

3.5 VEGETATION

This section describes the vegetation communities, the occurrences of special-status plant species, and noxious weeds within the White Pass Study Area. This section is divided into two main parts; Affected Environment and Environmental Consequences. The Affected Environment contains descriptions of the existing conditions within the White Pass Study Area, defined as the existing SUP boundary and the proposed SUP expansion area. The Environmental Consequences analyzes the potential impacts to the vegetation communities, special status species, and noxious weeds as a result of the implementation of the No Action and Action Alternatives.

3.5.1 Introduction

The White Pass Study Area lies within the Cascade Mountains and is located on US 12 approximately 55 miles west of Yakima, Washington. The White Pass Study Area is within the boundaries of the GPNF and OWNF. Both the Upper Tieton and Upper Clear Fork Cowlitz River watersheds occur in the White Pass Study Area.

Biologists and other specialists conducted field surveys within the White Pass Study Area, reviewed literature, interpreted color aerial photographs, and contacted state and federal resource agencies to accumulate information on vegetation resources. Resources consulted include the Clear Fork Cowlitz River Watershed Analysis (USDA 1998a) and Upper Tieton River Watershed Analysis (USDA 1998b), the Botanical Report for the 2003 Proposed White Pass Ski Area Expansion Project (USFS 2003a), Okanogan and Wenatchee National Forests Weed Management and Prevention Strategy and Best Management Practices (USFS 2002b), the Record of Decision for the Pacific Northwest Region Invasive Plants Program – Preventing and Managing Invasive Plants (USDA 2005) the Wetland and Stream Survey for the White Pass Proposal (SE Group 2004), and other documents as referenced in the text.

The USFS has conducted numerous field surveys for sensitive plant species within the White Pass Study Area between 1987 and 2004 (refer to Table 3.5 FEIS1).

**Table 3.5 FEIS1:
USFS Field Surveys for Sensitive Plant Species within the White Pass Study Area 1987-2004**

Date	Report Title	Authors
1987	Report of Plant Survey at White Pass Expansion Area	Barker
1991	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the White Pass Waste Water Disposal	Engle
1992	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the Proposed White Pass Ski Area Expansion, Glade North of Chairlift 4 and Route of Chairlift 8	Parsons and Engle
1993	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the Proposed White Pass Ski Area Projects – 1992	Parsons and Engle

**Table 3.5 FEIS1:
 USFS Field Surveys for Sensitive Plant Species within the White Pass Study Area 1987-2004**

Date	Report Title	Authors
1994	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the Replacement of Chairlift #1 – White Pass Ski Area	Parsons and Engle
1995a	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the Proposed White Pass Ski Area Expansion, Cat Track, Mainstreet Extension, Old Holiday	Massie
1995b	Biological Evaluation, Proposed Endangered, Threatened and Sensitive Plant Species for the Proposed White Pass Ski Area Expansion, Cross-Country Ski Trail System	Massie
1999	Survey and Manage Bryophyte, Lichen, Fungi, and Vascular Plant Evaluation for the Proposed White Pass Ski Area	Leingang
2000	Botanical Evaluation for Chair #3 Lift Line, Ski Run, Tower Locations, and the Propane site, and the Generator Shed site	Wheeler
2002	White Pass Proposed Yurt Site, Botanical Analysis Results	Ianni
2003a	Botanical Report for the Proposed Halfpipe Construction Project at White Pass Ski Area	Ianni
2003b	Botanical Report for the Proposed 2003 White Pass Ski Area Expansion Project	Ianni
2005	Botanical Report for the Proposed Dog Lake Campground and White Pass Pacific Crest Trail (PCT) Trailheads Maintenance and Expansion Project.	Ianni

Vegetation management within the existing ski area is typically accomplished through routine maintenance operations and Master Development Plan project elements. Proposed management direction activities for vegetation are included in the Mitigation Measures, Management Requirements, and Other Management Provisions as described in Chapter 2 (refer to Tables 2.4-2 through 2.4-4). The Mitigation Measures, Management Requirements and Other Management Provisions provide guidance for the long-term management of vegetation in the White Pass Study Area and identify measures for managing vegetation in existing ski trails and around supporting ski facilities and infrastructure. Direction from these measures would also be used for vegetation management during project implementation.

3.5.2 Affected Environment

Land use activities within the White Pass Study Area have contributed to the existing land cover, as represented by the mosaic of vegetation communities and developed areas that comprise the existing vegetation conditions. Descriptions of the vegetation communities within the White Pass Study Area are presented in this section. In an effort to present a detailed description of these vegetation communities, a brief discussion of forest structural components, such as canopy layers and canopy cover, has been included. Additional information regarding vegetation within the White Pass Study Area can be found in Appendix G – Vegetation.

The vegetation community and forest structure was inventoried by characterizing forest stands on the ground and assimilating the data into GIS layers maintained by the GPNF and OWNF. For the White Pass

EIS analysis, vegetation information contained in separate GPNF and OWNF GIS datasets were merged into a single layer for the White Pass Study Area. The merged GIS data was supplemented with ski trail talus slope mapping from rectified aerial photographs and field data collection. Finally, the vegetation communities and forest structure were characterized following the procedures outlined in Wildlife Habitat Relationships in Washington and Oregon (Johnson and O’Neil 2001) to address wildlife habitat occurrence. Please refer to Section 3.6 – Wildlife for additional information on wildlife habitat within the White Pass Study Area.

No significant issues regarding vegetation communities within the White Pass Study Area have been identified. The issues relating to vegetation during public scoping and the DEIS process were identified in the context of wildlife habitat and are discussed in Section 3.6 – Wildlife. The discussion of the vegetation communities is included in this FEIS to establish characteristics of the existing wildlife habitat present within the White Pass Study Area as well as provide general baseline environmental conditions to assist the reader in understanding the expansion area setting and the context of the Proposed Action. The discussion of wildlife usage of the habitat types present within the White Pass Study Area can be found in Section 3.6 – Wildlife.

3.5.2.1 Existing Vegetation Communities

Vegetation communities were divided into specific cover types by species composition and age classification. The age class did not play a major factor in determining vegetation communities due to the even distribution of age classes throughout the White Pass Study Area according to GIS data. Only a small portion (7.8 acres, 0.005 percent) of the White Pass Study Area is in an early seral condition. These are the small tree islands located within existing ski trails below the cliff band. The rest of the forested communities are in a late seral condition (1,235.8 acres, 78.6 percent of the White Pass Study Area). The eastern portion of the SUP area contains forest stands that exhibit old-growth forest characteristics; i.e., large trees, multi-storied, closed canopy, standing snags, etc. However, according to GIS data, no official old-growth stands have been designated within the White Pass Study Area.²⁷ The existing forested and non-forested vegetation communities within the White Pass Study Area are described below (refer to Table 3.5-1). The percent cover column in the table represents the portion of the White Pass Study Area covered by that vegetation type. The distribution of various vegetation communities is displayed in Figure 3-31.

Within the White Pass Study Area, the mixed conifer forest dominates at lower elevations within the area of existing ski operations. Mountain hemlock parkland forests dominate the higher elevations and a majority of the proposed expansion area.

²⁷ Late seral forests do not necessarily qualify as ‘old growth’. In order for a forest to be officially classified as old growth it must contain specific structural elements and characteristics. There is no old growth forest officially classified within the White Pass Study Area. However, several forest stands within the existing ski area contain some old growth characteristics.

**Table 3.5-1:
 Existing Vegetation Communities within the
 White Pass Study Area**

Type	Total Acres	Percent of Total White Pass Study Area
Mixed Conifer	528.5	34%
Mountain Hemlock	58.8	4%
Mountain Hemlock Parkland	654.4	42%
Modified Herbaceous	213.1	14%
Rock/Talus	52.5	3%
Total^a	1507.2	96%

^a The total vegetation cover does not equal the White Pass Study Area (1,572 acres) due to approximately 36 acres of developed and 26.8 acres of open water, both of which are not considered to be vegetated.

Within the Okanogan-Wenatchee National Forests, spruce budworm infestations have impacted approximately 51,000 acres within the Naches Ranger District through defoliation and seed cone depletion (USDA 2003a). Spruce budworm is an extensive problem within the forest and primarily affects Douglas-fir (*Pseudotsuga menziesi*), grand fir (*Abies grandis*), subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*) Pacific silver fir (*Abies amabilis*), mountain hemlock (*Tsuga mertensiana*), and western hemlock (*Tsuga heterophylla*). While spruce budworm is considered to be a problem in the OWNF, it is not analyzed in this EIS because it has not been identified as a problem within the White Pass Study Area.

Mixed Conifer Forest

The mixed conifer forest generally occurs below an elevation of 5,000 feet. This community is characterized by the co-dominance of mountain hemlock (*Tsuga mertensiana*) and Pacific silver fir (*Abies amabilis*). Within the White Pass Study Area, mixed conifer forest covers approximately 528.5 acres (34 percent) and is evenly split between the Upper Clear Fork Cowlitz and Upper Tieton River watersheds. Mountain hemlock and Pacific silver fir are known to overlap and generally co-dominate the forest community in this elevation range (USDA 1998b). Generally, mountain hemlock dominates at slightly higher elevations, whereas Pacific silver fir dominates at lower elevations. Additionally, western hemlock (*Tsuga heterophylla*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), and Engelmann spruce (*Picea engelmannii*) are scattered throughout this community. Understory vegetation consist of saplings of the above named species in addition to other shrub and herbaceous vegetation. The shrub community typically consists of big huckleberry (*Vaccinium membranaceum*), western prince's pine (*Chimaphila umbellata* var. *occidentalis*), low huckleberry (*Vaccinium myrtilus*), beargrass (*Xerophyllum tenax*),

dwarf bramble (*Rubus lasiococcus*), and sidebells pyrola (*Pyrola secunda*), among others. The herbaceous vegetation consists of western rattlesnake plantain (*Goodyera oblongifolia*) and various mosses.

Mountain Hemlock

The mountain hemlock dominated forest community generally occurs within the western portion of the White Pass Study Area at elevations ranging from 3,000 to 4,500 feet (USDA 1998a). It is similar to the mixed conifer forest described previously, except that mountain hemlock dominates the canopy throughout. The understory vegetation in this community is similar to the mixed conifer forest due to the closed canopy in both forests. This community covers approximately 58.8 acres (4 percent) and occurs entirely within the Upper Clear Fork Cowlitz watershed.

Mountain Hemlock Parkland

The mountain hemlock parkland community is located in a subalpine setting, typically between elevations of 5,000 and 6,000 feet in the southern portion of the White Pass Study Area. It is characterized by open, slow-growing mountain hemlock with scattered subalpine fir (*Abies lasiocarpa*) and Alaska yellow cedar, whitebark pine, and Pacific silver fir. Based on visual observations during field surveys, trees generally grow in scattered clumps on randomly distributed hummocks and minor ridges in the terrain. Tree growth within this community is also limited by the climatic conditions, such as heavy snow and ice accumulations, high winds, and a relatively short growing season. Understory and open area vegetation includes sedge species (*Carex spp.*), red mountain heath (*Phyllodoce empetriformis*), Cascade huckleberry (*Vaccinium deliciosum*), big huckleberry, grouse huckleberry (*Vaccinium scoparium*) and smooth woodrush (*Luzula hitchcockii*). Within the White Pass Study Area, mountain hemlock parkland covers approximately 654.4 acres (42 percent) and is located almost entirely within the Upper Clear Fork Cowlitz watershed.

Tree Age

An estimate of the age of the trees within the expansion area was taken from a sample of 50 trees, at different elevations. An increment borer was used to obtain a core sample with minimal damage to the tree. All cores were prepared and an age was determined by counting the number of annual rings from the tree center to the bark. The average age of the expansion area is approximately 127 years with a standard deviation of 68 years.

Modified Herbaceous

Existing ski trails within the White Pass Ski Area were cleared between 1956 and 1959 and are maintained in an open condition with a modified grass and forb community. As such, modified herbaceous is the only modified vegetation community within the White Pass Study Area. It covers approximately 213.1 acres (14 percent) of the White Pass Study Area. Of this, slightly more occurs within

the Upper Tieton River watershed, approximately 116.8 acres. Typically shrubs are observed in scattered clumps in this community, but are not common enough to be considered a unique strata (i.e., greater than 11 percent cover).

Rock/Talus

Rock outcrops, talus slopes, and other high-elevation rock areas within the White Pass Study Area are sparsely vegetated. These areas are considered as part of the vegetated landscape due to the unique growing conditions and wildlife habitat provided by these areas. Overall, rock/talus areas encompass approximately 52.5 acres (3 percent) of the White Pass Study Area, with most of it occurring within the Upper Clear Fork Cowlitz watershed.

3.5.2.2 Existing Forest Structure

The existing forest structure within the White Pass Study Area has been classified based on the average size of trees, average canopy closure and the number of layers present in the canopy. Tree size is defined in terms of the diameter at breast height (DBH) of the dominant and co-dominant tree species. Tree size categories are shown in Table 3.5 FEIS2.

**Table 3.5 FEIS2:
Tree Size Categories**

Tree Size	Diameter at Breast Height (inches)
Small	<21
Medium	21-32
Large	>32

Canopy coverage is expressed as a qualitative name given to represent a range of the percent closure. Canopy coverage categories are shown in Table 3.5 FEIS3.

**Table 3.5 FEIS3:
Canopy Coverage Categories**

Canopy Closure	Canopy Coverage Percent
Open	<10%
Low	11-39%
Moderate	40-69%
Closed	>70%

The number of canopy layers is classified as single or multi. Overall, eight different forest structures have been classified within the White Pass Study Area (refer to Figure 3-35 Existing Forest Canopy Structure). Table 3.5-2 summarizes the forest canopy structure currently present in the White Pass Study Area. In

general, there are no large tree classifications present within the White Pass Study Area.²⁸ Additional information regarding the forest structure can be found in the *White Pass Vegetation Technical Report and Biological Evaluation* in Appendix G.

**Table 3.5-2:
 Forest Canopy Structure Present within the White Pass Study Area**

Category	Total Acres	Percent of Total White Pass Study Area
Open Areas	328.2	21%
Small tree - Multi-Story - Open	5.9	0%
Small tree – Single Story – Moderate Canopy	654.4	42%
Small tree – Multi-Story – Moderate Canopy	59.0	4%
Small tree – Multi-Story – Closed Canopy	195.5	12%
Medium tree – Multi-Story – Open Canopy	11.8	1%
Medium tree – Multi-Story – Moderate Canopy	62.6	4%
Medium tree – Multi-Story – Closed Canopy	252.7	16%
Total	1570.0	100%

3.5.2.3 *PETS, Survey and Manage Species, and Surveys Conducted*

Special-status plant species include those plants listed as Proposed, Endangered, or Threatened under the federal Endangered Species Act, USFS Survey and Manage species (2001), and plants listed on the USFS Region 6 sensitive species list (USFS 2004b). An initial survey and inventory of the vegetation species present in the Hogback Ridge portion of the White Pass Study Area was completed in June and July 1987 (Barker 1987). As described previously, twelve subsequent special-status plant surveys were conducted by the USFS at White Pass between 1987 and 2004 within the White Pass Study Area in areas most likely to be disturbed by the proposed project (USFS 2003c). Individual survey reports have been included in the References section (refer to Chapter 4) of this document and a summary of these surveys is included in Appendix G. Survey methods followed the approved USFS protocol for sensitive plants and Survey and Manage species. The objectives of the surveys were to (1) locate populations of special-status species within the White Pass Study Area in order to adequately protect populations, (2) conduct a floristic inventory to identify all vascular plant species in the White Pass Study Area, (3) search for special-status plant taxa within the White Pass Study Area, and (4) map the locations of the special-status plant populations in the White Pass Study Area.

²⁸ For purposes of incorporating the GIS data provided by the OWNF and the GPNF, tree size data was grouped according to follow categories: small tree = less than 21 inches DBH, medium tree = 21 to 32 inches DBH, large tree = greater than 32 inches DBH.

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PETS (Proposed, Endangered, Threatened or Sensitive) plant species suspected to occur due to the presence of potentially suitable habitat within the White Pass Study Area are listed in Table 3.5-3. None of these species have been located during the numerous botanical surveys completed at White Pass (Barker 1987; USFS 2003c). Since no populations of special-status species have been encountered during extensive surveys between 1987 and 2004, the risk of disturbing PETS species in the White Pass Study Area is considered to be low.

Table 3.5-3:
Special Status Plant Species Suspected within the White Pass Study Area

Name of Species	Listing Type	Surveyed For	Habitat Present
Vascular Plants			
<i>Agoseris elata</i>	USFS Sensitive	Yes	Yes
<i>Anemone nuttalliana</i>	USFS Sensitive	Yes	Yes
<i>Botrychium lanceolatum</i>	USFS Sensitive	Yes	Yes
<i>Botrychium montanum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Botrychium paradoxum</i>	USFS Sensitive	Yes	Yes
<i>Botrychium pinnatum</i>	USFS Sensitive	Yes	Yes
<i>Carex atrata</i> var. <i>erecta</i>	USFS Sensitive	Yes	Yes
<i>Carex comosa</i>	USFS Sensitive	Yes	No
<i>Carex densa</i>	USFS Sensitive	Yes	No
<i>Carex pauciflora</i>	USFS Sensitive	Yes	Yes
<i>Carex proposita</i>	USFS Sensitive	Yes	Yes
<i>Carex saxalitis</i> var. <i>major</i>	USFS Sensitive	Yes	Yes
<i>Carex stylosa</i>	USFS Sensitive	Yes	Yes
<i>Carex sychnocephala</i>	USFS Sensitive	Yes	Yes
<i>Castilleja cryptantha</i>	USFS Sensitive	Yes	Yes
<i>Coptis asplenifolia</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Coptis trifolia</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Cypripedium fasciculatum</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Cypripedium montanum</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Eleocharis atropurpurea</i>	USFS Sensitive	Yes	Yes
<i>Erigeron salishii</i>	USFS Sensitive	Yes	Yes
<i>Eritrichulum nanum</i> var. <i>elongatum</i>	USFS Sensitive	Yes	Yes
<i>Fritillaria camschatcensis</i>	USFS Sensitive	Yes	No
<i>Galium kamtschaticum</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Geum rosii</i> var. <i>depressum</i>	USFS Sensitive	Yes	Yes
<i>Hackelia venusta</i>	USFS Sensitive	Yes	No
<i>Loiseluria procumbens</i>	USFS Sensitive	Yes	Yes
<i>Luzula arcuata</i>	USFS Sensitive	Yes	Yes

**Table 3.5-3:
Special Status Plant Species Suspected within the White Pass Study Area**

Name of Species	Listing Type	Surveyed For	Habitat Present
<i>Pedicularis rainierensis</i>	USFS Sensitive	Yes	Yes
<i>Pellaea breweri</i>	USFS Sensitive	Yes	Yes
<i>Phacelia minutissima</i>	USFS Sensitive	Yes	No
<i>Platanthera obtusata</i>	USFS Sensitive	Yes	No
<i>Plantanthera sparsiflora</i>	USFS Sensitive	Yes	Yes
<i>Potentilla breweri</i>	USFS Sensitive	Yes	Yes
<i>Ranunculus populago</i>	USFS Sensitive	Yes	Yes
<i>Salix vestita</i> var. <i>erecta</i>	USFS Sensitive	Yes	Yes
<i>Sisyrinchium sarmentosum</i>	USFS Sensitive	Yes	Yes
<i>Spiranthes porrifolia</i>	USFS Sensitive	Yes	Yes
Lichens			
<i>Dendrococaulon intricatum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Dermatocarpon luridum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Hypogymnia duplicata</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Leptiogium burnetiae</i> var. <i>hirsutum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Lobaria linita</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Nephroma bellum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Nephroma occultum</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Pilphorous nigricaulis</i>	USFS Sensitive	Yes	Yes
<i>Pseudocyphellaria rainierensis</i>	Survey and Manage	Yes	No
<i>Tholurna dissimilis</i>	USFS Sensitive	Yes	Yes
Fungi			
<i>Bridgeoporus nobilissimus</i>	Survey and Manage/ USFS Sensitive	Yes	No
<i>Schistostega pennata</i>	Survey and Manage	Yes	Yes
<i>Clavariadelphus sachalinensis</i>	Survey and Manage	Yes	Yes
Bryophytes			
<i>Schistostega pennata</i>	Survey and Manage/ USFS Sensitive	Yes	Yes
<i>Scouleria marginata</i>	USFS Sensitive	Yes	Yes
<i>Tetraphis geniculata</i>	Survey and Manage/ USFS Sensitive	Yes	No

Changes to Survey and Manage Species

In March 2004, the Record of Decision (ROD) to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning

Documents within the Range of the Northern Spotted Owl (USDA and USDI 2004b) was issued. The ROD determined that conservation of rare and little known species on National Forest System lands would rely on other elements of the Northwest Forest Plan (NWFP) and Forest Service Sensitive Species Policies. The ROD also determined that 152 of the 296 Survey and Manage species were eligible for inclusion in Special Status Species Programs (including the Sensitive Species Program). With respect to surveys already completed at the time of issuance of the 2004 ROD, it specified that no additional survey work was required for projects that fully complied with the former Survey and Manage Standards and Guidelines.

At the issuance of the April 2004 ROD (USDA and USDI 2004b), the White Pass Proposal project had fully complied with all of the previously required Survey and Manage Mitigation Measure Standards and Guidelines. Documentation of surveys for all Special Status Species, including all the species formerly listed as Survey and Manage (but no longer listed) is in the project files. The USFS conducted recent surveys at White Pass for lichens and bryophytes that were moved from the Survey and Manage to the Regional Forester's Sensitive Species list (USFS 2004b). These recent surveys did not detect the presence of any PETS species at White Pass. Following the discretionary guidance of the April 2004 ROD, additional surveys for fungi were not completed because they were considered impractical (USFS 2004b). Refer to the Addendum to the 2003 Botanical Report, located in Appendix G for further information.

On January 9, 2006, the 2004 ROD to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (2004 ROD) was vacated and management direction for PETS plants/Special Status species would be provided pursuant to the 2001 Record of Decision for management of these species. In this regard, the White Pass Study Area has been surveyed consistent with species identified in both the 2001 Record of Decision including any amendments or modifications to the 2001 ROD that were in effect as of March 21, 2004 (Table 1.1, December 2003), as well as the 2004 ROD to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (2004 ROD).

Rhizomnium nudum was considered a Survey and Manage plant species during preparation of the previous EIS, but it was removed from the Survey and Manage list in the second annual review for Survey and Manage species (USFS and USBLM 2003). Numerous occurrences of *R. nudum* have been documented in the Cascade Mountain Range in Washington, including the Olympic National Park, Mount Rainier National Park, the Mount Baker-Snoqualmie National Forest, and the Gifford Pinchot National Forest (USFS and USBLM 1999). Although there are known locations in the White Pass Study Area, *R. nudum* is no longer considered a special-status species, and Standards and Guidelines and Mitigation Measures associated with this species in Washington are no longer required.

3.5.2.4 *Noxious Weeds*

Noxious weed species addressed under this evaluation include those weeds declared noxious by the State of Washington Noxious Weed Board (WAC 2001) and the Yakima County Weed Control Board (Yakima County 2001). Noxious weed species commonly encountered in the Gifford Pinchot and Okanogan-Wenatchee National Forests and likely to occur within the White Pass Study Area are shown in Table 3.5-4. Although populations of these noxious weed species may occur, they have not been observed within the White Pass Study Area and their potential introduction is most likely low because of climatic conditions, i.e., high elevations, cold temperatures, and limited growing season due to a persistent snowpack. However, chances are higher for the establishment and spread of noxious weeds in disturbed areas, if a seed/propagative material source were to be present. Disturbed sites, including parking areas, trailheads, etc., provide potential population centers for these species.

**Table 3.5-4:
 Noxious Weeds that have the
 Potential to Occur within the White Pass Study Area**

Scientific Name	Common Name
<i>Centaurea maculosa</i>	Spotted knapweed
<i>Centaurea diffusa</i>	Diffuse knapweed
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy
<i>Cirsium arvense</i>	Canada thistle
<i>Cirsium vulgare</i>	Bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Hypericum perforatum</i>	St. John’s wort
<i>Hypochaeris radicata</i>	Spotted cat’s-ear
<i>Linaria genistifolia dalmatica</i>	Dalmatian toadflax
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Senecio jacobaea</i>	Tansy ragwort

No Washington State listed noxious weeds were located during the surveys of the proposed White Pass SUP area expansion, and none were observed in the current SUP area (WAC 2001; Yakima County 2001). Non-native species including white clover (*Trifolium repens*) and red sandspurry (*Spergularia rubra*) have been observed in the current White Pass SUP area. Three Washington State listed noxious weed species were noted during a botanical survey in 2005 at the White Pass PCNST north trailhead and horse camp. Oxeye daisy (*Leucanthemum vulgare*), cat’s ear (*Hypochaeris radicata*), and tansy ragwort (*Senecio jacobaea*) were encountered. These species are located outside of the White Pass Study Area, which is described as the current SUP boundary and the proposed SUP boundary expansion. However, these species occur in the Nordic trail system, which is approved for use under the SUP. The next closest documented occurrence of a Washington State listed noxious weed is a diffuse knapweed (*Centaurea diffusa*) site about 5 miles east of White Pass on US 12. Information for weed occurrences on the Cowlitz Valley Ranger District of the Gifford Pinchot National Forest was not investigated, but oxeye

daisy (*Chrysanthemum leucanthemum*) and scotchbroom (*Cytisus scoparius*) have been observed along the US 12 corridor between White Pass and Packwood. It is also likely that cat's-ear (*Hypochaeris radicata*) is in this area. These three noxious weed species present the highest likelihood of establishing in the proposed project area. However, as previously stated, the establishment of noxious weeds in the project area is currently limited by several interacting factors.

The White Pass proposal took into account the questions from the 1989 Mediated Agreement to analyze impacts to noxious weeds (USFS 1989). The discussion of the questions in relation to the White Pass Ski Area proposal can be found in the Noxious Weed section of Environmental Consequences.

3.5.3 Environmental Consequences

Construction and/or operation of facilities associated with the White Pass proposal have the potential to impact vegetation communities and forest structure within the White Pass Study Area. Impacts may be short-term or long-term in duration. In addition, these impacts may be further classified as direct or indirect.

Activities that result in a short-term disturbance to vegetation communities include the installation of buried utility lines in existing clearings and grading in previously modified shrub and herbaceous vegetation communities. Impacts to vegetation from normal ski area operations and maintenance could occur. Operational impacts, such as skiing and grooming, have the potential to impact vegetation through incidental contact damage. Typically, damage from skiers is minor and usually occurs to shrub and herbaceous vegetation protruding from the snowpack. Damage from grooming equipment can be more severe, for example, scarring of tree boles adjacent to ski trails. Grooming equipment does not typically impact shrub or herbaceous vegetation within the ski trail because the snowpack evenly distributes the weight of the equipment over the terrain.

Short-term impacts may persist for several years (two to three years) as shrub and herbaceous vegetation reestablishes to pre-disturbance conditions. Long-term impacts result from the conversion of an existing vegetation community to another community type, such as forest removal to be maintained as ski trails or lift terminals. Long-term impact activities include partial tree island removal, full clearing, and full clearing with grading resulting in a loss of natural vegetation that would not revert to a pre-development condition in a two to three year period (i.e., the removal of forested communities, construction of impervious surfaces, etc).

Direct impacts typically have immediate effects in the area of activity and include all of the activities listed above. Direct impacts to vegetation are classified as those impacts that would modify the condition of a vegetated site (i.e., from forest to herbaceous). These impacts would include permanent loss of vegetation, conversion of vegetation communities to another vegetation type, or a short-term loss of vegetation during a temporary construction impact. These impacts relate to the impact analysis for other

resource areas. For example, loss or conversion of vegetation communities would directly affect wildlife habitat in the White Pass Study Area. Section 3.6 – Wildlife refers to impacts displayed in this section to assist in the analysis of impacts to wildlife. Similarly, the loss or conversion of vegetation communities along riparian corridors directly affects the analysis of impacts in Section 3.2 – Watershed Resources, where riparian functions are discussed and in Section 3.15 – Visual Resources, where the effect of forest removal is discussed in the context of visual effects.

Indirect impacts have delayed or unforeseen effects that occur in the future or in a different location than the original action. For example, changes to the composition of an herbaceous community as a result of surrounding canopy removal would be considered an indirect impact on that community. Indirect impacts to vegetation would also include future maintenance operations (i.e., mowing/brushing ski trails), areas of soil disturbance that provide opportunity for noxious weed establishment, compaction of soils that limit establishment or health of plants growing in the soil, and utility trenching in existing herbaceous communities. These impacts relate to the impact analysis for other resource areas. For example, soils that remain in a disturbed condition (i.e., un-vegetated) would affect sediment generation and are therefore discussed in Section 3.2 – Geology and Soils.

3.5.3.1 Vegetation Communities

Alternative 1

Under Alternative 1, there would be no new impacts to the existing vegetation communities within the White Pass Study Area as no new development would occur.²⁹ White Pass would not construct any new trails or chairlifts and would continue to operate under their existing permit.

Ongoing ski area operations and maintenance would continue to occur at White Pass. Impacts to vegetation would occur during maintenance of ski trails from mowing and/or brushing. These activities would maintain the existing modified shrub and herbaceous community and continue to prevent future regeneration of forest for as long as ski area operations continue. Impact to vegetation from current ski operations would continue to occur from incidental contact between skiers and grooming equipment, however these impacts are not expected to be measurable.

Alternative 2

Under Alternative 2, there would be approximately 19.7 acres of direct impacts to vegetation communities resulting from tree removal for the construction of the proposed *Basin* and *Hogback Express* chairlifts, associated trails, mid-mountain lodge, and utilities (refer to Table 3.5-5 and Figure 3-32). Overall, this represents approximately 1.3 percent of the entire White Pass Study Area. The majority of

²⁹ The effects of the Action Alternatives on Forest Structure are provided in Appendix G – White Pass Vegetation Technical Report and Biological Evaluation because forest stand structure was not identified as an issue. Forest structure is germane to the wildlife discussion. Therefore Section 3.6 – Wildlife refers to the information presented in Appendix G.

the tree removal would be for the construction of the chairlifts and ski trails (through tree island removal techniques) and would not involve any grading impacts. The natural characteristic of the terrain is open glades with scattered tree islands. The general aim of the tree island removal prescription is to connect existing forest openings, through selective tree removal, to create ski trails. The majority of the proposed ski trails utilize the existing forest openings, which minimizes the need for forest clearing to create a skiable trail. Tree island removal clearing techniques result in a lower degree of impact compared to full clearing because trees and small understory vegetation are retained within the ski trail.

**Table 3.5-5:
 Potential Impacts to Vegetation Communities within the White Pass Study Area**

Type	Alt. 2	Modified Alt. 4	Alt. 6	Alt. 9
Mixed Conifer (acres)	0.0	21.6	3.8	35.3
Mountain Hemlock (acres)	0.0	0.0	0.0	0.0
Mountain Hemlock Parkland (acres)	19.7	21.5	11.3	0.0
Modified Herbaceous (acres)	0.0	1.3	0.2	3.6
Talus (acres)	0.0	0.0	0.0	0.0
Total (acres)	19.7	44.7	15.3	38.9

Note: Totals may vary due to rounding.
 Existing vegetation communities under Alternative 1 are included in Table 3.5-1.

The proposed clearing impacts would only occur within the mountain hemlock parkland community and the Upper Clear Fork Cowlitz watershed. Implementation of Management Requirement MR6 and Other Management Provision OMP5 would ensure that impacts to the mountain hemlock parkland community would be minimized by selective tree removal and by establishing the maximum clearing limits to avoid any unnecessary clearing. Utilities would be trenched within ski trail boundaries as described in Table 2.4.1 (Construction Techniques). Additionally, OMP5 would require the revegetation of herbaceous and shrub vegetation cover in cleared ski trails, which would be managed for the life of the ski area (refer to Table 2.4-5). Long-term impacts would persist in these modified vegetation communities as long as the area is maintained as a developed ski area. There would be no impacts to mixed conifer or mountain hemlock communities under Alternative 2.

Indirect impacts under Alternative 2 to vegetation communities could occur from future maintenance of ski trails, buildings, and other ski area facilities. These impacts would include, but are not limited to, periodic mowing/brushing to maintain ski trails in a modified condition suitable for skiing or hazard tree removal. Mowing/brushing would prevent future forest regeneration by not allowing saplings to establish during the life of the ski area. Other Management Provision OMP5 would ensure that impacts to adjacent natural vegetation communities would be minimized by limiting maintenance techniques to manual methods within the Mountain Hemlock Parkland community, and within established trails in other communities. A second potential indirect impact would be the establishment of noxious weeds within

cleared areas. Additional information regarding noxious weeds can be found under the *Noxious Weeds* discussion in this section.

Modified Alternative 4

Impacts to vegetation communities under Modified Alternative 4 would be the most of any Action Alternative due to additional clearing to realign trails away from Riparian Reserves, an egress trail (Trail 4-16) from the proposed *Hogback Express* bottom terminal, and additional trails within the existing SUP area. Tree island removal clearing techniques would occur for trail construction within the Hogback Basin and result in a lower degree of impact compared to full clearing because trees and small understory vegetation are retained within the ski trail. Additionally, a new ticket booth would be constructed adjacent to the Yakima Ski Club building and a new parking lot would be constructed near the bottom terminal of the existing *Lower Cascade* chairlift (refer to Figure 3-33).

Impacts to vegetation communities under Modified Alternative 4 would total approximately 44.7 acres, or approximately 2.8 percent of the White Pass Study Area (refer to Table 3.5-5). The majority of the impacts would occur within the mixed conifer community, approximately 21.6 acres, associated with construction of the ski trails within the existing SUP area, parking lot and ticket booth. As described in Appendix G, approximately 11 acres of clearing and grading in the mixed conifer community would impact forest stands with old-growth characteristics as a result of tree removal for construction activities within the existing SUP area. This equates to approximately 2.4% of the White Pass Study Area within the Upper Tieton River Watershed and 0.009% of the entire Upper Tieton Watershed. Approximately 21.5 acres of clearing and grading would occur to the mountain hemlock parkland community as a result of tree removal associated with construction of the proposed lifts, trails, and lodge, as well as the PCNST re-route. Management Requirement MR6 and Other Management Provision OMP5 would reduce impacts to adjacent natural vegetation communities by marking maximum trail clearing limits, felling trees away from adjacent communities, and limiting maintenance techniques to manual methods within the mountain hemlock parkland community.

Indirect impacts under Modified Alternative 4 to vegetation communities would be as described under Alternative 2.

Under Modified Alternative 4, approximately 2,000 feet of the existing PCNST would be rerouted to minimize impact to and views from the trail. As described in Mitigation Measure MM23, the trail would be cleared and maintained to a 24-inch tread of mineral soil and a 6-foot clearing of trees and woody shrubs. Additionally, the trail would be located to avoid the removal trees over 8 inches DBH wherever possible. Approximately 0.12 acre of vegetation would be permanently removed, and 0.36 acre of additional woody vegetation clearing would occur within and outside of the White Pass Study Area.

Alternative 6

Under Alternative 6, impacts to vegetation communities would be less than Alternative 2, because the proposed *Hogback Express* and associated trails would not be constructed. Tree island removal clearing methods would be utilized for trail construction within the Pigtail Basin and result in a lower degree of impact compared to full clearing because trees and small understory vegetation are retained within the ski trail.

Clearing and grading impacts to vegetation communities under Alternative 6 would total approximately 15.3 acres, or approximately 1.0 percent of the White Pass Study Area (refer to Table 3.5-5). The majority of the impacts would occur within the mountain hemlock parkland community, approximately 11.3 acres, as a result of tree removal associated with construction of the proposed lifts, trail, and mid-mountain lodge. Approximately 3.8 acres of clearing and grading would occur to the mixed conifer community associated with construction of the parking lot and mid-mountain lodge, and would impact 3.8 acres of forest stands with old-growth characteristics (refer to Appendix G). This equates to approximately 0.8% of the White Pass Study Area within the Upper Tieton River Watershed and 0.003% of the entire Upper Tieton Watershed. Implementation of Management Requirement MR6 and Other Management Provision OMP5 would reduce impacts to adjacent natural vegetation communities by marking maximum clearing limits, felling trees away from adjacent forest communities, and limiting maintenance techniques to manual methods within the mountain hemlock parkland community.

Indirect impacts under Alternative 6 to vegetation communities would be as described under Alternative 2.

Alternative 9

Under Alternative 9, no expansion of the SUP boundary would occur. All proposed construction would occur within the existing ski area SUP boundary. Lift and trail construction would require full clearing methods within the mixed conifer community compared to tree island removal in all other alternatives. Full clearing is required in this area due to the dense forest condition and lack of existing openings as seen within Hogback and Pigtail Basins. Full clearing results in a higher degree of impact because trees would not be retained in the trail and a majority of the understory vegetation would be removed (refer to Figure 3-34).

Clearing and grading impacts to vegetation communities under Alternative 9 would total approximately 38.9 acres, or approximately 2.4 percent of the White Pass Study Area (refer to Table 3.5-5). All impacts from clearing and grading would occur within the mixed conifer community, predominantly within the Upper Tieton River watershed. Approximately 24.2 acres of clearing would occur in forest stands with old-growth characteristics (the Medium tree – Multi-story – Closed Canopy forest structure). This equates to approximately 5.4% of the White Pass Study Area within the Upper

Tieton River Watershed and 0.02 percent of the entire Upper Tieton Watershed, the most of any alternative. There would be no impacts to the mountain hemlock parkland community. Implementation of Management Requirement MR6 and Other Management Provision OMP5 would reduce impacts to adjacent natural vegetation communities by establishing maximum clearing limits and felling trees away from adjacent and sensitive vegetation.

Indirect impacts to vegetation communities under Alternative 9 would be as described under Alternative 2.

Under Alternative 9, approximately 225 feet of the PCNST would be re-routed on the eastern portion of the existing SUP to avoid a proposed ski trail. As described in Mitigation Measure MM23, the trail would be cleared and maintained to a 24-inch tread to mineral soil and a 6-foot clearing of trees and woody shrubs. Additionally, the trail would be located to avoid trees over 8 inches DBH wherever possible. Approximately 0.01 acre of complete vegetation removal and 0.03 acre of woody vegetation removal would occur. The trail corridor would be maintained in this condition.

3.5.3.2 PETS, Survey and Manage, and USFS Sensitive Species

Alternative 1

Under Alternative 1, White Pass would continue to operate under its existing permit. No new development would occur and therefore there would be no new impacts to PETS, Survey and Manage, or USFS Sensitive plant species within the White Pass Study Area. There are no known populations that would be affected by routine operation and maintenance of the ski area.

Alternatives 2, 6, 9 and Modified Alternative 4

No federally listed species under the Endangered Species Act, Survey and Manage, or USFS Sensitive species have been found within the White Pass Study Area during vegetative surveys. Therefore, there would be no impacts to known or previously documented Endangered, Threatened, Sensitive, or Survey and Manage species within proposed disturbed areas, i.e., new trail and lift clearings. The implementation of Management Requirement MR6 would further minimize potential impacts to special status species if new populations are encountered during construction by stopping work until adequate surveys and protection measures are implemented.

3.5.3.3 Noxious Weeds

Alternative 1

Under Alternative 1, White Pass would continue to operate under its existing permit. No new development would occur and therefore the potential for the spread of noxious weeds would be limited to existing disturbed areas and corridors. The use of best management practices, as described in the OWNF

Weed Management and Prevention Strategy and Best Management Practices, by all personnel are designed to reduce the risk of the establishment of noxious weeds within the White Pass Study Area.

The extensive snowpack season, cold climate and short growing season in the proposed project area provide for an environment that is not conducive to the establishment of most noxious weeds. Based on past and current observations, the current conditions and natural processes occurring in the upper Hogback Basin make it relatively inhospitable to noxious weeds.

Alternatives 2, 6, 9 and Modified Alternative 4

Under all Action Alternatives, there is a potential for the spread of noxious weeds within proposed disturbed areas (i.e., new trail and lift clearings). Primary corridors for noxious weed dispersal within the White Pass Study Area include US 12, other roads, trails, and riparian areas. Possible vectors for the introduction of noxious weed seeds or propagative material into the White Pass Study Area include any necessary heavy equipment, work crews, and vehicles.

Surveys of the White Pass Study Area, to date, have not detected the presence of noxious weeds outside of the developed areas along the US 12 right-of-way corridor. However, noxious weeds have been observed in areas adjacent to the White Pass Study Area, in areas permitted for use under the SUP, such as at the White Pass PCNST north trailhead and horse camp.

The upper Hogback Basin is roadless, and consequently, has no areas consistently disturbed by human activities outside use of the PCNST by hikers and stock users. A large portion of the proposed SUP area expansion is comprised of late seral, high elevation, open parkland where natural ecological community processes dominate. Meadow openings in the parkland have very little bare soil cover and an abundance of native shrubs and perennial herbs. The extensive snowpack season, cold climate and short growing season in the proposed project area provide for an environment that is not conducive to the establishment of most noxious weeds. Based on past and current observations, the current conditions and natural processes occurring in the upper Hogback Basin make it relatively inhospitable to noxious weeds.

The initial and ongoing disturbance required to implement and maintain the proposed ski area expansion has the ability to introduce noxious weeds within the proposed project area. Noxious weeds have the highest probability of establishing around the areas where intense soil disturbance such as grading or digging will occur. These areas include the lift sheds, mid-mountain lodge, parking lots, lift tower locations, small sections of constructed ski trail, and areas along the re-routed PCNST. There is a lower probability of noxious weed establishment in the disturbed corridors of the ski trails and lifelines where tree island removal and full clearing with no grading techniques occur (i.e., less soil disturbance: smaller scale and intensity). Possible construction-related vectors for introduction of weed seed or propagative material into the project area includes any required heavy machinery, work crews, and project access vehicles. In addition, vectors for the introduction of weed seeds related to operations may include hikers,

stock, or hand tools. The use of Prevention Strategy Best Management Practices (USFS 2002b) by White Pass personnel and/or contractors are designed to reduce the risk of weed introduction into the project area.

The impact analysis for noxious weeds took into account the site-specific analysis questions posed in the Mediated Agreement (USFS 1989). Associated vegetation would be minimally impacted from the proposed project under any of the Action Alternatives and would continue to limit the establishment and spread of noxious weeds (refer to Vegetation Communities under Section 3.5.3 – Environmental Consequences). Due to the existing unfavorable environmental conditions within the White Pass Study Area (high elevation and limited growing season), the establishment of noxious weeds following construction disturbance is not likely. Previous tree removal for lift and trail construction within the White Pass Study Area has not increased the spread of noxious weeds, as evidenced by the lack of presence within ski trails. Therefore the implementation of the Action Alternatives is not expected to increase the potential for the introduction, spread, and establishment of noxious weeds. Management Requirement MR7 would require the revegetation of any disturbed soil with native vegetation to minimize the establishment and spread of noxious weeds according to the Okanogan-Wenatchee National Forest Weed Management and Prevention Strategy and Best Management Practices (USFS 2002b). Management Requirement MR7 and Appendix O.

3.5.4 Cumulative Effects

For purposes of this analysis, cumulative effects to vegetation are considered at the site scale (White Pass Study Area) and the Cumulative Effects Analysis Area (CEAA). The CEAA is comprised of two, 5th field watersheds, the Upper Tieton watershed and the Upper Clear Fork Cowlitz watershed. Past, present and reasonably foreseeable projects occurring within each watershed area are included in the analysis. A list of all projects occurring within the Upper Clear Fork Cowlitz (refer to Table 3.5-6) and the Upper Tieton watershed (refer to Table 3.5-7) and the impact to vegetation are presented below.

**Table 3.5-6:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Clear Fork Cowlitz Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UCFC-3a	Palisades Scenic Viewpoint Project	The creation of 0.5 acre of impervious surfaces to reconstruct the overlook indirectly affected vegetation through replacement of vegetation and soil with an impervious surface over the long-term. Spatially, the project effects occurred outside the White Pass Study Area. The effect of the removed vegetation overlaps temporally with the White Pass expansion. Construction of this project did not overlap in time with implementation of the White Pass expansion. Combined with the construction of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the 5th field watershed.

**Table 3.5-6:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Clear Fork Cowlitz Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UCFC-3b	Palisades Scenic Viewpoint Project Vegetation Mgmt	Long-term impacts would result from the treatment of a 1-acre stand of trees to improve views. Temporally, the vegetation management would overlap with tree removal for the White Pass expansion and ongoing trail, road, highway hazard trees, power line, and camp maintenance activities within the watershed. There is no spatial overlap with the White Pass Study Area, but implementation of Modified Alternative 4 or Alternative 9, combined with the additional vegetation removal from this and other projects identified in this table would cumulatively decrease the amount of forest vegetation at the 5th field watershed scale.
UCFC-4	Mt Rainier/Goat Rocks Scenic Viewpoint	Approximately 0.75 acre of stand treatment will occur for this project. The effects of this project would overlap with the effects of the White Pass expansion in time. There is no spatial overlap with the White Pass Study Area, but implementation of the Action Alternatives, combined with the additional vegetation removal from this and other projects identified in this table would cumulatively decrease the amount of forest vegetation at the 5th field watershed scale.
UCFC-5	White Pass Wildfire	The wildfire burned approximately 204 acres within the Upper Clear Fork Cowlitz watershed resulting in direct impacts to vegetation. In the eight years following the fire, it is expected that some natural regeneration has occurred. This project did not overlap the in space with the White Pass Study Area. Partial natural regeneration of the vegetation has occurred since the fire. In the long-term, the effects of the fire, coupled with the effects of the White Pass expansion and other project effects listed in this table, will contribute to a cumulative reduction in forest vegetation at the 5th field watershed scale. With continued revegetation, the potential for long-term effects of this fire will be eliminated.
UCFC-6	Knuppenberg Lake Bridge Removal	Beneficial, long-term direct impact to vegetation occurred through the removal of a 0.24-acre impervious surface associated with the bridge footings along the riparian fringe. Long-term project effects would temporally overlap with the White Pass expansion. Spatially, there is no overlap with the White Pass Study Area. Coupled with projects UCFC-12, UCFC-14 and UCFC-15, the removal of the bridge would improve provide for re-establishment of vegetation in previously disturbed areas. These projects will partially offset any cumulative effects to vegetation associated with the White Pass expansion or other projects listed in this table.
UCFC-7	Wilderness Trail Maintenance	Vegetation removal from tree clearing and corridor brushing would directly impact vegetation. In addition, ground disturbance and structure maintenance would indirectly impact vegetation. Maintenance activities would limit future growth of vegetation by maintaining a modified condition along the trail. Approximately 20.5 miles of trail are maintained every other year. The short- and long-term effects of this project overlap spatially with the effects of the White Pass expansion within the White Pass Study Area and at the 5th field watershed. Ongoing maintenance of trails, roads, and campsites with the 5th field watershed would overlap in time with the White Pass expansion and result in cumulative loss of vegetation along trail corridors in the White Pass Study Area and at the 5th field watershed scale.

**Table 3.5-6:
Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
in the Upper Clear Fork Cowlitz Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UCFC-8	Ongoing Road Maintenance	Road maintenance activities impact vegetation by maintaining a modified vegetative condition along the edge of the road. Approximately 9 miles of road maintenance (i.e. re-surfacing, re-grading) occurs every five years. While this project does not overlap spatially with the White Pass Study Area, the effects of ongoing maintenance of trails, roads, and campsites with the 5th field watershed would overlap in time with the White Pass expansion and result in the cumulative loss forest vegetation at the 5th field scale.
UCFC-10	Clear Fork Trail Puncheon Installation	The installation of puncheon along 0.1 mile (0.07 acre) of braided trail (an existing, unvegetated area) directly affected vegetation by eliminating user trails (encouraging vegetation re-growth) while eliminating the potential for natural revegetation in the area of puncheon during the lifetime of the puncheon. Spatially, this project did not overlap with the White Pass Study Area. Coupled with project UCFC-6, the puncheon would help to stabilize an area of impact to vegetation resulting from user trails.
UCFC-11	Air Quality Monitoring Building	Approximately 0.02 acres of clearing occurred on Pigtail Peak for the construction of the building. Implementation of this project had no temporal overlap with the proposed White Pass expansion as the project site is assumed to be stabilized. Spatially, this project occurred within the White Pass Study Area and contributed to a cumulative loss of forest vegetation at the 5th field watershed scale, combined with implementation of the Action Alternatives and other projects listed in this table.
UCFC-12	Rockfall Mitigation (between mileposts 143 and 149)	Approximately 2.5 acres of modified vegetation was impacted during slope stabilization project on US 12. The area is maintained in a modified condition. Implementation of this project did not overlap in time with the proposed White Pass expansion. This project occurred outside the White Pass Study Area, and did not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the previously modified US 12 right-of-way.
UCFC-14	Unstable Slope Repair Projects (between mileposts 145.61 and 145.77)	The repair of 1 acre of unstable slopes will affect modified vegetation during this slope stabilization project on US 12. The area will continue to be maintained in a modified condition. Implementation of this project will not overlap in time with the White Pass expansion. This project will occur outside the White Pass Study Area, and will not contribute to a loss of forested vegetation at the 5th field watershed scale as the project will occur within the previously modified US 12 right-of-way.
UCFC-15	Unstable Slope Repair Projects (between mileposts 141.8 and 144.4)	The repair of 4.5 acres of unstable slopes will directly affect modified vegetation during slope stabilization project on US 12. The area will be maintained in a modified condition. Implementation of this project will not overlap in time with the White Pass expansion. This project will occur outside the White Pass Study Area, and will not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the US 12 right-of-way.
UCFC-16	Highway 12 Hazard Tree Removal	The removal of hazard trees within the US 12 right-of-way is not expected to result in additional long-term impacts to vegetation. Ongoing tree removal would overlap in time with construction of the White Pass expansion, but would occur outside the White Pass Study Area.

**Table 3.5-6:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Clear Fork Cowlitz Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UCFC-17	White Pass Ski Area Yurt Construction	The conversion of 0.01 acre of forest to impervious surfaces indirectly affected vegetation through replacement of vegetation and soil with an impervious surface over the long-term. Spatially, the project effects occurred within the White Pass Study Area. The effect of vegetation removal overlaps temporally with the White Pass expansion. Construction of this project did not overlap in time with implementation of the White Pass expansion. Combined with the construction of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the Study Area.
UCFC-18	Special Forest Product Permits	No long-term impacts to vegetation would result from the removal of beargrass and tree boughs as the vegetation community would not change. There would be no spatial or temporal overlap with the White Pass expansion.
UCFC-20	Benton Rural Electric Association (REA) Power Line Maintenance	Maintenance activities along the power line corridor will affect vegetation within a 28-acre area. However, no long-term impacts to vegetation are expected as the corridor is maintained in a non-natural vegetative condition. As maintenance is ongoing, there would be temporal overlap with the White Pass expansion. Power line maintenance will spatially overlap with the White Pass Study Area and the 5th field watershed.

**Table 3.5-7:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Tieton Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UT-2	White Pass Ski Area Sewer Line Replacement	Approximately 0.73 acre of grading will occur due to the excavation of the trench and resulting in the loss of ground cover vegetation in the short-term. Project implementation and effects are expected to overlap in time and space with the effects of the White Pass expansion. No long-term effects to vegetation are expected because the disturbed soil areas will be immediately stabilized after construction. Combined with the White Pass expansion and other projects identified in this table, this project would add to a cumulative, short-term loss of vegetation within and outside the White Pass Study Area within the 5th field watershed.
UT-3	White Pass Ski Area Generator Shed and Propane Tank	The installation of 0.004 acre of impervious surfaces to build the shed and install the tank indirectly affected vegetation through replacement of vegetation and soil with an impervious surface over the long-term. Spatially, the project effects occurred within the White Pass Study Area. The effect of the removed vegetation overlaps temporally with the White Pass expansion. Construction of this project did not overlap in time with implementation of the White Pass expansion. Combined with the construction of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the White Pass Study Area.

**Table 3.5-7:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Tieton Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UT-4	White Pass Ski Area Relocation of Chair 3 and Platter Lift	Approximately 0.5 acres of clearing (shrubs and herbaceous vegetation) and grading occurred to realign the existing lifts, eliminating vegetation in the short-term. Within this total, 0.01 acre was converted to impervious surface, contributing to the loss of vegetation. The remainder of the 0.5 acre was reseeded and has stabilized. Spatially, this project overlaps with the White Pass expansion. Temporally, the short-term effects do not overlap with the White Pass expansion, but the effects of the loss of vegetation in the long-term (0.01 acre) will overlap with the effects of the White Pass expansion. Combined with the construction of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the White Pass Study Area.
UT-5	US Cellular Tower	Impacts to vegetation resulted from approximately 0.004 acre of clearing and installation of impervious surface. Spatially, the effects of the cellular tower site overlap with the White Pass expansion. Temporally, the long-term loss of vegetation will overlap with the effects of the White Pass expansion. Combined with the effect of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the White Pass Study Area.
UT-6	White Pass Ski Area Restaurant/Condo Conversion	The conversion of 0.01 acre to impervious surfaces indirectly affected vegetation through replacement of vegetation and soil with an impervious surface over the long-term. Spatially, the project effects occurred within the White Pass Study Area. The effect of vegetation removal overlaps temporally with the White Pass expansion. Construction of this project did not overlap in time with implementation of the White Pass expansion. Combined with the construction of the previous projects at White Pass identified in this table and the White Pass expansion, this project added to the loss of vegetation within the White Pass Study Area.
UT-8	White Pass Ski Area Manager's Cabin	Approximately 0.25 acre of ground was cleared and graded resulting in short-term loss of vegetation. The construction of the cabin resulted in 0.04 acre of impervious surfaces. The graded areas have been stabilized and revegetated. Spatially, the effects of this project occurred within the White Pass Study Area. Temporally, the short-term loss of vegetation has been stabilized and therefore does not overlap with the effects of the White Pass expansion. The long-term loss of vegetation associated with the impervious surfaces overlap with the effects of the White Pass expansion in the White Pass Study Area. In the long-term, this project and the other projects resulting in impervious surfaces, listed in this table, contribute to a cumulative loss of vegetation in the White Pass Study Area and at the 5th field watershed scale.
UT-10	Dog Lake Campground/ Four Trailhead Reconstruction	The reconstruction of the Dog Lake Campground and associated trailheads impacted approximately 1.0 acre of vegetation due to clearing and grading. Some selected areas were also revegetated with this project. Spatially, this project does not overlap with the White Pass Study Area, therefore project effects will not overlap with expansion effects spatially. However, the effects of this project are expected to overlap in time with the effects of the White Pass expansion. Therefore it would add to a loss of vegetation at the 5th field watershed scale.

**Table 3.5-7:
Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
in the Upper Tieton Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UT-11	Clear Creek Overlook Reconstruction	The reconstruction of the Clear Creek Overlook will directly impact vegetation over the short-term due to approximately 1 acre of grading. Creation of 0.1 acre of additional impervious surface will directly affect vegetation over the long-term. There is no spatial overlap with the White Pass Study Area. The short-term loss of vegetation associated with grading is expected to be stabilized immediately. Long-term loss of vegetation associated with the new impervious surfaces will temporally overlap with the effects of the White Pass expansion. In the long-term, this project, coupled with the White Pass expansion and other impervious surfaces listed in this table, will contribute to a cumulative loss of vegetation at the 5th field watershed scale.
UT-16	Trail 1106 Water Crossing	If the trail is rerouted and a ford is constructed (instead of bridge replacement), up to a 0.1-acre loss of riparian vegetation would occur in the short-term, until the abandoned crossing revegetates. This project does not overlap spatially with the White Pass Study Area. The short-term loss of vegetation will overlap with the effects of the White Pass expansion and other projects in this table that include short-term vegetation loss at the 5th field watershed scale. No long-term effects are anticipated.
UT-18	Benton Rural Electric Association (REA) Power line Maintenance	Maintenance activities along the power line corridor will affect vegetation within a 223-acre area. Power line maintenance will spatially overlap with the White Pass Study Area and the 5th field watershed. However, no long-term impacts to vegetation are expected as the corridor is maintained in a non-natural vegetative condition. As maintenance is ongoing, there would be temporal overlap with the White Pass expansion.
UT-19	Highway 12 Hazard Tree Removal	Hazard tree removal will spatially overlap with the White Pass Study Area and the 5th field watershed. The removal of hazard trees within the US 12 right-of-way is not expected to result in additional long-term impacts to vegetation. Ongoing tree removal would overlap in time with construction of the White Pass expansion.
UT-20	Clear Lake Recreation Projects	Campsite improvements and road modifications within the existing campground would impact vegetation from clearing and grading on approximately 2 acres, in the short-term. As the project effects occur outside the White Pass Study Area, there is no spatial overlap with the effects of the White Pass expansion. However, the short-term effect will overlap in time with the White Pass expansion.
UT-23	System Trail Maintenance	Vegetation removal from tree clearing and corridor brushing would directly impact vegetation. In addition, ground disturbance and structure maintenance would indirectly impact vegetation. Maintenance activities would limit future growth of vegetation by maintaining a modified condition along the trail. Approximately 48.5 miles of trail are maintained every other year. The short- and long-term effects of this project overlap spatially with the effects of the White Pass expansion within the White Pass Study Area and at the 5th field watershed. Ongoing maintenance of trails, roads, and campsites with the 5th field watershed would overlap in time with the White Pass expansion and result in cumulative loss of vegetation along trail corridors in the White Pass Study Area and at the 5th field watershed scale.

Table 3.5-7:
Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
in the Upper Tieton Watershed on Vegetation

Project Number	Project Name	Cumulative Effects
UT-25	Zig Zag Nordic and Snowshoe Trails	The Nordic trail has been maintained in a modified condition, although no soil disturbance has taken place. Over the long-term, the 4.4 acres of vegetation removal effects along the trail overlaps spatially and temporally with the White Pass expansion. The snowshoe trails have resulted in no short- or long-term effects to vegetation. The <i>Zig Zag</i> Nordic trail has cumulatively contributed to a loss of forest vegetation in the White Pass Study Area.
UT-26	Highway 12 Rock Stabilization (at Mile Post 155)	Approximately 1 acre of scattered pockets of vegetation would be impacted during slope stabilization projects on US 12. The effects are expected to be long-term as the area would continue to be maintained in a modified condition. Implementation of this project would overlap in time with the White Pass expansion. This project occurred outside the White Pass Study Area, and would not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the previously modified US 12 right-of-way.
UT-27	Highway 12 Rock Stabilization (at Mile Post 155)	Approximately 0.5 acre of scattered pockets of vegetation was impacted during slope stabilization project on the previously modified US 12 corridor. Implementation of this project did not overlap in time with the proposed White Pass expansion. This project occurred outside the White Pass Study Area, and did not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the US 12 right-of-way.
UT-28	Camp Prime Time Accessible Trail, Wagon Ride Route and Tree House	Construction of the trail, wagon ride route, and tree house would result in additional impacts to less than 0.1 acre of ground vegetation. No impacts to vegetation are expected from using an existing road for rides or the construction of a tree house. Effects are expected to overlap in time with the effects of the White Pass expansion and cumulatively add to a loss of vegetation at the 5th field watershed scale.
UT-31	Cellular Phone Carrier Improvements at White Pass Communication Site	The replacement of an existing cell tower and building addition will result in a short-term decrease in vegetation cover on up to 0.3 acre. Spatially, this project overlaps with the White Pass Study Area. Temporally, the short-term loss of vegetation associated with the project will overlap with the White Pass expansion and other projects in this table that cause short-term loss of vegetation. The long-term loss of vegetation will result from 0.1 acre of impervious surface associated with the cell tower and building addition. The long-term loss of vegetation will overlap with the effects of the White Pass expansion in the White Pass Study Area. In the long-term, this project and the other projects resulting in impervious surfaces, listed in this table, contribute to a cumulative loss of vegetation at the 5th field watershed scale.
UT-32	Camp Site Maintenance	Hazard tree removal will spatially overlap with the White Pass Study Area and the 5th field watershed outside of the White Pass Study Area. The removal of hazard trees within developed sites is not expected to result in additional long-term impacts to vegetation. Occasional tree removal would overlap in time with construction of the White Pass expansion. Other maintenance activities are not expected to result in effects to vegetation.

**Table 3.5-7:
 Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects
 in the Upper Tieton Watershed on Vegetation**

Project Number	Project Name	Cumulative Effects
UT-34	Unstable Slope Repair Projects (between Mile Posts 156.32 and 156.56)	Approximately 4 acres of scattered pockets of vegetation were impacted during slope stabilization projects on US 12. The impacts are expected to be long-term as the area would be maintained in a modified condition. Vegetation effects of this project overlap in time with the effects of the White Pass expansion. This project occurred outside the White Pass Study Area, and would not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the previously modified US 12 right-of-way.
UT-35	Unstable Slope Repair Projects (between Mile Posts 161.93 and 165.02)	Approximately 0.53 acre of scattered pockets of vegetation were impacted during slope stabilization projects on US 12. The impacts are expected to be long-term as the area would be maintained in a modified condition. Vegetation effects of this project overlap in time with the effects of the White Pass expansion. This project occurred outside the White Pass Study Area, and would not contribute to a loss of forested vegetation at the 5th field watershed scale as the project occurs within the previously modified US 12 right-of-way.

Within the site scale, the implementation of the White Pass expansion and projects described in Tables 3.5-6 and 3.5-7 would contribute to a long-term loss of forested vegetation. Approximately 3 percent of the site scale (refer to Table 3.5-8) would experience the cumulative loss of forested vegetation with the implementation of the Action Alternative with the greatest impact (Modified Alternative 4). Neither the White Pass expansion nor the other cumulative effects projects would eliminate plant communities at the site scale. As a result, the cumulative effect on plant communities at the site scale would not be measurable. At the larger CEAA, approximately 0.3 percent of the CEAA would experience the cumulative loss of forested vegetation. The projects in Table 3.5-6 and 3.5-7 would not result in the elimination of any plant communities within the CEAA, and the cumulative project effects are distributed throughout the CEAA. As a result, the cumulative effect of the White Pass expansion and these other projects would not have a measurable effect on plant communities at the fifth field scale. As the CEAA is comprised of two 5th field watersheds, the cumulative impact at the 5th field scale would be substantially less than 0.3 percent (refer to Table 3.5-8). Continued revegetation of projects at the 5th field scale described in Tables 3.5-6 and 3.5-7 would reduce the cumulative loss of forested vegetation over time.

**Table 3.5-8:
Cumulative Effects of Past, Present, and Reasonably Foreseeable Projects in the Cumulative Effects Analysis Area^a on Vegetation**

Impact Type	Alt. 1		Alt. 2		Mod. Alt. 4		Alt. 6		Alt. 9	
	Area (ac.)	Percent of Scale (%)	Area (ac.)	Percent of Scale (%)	Area (ac.)	Percent of Scale (%)	Area (ac.)	Percent of Scale (%)	Area (ac.)	Percent of Scale (%)
White Pass Study Area Scale										
White Pass Projects	0.00	0.00	19.70	1.25	44.51	2.84	15.10	0.96	35.30	2.25
Projects Not Associated with the White Pass Expansion	3.32	0.21	3.32	0.21	3.32	0.21	3.32	0.21	3.32	0.21
Cumulative Impacts	3.32	0.21	23.02	1.47	47.84	3.05	18.42	1.17	38.62	2.46
CEAA Scale^a										
White Pass Projects	0.00	0.00	19.70	0.01	44.51	0.02	15.10	0.01	35.30	0.02
Projects Not Associated with the White Pass Expansion	611.62	0.32	611.62	0.32	611.62	0.32	611.62	0.32	611.62	0.32
Cumulative Impacts	611.62	0.32	631.32	0.33	656.14	0.35	626.72	0.33	646.92	0.34

^a The Cumulative Effects Analysis Area (CEAA) is the combined areas of the Upper Tieton and modified Upper Clear Fork Cowlitz watersheds.