Tribe, and the Colville Tribes. As a result of meetings with the Tulalip Tribes during the Stevens Pass Master Development Plan Phase I Environmental Assessment (Forest Service 2009), measures to preserve and restore big leaf huckleberry have been included in the Project.
- Where projects will affect American Indian religious and cultural use sites, protection and mitigation measures shall be worked out with the leaders of the affected tribal groups on a project specific basis or through Memoranda of Agreement (Forest Service 1990a, p. 4-97; 1994 p. 54-55): The Proposed Action would result in the removal of huckleberry plants from both the temporary and the permanently cleared acres. To compensate for impacts and to enhance the production of big leaf huckleberry, SPMR would salvage or propagate plants for revegetation.

## 7.10 Other Resources

### 7.10.1 Transportation

#### 7.10.1.1 Existing Conditions

The SPMR is accessible by U.S. Highway 2, which extends 323 miles across the state of Washington: from Everett on the western end to Newport on the eastern edge of the state. U.S. Highway 2 is only one of two year-round highways crossing the Cascade Mountains in Washington. The highway serves as both a major freight route and also a scenic highway and major tourist route, particularly on weekends (WSDOT 2007).

On average, over 4,000 vehicles cross daily over Stevens Pass along U.S. Highway 2 throughout the year (WSDOT 2013). For example, the Annual Average Daily Traffic in this area was 4,200 in 2010 and 2011, and 4,100 in 2012 (WSDOT 2013). Furthermore, the portion of U.S. Highway 2 from Everett to Stevens Pass has been designated by Washington State as a Traffic Safety Corridor because anywhere from 80 to 125 collisions are recorded annually in this 65-mile stretch of roadway (WSDOT 2008).

#### 7.10.1.2 Direct and Indirect Effects

##### ***No Action Alternative***

Under the no action alternative, there would be no additional impact to transportation associated with construction of the proposed features. Ongoing operation and maintenance activities at the resort would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Winter sports recreation and summer recreation associated with current bike trails and hikers along the PCNST and year-round use of parking lots may increase, but there would be no change to the existing condition or trends due to the Proposed Action.

##### ***Proposed Action***

Under the Proposed Action, there would be an increase in vehicular traffic along U.S. Highway 2 due to increased use of the expanded bike park facilities during the summer season. During the 60 day summer operating season (roughly July through the first or second week of October) the bike trail and other facilities would be open from Thursday through Sunday (from 10:00 a.m. to 6:00 p.m.). During the 2014 summer season, SPMR had over 10,600 visitors, including mountain bikers, scenic chair riders, hikers, and disc golfers. Stevens Pass anticipates that use of the park during the summer season over the next 3 years would be as follows (SPMR 2013b):

- Summer 2015 – over 10,000 visits for the season, or 167 per day
- Summer 2016 – 13,500 visits for the season, or 225 per day
- Summer 2017 – 18,000 visits for the season, or 300 per day

Assuming 2.3 passengers per vehicle, there would be approximately 130 vehicles anticipated to travel to SPMR daily during the summer of 2017. This increase in the number of vehicles traveling to SPMR would have some minor effect on highway speeds and accidents rates along U.S. Highway 2, particularly in the morning when most day users might be expected to arrive, but the effects are not expected to be distinguishable from existing conditions. With over 4,000 vehicles crossing daily over Stevens Pass along U.S. Highway 2 throughout the year (WSDOT 2013), this increase would not have a significant effect on the volume of traffic in the area.



The action alternative would include the construction of a new parking area near the existing Lot C north of U.S. Highway 2, which would accommodate approximately 200 vehicles. If all spaces were used on a peak winter ski season day, an additional 200 cars would be traveling on U.S. Highway 2. This increase would not have a significant effect on the volume of traffic in the area. No new parking lot entrances or exits would be developed along the highway.

### 7.10.1.3 Cumulative Effects

The action alternative would result in negligible effects on highway speeds and accidents rates along U.S. Highway 2. Reasonable foreseeable projects in the area that could also affect traffic rates in the area include other potential improvement projects at the SPMR which might attract additional guests such as the addition to the Tye Creek Lodge, extension of the heated plaza between the Granite Peaks Lodge and Tye Creek Lodge, and Hogsback zip line. Each of these potential projects could result in an increase in visitation to the SPMR, and thus, increased traffic and accident rates along U.S. Highway 2. Based on the average existing volume of traffic that passes over Stevens Pass daily, the cumulative increases in traffic volume are not likely to be significant.

### 7.10.1.4 Forest Plan Consistency

There are no known conflicts between the alternatives discussed in this document and the plans and policies of any jurisdiction, including the Forest Plan.

## 7.10.2 Environmental Justice

### 7.10.2.1 Existing Conditions

Environmental justice is defined as the pursuit of equal justice and equal protection under the law for all environmental statutes and regulations, without discrimination based on race, ethnicity, or socioeconomic status. The demographics of the affected area were examined to determine the presence of minority, low-income, or tribal populations that could be affected. Tribal populations are addressed in Section 7.8.

The SPMR is located along the border of King and Chelan Counties. Table 7.10-1 shows the race and ethnic profile of King and Chelan Counties, based on the 2010 census. The most populous area near the SPMR is King County, which includes the city of Seattle. The next largest cities/towns near the SPMR include Leavenworth and Skykomish. The city of Leavenworth is approximately 35 miles east of the SPMR, and had an estimated population of 1,965 in 2010 (U.S. Census Bureau 2013). The town of Skykomish, is approximately 16 miles west of the SPMR, and had an estimated population of 198 in 2010 (U.S. Census Bureau 2013).

**Table 7.10-1. Race and Ethnic Profile for King County.**

	<b>King County</b>	<b>Chelan County</b>
Total Population	1,931,249	72,453
Race/Ethnic Profile	Estimated Population and Percent of County	
Black or African American	119,801 (6.2%)	236 (0.3%)
American Indian, Alaska Native	16,147 (0.8%)	700 (1.0%)
Asian	282,075 (14.6%)	588 (0.8%)
Native Hawaiian or other Pacific Islander	14,486 (0.8%)	100 (0.1%)
Hispanic Origin (of any race)	172,378 (8.9%)	18,713 (25.8%)
White	1,251,300 (64.8%)	51,202 (70.7%)
Other	75,062 (3.9%)	914 (1.3%)

Source: Data taken from Washington Office of Financial Management website (<http://www.ofm.wa.gov/pop/census2010/data.asp>).

There are no known areas of religious significance in the SPMR. Furthermore, there is no known area consisting primarily of minority or low-income populations within or near SPMR. However, individuals or groups may work, recreate, gather forest products, or have other interests in the area.

### **7.10.2.2 Direct and Indirect Effects**

#### ***No Action Alternative***

Under the no action alternative, there would be no additional impact associated with construction of the proposed features. Ongoing operation and maintenance activities at the resort would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Winter sports recreation and summer recreation associated with current bike trails and hikers along the PCNST and year-round use of parking lots may increase, but there would be no change to the existing condition or trends due to the Proposed Action.

#### ***Proposed Action***

The effects of the Proposed Action would be similar for all population groups, and would not be disproportionate to low-income or minority groups. Furthermore, the Project's implementation would not result in adverse civil rights impacts to any group or individual.

The Tulalip Tribes have previously expressed interest in gathering huckleberries within the SPMR, and the Forest recognizes this as a reserved right under the Treaty of Point Elliott. The Proposed Action would result in the removal of some huckleberry plants. To compensate for impacts and to enhance the production of big leaf huckleberry, SPMR will salvage or propagate big leaf huckleberry for revegetation.

### **7.10.2.3 Cumulative Effects**

Because the Proposed Action would not be expected to disproportionately affect low-income populations or minorities, there would be no contribution by the project to cumulative effects associated with environmental justice when added to other past, present, or reasonably foreseeable projects.

### **7.10.2.4 Forest Plan Consistency**

There are no known conflicts between the alternatives discussed in this document and the plans and policies of any jurisdiction, including the Forest Plan.

## **7.10.3 Climate Change**

### **7.10.3.1 Existing Conditions**

The global climate has changed through time and will continue to change. An increasing number of scientific models and methodologies predict an increasing rate of climate change in upcoming years. Applying regional climate models to site-specific project areas makes the conclusions less certain; however, some general projections are possible for the purpose of environmental analysis.

The following projections for the Pacific Northwest are derived from the Climate Impacts Group of the University of Washington, Seattle. Models developed by the Climate Impacts Group project temperature increases during the 21st century with the potential for a slight increase in precipitation during the fall and winter months (Casola et al. 2005). A 2009 report (Littell et al. 2009) from the Climate Impacts Group updates the 2005 projections with the following probable regional impacts:

- April 1 snowpack is projected to decrease across the state (30 percent less by 2020) with seasonal streamflow timing shifts, which will be especially noted in sensitive watersheds.

- Rising temperatures may result in increases in stream temperatures that will reduce quality and extent of freshwater salmon habitat.
- Increased summer temperatures and decreased summer precipitation may result in large burn areas and increased susceptibility of stands to insect attacks, especially mountain pine beetles (east side of the North Cascades).
- Although there have been few statistically significant changes in extreme precipitation in the Puget Sound area, mode simulation predicts higher precipitation in the Puget Sound area.

A summary of the Intergovernmental Panel on Climate Change (2013) also included projections for a future with fewer cold days and nights, more hot days and nights, more heat waves, increasing area affected by drought, and an increase in precipitation that falls as rain.

On a regional basis, reports from the Climate Impacts Group predict a scenario for the Pacific Northwest with future warming of approximately 0.5 degree Fahrenheit per decade with temperatures increasing in all seasons, but particularly in June through August. A larger percentage of winter precipitation would fall as rain rather than snow, with an earlier spring snowmelt, lower summer stream flows, droughts becoming more common, and a greater risk of floods and wildfires.

### **7.10.3.2 Direct and Indirect Effects**

#### ***No Action Alternative***

Under the no action alternative, there would be no additional impact associated with construction of the proposed features. Ongoing operation and maintenance activities at the resort would remain similar to what they are today, although variations may occur resulting from potentially changing recreational use levels over time. Winter sports recreation and summer recreation associated with current bike trails and hikers along the PCNST and year-round use of parking lots may increase, but there would be no change to the existing condition or trends due to the Proposed Action.

#### ***Proposed Action***

The Project is neither of the scope nor scale to potentially affect climatic conditions or ongoing climate changes. However, ongoing and predicted regional climate changes would have the potential to affect the hydrologic regime in the upper Cascade Mountains, such as increased year-round temperatures, changes in the precipitation patterns (including rain on snow events), and greater magnitude and frequency of storm flows.

Predicted decreases in summer precipitation could improve operating conditions at the proposed bike skills park by decreasing trail closures during wet conditions. The effects of increased winter precipitation, storm events, and rain-on-snow events would primarily affect already authorized winter use. With more winter precipitation falling as rain, snow packs will be reduced and spring melt may occur sooner, reducing the duration of winter ski operations. Successful stormwater management and erosion control planning will be increasingly important as storm frequency and magnitude increase.

### **7.10.3.3 Cumulative Effects**

Because the action alternative is neither of the scope nor scale to potentially affect climatic conditions or ongoing climate changes, there would be no appreciable contribution by the project to cumulative effects associated with climate change.

#### **7.10.3.4 Forest Plan Consistency**

There are no known conflicts between the alternatives discussed in this document and the plans and policies of any jurisdiction, including the Forest Plan.

#### **7.10.4 Prime Forestland, Prime Farmland, Rangeland, and Other Resources**

Prime forestland, as defined by the NRCS, occurs on the MBS. However, none of the alternatives, including no action, would affect any such land. The entire SPMR Permit Area is administratively withdrawn from management for timber production. There is no prime farmland or rangeland within the Project area. Other resources, such as noise, minerals, energy, inventoried roadless and wilderness areas, Wild and Scenic Rivers, floodplains, fire, insects, disease, etc., were considered, but are not described in further detail here because they are associated with limited or no impacts.

#### **7.10.5 Irreversible and Irretrievable Commitment of Resources**

An irreversible commitment of resources results from a decision to use or modify resources that are permanent or renewable only over an extremely long period. The demolition of two historic cabins would constitute an irreversible commitment of historic resources. An irretrievable commitment of resources occurs when opportunities are foregone for the period of time of the commitment such as the temporary loss of timber productivity in forested areas that are kept clear for use as ski runs, bike trails, and parking areas. Under active management, irretrievable resource commitments are unavoidable, because managing resources for any given purpose necessarily precludes the opportunity to use those resources for other purposes. Under the Proposed Action, there would be an irretrievable commitment of resources within the SPMR Permit Area associated with the 21.4 acres (maximum) and 8.9 acres of temporary and permanent disturbance, respectively.

#### **7.10.6 Potential Conflicts with Plans and Policies of Other Jurisdictions**

Private individuals, groups, and governmental agencies including Tribal representatives have been contacted about this Project (see Section 3). There are no known conflicts between the alternatives discussed in this document and the plans and policies of any other jurisdictions.

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**Appendix A**  
**Applicable BMPs and Mitigation Measures**

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No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
<b>Water Resources</b>						
WTR-1	Avoid diverting streams and minimize disrupting swales, ephemeral channels, and wetlands.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	High (avoidance)	Rec-10 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-2	Minimize grading or recontouring of hill slopes to maintain intact soil horizons and infiltrative properties.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	High (avoidance)	Rec-10 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans
WTR-3	Cut stumps flush with soil surface or grind in place instead of grubbing when clearing trees from ski runs wherever practicable.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	High (avoids soil disturbance)	Rec-10 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-4	Design and construct stream crossings to minimize riparian and channel disturbance and pass anticipated flood flows and associated debris, while allowing desired aquatic organism passage. Maintain normal stream patterns, geometry, and habitat features to the extent practicable.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (Implementation of industry standard)	Rec-10 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans
WTR-5	Use low-pressure construction and maintenance equipment whenever practicable to reduce soil compaction and surface impacts on steep slopes.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (minimize soil disturbance)	Rec-10 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-6	Stockpile biologically active topsoil removed during excavation for use in reclamation. Store stockpiled topsoil separately from other vegetative slash, soil, or rock and protect from wind and water erosion, unnecessary compaction, and contaminants.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (Implementation of industry standard)	Rec-10 (Forest Service 2012))	Permit Admin	Periodic construction monitoring
WTR-7	Maintain desired vegetative ground cover with irrigation, fertilization, or other treatments as necessary. If fertilizers are used they need to be applied so they do not enter stream courses.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (Implementation of industry standard)	Rec-10 (Forest Service 2012)	Permit Admin	Periodic operation monitoring



No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WTR-8	Use suitable measures to direct overland flow on slopes into areas with intact soil horizons to encourage infiltration and disconnect overland flow from waterbodies and wetlands.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (Implementation of industry standard)	Rec-10 (Forest Service 2012)	Permit Admin	Approval of an erosion and sediment control plan prior to construction.  Periodic construction and operation monitoring.
WTR-9	Schedule, to the extent practicable, construction activities to avoid direct soil and water disturbance during periods of the year when heavy precipitation and runoff are likely to occur. Prohibit traffic on disturbed areas during periods of excessive soil moisture, precipitation, or runoff. Limit operation of equipment when ground conditions could result in excessive rutting, soil puddling, or runoff of sediments directly into waterbodies.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts by controlling erosion and managing stormwater discharge originating from ground disturbance.	Moderate (Implementation of industry standard)	Fac-2 and Rec-10 (Forest Service 2012)	Permit Admin	Approval of erosion and sediment control plan prior to construction Periodic construction and operation monitoring.
WTR-10	Monitor revegetation response in terms of its capacity to avoid or minimize erosion during runoff. Perform additional revegetation or erosion control as needed to protect water quality and soil integrity.	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts.	Moderate (Implementation of industry standard)	Rec-10 (Forest Service 2012)	Permit Admin	Periodic operation monitoring.
WTR-11	Refuel and service equipment only in designated staging areas.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Avoidance)	AqEco-2 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans.  Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WTR-12	Develop an erosion and sediment control plan to avoid or minimize downstream impacts using measures appropriate to the site and the proposed activity that covers all disturbed areas, including borrow, stockpile, fueling, and staging areas used during construction activities that is consistent with the 2012 Stormwater Management Manual for Western Washington or 2004 Stormwater Management Manual for Eastern Washington, as applicable. Prepare for unexpected failures of erosion control measures and have necessary materials and tools readily available to repair or replace erosion control measures.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.  Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling erosion and managing stormwater discharge originating from ground disturbance during construction of developed sites	Moderate (Implementation of erosion and sediment control measures is an industry standard)	AqEco-2; Fac-2 (Forest Service 2012)	Hydrologist Permit Admin	Approval of preconstruction plans.  Periodic construction monitoring
WTR-13	Promptly install and appropriately maintain erosion control measures before initiating surface-disturbing activities to the extent practicable. .	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources when working in or near aquatic ecosystems by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites..	Moderate (Implementation of erosion and sediment control measures is an industry standard)	AqEco-2 and Fac-2 (Forest Service 2012)	Permit Admin	Approval of erosion and sediment control plan prior to construction Periodic construction monitoring
WTR-14	Promptly install and appropriately maintain spill prevention and containment measures. Establish a hazardous spill plan and maintain a spill remediation kit on-site. Spill prevention kits shall be available on-site during use of heavy machinery and commensurate with the type of equipment present.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Implementation of erosion and sediment control measures is an industry standard)	AqEco-2 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-15	Promptly rehabilitate or stabilize disturbed areas as needed following construction or maintenance activities. Disturbed areas, including access routes and pads, should be recontoured, decompacted, and revegetated, as needed.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Burroughs and King 1989; Luce 1997) <sup>1/</sup>	AqEco-2 (Forest Service 2012)	Permit Admin	Periodic construction and post-construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WTR-16	Keep excavated materials out of waterbodies. Avoid all project-related discharge of dredge or fill material to jurisdictional wetlands and waters of the United States.	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources when working in or near aquatic ecosystems by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites..	High (avoidance)	AqEco-2 and Fac-2 (Forest Service 2012))	Permit Admin	Approval of preconstruction plans  Periodic construction monitoring
WTR-17	Use only clean, suitable materials that are free of toxins and invasive species for fill. Woodstraw or locally derived wood chip are preferred over straw mulch.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Forest Service 2005)	AqEco-2 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-18	Use suitable species and establishment techniques to revegetate the site in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species. Conduct revegetation efforts prior to the onset of the next wet season.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Forest Service 2005)	AqEco-2 (Forest Service 2012)	Permit Admin	Periodic post-construction monitoring
WTR-19	Inspect the work site at suitable regular intervals during and after construction activities to check on quality of the work and materials and identify need for midproject corrections.	Avoid, minimize, or mitigate adverse impacts to water quality when working in or near aquatic ecosystems.	Moderate (Regular inspection provides opportunity for corrective action and early response)	AqEco-2; Fac-2 (Forest Service 2012)	Permit Admin	Periodic construction and post-construction monitoring
WTR-20	Establish and maintain construction area limits to the minimum area necessary for completing the project and confine disturbance to within this area. Establish designated areas for equipment staging, stockpiling materials, and parking to minimize the area of ground disturbance. Clearly delineate the work zone, clearing limits, and sensitive areas (e.g., wetlands) prior to construction activities.	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites.	Moderate (Minimize)	Fac-2 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans  Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WTR-21	Contour site to disperse runoff, minimize erosion, stabilize slopes, and provide a favorable environment for plant growth. Maintain the natural drainage pattern of the area wherever practicable. Control, collect, detain, treat, and disperse stormwater runoff from the site.	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites.	Moderate (Implementation of erosion and sediment control measures is an industry standard)	AqEco-2 and Fac-2 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans  Periodic construction monitoring
WTR-22	Limit the amount of exposed or disturbed soil at any one time to the minimum necessary to complete construction operations. Divert surface runoff around bare areas with appropriate energy dissipation and sediment filters. Stabilize steep excavated slopes.	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites.	Moderate (Avoidance)	Fac-2 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans  Periodic construction monitoring
WTR-23	Implement corrective actions without delay when erosion and stormwater control, failures are discovered to prevent pollutant discharge to nearby waterbodies.	Avoid, minimize, or mitigate adverse impacts to water quality and riparian resources by controlling erosion and managing stormwater discharge originating from ground disturbance during construction or developed sites.	Moderate (Regular inspection provides opportunity for corrective action and early response)	Fac-2 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WTR-24	Waste materials associated with the project shall be disposed of outside of the riparian reserve and trash removed from site to an appropriate disposal area.	Avoid, minimize, or mitigate adverse effects to water quality from trash, nutrients, bacteria, and chemicals associated with construction solid.	High (Avoidance)	Fac-5 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WET-1	Bike trails would be routed around or spanned across wetlands and streams that cannot be avoided using bridges. A wetland biologist trained in the identification and delineation of wetlands would identify wetland boundaries to be staked in the field. Wet and/or boggy areas would be crossed using a combination of raised mineral soil causeways, ditching, and raised wooden boardwalks.	Avoid or minimize impacts to wetlands	Moderate (Avoidance)	Rec-12 (Forest Service 2012)	Permit Admin	Approval of preconstruction plans  Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WET-2	Vegetation removal in wetlands and riparian vegetation zones would be conducted by hand/chainsaw.  No ground-based heavy equipment would operate in wetlands.	Avoid or minimize impacts to wetlands	Moderate (Avoidance and minimization)	AqEco-2 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WET-3	Trees may be felled away from wetland areas and removed by heavy equipment operating from uplands, provided that no disturbance to wetland or riparian soils occurs.	Minimize impacts to wetlands	Moderate (Minimize impacts)	Veg-3 (Forest Service 2012)	Permit Admin	Periodic construction monitoring
WET-4	Compensatory mitigation for impacts to wetlands would be identified and implemented if required.	Mitigate for impacts to wetlands	Moderate (Mitigate impacts)	None; requirement of Federal and State laws and regulations.	USACE and State of Washington Department of Ecology.	Approval of preconstruction plans
<b>Vegetation and Plants</b>						
VEG-1	If any previously undiscovered threatened, endangered, and sensitive (TES) (or other rare or uncommon) vascular plants, bryophytes, lichens, or fungi are discovered, before or during project implementation, halt work until a Forest Service botanist is consulted and necessary mitigation measures are enacted.	Prevent impact to TES or other rare or uncommon plants	High (logic)	Forest Plan S&G, Threatened, Endangered, and Sensitive Species #1 (Forest Service 1990).	Permit Admin; District Botanist	Construction monitoring
VEG-2	Treat and eradicate all known tall hawkweed within the permit area. Treat infestations before ground disturbance begins; schedule appropriate weed treatments including R6-approved herbicides.	Eradicate known noxious weed infestations in the Project area.	High (Forest Service 2005)	Forest Plan S&G #16 (Forest Service 2005); Forest Plan S&Gs Vegetation Management #2 (Forest Service 1990).	Permit Admin Botanist	Periodic pre-construction and operation monitoring
VEG-3	Equipment brought on to the National Forest must be free of weeds and weed seeds. If weeds are present in the Project area, all equipment and gear must be cleaned before leaving the Project area to avoid spreading the infestation further. Clean all equipment after exiting known infestations of tall hawkweed, until the infestations have been deemed eradicated	Prevent introduction and spread of weeds in the Permit Area	Moderate (Forest Service 2005)	Forest Plan S&G #2 (Forest Service 2005); Forest Plan S&Gs Vegetation Management #2 (Forest Service 1990).	Permit Admin	Approval of re-vegetation and weed control plan prior to construction  Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
VEG-4	Suppliers must provide annual documentation to the permit administrator indicating that the following products have been examined by a qualified inspector and deemed free of state-listed noxious weeds: Straw or other mulch Gravel, rock, or other fill Seeds (according to Association of Official Seed Analysts standards)	Prevent introduction and spread of weeds in the Permit Area	Moderate (Forest Service 2005)	Forest Plan S&G #3 and 7 (Forest Service 2005).	Permit Admin	Approval of weed control plan prior to construction  Periodic construction monitoring
VEG-5	If weeds are present in the Project area, work from relatively weed-free areas into the infested area rather than vice-versa.	Prevent weed spread	Moderate (Minimize spread).	Forest Plan S&G's Vegetation Management #2 (Forest Service 1990).	Permit Admin	Construction monitoring
VEG-6	Revegetate as soon as practical all areas of bare soil exposed by project activities. Native plant materials are the first choice in revegetation where timely natural regeneration of the native plant community is not likely to occur. Impacts to groundcover from clearing would be limited to the top and bottom of cut and fill. To compensate for vegetation impacts, huckleberry and other species for revegetation will be salvaged from construction areas or propagated. Develop and implement a native plant restoration program in coordination with the Forest Botanist. In the interim, until native plant materials are available, use the appropriate MBSNF non-native seed mix (per Potash and Aubry 1997).	Prevent introduction and spread of weeds; maintain and restore habitat.	Moderate (Burroughs and King 1989; Luce 1997; Forest Service 2005)	Forest Plan S&Gs Vegetation Management #2 (Forest Service 1990); ROD for preventing and managing invasive plants in the Pacific NW S &G #12 and 13 (Forest Service 2005).	Permit Admin; District Botanist	Approval of revegetation plan prior to construction  Periodic construction and operation monitoring
VEG-7	Report effectiveness of revegetation in annual reports to the Forest Service, and modify /supplement revegetation efforts until entire area is revegetated to acceptable levels and final approval of efforts are signed off by the Forest Service.	Prevent introduction and spread of weeds; maintain and restore habitat.	Moderate (Provides effectiveness monitoring and opportunity for modification).	Forest Plan S&Gs Vegetation Management #2	Permit Admin; botanist	Approval of revegetation plan  Periodic operation monitoring



No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
VEG-8	A bike washing station where bikes are cleaned prior to and after utilizing bike trails would be maintained.	Prevent introduction and spread of weeds	Moderate (Minimize spread)	Fac-7 (Forest Service 2012)	Permit Admin	Periodic operation monitoring
VEG-9	A noxious weed management plan would be developed and would include monitoring, treatment, and reporting protocols.	Prevent introduction and spread of weeds; control spread of weeds.	Moderate (Minimize and control spread)	No specific S&G; helps meet goals and objectives in ROD for preventing and managing invasive plants in the Pacific NW S &G #12 and 13 (Forest Service 2005).	Permit Admin	Periodic operation monitoring
VEG-10	Forest clearing in the proposed trail corridors would be reduced to the extent practical through careful trail layout during construction.	Avoid, minimize, or mitigate adverse impacts to forest vegetation.	Moderate (Minimize impacts)	None – Project-specific design feature	Permit Admin	Periodic construction monitoring
VEG-11	Educate workers on invasive plants. This may include but is not limited to: internal education of Ski Park staff on identification of invasive plants; increase signage and posters about invasive plant identification, ecology, and prevention measures.	Prevent introduction and spread of weeds	Moderate	None – Project-specific design feature	Permit Admin; botanist	Periodic construction and operation monitoring
<b>Wildlife</b>						
WLD-1	Coarse woody debris already on the ground should be retained and protected to the extent possible from disturbances during treatment.	Retain down woody material diversity and habitat values	Moderate (maintains habitat)	USDA USDI 1994, p. C-40	Permit Admin	Periodic construction monitoring
WLD-2	Trees that must be felled within riparian reserves should be felled toward the stream and left in place. Do not yard any trees through stream channels.	Retain felled trees as large-woody debris to provide habitat within the stream.  Protect stream bank integrity and aquatic resources.	High (protect habitat)	USDA USDI 1994, C-40	Permit Admin	Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
WLD-3	<p>At a minimum, snags should be retained at levels sufficient to support cavity nesting bird species at 40 percent of potential population levels; snags over 20 inches dbh should not be marked for cutting, unless for safety purposes</p> <p>Design bike trails to minimize removal of trees greater than 6 inches dbh. Any trees greater than 6 inches dbh that might potentially need to be removed would be marked and pre-approved by the Special Use Permit administrator. Trees that would need to be cut would be felled and left in place, unless used for bridge stringer or other structures.</p>	<p>Provide habitat for cavity nesting birds and mammal dens.</p> <p>Limit forest canopy and large wood source reduction. Retain cover and root strength.</p>	Moderate (maintains habitat)	USDA USDI 1994, p. C-41, C-42, C-46	Permit Admin	Pre-construction monitoring and periodic construction monitoring.
WLD-4	To reduce impacts to mature forest, avoid clearing buffer areas of parking lots, roads, and buildings within mature forest habitat to the extent feasible and design utility trenching such that mature trees do not have to be removed.	Maintain habitat diversity.	Moderate (maintains habitat)	USDA Forest Service 1990, p. 4-122	Permit Admin	Periodic construction monitoring
WLD-5	All food and garbage associated with construction activities and summer recreation use will be disposed of in bear-proof garbage cans.	Minimize any potential wildlife-human conflicts associated with increased summer use.	Moderate (minimize risk potential)	USDA Forest Service 1990, p. 4-112	Permit Admin	Periodic construction and operation monitoring
WLD-6	All construction equipment would employ functional exhaust/muffler systems to minimize sound related environmental impacts	Ensure the construction of Phase III projects would not unreasonably conflict or interfere with wildlife, or other scheduled or authorized existing uses on or adjacent to NFS lands.	High (minimize harassment)	USDA Forest Service 1990, p. 4-112	Permit Admin	Periodic construction monitoring

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
<b>Heritage</b>						
HER-1	If a previously unidentified heritage resource is discovered during project implementation, or if an identified resource is affected in an unanticipated way, SPMR shall stop the Project in the area of the find and make a reasonable effort to secure and protect the resource(s). The Heritage Specialist shall be notified and the Forest would fulfill its responsibilities in accordance with the programmatic agreement and other applicable regulations. If human remains or cultural items specified in the Native American Graves Protection and Repatriation Act are located, regulations implementing the Act shall be followed.	Preserve heritage resources	Moderate (experience)	Forest Plan Archaeology Protection, p. 4-99  36 CFR 800 regulations for the National Historic Preservation Act	Permit Admin;  Forest Heritage Specialist	Periodic construction monitoring
HER-2	Prior to Project implementation, Project personnel will be briefed on the prehistoric and historic use of the Project area. Further, personnel may be briefed on the importance of, and the legal basis for, the protection of significant archaeological resources and how these resources contribute to modern society, in which personnel participate.	Preserve heritage resources	Moderate (experience)	Forest Plan Archaeology Protection, p. 4-99  36 CFR 800 regulations for the National Historic Preservation Act	Permit Admin;  Forest Heritage Specialist	Approval of preconstruction plans
HER-3	The Forest Service shall consult with the SHPO to determine appropriate mitigation for adverse effects under Section 106 of the NHPA. Following consultation, the Forest Service shall complete a Memorandum of Agreement with the State Historic Preservation Office and SPMR outlining the agreed upon mitigation measure(s).	Document affected heritage resources	High (experience)	Forest Plan Archaeology Protection, p. 4-99  36 CFR 800 regulations for the National Historic Preservation Act	Permit Admin;  Forest Heritage Specialist	Approval of preconstruction plans

No.	Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline or National BMP	Enforcement	Monitoring
<b>General</b>						
G-1	Prior to construction, SPMR would identify all temporary access routes, stream crossings and construction pad locations for Forest Service review. Following construction, the sites will be restored to original grade and revegetated.	Ensure final construction plans are protective of sensitive resources and consistent with terms of the authorization.	High (experience)	NEPA requires consideration of substantial changes and new information.	Permit Admin	Approval of preconstruction plans