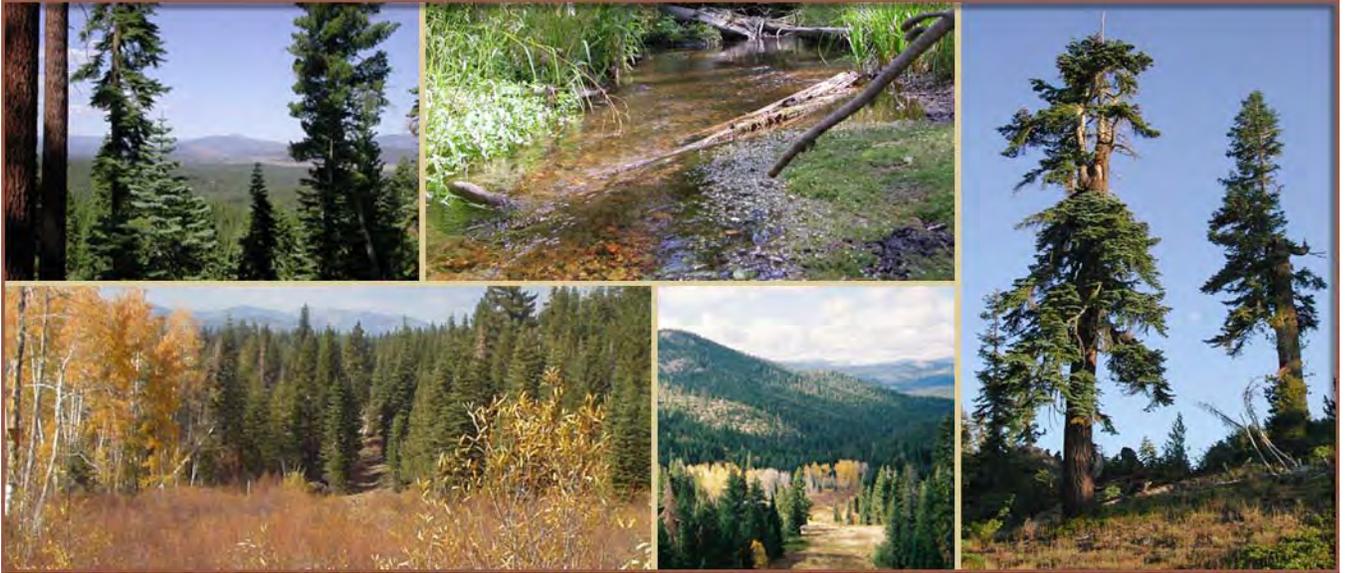


**APPENDIX 3.3**  
**NORTHSTAR HABITAT MANAGEMENT PLAN**



# Habitat Management Plan

## Northstar-at-Tahoe



Prepared for:

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Truckee, CA 96161

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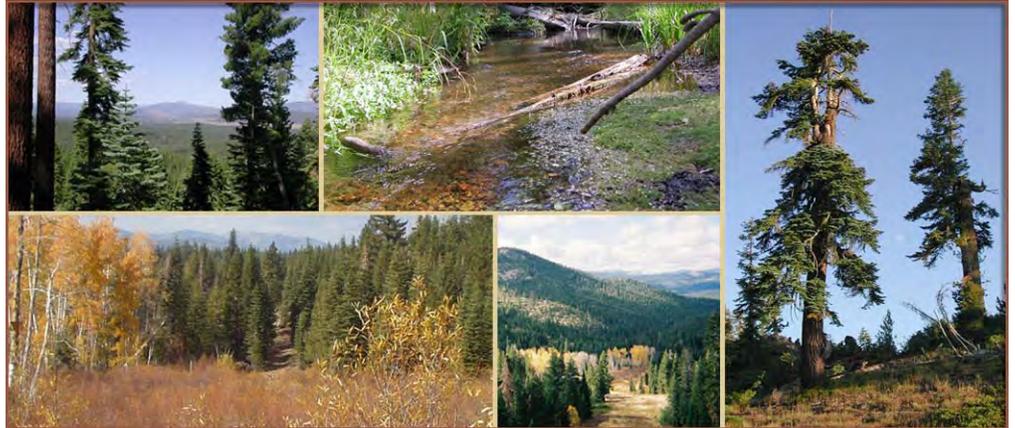
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February 13, 2009

# Habitat Management Plan

## Northstar-at-Tahoe



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## ABBREVIATIONS AND ACRONYMS

ANSI	American National Standards Institute
Basin Plan	Water Quality Control Plan for the Lahontan Region
BMI	benthic macroinvertebrate
BMPs	Best Management Practices
CAREC	California Alpine Resort Environmental Cooperative
CBI	Conservation Biology Institute
CDF	California Department of Forestry and Fire Protection
CDFG	California Department of Fish and Game
cfs	cubic feet per second
CSBP	California Stream Bioassessment Procedure
CWHR or WHR	California Wildlife Habitat Relationships
DBH	diameter at breast height
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information Systems
HMP	Habitat Management Plan
IBI	Index of Biotic Integrity
LEED	U.S. Green Building Council's Leadership in Energy and Environmental Design
LTIMP	Lake Tahoe Interagency Monitoring Program
MAPF	Mountain Area Preservation Foundation
MDCB	Methods and Data Comparability Board
MIP	Mountain Improvements Project
MRP	Monitoring and Reporting Program
MVCP	Martis Valley Community Plan
NCSD	Northstar Community Service District
Northstar	Northstar-at-Tahoe
NPOA	Northstar Property Owner's Association
OMMP	Overall Mountain Master Plan
PAC	Protected Activity Center
PBMS	performance based methods system
RPF	Registered Professional Forester
RWQCB	Regional Water Quality Control Board
THP	Timber Harvest Plan
TPZ	Timber Production Zone
UC-SNARL	University of California's Sierra Nevada Aquatic Research Lab
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
WLPZ	water course and lake protection zone

# 1 INTRODUCTION

Northstar-at-Tahoe™ is a year-round destination resort located in Truckee, California near Lake Tahoe. The 8,000-acre Northstar property includes a gradient in land use/land cover from intensive residential and recreation development to relatively undisturbed old-growth conifer forest, riparian, and wetland habitats. In March 2005, Trimont Land Company, the owner of Northstar-at-Tahoe™ at that time, and Northstar Mountain Properties, the developer of real estate at Northstar (hereinafter referred to collectively as “Northstar”), entered into an agreement with Sierra Watch and Mountain Area Preservation Foundation (MAPF). Sierra Watch and MAPF are non-profit groups working on resource conservation issues in the Truckee region. The agreement between the parties was established so that development at Northstar could move forward and would not be legally challenged by the groups if the development and resource protection and management are carried out in a manner that is consistent with the terms of the agreement. Section 3 of the agreement required Northstar to prepare a Habitat Management Plan that identifies land use and resource management zones for the project. Attachment M of the agreement summarizes the intent of the document (Appendix A) and establishes three overall goals for land use and natural resources management at Northstar:

- Goal 1:** Maintain and/or enhance natural resources values of Northstar lands while allowing for current and planned future land uses in a manner that is compatible with those values.
- Goal 2:** Develop a Habitat Management and Monitoring Plan that describes a natural resources management plan to accomplish the above goal.
- Goal 3:** Recognize Northstar’s role and contribution to natural resources conservation and management in the Martis Valley region.

The purpose of this Habitat Management Plan (HMP) is to achieve these goals and provide a programmatic framework for long-term management, conservation, and monitoring of biological resources at Northstar while allowing for reasonable economic uses for development and recreational activities. The HMP also provides a short-term action plan to achieve land use and natural resource management goals.

The HMP is organized into the following chapters:

- ▶ **Chapter 1, Introduction** briefly describes the HMP’s background and purpose, and the organization of this document.
- ▶ **Chapter 2, Development of the Habitat Management Plan** describes the approach and methodology, as well as key planning and ecological considerations, used to develop the HMP.
- ▶ **Chapter 3, Existing Land Uses, Future Uses, and Target Habitat Conditions** describes the land use setting and target resources at Northstar, and summarizes anticipated future land uses identified in the agreement. This chapter also presents the results of a GIS-based habitat value and constraints assessment for target resources. This assessment is used to identify areas of high-value habitat, map biological opportunities and constraints, and prioritize areas for various management actions in the planning area.
- ▶ **Chapter 4, Land Use and Habitat Management Strategy** is the core of the HMP. This chapter includes an integrated set of natural resources goals, management objectives, targets, and practices intended to guide future land use planning at Northstar and minimize or avoid substantial adverse impacts to natural resources.
- ▶ **Chapter 5, Habitat Enhancement Plan** discusses opportunities for and constraints to potential habitat enhancements for achieving management objectives and mitigating for likely impacts resulting from future land use activities and development. This chapter also identifies locations prioritized for long-term habitat enhancement.

- ▶ **Chapter 6, Monitoring and Adaptive Management Framework** summarizes the monitoring and reporting components of the HMP.
- ▶ **Chapter 7, References** lists the printed references and personal communications cited in this document.

## 2 DEVELOPMENT OF THE HABITAT MANAGEMENT PLAN

This chapter describes the overall approach, and the key planning and ecological considerations, used to guide development of the management strategy. The land use and habitat management strategy, presented in chapter 4, provides the specific resource management and land use targets and measures of the HMP.

In the remainder of this document, when referred to as an ownership, management, or implementing entity, “Northstar” refers collectively to Northstar Resort and Booth Creek Resort Properties, the operating company, and the land owner, CNL Income Northstar, LLC and CNL Income Northstar TRS, LLC and Northstar Mountain Properties. Northstar Mountain Properties is the applicant, landowner, and proponent of the Highlands, the Village, and Sawmill Heights projects. CNL is the applicant, landowner, and proponent of the Mountain Improvements and future mountain improvements projects. The Porcupine Hill Subdivision is owned by Booth Creek Resort Properties. These projects are discussed in Chapter 3 (*Existing Land Uses, Future Uses, and Target Habitat Conditions*). Other entities, such as Northstar Community Services District and Northstar Property Owner’s Association, also administer lands within the Northstar planning area.

### LAND USE CONTEXT

This HMP was developed in the context of existing and planned future land uses at Northstar, and aims to balance future growth of the resort with maintenance of important natural resources values on Northstar lands. Northstar is developing its Overall Mountain Master Plan (OMMP), which will propose and describe a range of future land uses and resort expansion projects to be implemented over the next several years. Existing and future land uses are described in Chapter 3.

The HMP provides specific resource management guidance for land use and development of the Northstar property. Additionally, the HMP will serve as a planning tool during development and implementation of the OMMP. It is intended to provide planning guidance at a programmatic level and assumes that more detailed project-level analyses will take place during the project-specific regulatory process. However, the HMP attempts to anticipate some of the major biological issues that would be identified during future environmental analyses, and includes practices for upfront minimization or avoidance of several potential adverse effects. Elements of the land use and habitat management strategy (chapter 4) will be integrated into site-specific design of future projects such as ski lifts and trails, and residential and commercial development. Also, the HMP includes a habitat enhancement plan (chapter 5), which provides guidance and designated priority areas for habitat enhancement at Northstar.

### PLANNING APPROACH AND KEY CONSIDERATIONS

#### HABITAT- AND MAP-BASED PLANNING

This HMP is habitat-based; resources management objectives, targets, practices, and monitoring address the extent, location, and quality of target habitats (i.e., late-seral forest, aquatic, stream riparian, and meadow habitats) and factors that affect those habitats. This is contrasted with a species-based planning approach, which would establish objectives, targets, and monitoring requirements for species populations. By maintaining or enhancing the values of target habitats, it is expected that the requirements of species associated with those habitats would be met. Standards for target habitats are based partly on the ecological requirements of a set of focal species associated with those habitats.

#### PLANNING AREA: LAND USE AND RESOURCE MANAGEMENT ZONES

The HMP planning area is the entire Northstar-at-Tahoe™ property (see Exhibits 2-1 and 2-2). The Agreement divided the planning area into five land use and resource management zones to establish the types of land uses that will be allowed and the general natural resources management requirements within each zone. These zones are shown in Exhibit 2-2. The land use and habitat management strategy (chapter 4) is based on and incorporates

the objectives established for these zones. The land uses and conservation and management objectives established by the Agreement for each zone are summarized in the following sections.

Zones A, B, C, D, and E are approximately 1,583, 2,430, 894, 902, and 1,964 acres in size, respectively. Zones C, D, and E are further subdivided into subzones (Exhibit 2-2).

## **ZONE A: DEVELOPED COMMUNITY**

### **Land Use and Management Objectives**

- ▶ Design development/land uses to avoid or minimize adverse biological effects to adjacent areas, with particular emphasis on controlling and minimizing the adverse impacts of storm water runoff into downstream water bodies.
- ▶ Develop and implement management practices to minimize and/or mitigate adverse impacts, and monitor and control potential sources of threats to natural resources, including the use of native landscaping and control/elimination of invasive non-native plants in native habitat areas under Northstar's purview. This requirement recognizes that portions of Zone A are privately owned and not under the control of Northstar. However, the expectation is that monitoring and management activities would take place at the interface of Zone A and other zones, with the intent of preventing invasive exotic species from spreading into Zones B, C, D, and E.
- ▶ Monitor water quality at points upstream and downstream of Zone A in watercourses receiving runoff from Zone A areas. This agreement recognizes that portions of Zone A are privately owned and not under the control of Northstar. However, the expectation is that monitoring and management activities would take place at the interface of Zone A, with the intent of preventing impairment of downstream waterbodies.
- ▶ Manage forested areas in accordance with the Northstar Community Service District (NCS D) fuel silviculture prescriptions for the protection of human and forest health and, to the extent practicable with these objectives, maintain and enhance natural resources values. Zone A is the only zone that NCS D has jurisdiction for fuel management.

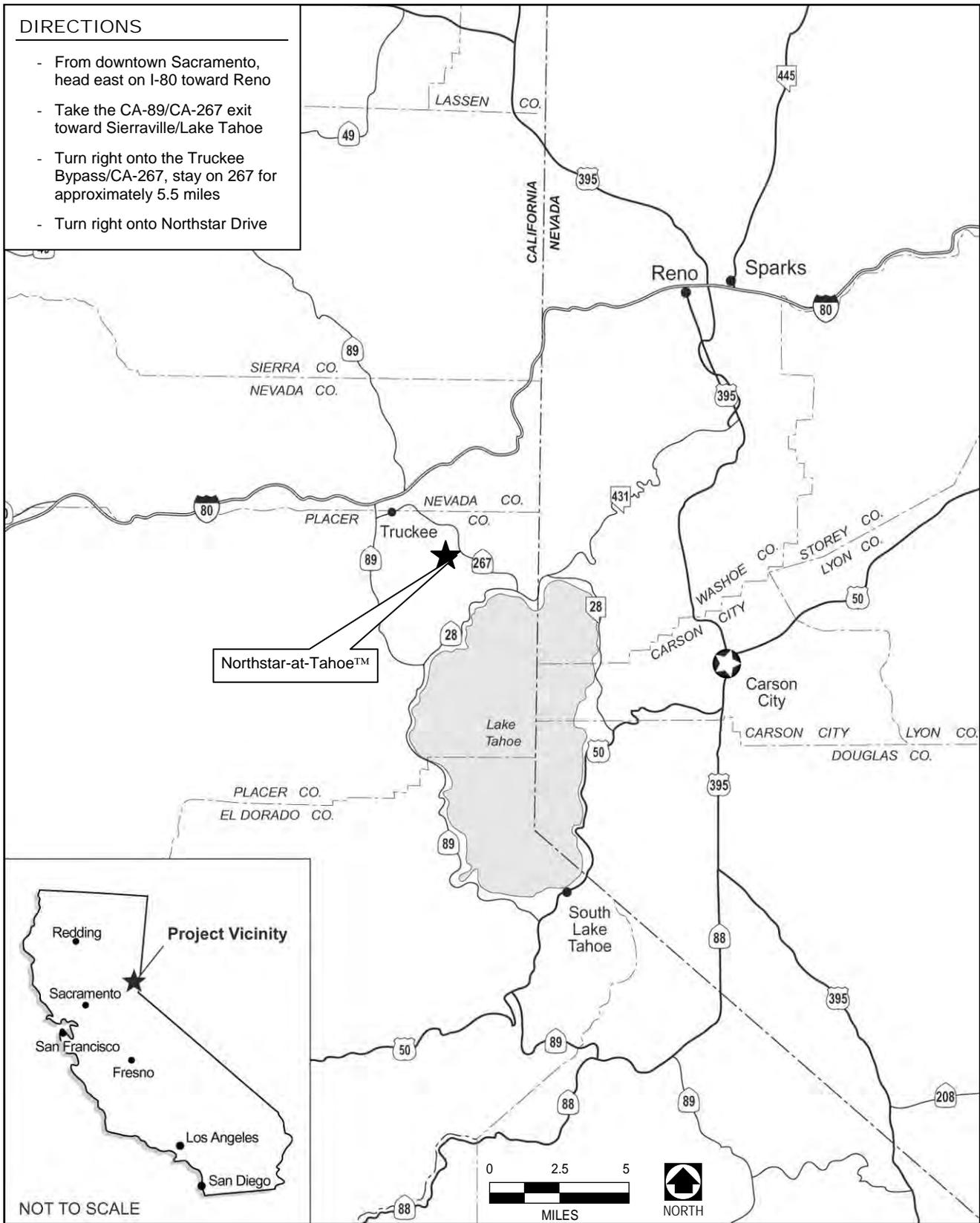
## **ZONE B: INTENSIVE SKI AREA DEVELOPMENT**

### **Land Use and Management Objectives**

- ▶ Design development/land uses to avoid or minimize adverse biological effects within Zone B and to adjacent Zones C, D, and E.
- ▶ Develop and implement management practices to minimize and/or mitigate adverse impacts, and monitor and control potential sources of threats to natural resources. Establish native vegetation communities on slopes where grading and or smoothing has taken place, to minimize the risk of erosion.
- ▶ Identify and monitor use of Zone B areas by deer for fawning. Based on this information, restrict access to potential deer fawning areas during fawning season.
- ▶ Manage forested areas in conformance with CA Forest Practice Rules Title 14. Natural Resources, Division 1.5. Department of Forestry and Fire Protection for the protection of human and forest health and, to the extent practicable with these objectives, maintain and enhance natural resources values.
- ▶ Monitor streams for water quality at points upstream and downstream of Zone B in major watercourses receiving runoff from Zone B areas.
- ▶ Prohibit summertime motorized recreational uses.
- ▶ Monitor the success of native revegetation areas.

**DIRECTIONS**

- From downtown Sacramento, head east on I-80 toward Reno
- Take the CA-89/CA-267 exit toward Sierraville/Lake Tahoe
- Turn right onto the Truckee Bypass/CA-267, stay on 267 for approximately 5.5 miles
- Turn right onto Northstar Drive



Source: CSAA, Bay and Mountain Section 1999; Northern California Section 1995

**Regional Map**

**Exhibit 2-1**

## **ZONE C: INTENSIVE RECREATION USE AREA**

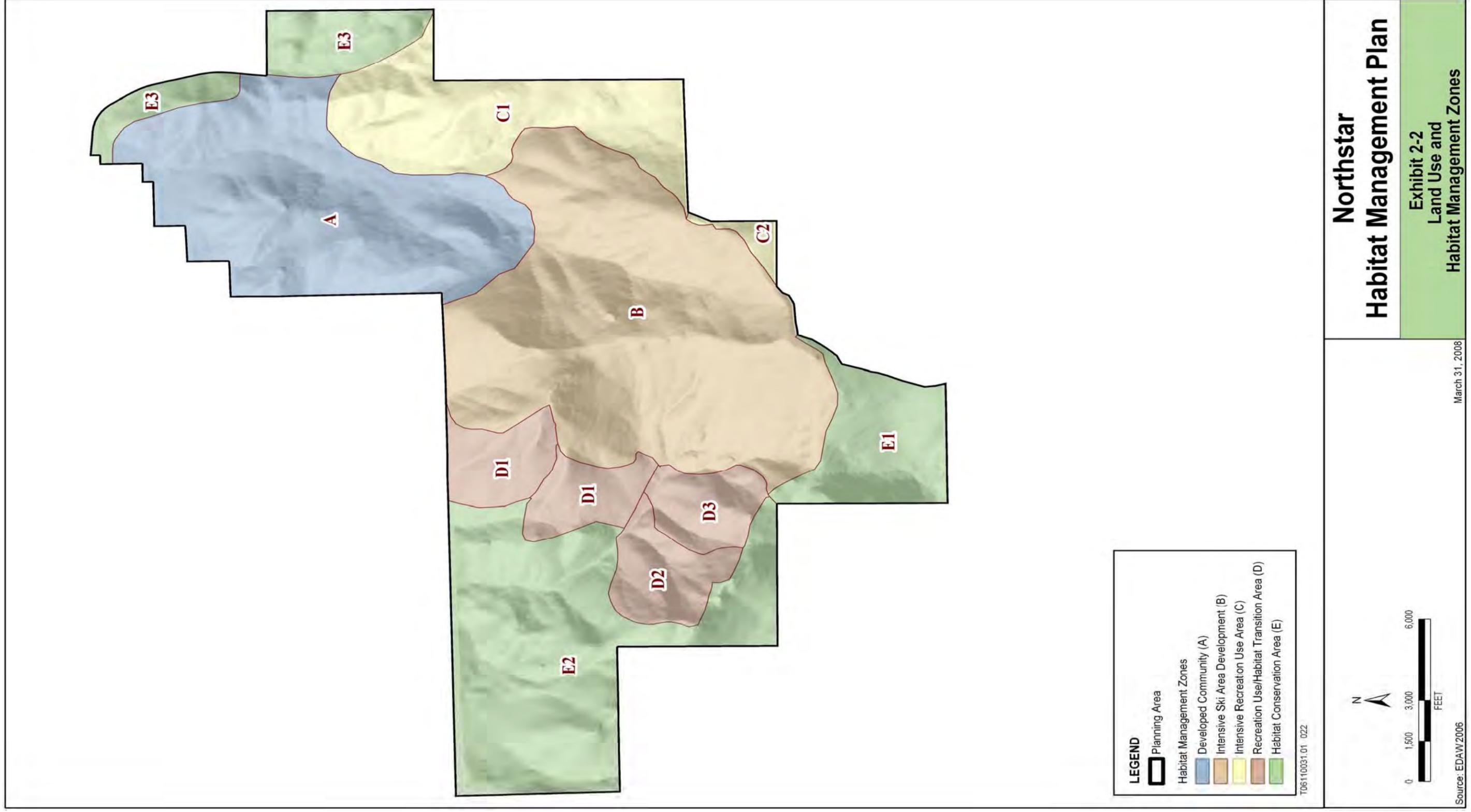
### **Land Use and Management Objectives**

- ▶ Restrict summertime motorized recreational uses to Zone C, and manage Zone C to minimize adverse natural resources effects within Zone C and adjacent zones.
- ▶ Develop and implement management practices to minimize and/or mitigate adverse impacts, and monitor and control potential sources of threats to natural resources. Minimize the risk of erosion in areas where trails have been established.
- ▶ Identify and monitor use of Zone C areas by deer for fawning. Based on this information, restrict access to potential deer fawning areas during fawning season.
- ▶ Monitor water quality at points upstream and downstream of Zone C in major watercourses receiving runoff from Zone C areas.

## **ZONE D: RECREATION USE/HABITAT TRANSITION AREA**

### **Land Use and Management Objectives**

- ▶ Design development/land uses to avoid and/or minimize adverse biological effects within Zone D and to adjacent Zone E areas. Island and glade ski run designs will be used to emphasize protecting natural resources values, particularly late seral stage forest values. Future environmental camp described in the Martis Valley Community Plan is proposed for subzone D1.
- ▶ Develop and implement management practices to minimize and/or mitigate adverse impacts, and monitor and control potential sources of threats to natural resources. Establish native vegetation communities on slopes where grading or smoothing has taken place, to minimize the risk of erosion.
- ▶ Avoid new road construction. For construction of trails and lift towers and terminals, use existing roads, or use a helicopter where existing road access is unavailable.
- ▶ Where roads are not necessary for forest management, restore roaded areas to native habitat.
- ▶ Manage forested areas in conformance with CA Forest Practice Rules Title 14. Natural Resources, Division 1.5. Department of Forestry and Fire Protection for the protection of human and forest health and, to the extent practicable with these objectives, retain and enhance natural resources values. Prohibit new roads except where necessary to comply with fuel management regulations and to protect human and forest health.
- ▶ Identify and monitor use of Zone D by deer for fawning. Based on this information, prohibit access to potential deer fawning areas during fawning season.
- ▶ Restrict use of Zone D areas to non-mechanized recreational uses only (e.g., skiing, hiking, and biking), except in the winter time for guided snowmobile tours.
- ▶ Monitor and enforce restrictions on uses of Zone D areas, including off-season uses.
- ▶ Monitor water quality at points upstream and downstream of Zone D in major watercourses receiving runoff from Zone D areas.
- ▶ Monitor forest/habitat condition, target wildlife species, and success of native revegetation areas.



## **ZONE E: HABITAT CONSERVATION AREA**

### **Land Use and Management Objectives**

- ▶ Prohibit all development except for surface lift Z.
- ▶ Restrict use of Zone E areas to non-mechanized uses only (e.g., cross-country skiing, alpine tree skiing in the vicinity of lift Z, hiking, biking).
- ▶ Manage forested areas in conformance with CA Forest Practice Rules Title 14. Natural Resources, Division 1.5. Department of Forestry and Fire Protection for the protection of forest and human health and, to the extent practicable with these objectives, maximize natural resources values for late seral stage forest associated wildlife species. This includes retention of large trees and large diameter dead wood (both standing and down). Prohibit new roads except where necessary to assist with fuel management and for habitat management.
- ▶ Restore all roads not necessary for forest management to native habitat.
- ▶ Identify and monitor use of Zone E areas by deer for fawning. Based on this information, prohibit access to potential deer fawning areas during fawning season.
- ▶ Monitor and enforce restrictions on uses of Zone E areas.
- ▶ Monitor water quality where appropriate.
- ▶ Monitor forest/habitat condition, target wildlife species, and native revegetation areas.

### **TARGET HABITATS AND FOCAL SPECIES**

The planning area supports a variety of common and sensitive vegetation communities and wildlife habitat types. Existing conditions of key biological resources in the planning area are described in chapter 3. A set of target habitats and focal species were identified to focus the HMP on natural resources that were emphasized in the Agreement or otherwise considered to be the most biologically significant resources within the planning area. Target habitats in this HMP are late-seral conifer forest, stream riparian and aquatic, and wetland and meadow. A set of focal species associated with these habitats was also identified. The “focal species” concept provides a basis for identifying specific habitat characteristics or conditions that are desirable (Chase and Geupel 2005). For example, standards for target habitats established in chapter 4 were based partly on the ecological requirements of a set of focal species associated with those habitats. Table 2-1 lists the target resources, focal species associated with them, and biophysical attributes that affect the quality or suitability of these resources.

Target resources and focal species were selected based on several factors, including their relative contribution to local and regional biodiversity, population or condition status and trend, regulatory status, and potential to be affected by future land uses at Northstar. Although these target habitats encompass the most sensitive biological resources in the planning area, several biological resources are not covered by this management strategy. This programmatic plan does not account for the habitat requirements of all species, as well as several other biological issues, that would typically be addressed during the environmental review process (e.g., in an environmental impact report [EIR]) for specific projects.

<b>Table 2-1 Northstar Habitat Management Plan Target Habitats and Focal Species</b>				
Target Habitat	Key Ecological Function	Focal Species or Group Related to Function	Rationale	Important Attributes and Processes that Maximize Function and Habitat Value <sup>1</sup>
<b>Late-seral Conifer Forest</b>	<ul style="list-style-type: none"> <li>▶ Provision of habitat structure suitable for uncommon or unique wildlife communities and sensitive species</li> <li>▶ Maintenance of movement, foraging, and breeding habitat for a variety of wildlife species</li> <li>▶ Significant contribution to local and regional biological diversity</li> <li>▶ Soil stabilization and water quality maintenance in downstream areas</li> </ul>	California Spotted Owl <i>(Strix occidentalis occidentalis)</i>	Rare species; associated with mature forest conditions; pairs are known to occur at and near Northstar	<ul style="list-style-type: none"> <li>▶ Dense and multilayered canopy closure</li> <li>▶ Large trees</li> <li>▶ Large snags</li> <li>▶ Abundant rodent prey populations</li> <li>▶ Forest regeneration: variable age structure</li> </ul>
		Northern Goshawk <i>(Accipiter gentilis)</i>	Rare species; associated with mature forest conditions; populations considered sensitive to recreation disturbances during the breeding season (e.g., TRPA 2002 citing J. Keane data); known to nest at and near Northstar	<ul style="list-style-type: none"> <li>▶ Dense canopy closure</li> <li>▶ Relatively open or gapped understory</li> <li>▶ Large trees</li> <li>▶ Abundant avian and rodent prey populations</li> <li>▶ Relatively undisturbed areas during breeding season (February – August)</li> <li>▶ Forest regeneration: variable age structure</li> </ul>
		American Marten <i>(Martes americana)</i>	Uncommon species; generally associated with mature forest conditions; considered sensitive to human activities during reproductive period; known to occur near Northstar	<ul style="list-style-type: none"> <li>▶ Dense canopy closure</li> <li>▶ Large trees</li> <li>▶ Large snags</li> <li>▶ Abundant rodent and insect prey populations</li> <li>▶ Large size-classes of down woody debris</li> <li>▶ Forest regeneration: variable age structure</li> </ul>
		Pileated Woodpecker <i>(Drycopus pileatus)</i>	Regionally uncommon species, associated with large trees and decaying snags; known to nest at Northstar	<ul style="list-style-type: none"> <li>▶ Large trees</li> <li>▶ Abundant large, decaying snags</li> <li>▶ Forest regeneration: variable age structure</li> </ul>
<b>Riparian and Aquatic Habitat</b>	<ul style="list-style-type: none"> <li>▶ Significant contribution to local and regional biological diversity</li> <li>▶ Provision of habitat for neotropical migrant bird communities</li> <li>▶ Provision of wildlife movement and resting habitat</li> </ul>	Native Fish Communities	Sensitive to water quality, in-channel habitat diversity, and riparian condition	<ul style="list-style-type: none"> <li>▶ Water quality</li> <li>▶ In-channel habitat diversity (combination of pools, riffles, etc.)</li> <li>▶ Invertebrate productivity</li> <li>▶ Riparian cover</li> <li>▶ Stable bank/channel</li> </ul>
<b>Wetlands and Meadows</b>		Mountain yellow-legged frog <i>(Rana)</i>	Sensitive to water quality, riparian condition, and fish	<ul style="list-style-type: none"> <li>▶ Ponds, lakes, and bogs; or streams with deep pools and slow-moving water</li> </ul>

Table 2-1 Northstar Habitat Management Plan Target Habitats and Focal Species				
Target Habitat	Key Ecological Function	Focal Species or Group Related to Function	Rationale	Important Attributes and Processes that Maximize Function and Habitat Value <sup>1</sup>
	<ul style="list-style-type: none"> <li>Maintenance of movement, foraging, and breeding habitat for a variety of wildlife species</li> <li>Water quality maintenance in downstream areas</li> </ul>	<i>muscosa</i>	community composition; rare species of management concern; however, not known to occur at Northstar	<ul style="list-style-type: none"> <li>Absence of non-native fish predators</li> </ul>
		Riparian bird communities	This group accounts for a high proportion of regional wildlife diversity; is limited in distribution; includes several special-status species; is comprised primarily of neotropical migrant birds, which are of management concern; and can be monitored efficiently. Distribution and abundance of species within this group can indicate management effects and habitat conditions over time	<ul style="list-style-type: none"> <li>Native riparian vegetation, especially willow (<i>Salix</i> spp.)</li> <li>Vegetation structure with high foliar density</li> <li>Minimal conifer encroachment</li> <li>Hydrologic connectivity between stream channel and floodplain</li> </ul>
		Mule Deer (Fawning) ( <i>Odocoileus hemionus</i> )	Regionally important; Northstar is positioned within core migration range; population declining and threatened; fawning occurs at Northstar	<ul style="list-style-type: none"> <li>Meadows or wide riparian corridors</li> <li>Moderate shrub cover near water</li> <li>Relatively undisturbed areas during fawning season</li> </ul>
		Willow Flycatcher ( <i>Empidonax traillii</i> )	Rare species associated with wet meadows in the Sierra Nevada; population declining and threatened	<ul style="list-style-type: none"> <li>Meadows or wide riparian corridors with native riparian vegetation, especially willow (<i>Salix</i> spp.)</li> <li>Vegetation structure with high foliar density</li> <li>Hydrologic connectivity between stream channel and floodplain</li> <li>Saturated soils or standing water through July</li> <li>Minimal conifer encroachment</li> </ul>
		Sierra Nevada Mountain Beaver ( <i>Aplodontia rufa californica</i> )	Rare species associated with riparian corridors and wet meadows in the Sierra Nevada; occurs in the planning area	<ul style="list-style-type: none"> <li>Riparian corridors or wet meadows with dense riparian shrub cover</li> <li>Permanent water (e.g., perennial streams)</li> <li>Soft soil for burrowing</li> </ul>

## EXISTING CONDITIONS, VALUE, AND CONSTRAINTS ASSESSMENT FOR TARGET HABITATS

This section describes the approach used to assess existing conditions of and biological constraints associated with target habitats. This analysis consisted of three primary components:

- ▶ land use and land cover mapping,;
- ▶ field-based riparian and stream habitat assessment; and
- ▶ Geographic Information Systems (GIS)-based mapping to characterize the variation in habitat values and identify key biological constraints over the planning area, and determine where land use and resource protection conflicts could exist.

These components are summarized in the following sections.

### LAND USE AND LAND COVER MAPPING

#### Vegetation Mapping

Using a vegetation classification developed for the purpose of supporting the HMP, we produced a vegetation map of the Northstar properties. This vegetation map was produced from a georectified aerial photograph, information from and review by Northstar staff and consultants, and fieldwork to ground-truth the map. The following text describes the vegetation classification system and the mapping methodology that were used.

#### ***Vegetation Classification System***

The vegetation classification was based on the vegetation classification used by the CDFG's California Wildlife Habitat Relationships (CWHR or WHR) computer program. The CWHR system classifies vegetation into relatively broad categories based on plant species composition, and then subdivides these into finer categories based on vegetation structure. The categories and their subdivisions are intended to subdivide vegetation into units that differ in associated animal species and the quality of habitat provided for associated species.

In applying this state-wide classification to the Northstar properties, we included several additional land cover types present at the Northstar site that are distinctive in their species composition and structure, and likely differ from CWHR types in the habitat they provide and/or their potential management. These additional land cover types included mosaics of more than one CWHR type that were either finely intermeshed or had one CWHR type in patches that were generally below the size of the minimum mapping unit (e.g., Jeffrey pine-montane chaparral). The additional types also included land use categories contained in broader developed land cover types by the CWHR system (e.g., ski run). Chapter 3 (*Existing Land Uses, Future Uses, and Target Habitat Conditions*) describes the vegetation classification we developed for the planning area and provides the cover and tree size categories of the CWHR forest structure classification.

#### ***Mapping Methodology***

Using ArcInfo 9.0 and 9.1, a preliminary draft map was produced by digitizing vegetation polygons on-screen while viewing a georectified aerial photograph. The aerial photograph was taken in September 2005.

Delineated polygons were relatively distinct with relatively homogeneous "signatures" on the aerial photograph. These polygons generally had a 10-acre minimum size (i.e., minimum mapping unit) except for wetland and riparian features, which had a 1-acre minimum mapping unit. Developed areas and forest patches that were smaller, but that were distinct from adjacent areas and had abrupt boundaries, also were mapped as separate polygons.

Several additional guidelines were followed in producing the preliminary map. At forest boundaries, canopy-sized trees within about 10 m (33 ft) of other canopy trees were included within forest units, while those further away were not; and, forest polygons, in general, were not drawn narrower than 10 m. The rationale for these rules was that distinct forest habitats generally would not extend across larger breaks in the tree canopy or narrower bands of vegetation. To facilitate the forest structure mapping, forest polygons were subdivided along the numerous dirt roads that cross the Northstar properties. Forest structure has been strongly affected by timber management, and roads have sometimes served as the boundaries of management units.

This preliminary map was checked in the field by two EDAW biologists (one botanist and one senior ecologist) during two days of field work in October 2005. Their observations of land cover on portions of the Northstar site were recorded and then used to assign a land use-land cover type to each mapped polygon.

After revision on the basis of the field data, the preliminary draft map was reviewed by Northstar's Registered Professional Forester (RPF). The RPF manages timber harvests at the Northstar properties. He reviewed the map for errors, and also added a description of the vegetation structure to each forest polygon.

The draft vegetation map was then combined with mapping produced by a 2005 wetland delineation of a portion of Zone D. Within the boundaries of this delineation, the preliminary vegetation map was replaced by the mapping performed for the wetland delineation. This was done to provide more detailed mapping within an important area for future management.

After revising the map based on the RPF's review and to incorporate mapping from the wetland delineation, a draft vegetation map was distributed to Northstar staff and consultants for additional review. Two additional days of fieldwork by EDAW staff also were conducted to further ground-truth the map, and the RPF conducted an additional review.

After revising this draft map in response to comments, and based on the additional fieldwork, the final vegetation map was distributed and used to support development of the HMP.

## **RIPARIAN AND STREAM HABITAT ASSESSMENT**

In August 2006, a riparian and aquatic habitat baseline assessment of the planning area was conducted to support the development of habitat suitability maps for riparian and aquatic focal species, and to support the development of riparian-related HMP management targets, practices, and enhancement concepts. The purpose of the assessment was to document the location and baseline attributes of perennial, seasonal, and intermittent waterways. Attributes included the location, gradient, flow regime (i.e., intermittent, seasonal, perennial), and observations regarding the condition of the channel bed, channel banks, and adjacent riparian and upland areas. During the assessment, several streams that were not previously mapped were identified and mapped. The assessment was focused on Zones C and D; however, portions of Zones A, B, and E were also evaluated. Zones C and D were considered priority areas because the potential for conflicts between management of target habitats and resort expansion activities are greatest in those locations. The full assessment methodology, field protocol, data form, and tabular results are presented in Appendix B.

Riparian and aquatic habitat characteristics of each stream reach were recorded while walking the entire length of target stream reaches and recording the presence or absence of key features, and overall characteristics of the reach. Stream features recorded included the reach type (e.g., perennial, ephemeral, etc.), bankfull width and depth, substrates present, presence and characteristics of pools, barriers to fish movement, and evidence of floodplain. Characteristics of stream corridor and adjacent upland vegetation were also recorded. Riparian habitat attributes were characterized by plant community type and dominant species present, structure and cover classes of woody and herbaceous vegetation, corridor width, and evidence of conifer encroachment within the riparian vegetation zone. The same vegetation community characteristics were recorded for upland vegetation within 50 meters of the edge of the stream corridor. Representative photographs were taken of each reach, and locations of

breaks between reaches were recorded using a Thales MobileMapper CE GPS unit. Observed anthropogenic and natural sources that limit habitat quality were also documented.

## **HABITAT VALUE MAPPING**

Geographic information systems (GIS) and landscape-scale data provide opportunities to model, map, and evaluate wildlife habitat quality over large planning areas. GIS-based habitat suitability maps were developed to 1) characterize habitat suitability for a set of focal species over the planning area, 2) identify high-value areas within target habitats, 3) map biological constraints, and 4) prioritize areas for potential habitat management, enhancement actions, and potential mitigation in the planning area. More information about the methodology and results of this analysis are presented in Chapter 3 and Appendix C. Maps produced during this analysis, combined with preliminary maps showing potential locations of future land uses, were used to identify locations where conflicts between land uses and protection of target habitats could occur.

### 3 EXISTING LAND USES, FUTURE USES, AND TARGET HABITAT CONDITIONS

This chapter describes the regional setting of Northstar, and primary existing land uses, ongoing projects, and planned future land uses at Northstar-at-Tahoe™. The Land Use and Habitat Management Strategy (Chapter 4) would apply to some of these primary land uses. This chapter also describes existing conditions for target habitats.

Allowable land uses at Northstar have been established by the Placer County General Plan (Placer County 1994), the Martis Valley Community Plan (Placer County 2003), and the Sierra Watch/MAPF Settlement Agreement. These plans represent the underlying documents that will guide the HMP implementation and future projects at Northstar. It should be noted that the Sierra Watch/MAPF Agreement is more restrictive than the allowable uses Placer County has established and the Agreement further limits land uses at Northstar (see Appendix A for Attachment M of the Agreement).

Regionally, additional agreements between Sierra Watch, MAPF, and adjacent Martis Valley property owners (i.e. Martis Camp, Timilick) are in place, which further restrict land uses in Martis Valley beyond the Placer County allowances.

#### REGIONAL SETTING

This section was adapted from the *Draft Environmental Impact Report for Northstar Highlands* (Pacific Municipal Consultants 2004).

#### MARTIS VALLEY

The Martis Valley area is composed of areas in Nevada and Placer Counties, the Town of Truckee, and part of the State of Nevada's Washoe County. Land use in the region is primarily associated with leisure, tourism, and outdoor recreational activities. The region is dominated by national forests, Lake Tahoe, and several large state parks, although regional attractions also include the Town of Truckee, the Truckee River, the Truckee Tahoe Airport, Donner Lake, Squaw Valley, and Alpine Meadows. Lake Tahoe, often referred to as the Jewel of the Sierra, attracts visitors from around the world. The Town of Truckee, with the highest density of historic sites in California, initially developed around the emigrant trail, served soon after as a station for the Transcontinental Railroad, and was later known for logging and winter sports (Town of Truckee 1996). Other world-class ski resorts in the area, including Northstar-at-Tahoe™ (Northstar), Heavenly Valley, Boreal Ridge, Squaw Valley, and Alpine Meadows, offer a variety of winter recreational activities. In addition, a wide variety of summer activities can be found in the region, including golf, water sports, hiking, fishing, and mountain biking. The region also contains many residential developments, a large concentration of secondary or recreational homes, public and private recreational areas and facilities, and commercial and industrial areas.

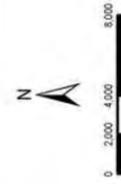
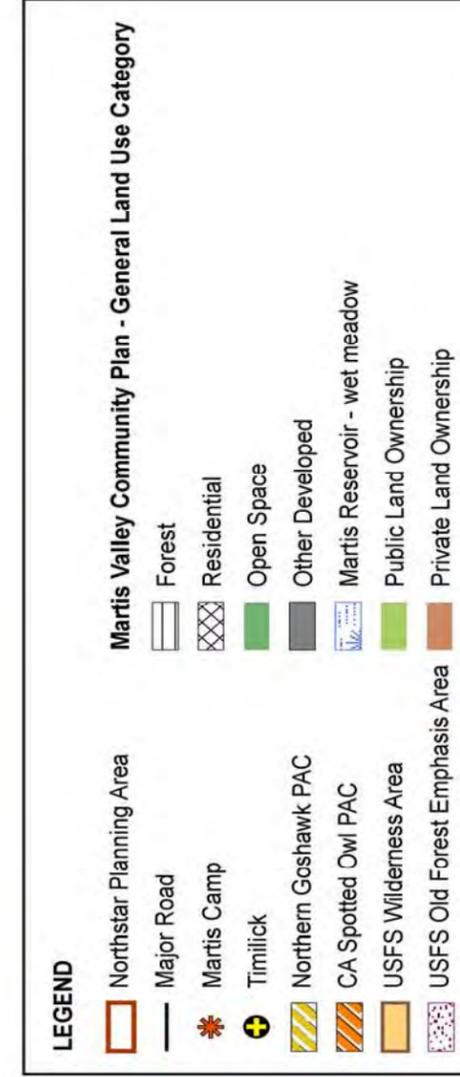
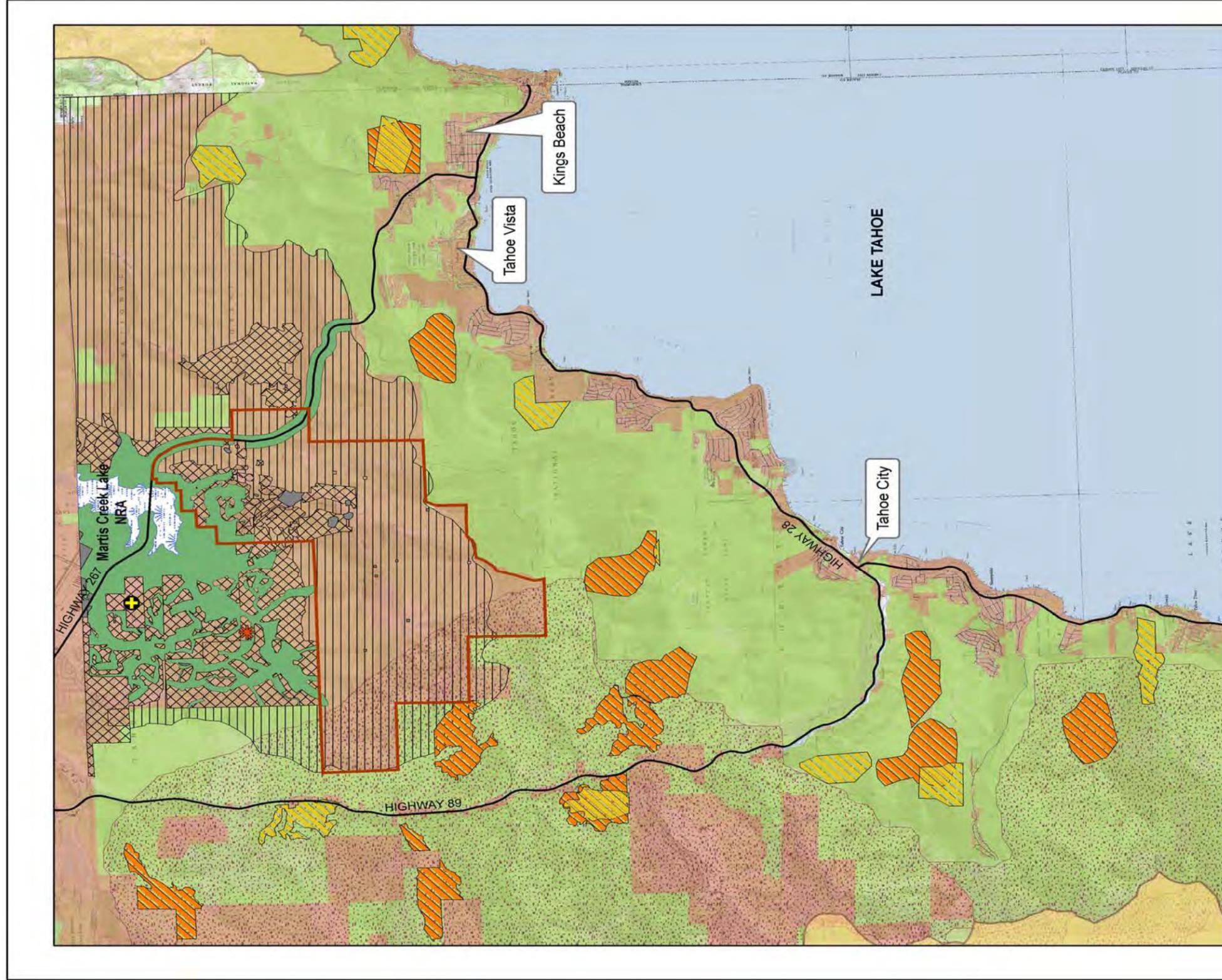
The Martis Valley is located in both Nevada and Placer Counties, encompassing approximately 44,800 total acres. The Placer County portion of the Martis Valley consists of approximately 25,570 acres, or roughly 57 percent of the total acreage of the valley. Land use patterns consist of a wide range of urban and commercial areas, forest lands, and public and private recreational areas and facilities, as well as areas designated for airport use. Exhibit 3-1 shows the general land use and ownership patterns in the Northstar region, including Martis Valley. Several of the general land use categories shown in Exhibit 3-1 are based on those defined in the Martis Valley Community Plan (MVCP, Placer County 2003), but are also subject to landowner agreements that result in additional conserved open space that is not illustrated in the figure. In Exhibit 3-1, several of the MVCP designations are combined into general categories for display purposes. Table 3-1 summarizes the relationship between the general land use categories shown in Exhibit 3-1 and the MVCP designations.

<b>Table 3-1 Relationship Between General Land Use Categories in Exhibit 3-1 and MVCP Designations</b>	
<b>General Land Use Category in Exhibit 3-1</b>	<b>Martis Valley Community Plan Land Uses</b>
Forest	Land uses allowed include commercial timber production operations and facilities, recreational uses including skier services and campgrounds, and necessary public facilities. Residential development in areas designated Forest may include one principle and one secondary dwelling per lot, and caretaker/employee housing.
Residential	Includes all residential categories: rural, forest, low density, medium density, and high density residential. Designation provides for a variety of residential neighborhoods with varied lot sizes and allowable units per acre.
Open Space	Greenbelt and open space lands identified within the Martis Valley. Land uses include open space preserves, recreational uses, and public facilities supporting those uses.
Other Developed	Includes multiple land use designations; public facilities, tourist/resort commercial, professional office, and general commercial. Land uses vary between designation but in general allow for a variety and high level of development including commercial centers, lodging facilities, retail services, office locations, and public facilities such as the airport or government offices.
Martis Reservoir – wet meadow	Designated “water” in the Martis Valley Community Plan, includes the Martis Reservoir area in public ownership.
Source: Placer County (2003)	

## MARTIS VALLEY TIMBERLAND

A large portion of Placer County, including most of the Martis Valley, currently consists of forestland (Exhibit 3-1). As shown in Table 3-2, total forestlands in Placer County totaled 421,000 acres in 1999. Ownership of these lands includes 244,000 acres in national forests, 15,000 acres in other public lands, and 69,000 acres owned by forest industries, and other private owners have 87,000 acres. The Placer County portion of Martis Valley includes 17,032 acres of forestland.

<b>Table 3-2 Area of Timberland and Ownerships (1999)</b>								
	U.S. Forest Service	Public Non-National Forest	Forest Industry	Private Farmers	Other Private	Total Private	Total All Ownership	Timber Production Zone
Placer County	244,000	15,000	69,000	6,000	87,000	162,000	421,000	117,000
California	8,784,000	429,000	4,198,000	951,000	2,288,000	7,438,000	16,649,000	5,432,000
Source: California Statistical Analysis (2001), <i>cited in</i> Pacific Municipal Consultants (2004).								



SOURCE: USGS, USFS, Placer County, Booth Creek  
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April 3, 2008

# Northstar Habitat Management Plan

Exhibit 3-1  
Regional Land Use Context  
in Placer County

Sierra Pacific Industries is the largest single landowner within the Placer County portion of Martis Valley, with approximately 7,343 acres (29 percent). The U.S. Forest Service (USFS) presently manages approximately 3,093 acres (12 percent) within the Placer County portion of Martis Valley. These areas consist of several small divided land Parcels of various sizes, all of which lie within the Tahoe National Forest. The Tahoe National Forest is renowned for exceptionally productive timberlands.

The Martis Creek Lake National Recreation Area is located to the north/northwest of the Northstar-at-Tahoe™ resort community. Located to the north/northeast of Northstar-at-Tahoe™ is undeveloped valley land that is under stewardship by Truckee Donner Land Trust. Undeveloped small ownership lots are located across SR 267 to the northeast of Northstar-at-Tahoe™. To the east, across SR 267, is undeveloped forest land that is owned by CNL Income Northstar, LLC, CNL Income Northstar TRS, LLC, and Sierra Pacific Industries. Martis Camp is located west of Northstar-at-Tahoe™ and consists of undeveloped land that is being developed.

## ADJACENT LANDS

Most land adjacent to Martis Valley and the Northstar property is publicly-owned and undeveloped, but a substantial amount of private land also occurs throughout the region (Exhibit 3-1). Public land is primarily Forest Service lands (Tahoe National Forest to the north and west, Lake Tahoe Basin Management Unit to the south and east), but also includes California State Parks, California Tahoe Conservancy, and other lands. Forest Service lands in the vicinity include several special management designations or allocations. These include California Spotted Owl Protected Activity Centers (PACs), Northern Goshawk PACs, Old Forest Emphasis Areas, and Wilderness areas (Exhibit 3-1). A northern goshawk PAC is an area 200 acres in size that includes the best available habitat around known or suspected nest sites. A California spotted owl PAC is an area 300 acres in size that includes the best available habitat around known or suspected nest stands in as compact a unit as possible (USDA Forest Service 2001). The Forest Service's network of Old Forest Emphasis Areas is intended to comprise approximately 40 percent of National Forest lands in the Sierra Nevada and Modoc Plateau. Management in Old Forest Emphasis Areas focuses on protecting the highest quality mature forest stands and landscapes, enhancing mature forest conditions, using prescribed fire to reduce hazardous fuel conditions, and reintroducing fire as an ecosystem process (USDA Forest Service 2001).

## LAND USE OVERVIEW

Northstar has developed a plan, "Completing the Vision," to guide the resort in achieving its growth objectives. "Completing the Vision" proposes trail networks for summer and winter use that link all areas of the community, providing new recreation and amenities as new neighborhoods are created, balancing all-season recreation with increases in the numbers of visitors, and devoting more than 75 percent of Northstar to recreational use. The document also outlines road, parking, and trail improvements that would improve auto and pedestrian circulation at Northstar-at-Tahoe™.

The planning, design, and implementation of current and planned future land uses at Northstar are driven by the following objectives:

- ▶ Enhance Northstar's status as a self-sustaining, self-contained destination resort that provides all necessary services and amenities to guests and residents on site. Northstar will continue to develop as a community that addresses the need to upgrade existing facilities by providing additional or new resort-related recreational services, lodging, housing, and amenities.
- ▶ Maintain Northstar's competitiveness as a resort destination by upgrading existing services and operations. This includes providing a better balance of skier amenities, improving lift technology, increasing the variety and mix of recreational activities (e.g., trails), providing a greater range of lodging and dining options, and planning for more efficiently designed parking areas and auto/transit systems.

- ▶ Continue to build upon and expand the existing circulation systems and amenities at Northstar in order to decrease the need for offsite trips. Existing transportation and circulation systems will be improved by providing additional efficient day-use parking and an additional employee parking area; increasing services and amenities on Northstar property; expanding trail systems and shuttle service; and providing additional lifts, ski-in/ski-out housing, and lodging alternatives. Northstar will continue to encourage the use of regional transit to and from the project site by providing designated transportation stops within the community.
- ▶ Implement a land use plan that is responsive to the Northstar community regarding visual character, traffic management, parking availability, recreational facilities, environmental issues, and the desire for expanded community services and amenities.
- ▶ Develop a project that is consistent with the planning guidelines and principles of the Sierra Watch/MAPF Agreement, the Northstar Overall Mountain Master Plan (OMMP), the 2003 Martis Valley Community Plan (Placer County 2003), and the 1994 Placer County General Plan.
- ▶ Continue to grow a community that draws upon the historic Sierra and Tahoe regional architectural traditions in the development of all residential and commercial buildings and site improvements.
- ▶ Continue to incorporate sustainable design concepts in the development of the real estate projects to ensure the long-term preservation, enhancement of resources, and reduction of site impacts. The real estate development will continue to use and draw upon the sustainable concepts outlined in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards or LEED equivalent.
- ▶ Reinforce Northstar as a four-season destination resort through the addition of a new resort hotel with additional resort services and dining options.
- ▶ Designate sufficient land to provide appropriate locations for work force housing to serve Northstar's employees and regional employees whose income does not exceed moderate income guidelines and to provide housing primarily for Northstar employees, employees working at Northstar, or regional employees whose income does not exceed the moderate-income guidelines.
- ▶ Maintain and/or enhance natural resources values of Northstar lands while allowing for current and planned future land uses in a manner that is compatible with those values.
- ▶ Recognize Northstar's role and contribution to natural resources conservation and management in the Martis Valley region.

## EXISTING LAND USES

The primary existing land uses at Northstar-at-Tahoe™ are year-round recreation, residential uses, and commercial business. Most of these land uses are concentrated in management Zones A, B, and C. Some of these land uses are described further below.

Northstar-at-Tahoe™ resort is situated on approximately 8,000 forested acres and provides a diverse mix of year-round recreational activities. The Placer County Martis Valley Community Plan (Placer County 2003) designates several zoning classifications at the resort. Zoning classifications on the property include single-family residential, multi-family residential, resort, forestry, open space, and TPZ. In winter, the resort offers downhill skiing and snowboarding, cross-country skiing, and snowshoeing, tubing, and skating. During summer, recreation activities include mountain biking, hiking, and golf. Most developed recreation activities are presently concentrated in management Zones A, B, and C.

Zone A is approximately 1,583 acres in size and includes the most developed land within the planning area. Portions of this zone are owned by entities other than Northstar. This zone includes most residential and commercial development, and some additional ski runs and lifts at the resort. Zone A provides the “gateway” and main entrance corridor to the resort. Existing land uses in Zone A include retail areas, commercial uses, parking and circulation, pedestrian areas, restaurants, residential uses, recreation areas (including an 18-hole golf course), and ski operations. Existing accommodations within Zone A consist of over 1,400 private homes, condominiums, commercial development, and undeveloped lots. Some of the existing residential units serve as rental properties.

## **PROPOSED DEVELOPMENT PROJECTS**

### **REAL ESTATE DEVELOPMENT PROJECTS**

Extensive real estate development at Northstar is in progress in Zone A. Based on the Sierra Watch/MAPF Agreement, the HMP establishes the following limits on the density and intensity of hotel, residential, and commercial development at Northstar: Highlands Project – hotel of 255 rooms, 1,450 residential units, and commercial and recreational uses as established in the Highlands EIR overall project description; Retreat – 18-lot subdivision; Porcupine Hill – 12-lot subdivision; and Sawmill Heights – 270 units of employee housing. The Northstar Resort Expansion Projects involve the creation of new residential and commercial structures, access lifts and new access and egress ski runs. Summaries of the four main projects being implemented within Zone A are presented below. Exhibit 3-2 illustrates the locations of the major features of these main projects. These projects have been approved by Placer County and are currently under construction with project build-out anticipated in the next ten years. Land use and density allowances are consistent with the Sierra Watch/MAPF Agreement.

Several environmental review documents for these projects have been prepared (e.g., EDAW 2003, Hughes Environmental Consultants 2003, Pacific Municipal Consultants 2004). These documents include the Northstar Village Final EIR certified by Placer County in October 2003, the Northstar Highlands Final Phase I and Program EIR certified by Placer County in February 2005, and the Northside Final EIR certified by Placer County in July 2006. Although not specifically reviewed here, these documents included supporting biological analyses, impact assessments, and mitigation measures that were incorporated into final project designs or conditions of approval. Many of these mitigation measures and conditions of approval address biological resources.

### **THE VILLAGE**

The Village project area contains approximately 24 acres. The pre-project structures and paved areas on the Village parcel included the gondola, the Activity Center, the Photo Shop, the Clocktower building, the Village Condos, and the Northstar Club. Uses in the latter three buildings included retail space, residential units, conference space, skier services, parking, storage, and restrooms. Of these, the two buildings that will remain are the Village Condos and the Northstar Club buildings.

Placer County has approved the Village project. The various improvements associated with the Village are either constructed or under construction. Village improvements include additional residential units, a mix of retail opportunities, above and below grade parking, and various year-round recreation opportunities. There are six new buildings proposed varying in size from 2½ to 5½ stories high. When completed, the Village will include approximately 213 residential units, approximately 100,000 square feet of commercial and retail space, 45,000 square feet of resort related facilities, and 182,000 square feet of underground parking and service space.

### **THE NORTHSIDE**

The Northside project is located to the west of the Village on the lower portion of the existing parking lots. Placer County approved the Northside project in July 2006. The project is a mixed-use real estate project, and will include approximately 137 units comprised of town homes and fractional and whole ownership condominiums.

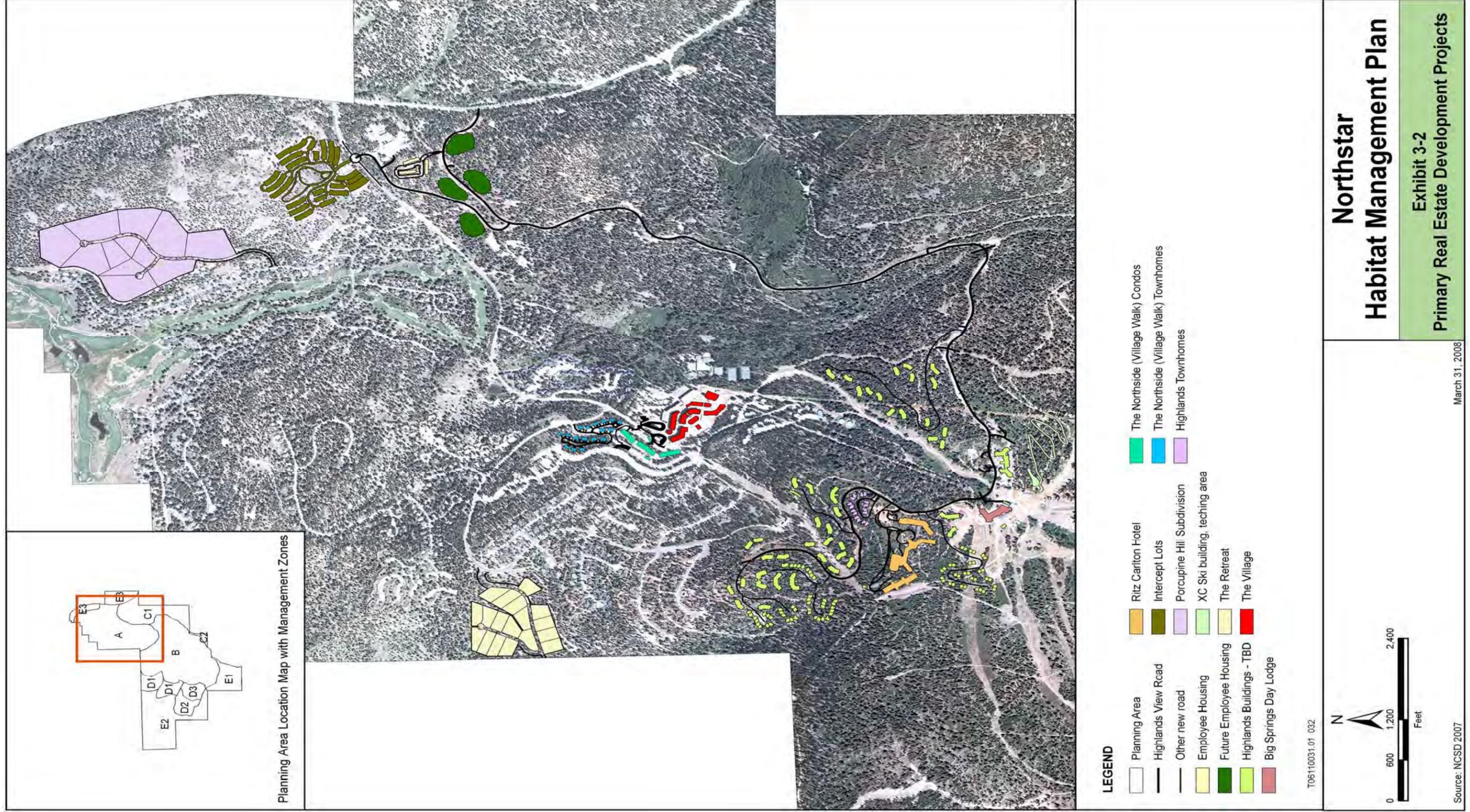
The Northside project also includes a recreational facility with pool and fitness center to accommodate the residences of the Village and the Northside. This project will displace some existing parking; however, an additional parking lot (Intercept Lot; see *The Highlands* below) is constructed northeast of the Village Walk near the resort entrance.

## THE HIGHLANDS

The Highlands project refers to the planned development of approximately 324.6 acres within the existing Northstar-at-Tahoe™ resort community. The proposed project at full buildout entails a combination of uses including lodging (hotel), residential (multifamily and employee housing), skier services, and recreational land uses. The project site is located centrally within the Northstar-at-Tahoe™ resort community. The Highlands project consists of several components and includes the creation of and development on several Parcels.

The Highlands project area at the Northstar Resort supports undeveloped land, recreational and support facilities including the Big Springs Day lodge, the gondola, several ski lifts, skier services, including the Northstar Cross Country Facility, and maintenance facilities that are located in the general vicinity of the project. Placer County approved the Highlands project in February 2005. The approval included project-specific entitlements (e.g., vesting tentative map) for Phase I. Construction of several elements of Phase I of the Highlands project was initiated in 2006. Buildout of the overall proposed Highlands is anticipated to occur over 15 to 20 years. The program involves the following elements:

- ▶ up to 1,450 clustered multifamily residential units, consisting of a combination of fractional and whole-ownership products;
- ▶ employee-housing sites (The first site is the Sawmill Heights project, which is located on a knoll adjacent to Highlands View Road approximately 450 feet south of Northstar Drive and approximately 1,500 feet west of SR 267, near the entrance to the Northstar Resort. The Sawmill Heights project will be constructed as part of Phase 1. The first phase Employee Housing project consists of 96 residential units with approximately 330 beds in three 4-story buildings. Each building will contain a mix of studio, one-bedroom, two-bedroom, three-bedroom and four-bedroom units. Parking for the units will consist of 89 on-site parking spaces and 22 off-site parking spaces. The second and third sites would be for future employee housing and are adjacent to the Sawmill Heights site and southeast of the Sawmill Heights site where Sawmill Flat Road will intersect with Highlands View Road, and will be constructed in future phases. Phases 2 and 3 are planned to include an additional 174 employee housing residential units over time.);
- ▶ an expanded Big Springs Day Lodge with units above, including additional residential recreational amenities, such as a grass outdoor amphitheatre and approximately 30,000 square feet of additional skier services;
- ▶ a 170-room hotel with approximately 12,000 sf of retail and dining uses and 20,000 sf of spa uses;
- ▶ the relocation of the resort's existing maintenance operations facility to a new site;
- ▶ the relocation of resort's ski maintenance facility would be located approximately 1,600 feet uphill and to the southeast of the existing facility;
- ▶ a satellite fire facility for the Northstar Community Services District, which would be located on either the north or south side of Highlands View Road adjacent to the existing water treatment plant;
- ▶ the relocation of the Northstar Resort's Cross-Country Facility to approximately 200 feet southeast of the Vista ski lift;
- ▶ a water tank to serve Sawmill Heights employee housing site;



- ▶ roadway circulation systems, including Highlands View Road, Ridgeline Drive from Highlands View Road to the new roundabout at Northstar Drive, and a connection to the south end of Big Springs Drive, infrastructure systems, and new/relocated recreational ski trails required for the future buildout and phasing of the proposed project;
- ▶ a 33.0-acre day skier intercept parking lot to be located adjacent to the existing Northstar gas station on Northstar Drive (this lot will provide approximately 1,200 automobile parking spaces and would be linked to the Village at Northstar facilities by a bus transit/shuttle system);
- ▶ a 2.0-acre expanded employee parking lot located adjacent to Northstar's existing administration building, south of Northstar Drive near the existing gas station (potential capacity for the employee lot is estimated to be approximately 300 parking spaces); and
- ▶ an expanded recreational trail system plan. Trail proposals for the proposed Highlands project include extending the existing Northstar Resort trails system. Extended trails would include a network of pedestrian and mountain biking trails, and ski-in/ski-out trails to residential buildings that connect with the greater Northstar-at-Tahoe™ resort community. Relocated and new ski and cross-country trails would be developed to interconnect the existing ski area with recreational and residential amenities. The proposed Highlands project trails system, includes establishment of a segment of an 8- to 10-foot-wide, Class 1 Regional Trail (the Tompkins Memorial Trail) that would provide alternative access to Lake Tahoe (in lieu of SR 267) and a link to the Town of Truckee. The Tompkins Memorial Trail would link the Highlands as well as the Village at Northstar to the overall regional trail system. The trail would generally follow a southeasterly orientation from the Village (with a link to the proposed Highlands project) and use existing trails and roads to the greatest extent possible to reduce disruption to the landscape. This new segment of the trail would continue to the ridgeline of the Lake Tahoe basin where it would link with the basin segment of the trail being established by the Tahoe Rim Trail Association.

The Highlands development will also be served by the Pulse Gondola lift. The Pulse Gondola will provide access from the Village at Northstar to the hotel. The gondola will operate year-round.

## **PORCUPINE HILL SUBDIVISION**

The Porcupine Hill Subdivision consists of developing 12 custom homesite lots east of the existing residential lots located on Skidder Trail (Northstar Unit 6-C) at Northstar. Lot sizes average 3.85 acres. Reduced density and increased lot size is intended to maintain forest lands and open space within the project area and the lots. Future residences to be constructed on the proposed lots will be primarily custom homes. A subdivision access road leading to two cul-de-sacs and an emergency access road will be constructed off of Skidder Trail to serve the 12 future residences. Skidder Trail is a residential road that connects to Northstar Drive via Basque Road. Utility infrastructure for the proposed project will be extended from the existing infrastructure that serves surrounding subdivisions. Water will be supplied by the existing Northstar Community Services District (NCS D) water main located along Lower Sawmill Flat Road which parallels the project's western boundary. The project includes a 15' trail easement within Lot 1 that will ultimately connect to potential expansion of the Tompkins Memorial Trail system. The secondary ingress/egress fire road at the northern end of the subdivision road will provide emergency access as well as a direct connection into the existing Lower Sawmill Maintenance Road. Placer County environmental approvals and entitlements are anticipated by the end of 2007 with construction occurring within the next 5 years.

## **RETREAT SUBDIVISION**

The Retreat Subdivision is a 31.1 acre single-family residential subdivision, consisting of 18 custom homesite lots with open space areas. The project is located on Big Springs Drive, south of the existing Indian Hills Condominiums. Components of the subdivision include access roads (Mill Site Road and Cross Cut Court); storm

drainage facilities and utilities; an access ski trail from the Northstar resort to the subdivision; and connection to the existing Northstar multi-use trail system. Two open space areas will be created to maintain buffers between the proposed project area and existing surrounding subdivisions. In addition, Mill Site Road will connect to the proposed Martis Camp project as a planned emergency and transit access corridor. Lot sizes for the proposed 18 custom homesites average just over an acre, a reduced density from surrounding subdivisions. Future residences are anticipated to be custom homes. The project was approved by Placer County in February 2005 and construction is anticipated to be completed in Fall 2007.

## **MOUNTAIN DEVELOPMENT PROJECTS**

Development projects to expand existing resort uses will be implemented over the next 15 to 20 years. These projects include the Mountain Improvements Project (MIP), Arrow and Comstock Lifts Replacement Project, S Ski Pod Project, and the Overall Mountain Master Plan (OMMP). The following section provides a summary of proposed mountain development projects and is subject to regulatory compliance and Attachment M of the Sierra Watch/MAPF Settlement Agreement. The main features of these projects are illustrated on Exhibit 3-3.

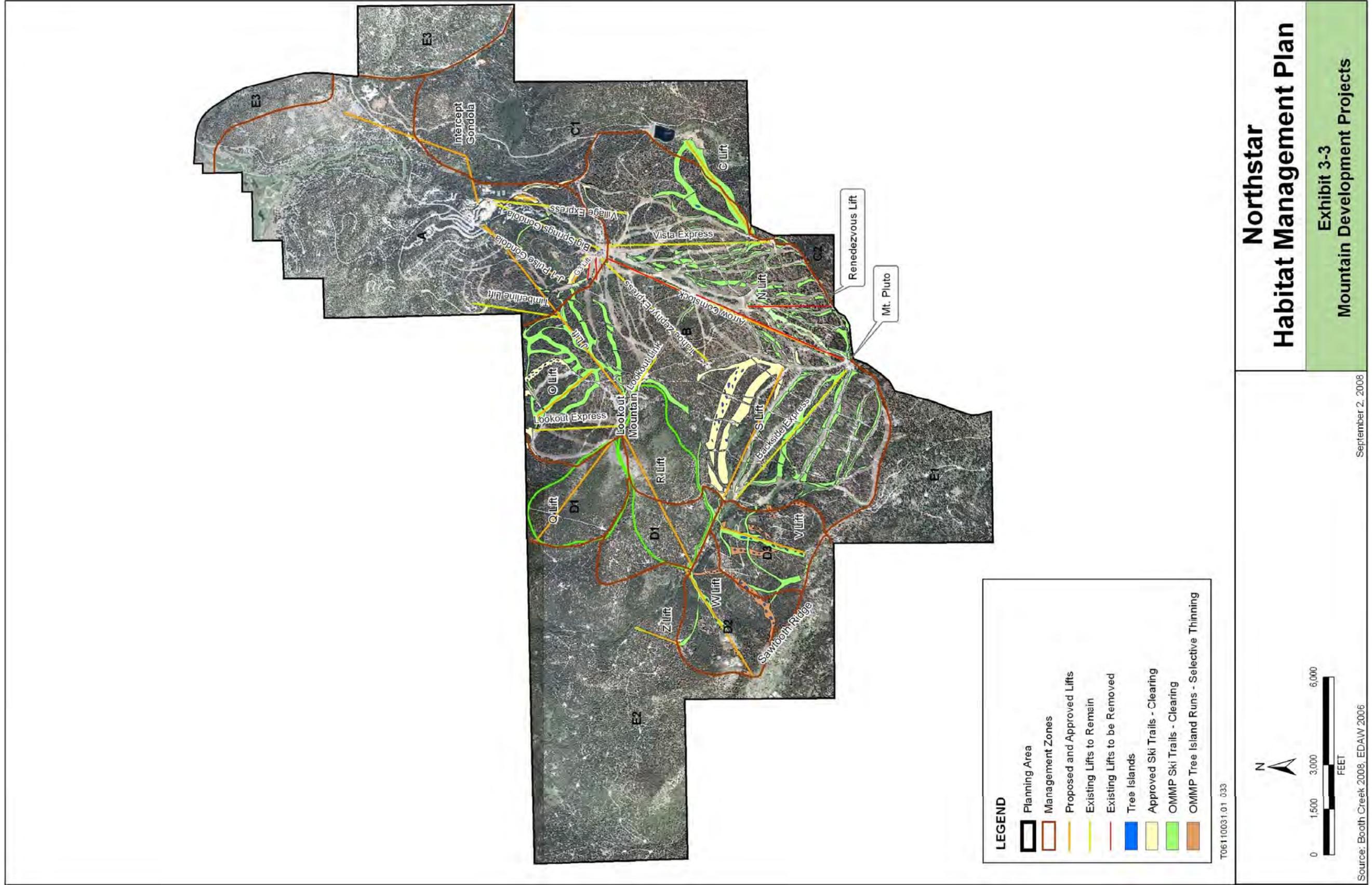
### **MOUNTAIN IMPROVEMENTS PROJECT**

The Mountain Improvements Project (MIP) was approved by Placer County in January 2005 and phased construction has been ongoing since the date of approvals. The MIP is designed to address existing operational needs of the resort and specific concerns of Northstar-at-Tahoe™ guests. The MIP project includes the following components:

- ▶ the installation of two new lifts (J1 and Real Estate Lift),
- ▶ the installation of 4 magic carpet lifts to create a beginner area adjacent to the Village Express Lift bottom terminal,
- ▶ the removal and replacement of three lifts (Pioneer replaced with G2, Lookout Overland surface tow is replaced with Lookout Link, and Bear Paw is replaced with the G3 lift),
- ▶ the expansion of the primary and booster pumphouses to accommodate snowmaking improvements,
- ▶ the construction of fuel tanks at the top terminals of each lift,
- ▶ the construction of approximately 98 acres of new ski trails and widening of existing ski trails for improved skier circulation and beginner area enhancement,
- ▶ the construction of approximately 35,400 linear feet of snowmaking, and
- ▶ tree removal on approximately 110 acres for the proposed lifts and trails.

### **ARROW AND COMSTOCK LIFTS REPLACEMENT PROJECT**

The Arrow and Comstock Lifts Replacement Project was approved by Placer County in February 2007. The proposed Arrow-Comstock Lifts Replacement will provide a more direct access from the mid-mountain to the top of the mountain via one lift, versus the current two lifts. This will address existing skier concerns regarding the amount of time it takes to reach the top of the mountain to commence round trip skiing. The proposed project includes the replacement of two lifts with one lift, utilizing existing terminal and tower locations where appropriate.



## **S SKI POD PROJECT**

The S Ski Pod Project was approved by Placer County in October 2007. The project is intended to create an additional infill ski pod to provide a redundancy lift to the Backside Express should it become inoperable; to reduce lift lines at the Backside Express lift; and to create additional terrain to increase skier retention. Project construction is anticipated to commence in the next 5 years. The project includes the following components:

- ▶ high speed detachable quad lift (S Lift),
- ▶ 1,000 gallon above ground fuel tank,
- ▶ approximately 77 acres of tree clearing for proposed ski trails, and
- ▶ snowmaking improvements on 2 proposed ski trails.

## **OVERALL MOUNTAIN MASTER PLAN**

An application package for the Overall Mountain Master Plan (OMMP) Environmental Impact Report (EIR) was filed with Placer County on July 2007 to commence Placer County environmental review and public circulation. The OMMP is the consideration of planned on-mountain development at Northstar including additional lifts, ski pods, and infrastructure to accommodate these features; on-mountain skier service facilities and upgrades to existing facilities; snowmaking and utilities; and maintenance/access roadways. The OMMP also includes alternative recreational components such as camping, biking, and cross-country skiing facilities. The OMMP represents the continued efforts of Northstar to evaluate and further define the overall resort experience given the needs of its guests, and the use of this information to develop a master plan that would guide the resort's future.

The development of OMMP design concepts is proceeding concurrently with development of this HMP. Some of the preliminary findings and guidelines of this HMP, and terms of the Sierra Watch/MAPF Settlement Agreement with respect to land use and project planning by management zones, have been integrated into the initial OMMP concepts. Exhibit 3-3 shows the distribution of the primary OMMP concepts. The final HMP will continue to serve as a planning tool during development and implementation of the final OMMP, and project concepts may be further modified based on the final HMP.

The OMMP is proposed on CNL Income Northstar, LLC and CNL Income Northstar TRS, LLC property within the existing ski terrain (i.e., infill ski pods), on the western slopes of Mt. Pluto, the northeastern slopes of Sawtooth Ridge, and on Lookout Mountain. The majority of this property is zoned Forestry (i.e., ski resort development is an allowed use), however portions are zoned Timberland Production Zone (TPZ) and may require a rezoning or Zoning Text Amendment (ZTA) to allow for ski run development in these areas. The Sierra Watch/MAPF Agreement further defines land uses in these mountain development areas.

The intent of the OMMP is to provide improved ski run development (i.e., typical trails) within the existing developed areas and less intensive ski terrain development (i.e., tree island runs and tree skiing) in the more remote areas of the resort. The goal is to promote several different skiing experiences, while respecting and taking into consideration the natural resource values of the land. In addition the plan will evaluate other forms of recreational components such as improved cross-country facilities, mountain biking, and remote wilderness lodging/camping.

### **Program-Level Components**

Given that some of the future ski pod expansions and alternate recreation lodging/camping are not anticipated to be constructed in the near future, Northstar has proposed these components on a programmatic level. The program-level components include:

- ▶ the Q and R lifts and the Intercept Parking Lot Gondola and associated terrain, snowmaking, fuel tanks and standby engines, and necessary utilities and maintenance/access roadways to service these lifts;

- ▶ three skier service sites (The skier service sites would provide restrooms and some food service facilities. The program-level sites would be located at the top of the C lift, approximately 600 feet downhill from the S lift top terminal, and near the top of Lookout Mountain.);
- ▶ cross-country center relocation and campsite area (The program-level relocated cross-country center would be located to the west of the Sawmill Reservoir and would include the relocation of the cross-country center building. The proposed campsite area would offer a variety of camping opportunities and would be conceptually planned to promote environmental stewardship by providing recreational learning experiences outdoors. A road to this site would also need to be constructed.); and
- ▶ backside campsite area. The program-level campsite area would be located on the Backside and would offer a variety of camping opportunities.

## Project-Level Components

Some OMMP components are anticipated to be constructed within the next five to ten years. These project-level components include:

- ▶ the C, J, O, V, W and Z lifts and associated terrain, snowmaking, fuel tanks and standby engines, and necessary utilities and maintenance/access roadways to service these lifts;
- ▶ reduction in length of the existing Rendezvous lift to provide an upper mountain ski pod suited for lower ability levels and an additional teaching area;
- ▶ additional ski trails and the modernization of existing narrow ski trails through widening to occur adjacent the Vista, Rendezvous, Arrow, Comstock, and Backside lifts;
- ▶ four skier bridges/crossings necessary for ingress and egress to/from the V, W and Z lifts and associated terrain, and for Village run access;
- ▶ skier service site improvements (The skier service sites would provide for improved food service, restroom facilities, and seating areas offered on-mountain. The project-level sites would include improvements to the existing Summit Deck and Grille facility located on the top of Mt. Pluto and the existing Big Springs Daylodge Plaza area located at the mid-mountain; and a new warming hut with deck located on the Backside, directly adjacent the S lift bottom terminal.);
- ▶ additional mountain bike park trails (the proposed bike trails would connect into the existing bike trail system and expand upon mountain bike park activities offered during the summer months); and
- ▶ Timberland Production Zone (TPZ) Rezone or Zoning Text Amendment (ZTA) and Martis Valley Community Plan Update General Plan Amendment. Portions of the OMMP project are located within TPZ and would require an immediate rezone to facilitate the change of zoning from TPZ to Forestry (FOR) or a ZTA to allow ski lift facilities and ski runs in TPZ. A General Plan amendment to the Martis Valley Community Plan Update would be necessary for the relocation of the Tourist/Resort Commercial land use area located on the Backside to the cross-country center relocation/campsite project area.

## EXISTING HABITAT CONDITIONS

The 8,000-acre planning area includes a gradient in land use/land cover from intensive residential and recreation development to relatively undisturbed old-growth conifer forest, riparian, and wetland habitats. The planning area is dominated by conifer forest intermixed with various types of facilities and development associated with operation of the Northstar ski resort. Developed features include roads, mountain biking and hiking trails, ski runs, ski lifts, snowmaking equipment, and residential and commercial buildings. Developed features are concentrated primarily within management Zones A and B.

Vegetation communities and habitats present within the project study area include several upland forest, chaparral, herbaceous, and riparian types. Aquatic habitats include perennial and intermittent streams, lakes, and aquatic conditions associated with wet meadows. Exhibit 3-4 shows the distribution of land cover types within the planning area; Table 3-3 describes these land cover types. Table 3-4 provides the cover and tree size categories of the CWHR forest structure classification. Exhibit 3-5 shows the distribution of CWHR types within the planning area. These cover and tree size categories were assigned to each forest polygon in Exhibit 3-4.

Numerous resident and migratory wildlife species use habitats within the project study area for foraging, shelter, and breeding. The quality of these habitats for wildlife and plant communities in the planning area varies with the distribution of land cover types, land use and disturbance history (e.g., logging, fire, development), geomorphic setting, and locations and types of ecological gradients. Although several habitat types at Northstar are common and widespread in the local area, some have experienced a significant amount of disturbance regionally in recent years. Within the Northstar planning area, most land cover change has occurred in the central and eastern portions of the planning area (i.e., Zones A and B). The following section focuses on values and biological constraints of target habitats at Northstar.

## **TARGET HABITATS: VALUE AND CONSTRAINTS ASSESSMENT**

### **LATE-SERAL FOREST**

Late-seral (i.e., mature, old-growth) forests have canopies dominated by larger and taller trees, and have a more complex canopy structure than younger stands. They also tend to have greater quantities of large snags and larger coarse wood debris than younger stands. Chapter 5 (*Conceptual Habitat Enhancement Plan*) further describes stand development and structure of late-seral forests.

Late-seral forests provide wildlife habitats and other ecological functions that are distinct from those of younger forests. The extent of late-seral forest has been substantially reduced in the Lake Tahoe region, primarily because of historic timber harvests (Manley et al. 2000). Ecological effects of these changes include the loss of structural diversity and habitat value within forest patches, the loss of forest ecosystem diversity on a landscape scale, and regional forest fragmentation. Because they provide distinct ecological functions and their extent and quality have been reduced, maintaining and increasing the extent of late-seral forest is a regional conservation goal.

Several sensitive wildlife species require old forests or old forest characteristics such as large trees, snags, large woody debris, canopies of variable heights and closures, and complex spatial mosaics of vegetation. Many raptors and mammals, including Northern Goshawk, California Spotted Owl, and American marten, require old forest characteristics for breeding and foraging. In addition to providing habitat for sensitive species and supporting unique biological communities, important functions of late-seral forest include ecological processes such as regulation of snowmelt, regulation of biochemical processes, soil stabilization, and temperature modification below the forest canopy. More complete reviews of biophysical characteristics, ecological functions, status, and trends of late-seral forest in the Sierra Nevada are included in Franklin and Spies (1991), Franklin and Fites-Kaufmann (1996), SNEP Science Team et al. (1996), and USDA Forest Service (2001, 2004).

### **Distribution and Value in the Planning Area**

Late-seral forest habitat in the Northstar HMP planning area is defined as stands with CWHR forest structure classifications of 5M, 5D, or 6. Areas identified as late-seral forest are characterized primarily by relatively large trees and dense canopy closure. This definition is more directly related to forest structural attributes rather than actual age, and is intended to reflect the habitat associations of late-seral focal species selected for this HMP. For example, stands classified as late-seral forest in this HMP may not include those that are relatively old but characterized by open canopy closure and/or small trees (e.g., old stands of Sierra juniper).

Approximately 92.6 acres of late-seral forest occurs in the western portion of the planning area; this represents approximately 1% of the planning area. Late-seral forest was identified in land use Zones B (intensive ski area

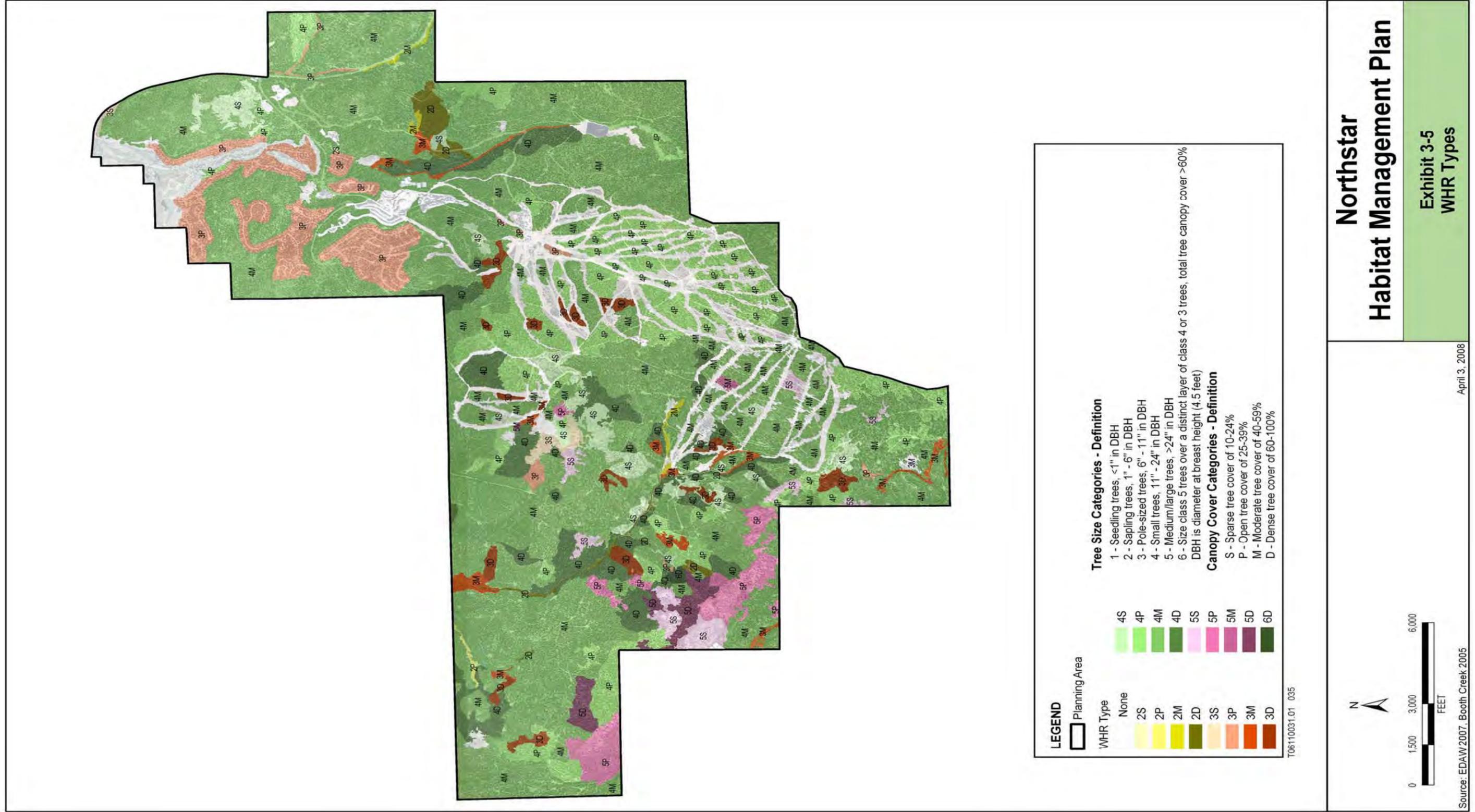
development area), D2 (recreation use/habitat transition area), and E2 (habitat conservation area). The locations of these stands are shown in Exhibit 3-6. The largest contiguous patches of this habitat type occur in Zones D2 and E2; only two small fragments were identified in Zone B.

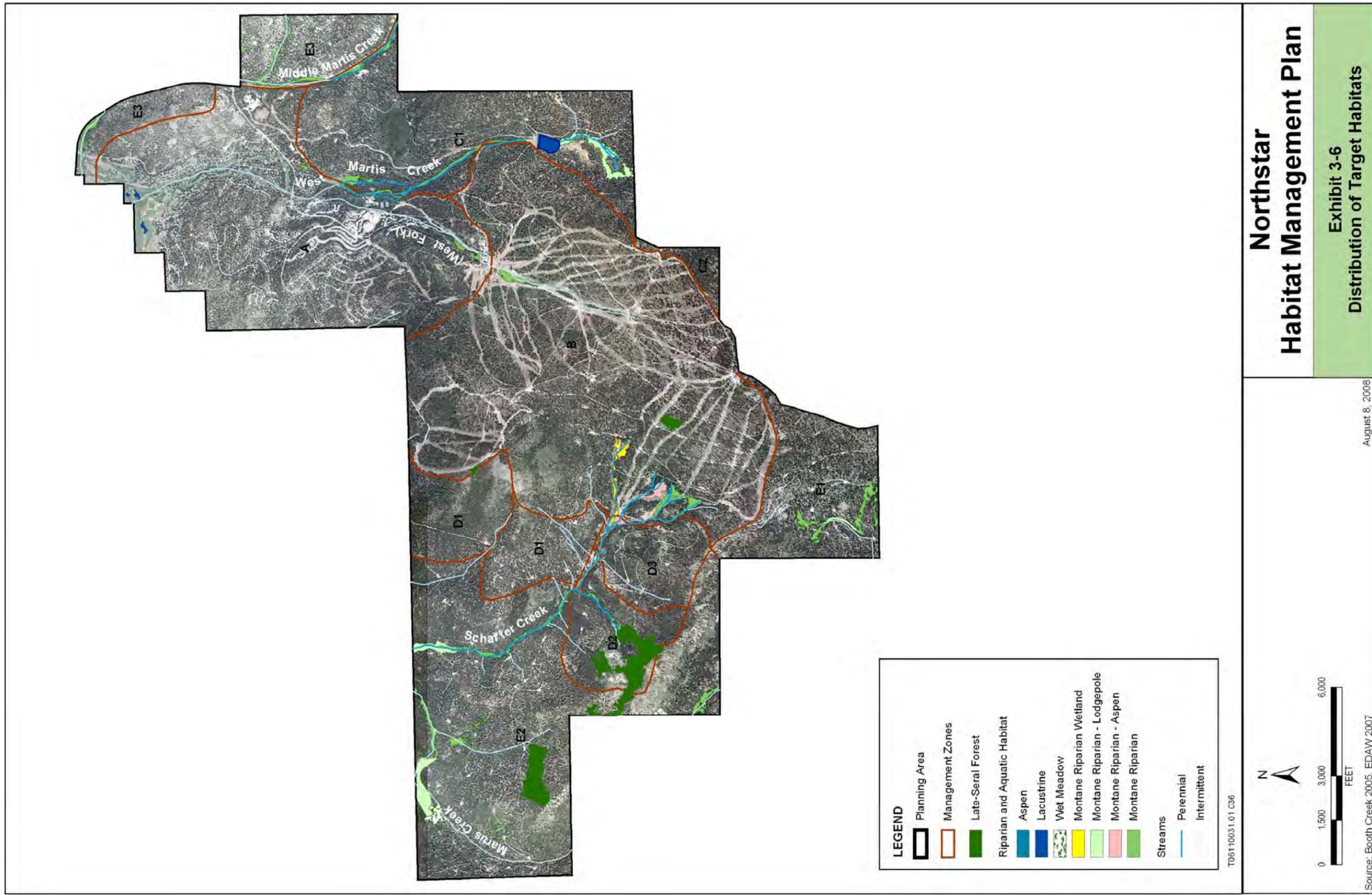
Along with riparian and aquatic habitats (addressed in the following sections), late-seral forest is among the most ecologically significant and sensitive resources on Northstar lands. Functions of late-seral forest at Northstar include:

- ▶ provision of habitat structure suitable for uncommon or unique wildlife communities and sensitive species including Northern Goshawk, California Spotted Owl, and American marten;
- ▶ maintenance of movement, foraging, and breeding habitat for a variety of wildlife species;
- ▶ significant contribution to local and regional biological diversity; and
- ▶ soil stabilization and water quality improvement in downstream areas.

In addition to mapping late-seral forest stands based on CWHR structure types, GIS-based models were developed to 1) characterize breeding and foraging habitat suitability for two late-seral focal species—Northern Goshawk and California Spotted Owl—over the planning area, 2) identify particularly high-value areas within target habitats, and 3) prioritize areas for potential habitat management and enhancement actions in the planning area. Northern Goshawk and California Spotted Owl habitats were selected for modeling because 1) although both species generally require mature forest for breeding habitat, their specific habitat requirements differ; 2) their combined habitat associations likely encompass those of other late-seral focal species (e.g., American marten); and 3) habitat and land use variables that account for most variation in their habitat use patterns were available from the land cover mapping and with relatively minimal GIS processing. The models were based on four variables that are known or assumed to affect habitat suitability for Northern Goshawk and California Spotted Owl: land cover type, forest structure variables (e.g., canopy closure and tree diameter), habitat patch size, and distance to a developed edge. The results of the individual goshawk and owl models were combined to produce an overall map of late-seral forest wildlife habitat value.







**Table 3-3  
Land Cover-Land Use Types in the Northstar Planning Area**

Land Cover-Land Use	Description
<b>Developed Types</b>	
Golf Course	The golf course has intensively managed landscaping with impervious surfaces, structures, and lacustrine features
Other Developed/Disturbed	Other developed/disturbed land cover includes roads, commercial development, and other land cover with impervious, surfaces, structures, and landscaping.
Residential	Residential consists of residential development, and associated structures, roads, landscaping, and small fragments of natural vegetation.
Ski Runs	Ski runs consist of herbaceous and shrub cover, primarily of native species, actively maintained at a low height
<b>Natural Vegetation Types</b>	
<i>Chaparral and Chaparral-Forest Mosaics</i>	<i>Chaparral and forest-chaparral mosaics are characterized by dense shrub cover. Forest-chaparral mosaics have patches with tree cover &gt; 10%. At Northstar properties, this vegetation typically is on rocky ridgelines or upper slopes.</i>
Montane Chaparral	Tree cover is < 10%; Shrub cover is > 50% with important species including greenleaf manzanita ( <i>Arctostaphylos patula</i> ), pinemat manzanita ( <i>Arctostaphylos nevadensis</i> ), snowbrush ceanothus ( <i>Ceanothus velutinus</i> ), huckleberry oak ( <i>Quercus vaccinifolia</i> ), and Sierra gooseberry ( <i>Ribes roezlii</i> ). Herbaceous cover is < 25%
Jeffrey Pine-Montane Chaparral	Predominant tree species is Jeffrey pine; Shrub cover > 50% with a species composition similar to montane chaparral; this type consists of interwoven patches, some patches with tree cover < 10% and others with tree cover > 10%.
White fir-Montane Chaparral	Predominant tree species is white fir ( <i>Abies concolor</i> ); shrub cover is > 50% with a species composition similar to montane chaparral; this type consists of interwoven patches, some patches with tree cover < 10% and others with tree cover > 10%.
<i>Upland Forest</i>	<i>Upland forest is the predominant vegetation on Northstar properties and forms a mosaic within which other vegetation types are embedded. Forest types differ in dominant species, and within each type forest stands differ in total canopy cover and the size of canopy trees. All forest vegetation, however, has at least 10% tree cover.</i>
Jeffrey Pine	Jeffrey pine is the dominant tree species; shrub cover and species composition varies widely; and, herbaceous cover is typically sparse (< 25%)
Jeffrey Pine-Juniper	Jeffrey pine is the dominant tree species, but Sierra juniper ( <i>Juniperus occidentalis</i> ) is also important; shrub cover and species composition varies widely; and, herbaceous cover is typically sparse (< 25%)
Lodgepole Pine	Lodgepole pine ( <i>Pinus contorta</i> ) is the dominant tree species; shrub cover and species composition varies widely; and, herbaceous cover is typically sparse (< 25%).
Red Fir	Red fir ( <i>Abies magnifica</i> ) is the dominant tree species; shrub cover and species composition varies widely; and, herbaceous cover is typically very sparse (< 10%)
Subalpine Conifer	Dominant and important tree species include Mountain hemlock ( <i>Tsuga mertensiana</i> ), lodgepole pine ( <i>Pinus contorta</i> ), and red fir; shrub cover and species composition varies widely; herbaceous cover is typically sparse (< 25%)
White Fir	White fir is the dominant tree species; shrub cover and species composition varies widely; herbaceous cover is typically sparse (< 25%)
White Fir-Jeffrey Pine	Similar to the white fir type except that Jeffrey pine is more abundant, and accounts for 20-50% of canopy cover.
<i>Herbaceous Vegetation</i>	<i>At the resort, several patches of vegetation along or near streams are dominated by herbaceous plants.</i>
Wyethia	Tree cover is < 10%, shrub cover is < 50%; herbaceous cover is > shrub cover, and woolly mule's ears ( <i>Wyethia mollis</i> ) is the dominant herbaceous species. While woolly mule's ears can dominate extensive dry meadows, on Northstar properties, it dominates

**Table 3-3  
Land Cover-Land Use Types in the Northstar Planning Area**

Land Cover-Land Use	Description
	just several areas small areas in or adjacent to riparian zones.
Wet Meadow	Tree cover is < 10%, shrub cover is < 50%; herbaceous cover is > shrub cover, and is dominated by sedges ( <i>Carex species</i> ), Baltic rush ( <i>Juncus balticus</i> ), and grasses with numerous forbs including cornlily ( <i>Veratrum californicum</i> ), graceful cinquefoil ( <i>Potentilla gracilis</i> ), and yarrow ( <i>Achillea millifolium</i> ); occurs in the northwestern portion of the resort along Martis creek
Riparian Vegetation	Riparian vegetation is associated with drainages, and grows in the transition zone between stream and upland ecosystems. This transition zone generally extends from the channel banks to the outer boundary of the active floodplain. All of the riparian vegetation types have a relatively dense herbaceous layer growing beneath shrubs and trees.
Aspen	Aspen ( <i>Populus tremuloides</i> ) is the dominant tree species, and forms a relatively closed canopy (cover > 50%); some conifers may also occur in the canopy, and the understory often contains mountain alder ( <i>Alnus incana</i> ) and willow species ( <i>Salix spp.</i> ); the herbaceous layer is variable. Although aspen can occur on upland and riparian sites, at Northstar properties it only occurs along drainages.
Montane Riparian	Combined cover of tree and shrub layers is > 75%; herbaceous cover is > 25%; the predominant woody plants are mountain alder, Lemmon’s willow ( <i>Salix lemmonii</i> ), and Scouler’s willow ( <i>Salix scouleriana</i> ); these species grow as shrubs or small trees, in a typically dense layer; the herbaceous layer varies widely in cover and species composition.
Montane Riparian-Lodgepole Pine	Combined cover of tree and shrub layers is > 75%; herbaceous cover is > 25%; the predominant tree species is lodgepole pine; mountain alder, Lemmon’s willow, and Scouler’s willow are also present in the understory; the herbaceous layer varies widely in cover and species composition.
Montane Riparian-Aspen	Combined cover of tree and shrub layers is > 75%; herbaceous cover is > 25%; the predominant woody plants are mountain alder, Lemmon’s willow, and Scouler’s willow; these species grow as shrubs or small trees, in a typically dense layer; aspen is also present but is not the most abundant species in the tree-shrub layer; the herbaceous layer varies widely in cover and species composition.
<b>Other Types</b>	
Barren	Barren areas are largely lacking cover of trees or shrubs, and where exposed soil and rock is more extensive than herbaceous vegetation; at Northstar properties, barren areas are man-made.
Lacustrine	Lacustrine areas are bodies of water; at Northstar properties, all lacustrine features are man-made.

Several wildlife species that are considered “old-growth species” use late-seral forest stands most frequently as breeding habitat; however, they use other stand types less frequently for breeding or to meet other life history requirements. Development of the Northern Goshawk and Spotted Owl habitat models attempted to account for this gradient in habitat use by classifying lands on a scale from 0 to 4, where 0 indicated no foraging or breeding habitat value and 4 indicated high-quality habitat for breeding and foraging. This approach was intended to provide a systematic, consistent, and transparent basis for evaluating habitat suitability based on life history requirements of these focal species, beyond a more common approach of generally classifying a site as suitable, potentially suitable, or not suitable. In planning efforts that attempt to balance land uses with habitat protection, this approach can be used to prioritize specific locations for conservation and/or enhancement.

<b>Table 3-4</b>	
<b>CWHR Canopy Cover and Canopy Tree Size Categories for Tree-Dominated Vegetation Types</b>	
<b>Category</b>	<b>Definition</b>
<b>Tree size Categories</b>	
1	Seedling trees, < 1" in DBH
2	Sapling trees, 1"– 6" in DBH
3	Pole-sized trees, 6"–11" in DBH
4	Small trees, 11"–24" in DBH
5	Medium/large trees, > 24" in DBH
6	Size class 5 trees over a distinct layer of class 4 or 3 trees; total tree canopy cover >60%
<b>Canopy Cover Categories</b>	
S	Sparse tree cover of 10–24%
P	Open tree cover of 25–39%
M	Moderate tree cover of 40–59%
D	Dense tree cover of 60–100%
<sup>1</sup> DBH is diameter at breast height (4.5 ft).	

The results of the habitat suitability modeling for Northern Goshawk and California Spotted Owl are shown in Exhibits 3-7 and 3-8. Exhibit 3-9 shows an overall map of late-seral forest wildlife habitat value. Appendix C summarizes the GIS model approach, data inputs, and assumptions. Table 3-5 summarizes habitat conditions and the known occurrence information for late-seral focal species at Northstar.

<b>Table 3-5</b>		
<b>Habitat Conditions and Known Occurrences of Late-Seral Forest Focal Species</b>		
<b>Species</b>	<b>Habitat Conditions at Northstar</b>	<b>Known Occurrence at Northstar</b>
Northern Goshawk	Suitable nesting and foraging habitat present (see Exhibit 3-7). Highest-value areas occur on the north slope below Sawtooth Ridge.	Known to nest. An active nest was located in Zone E2 during surveys conducted in 2007 (EDAW field data; Exhibit 3-7). A nesting pair and foraging individuals were previously reported from Zone E2 (Banka pers. comm., Wildlife Resource Consultants 2004); also, an individual was observed flying near the boundary of Zones A and C1 (Henderson pers. obs.). Also known to nest nearby on adjacent USFS lands. Comprehensive surveys within all suitable habitat at Northstar have not been conducted.
California Spotted Owl	Suitable nesting and foraging habitat present (see Exhibit 3-8). Highest-value areas occur on the north slope below Sawtooth Ridge.	Known to occur. In 2003-2004, detected during breeding season on the north slope of Sawtooth Ridge in Zone D2 near the D2/E2 boundary (Wildlife Resource Consultants 2004). A nest was not located; however, a pair with fledglings was observed, confirming nesting in the area. In 2007, a pair was also located in the same area, in Zones D2 and E2; and an individual was detected in Zone E2 (EDAW field data; Exhibit 3-8). Known to nest nearby on adjacent USFS lands. Comprehensive surveys within all suitable habitat at Northstar have not been conducted.
American Marten	Variation in habitat suitability assumed to correspond generally with that of Northern Goshawk and California Spotted Owl.	Not reported to occur; however high likelihood of occurrence in suitable habitats. Known to occur regularly on adjacent USFS lands. Comprehensive surveys within all suitable habitat at Northstar have not been conducted.
Pileated Woodpecker	Suitable habitat at Northstar includes areas mapped as late-seral forest, or other areas with large trees and snags.	Known to nest in the planning area. Focused surveys for this species have not been performed.

## RIPARIAN AND AQUATIC HABITATS

Riparian ecosystems are transitional between an aquatic source (e.g., stream, ponded water, subsurface water) and terrestrial uplands. They are distinguished by unique ecological processes and biological communities, a biophysical linkage between surface or subsurface hydrology and surrounding uplands, sharp ecological gradients, and high primary productivity and biological diversity (Keddy 2000, Brinson et al. 2002 *cited in* Jones & Stokes 2005, USDA Forest Service 2001, RHJV 2004). In the Sierra Nevada, important forms of riparian habitat include linear riparian corridors along streams and deciduous shrub components of wet meadows.

In the Sierra Nevada, wildlife species diversity and abundance are greater in riparian and stream environments than any other habitat type (Sands and Howe 1977, Thomas et al. 1979). Many of these species are entirely dependant on the riparian corridor or adjacent aquatic environments for all or part of their life histories. Of approximately 400 terrestrial vertebrate species in the Sierra Nevada, approximately one-fifth (84 species) are dependent on riparian areas (Graber 1996). In the Sagehen Creek basin, a tributary of the Little Truckee River, around 40 percent of vertebrate species are strongly dependent on riparian habitat (Morrison et al. 1985). Similarly, a large proportion of vascular plants are strongly associated with riparian areas (Graber 1996).

Riparian areas provide habitat for aquatic and terrestrial organisms such as aquatic insects, insectivorous birds, aquatic reptiles, amphibians, and mammals. Riparian habitats are among the most productive and species-rich areas in the Sierra Nevada bioregion, and support a high proportion of neotropical migrant landbird species (i.e., birds that breed in North America and winter in the neotropics). Riparian areas provide some of the most important habitat for neotropical migrants that breed in or migrate through the western United States. These areas function as breeding habitat, as well as important stopover areas during spring and fall migration. Riparian habitat degradation and loss may be the most important cause of landbird population declines in western North America (RHJV 2004). Conservation of neotropical migrants and other riparian biota has received considerable attention over the past 15 years due to local and widespread population declines of species within these groups (see Hagen and Johnston 1992).

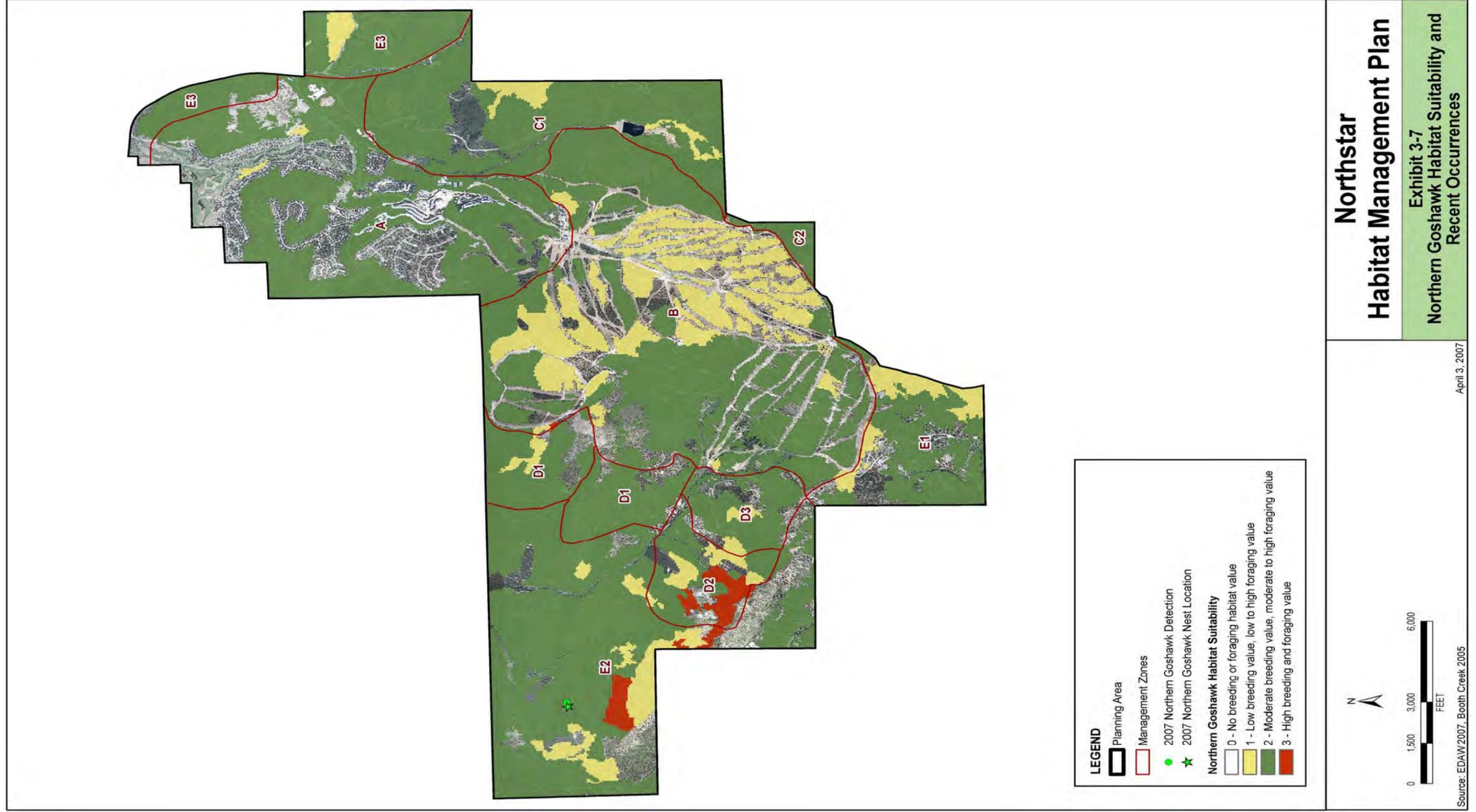
More complete reviews of biophysical characteristics, ecological functions, status, and trends of riparian and aquatic habitats are included in Keddy (2000), USDA Forest Service (2001), Brinson et al. (2002), and RHJV (2004).

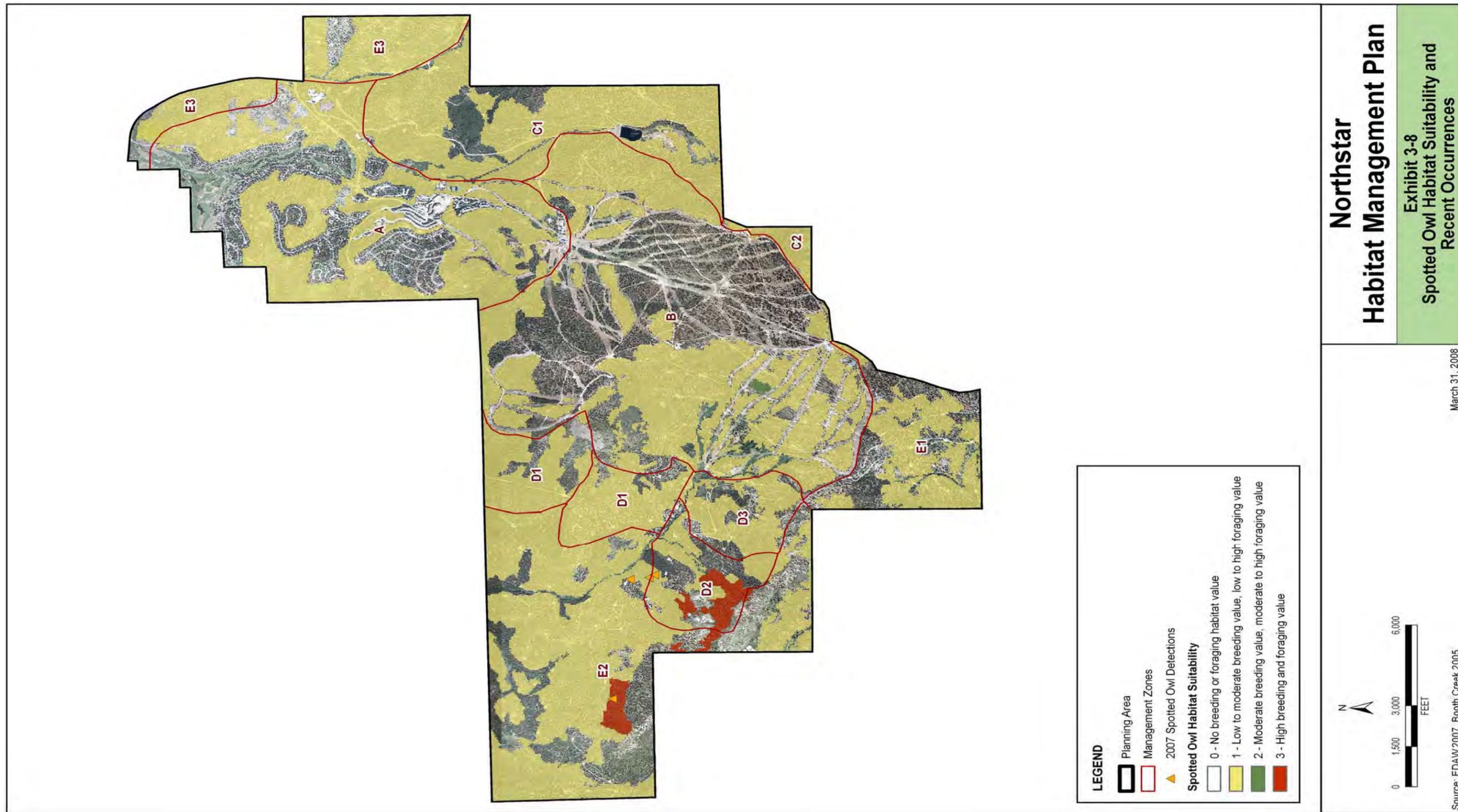
### Distribution and Value in the Planning Area

Riparian and aquatic habitats in the Northstar HMP planning area were defined as land cover types mapped as montane riparian, montane riparian-wetland, montane riparian-lodgepole pine, aspen, montane riparian-aspen, wet meadow, stream, and lacustrine. Approximately 127 acres of riparian habitat occurs in the planning area; this represents approximately 1.6 % of the planning area. Riparian vegetation is typically associated with drainages, and grows in the transition zone between stream and upland ecosystems. This transition zone generally extends from the channel banks to the outer boundary of the active floodplain. All of the riparian vegetation types have a relatively dense herbaceous layer growing beneath shrubs and trees. Riparian and aquatic habitats occur in all land use zones. The locations of these habitats are shown in Exhibit 3-6.

Along with late-seral forest habitat (addressed in the previous section), riparian and aquatic habitats are among the most ecologically significant resources on Northstar lands. These habitats are sensitive resources and key biological concerns to be considered in resort planning. Specific functions of riparian habitat at Northstar include:

- ▶ biological functions, including maintenance of native aquatic and terrestrial vegetation communities; maintenance of movement, foraging, and breeding habitat for a variety of aquatic and terrestrial wildlife species; significant contribution to local and regional biological diversity; provision of habitat for neotropical migrant bird communities; and provision of habitat linkages between locations within and across watersheds;
- ▶ biogeochemical functions, including primary production; carbon storage; and phosphorus, nitrogen, and micronutrient cycling; and





March 31, 2008

Source: EDAW 2007, Booth Creek 2005



- ▶ hydrologic and geomorphic functions, including ground water recharge; surface water storage; sediment and organic matter transport; sediment storage; and maintenance of channel and floodplain landforms. (Keddy 2000, Brinson et al. 2002 *cited in* Jones & Stokes 2005.)

In August 2006, a riparian and aquatic habitat assessment of the planning area was conducted to support the development of habitat suitability models for riparian and aquatic focal species, and to support the development of riparian-related HMP management targets, practices, and enhancement concepts. The purpose of the assessment was to document the location and attributes of perennial and intermittent waterways. Attributes included the location, gradient, flow regime (i.e., intermittent, perennial), and observations regarding the condition of the channel bed, channel banks, and adjacent riparian and upland areas. During the assessment, several streams that were not previously mapped were identified and mapped. The assessment was focused in Zones C and D; however, portions of Zones A, B, and E were also evaluated. Zones C and D were considered priority areas to further understand the resources in these areas, given the potential resort projects proposed in these zones. Additional information about the assessment methodology is presented in Chapter 2.

In addition to mapping riparian and aquatic habitat (Exhibit 3-6), GIS-based models were developed to characterize habitat suitability for three riparian and aquatic focal species – Willow Flycatcher, mule deer (fawning), and mountain yellow-legged frog – over the planning area. Results of the field-based riparian and aquatic habitat assessment were used to develop the habitat suitability models and map the distribution of habitats for these species. Appendix C summarizes the GIS model approach, data inputs, and assumptions. The results of these analyses are presented in Exhibits 3-10, 3-11, and 3-12. The suitability analyses apply specifically to Zones C and D, and only small portions of Zones A, B, and E. Most of Zones A, B, and E were not part of the field assessment; therefore, it is possible that additional suitable habitats occur within those zones but are not shown in Exhibits 3-10, 3-11, and 3-12. Table 3-6 summarizes the habitat conditions and known occurrence information for these focal species at Northstar.

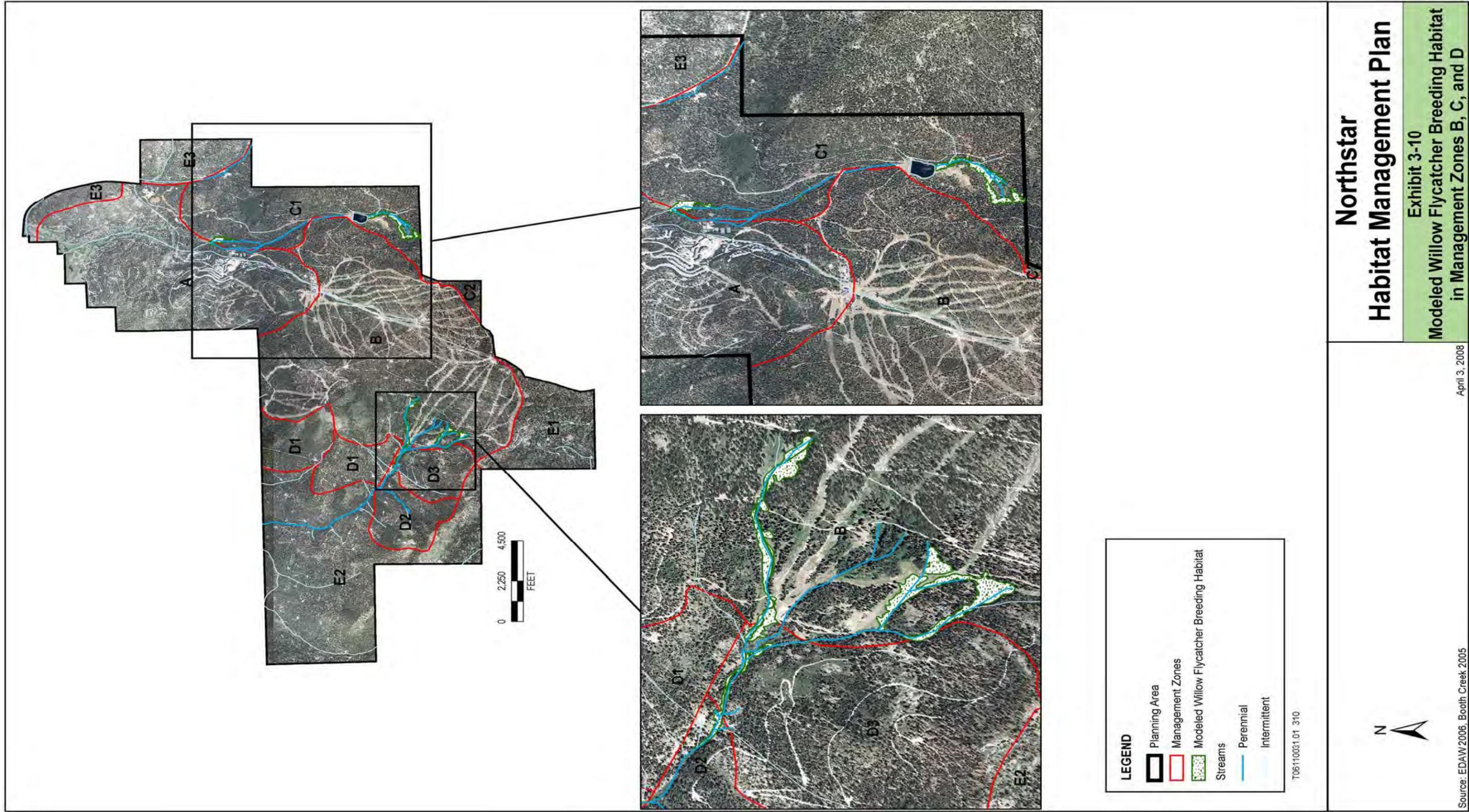
Species	Habitat Conditions at Northstar	Known Occurrence at Northstar
Willow Flycatcher	In the Sierra Nevada, breeding habitat typically consists of montane meadows that support riparian deciduous shrubs (particularly willows [ <i>Salix</i> ]) and remain wet through mid-summer. Very little of this habitat occurs at Northstar. Based on the riparian and aquatic assessment, a limited amount of suitable habitat is concentrated in the Schaffer Creek complex and along West Martis Creek east of the Village. Small amounts of suitable habitat could occur outside the riparian assessment area (e.g., near the golf course and Martis Valley).	Not known to occur. Surveys were conducted by EDAW in 2006 along West fork of West Martis Creek; and in 2007 along a portion of Schaffer Creek and West Martis Creek east of the Village.
Mule Deer	Most of the Northstar landscape is considered migratory habitat. Based on the riparian and aquatic assessment, literature review, and vegetation mapping, potential fawning habitat was identified (see Exhibit 3-11).	Known to occur during the migration and breeding seasons; and fawning at Northstar was documented on June 7, 2007 (EDAW field data). Two fawns were observed on Sawtooth Ridge in area mapped as high-potential fawning habitat (EDAW field data; Exhibit 3-11). A portion of Northstar was mapped by CDFG as a fawning area. The precision of the CDFG mapping effort is unknown. Surveys for fawning have not been conducted.
Sierra Nevada Mountain Beaver	The riparian and aquatic assessment identified suitable habitat, primarily in the Schaffer Creek watershed.	Occurs in riparian habitat in Schaffer Creek watershed (Fox pers. comm.). Could be present in other watersheds. Comprehensive surveys at

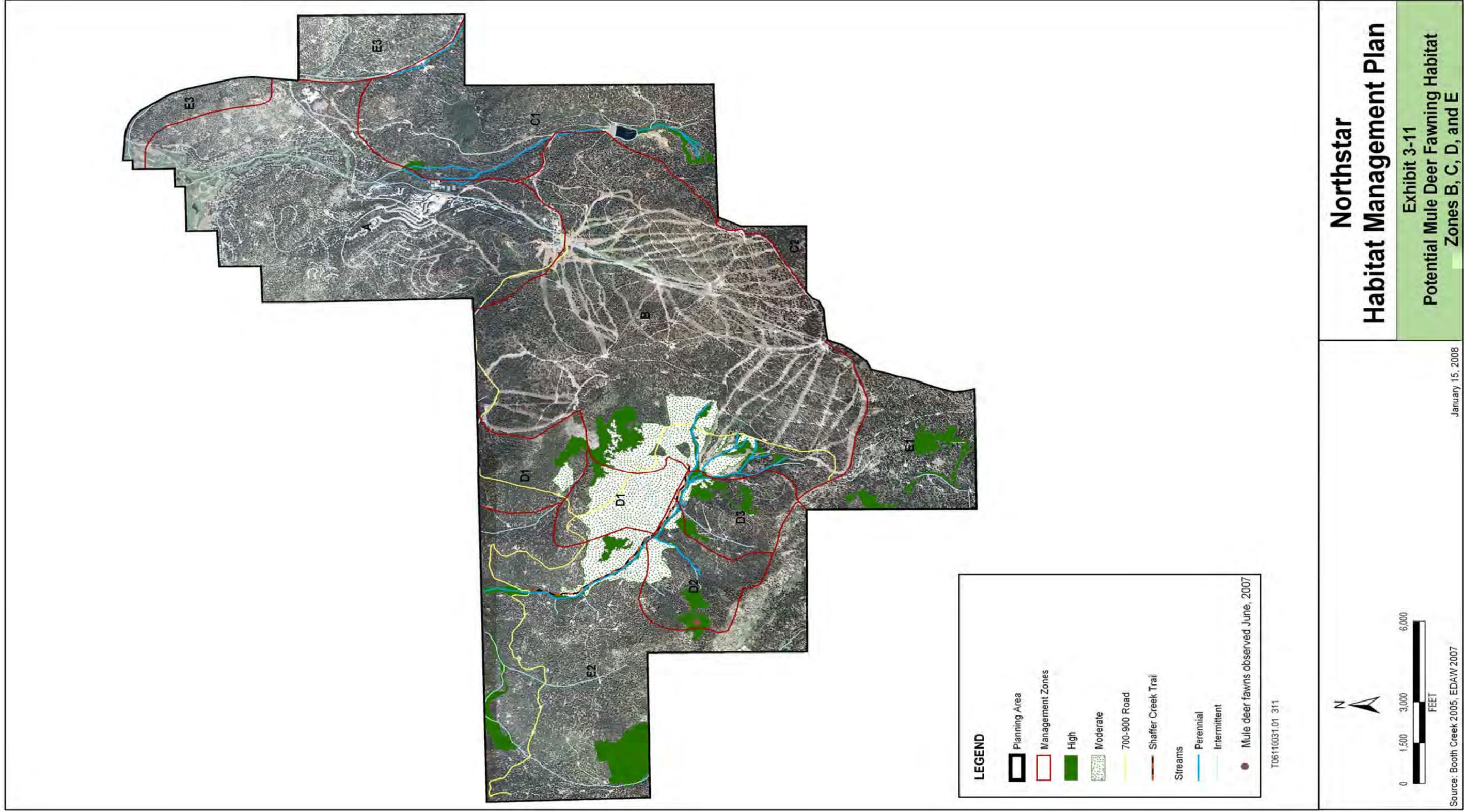
Table 3-6 Habitat Conditions and Known Occurrences of Riparian and Aquatic Focal Species		
Species	Habitat Conditions at Northstar	Known Occurrence at Northstar
		Northstar have not been conducted.
Mountain Yellow-Legged Frog	The riparian and aquatic assessment identified potential breeding habitat at Sawmill Lake. However, this lake supports an abundant nonnative trout population and is not very likely to support mountain yellow-legged frog. Streams evaluated during the riparian and aquatic assessment were not considered suitable breeding habitat; however, these areas could provide seasonal or movement habitat if a breeding source occurs nearby.	Not known or likely to occur. Comprehensive surveys at Northstar have not been conducted.

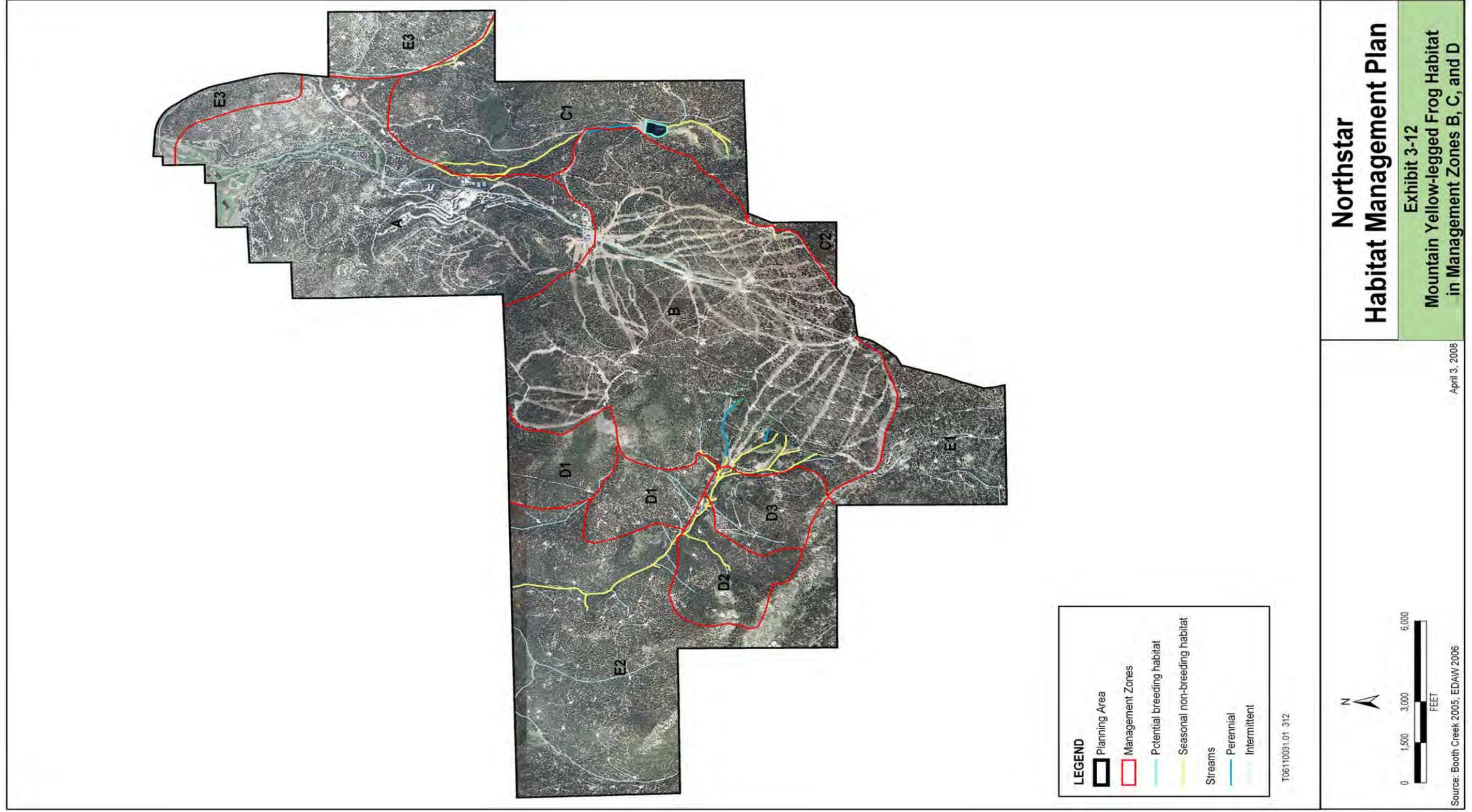
## SUMMARY

Target habitats at Northstar are distributed over multiple management zones (Exhibit 3-6). However, the habitat value assessment identified two primary areas where these resources are concentrated and of particularly high value: 1) aquatic and riparian habitat and adjacent lands along the Schaffer Creek stream and riparian complex (i.e., much of the Schaffer Creek watershed) and 2) late-seral forest stands on the north face below Sawtooth Ridge. These core areas provide suitable habitat for and support several focal species (Tables 3-5 and 3-6). In particular, the recent detections of California Spotted Owl (including fledglings of this species) and a recently active Northern Goshawk nest in the late-seral forest stands below Sawtooth Ridge, and mule deer fawns on the ridge, demonstrate the biological significance and sensitivity of this area.

In addition to identifying ecologically high-value lands and representing biological constraints to project implementation, areas mapped as target habitats indicate areas where habitat enhancement for project mitigation or achieving HMP objectives could be focused. Habitat enhancement is addressed in Chapter 5.







## 4 LAND USE AND HABITAT MANAGEMENT STRATEGY

This chapter presents the programmatic habitat management strategy of the Habitat Management Plan (HMP). The strategy is based on the existing conditions, current and planned uses, and other key planning considerations described in the previous chapters of this document. The strategy is an integrated set of objectives, targets, and practices for managing natural resources that are intended to guide and assist in decisions regarding land uses and stewardship of natural resources at the resort.

As described in Chapter 2 (*Development of the Habitat Management Plan*), this strategy aims to balance future land uses and growth of the resort with maintenance and enhancement of important natural resources values on Northstar lands. The strategy is intended to provide guidance at a programmatic level; it assumes that more detailed project-level analyses would proceed during the environmental review process for individual projects. However, this strategy attempts to anticipate the major biological issues that would be identified during future environmental analyses, and includes practices for up-front minimization or avoidance of potential adverse effects.

This HMP is habitat-based; resources management objectives, targets, practices, and monitoring address factors affecting the extent, location, and quality of target habitats (i.e., late-seral forest, aquatic, and riparian habitats). This differs from a species-based planning approach, which would establish objectives, targets, and monitoring requirements for species' populations. By maintaining or enhancing the values of target habitats, it is expected that the requirements of species associated with those habitats would be met. As discussed in Chapter 2, target habitats were selected largely on the ecological requirements of a set of focal species.

These focal species were selected on the basis of several factors, including their relative contribution to local and regional biodiversity, status and trend, and potential to be affected by future land uses at Northstar. (See Chapter 2.) Thus, the target habitats encompass the most sensitive biological resources in the planning area.

### LAND USE AND NATURAL RESOURCE GOALS

Land use and natural resource goals of the HMP are broad, guiding principles. They are based on terms of the agreement, the distribution and condition of focal habitats, and the regional context of the planning area. Goal statements describe the desired future condition for resources and land uses with full implementation of the HMP. The HMP has the following land use and natural resource goals:

- ▶ Maintain and/or enhance natural resources values of Northstar lands, while allowing for current and planned future land uses in a manner that is compatible with those values. The goals are focused on the values of late-seral forest, aquatic, riparian, and meadow habitats and their associated species.
- ▶ Consistent with the resort's regional context, concentrate more intensive land uses (e.g., recreation, development) in the central-western portions of the Northstar property, and emphasize habitat management, open space, and less intensive recreation in the eastern and western areas.

The following sections define more specific and measurable management objectives, targets, and practices designed to meet these goals.

# **BASIS OF OBJECTIVES, TARGETS, AND PRACTICES**

## **OBJECTIVES**

For each zone, one or more objectives describe the desired outcome in general or programmatic language. The objectives are intended to guide the selection of targets, the development and implementation of design and management practices, and the adaptive management process.

These objectives are based on existing conditions, current and planned uses, and other key planning considerations described in previous chapters of this document.

## **RESOURCE MANAGEMENT TARGETS**

Resource management targets describe measurable or observable attributes of desired outcomes that are feasible to attain, and are intended to guide adaptive management of habitats. An example of a target is the acreage of forest in a particular California Wildlife Habitat Relationships (CWHR) structural class (which is based on tree size and cover) and the density of snags and quantity of downed woody debris within this forest. As a set, the targets represent conditions that both sustain habitat and other important ecological functions, and allow current and planned uses.

Resource management targets need to remain consistent with relevant standards, particularly regulatory standards. Examples of relevant standards include policies in the Placer County General Plan, forest practice rules governing timber harvests on private land, the Basin Plan and related standards established by the Regional Water Quality Control Board, and the sediment source control Best Management Practices (BMPs) under development by the California Alpine Resort Environmental Cooperative (CAREC). Therefore, where applicable, these standards have been incorporated into targets to minimize the need for future revisions to the HMP. For example, water quality targets are based primarily on the water quality objectives of the Lahontan Regional Water Quality Control Board (RWQCB).

It is important to acknowledge that the attainment of targets is not entirely under the control of Northstar, and changed or unforeseen circumstances may necessitate changes to targets. For example, a catastrophic wildfire may preclude attainment of forest structure targets for the foreseeable future.

Because the HMP is a long-term plan, and because of the potential for change in regulatory standards or in conditions that exist at the resort, some resource management targets will likely require modification in the future. Thus, this plan includes criteria and a process for revisions that is described in Chapter 6.

## **RATIONALE FOR RESOURCE MANAGEMENT TARGETS**

For different zones of the resort, resource management targets include:

- ▶ water quality,
- ▶ stream and riparian condition, and
- ▶ forest structure.

These represent the primary ecosystems (aquatic, riparian, and upland forest) and focal habitats that are addressed through this HMP.

The resort contains a reservoir and a system of perennial and intermittent streams that are part of the Martis Creek watershed (as described in Chapter 2 and Appendix B). The perennial streams flow year-round, and fish are present within most of these streams. Thus, most of these perennial streams are considered Class I waters by the California Forest Practice Rules (California Department of Forestry and Fire Protection [CDF] 2008). The

intermittent streams vary in the duration of their flow from flows of several hours or days following storms to flows sustained throughout entire seasons (e.g., throughout the spring). These intermittent streams generally lack aquatic life, but are capable of transporting sediment to downstream perennial streams, and thus are considered Class III waters by the California Forest Practice Rules (California Department of Forestry and Fire Protection [CDF] 2008). A corridor of riparian vegetation is present along most perennial streams and also some of the intermittent streams (as described in Chapter 2 and Appendix B). The condition of these riparian corridors and the streams, and water quality all affect the quality of aquatic and riparian habitats, and also of adjacent forest habitats.

Forest structure has a substantial influence on habitats and on all aspects of the terrestrial and aquatic ecosystems of the resort. Forest structure also strongly affects fire risks and potential land uses. The resort contains several forest types and the structure of these forests varies from stands with open canopies to dense canopies composed of smaller to relatively large trees. These different types of stands have different habitat values, and in fact, most CWHR classes for forest structure are present on the resort.

The GIS-based value and threat assessment for target resources (see Chapters 2 and 3) was used to develop the resource management targets for water quality, stream and riparian condition, and forest structure for each zone. For example, Zones D and E support 86.5 acres of high-value breeding and forging habitat for focal species associated with late-seral forests (e.g., Northern Goshawk, California Spotted Owl). Some of this habitat is located within an area proposed for ski area expansion (see Chapter 3). Thus, the forest structure targets were established for an increase in the acreage of late-seral forest over the long-term. This long-term target both sustains habitat for target species and allows for future land uses to affect some existing late-seral forest (provided that forest management facilitates the development of additional late-seral forest).

## **Water Quality**

For all zones of the resort, water quality targets represent sustained integrity of aquatic ecosystems on-site and downstream. In some zones of the resort, water quality monitoring for regulatory compliance is on-going, and additional monitoring is anticipated both at the resort and elsewhere in the Martis Creek watershed. At the resort, conformance with the applicable regulatory standards is an appropriate water quality target because in the Martis Creek watershed these standards are based in part on sustaining aquatic habitats.

Water quality targets must incorporate flexibility in response to changes in regulatory standards, or in response to changes in the extent or type of water quality monitoring performed within the Martis Creek watershed. Regulatory standards for water quality are undergoing review by the Lahontan RWQCB and Placer County, and affected land owners. As a result of this review, monitoring approaches, regulatory standards, and availability of monitoring data in the Martis Creek watershed will likely change. Also, long-term monitoring of water quality for regulatory compliance may not occur in all zones (and subzones) of the resort. Therefore, while this HMP bases water quality targets on regulatory standards for water quality constituents (e.g., sediment, nitrogen) and aquatic invertebrate assemblages, in some zones it also provides the alternative of water quality targets based only on aquatic invertebrates using a bioassessment approach (Herbst 2001, LTIMP 2002,). A comparable bioassessment approach has recently been implemented by regulatory agencies at the resort, and it is a more direct and integrated measure of water quality effects on the aquatic ecosystem.

The numerical objectives of the Water Quality Control Plan for the Lahontan Region (Basin Plan) (LRWQCB 2005) have been established to protect aquatic ecosystems and, therefore, are appropriate targets for water quality. The Basin Plan contains narrative and numerical objectives for a set of water quality parameters and a nondegradation objective. The objectives set forth in the Basin Plan apply to all waters in the region. The Basin Plan also includes objectives that are specific to the Martis Creek and Truckee River watersheds. All of these objectives have been established to ensure the reasonable protection of the designated beneficial uses of waters. Within the Truckee River Hydrologic Area, cold freshwater habitat; wildlife habitat; rare, threatened, or endangered species habitat; and fish spawning, reproduction, and development have been designated as beneficial

uses of all perennial streams. In addition, in the Basin Plan, migration of aquatic organisms has been designated as a beneficial use of Martis Creek. Therefore, the set of water quality objectives applicable to the resort has been established to protect aquatic ecosystems.

The bioassessment approach potentially provides an alternative basis for water quality targets in some zones. The California Department of Fish and Game has developed a standard procedure for collecting data on the aquatic invertebrate community of streams, and these data would be analyzed using an Index of Biotic Integrity (IBI) developed for the eastern Sierra and Lake Tahoe region. (The method is described in further detail in Chapter 6.) The target is to have stable or increasing IBI scores. This target represents an aquatic ecosystem that has a stable or improving condition. The bioassessment data, and its interpretation through an IBI, provide a more direct indicator of the integrity of the aquatic ecosystem than does water quality monitoring data.

Targets based on bioassessment may be more appropriate than monitoring of water quality constituents in zones where developed structures, roads, and human use are limited, and relatively intensive monitoring of water quality parameters is not required for regulatory compliance, and may not otherwise be justified. In these instances, the monitoring of aquatic ecosystems through a bioassessment provides appropriate monitoring to guide adaptive management and to provide a long-term evaluation of the effectiveness of the HMP.

### **Stream and Riparian Area Condition**

Targets for stream and riparian area condition include either one or two components. The first component is to minimize degradation in stream and riparian area conditions due to human activities. Stream and riparian conditions are quantified on the basis of a rapid assessment that is conducted annually. This assessment records stream bed and bank, riparian vegetation, and soil surface conditions. These variables are assessed because they affect habitat values and help identify human activities that may be damaging habitat values. The protocol for this procedure is described in Chapter 6 (*Monitoring and Adaptive Management Framework*).

The second component is a resource management zone to manage natural vegetation adjacent to some streams and riparian areas to benefit habitat functions, while still allowing for planned land uses. Adjacent vegetation affects stream and riparian habitats; and for some species, this effect on habitat extends beyond the adjacent riparian vegetation into adjacent uplands. Therefore, retention and management of most adjacent vegetation in a 200-foot wide resource management zone on each side of Schaffer Creek is included in the targets for Zones D and E, because these zones have management objectives for maintaining or enhancing habitat functions. In these resource management zones, through forest management, habitat will be maintained and enhanced by maintaining tree cover and increasing tree size and snag density overall, over the long-term.

However, not all upland and riparian vegetation can be retained within these resource management zones. There are existing road and trail crossings of streams and riparian areas, and ski lifts in or near these areas; and, planned land uses will also require additional road and trail crossings, and the placement of some facilities near riparian areas. For this reason, complete avoidance of streams, riparian areas, and adjacent uplands is not feasible with the planned uses. However, effects of planned and existing uses on stream, riparian areas, and adjacent uplands will be minimized through the design and management practices described in this chapter.

### **Forest Structure**

At the resort, forests are actively managed using a variety of silviculture treatments to sustain habitats and forest productivity, enhance forest health, increase tree growth rates, provide for adequate tree regeneration, and to reduce fire hazards, among other objectives. Silvicultural treatments include commercial thinning, selection, group selection, sanitation-salvage, fuelbreak/defensible space, alternative prescriptions consistent with fuelbreak/defensible space, and alternative prescriptions to deal with insect and disease problems. This HMP includes targets for forest structure in Zones D and E because forests in these zones are actively managed, and Zones D and E have management objectives for forest habitats.

All forest structure targets contain desired acreages for CWHR categories for stand structure. These include categories for tree cover, size of dominant trees, and combinations of cover and tree size. Target acreages differ from existing conditions because they account for changes resulting from forest management to increase habitat values and decrease fire hazards, and forest conversion necessary for planned uses. More specifically, current acreages in each CWHR category were adjusted to account for anticipated:

- ▶ conversion of forest stands to non-forest land cover for planned uses, and
- ▶ silvicultural treatment within forest stands that would shift them into different CWHR classes, including treatments to reduce fire hazards; reduce risks of bark beetle outbreaks; minimize, and control, the spread of current infestations of dwarf mistletoe (*Arceuthobium abietinum*) and true fir Cytospora canker (*Cytospora abietis*); maintain proper stand densities; maintain good stand vigor; promote healthy tree growth rates and forest productivity; or facilitate development of late-seral characteristics.

The target acreages represent the desired long-term outcome of forest management. This outcome attempts to balance habitat values with existing and planned uses, sustained production of high quality timber products, and safety considerations, in a manner consistent with zone objectives. In all zones, the desired outcome includes:

- ▶ no-net-loss or an increase in the acreage of late-seral forest that provides habitat for focal species,
- ▶ a reduced acreage of relatively dense stands that pose the greatest fire hazard, and
- ▶ a variety of stand types (i.e., stands differing in tree species, size, and density).

In Zone E, the desired outcome also includes maximizing natural resource values for wildlife species associated with late-seral stage forest, to the extent practicable and in conformance with the California Practice Rules for the protection of forest and human health.

Chapter 5 (*Habitat Enhancement Plan*) describes how this enhancement of forest habitats supports no-net-loss and intended increases of late-seral forest acreage over the long term. These enhancements will be in a core area in which development of late-seral habitats will be facilitated. The location and size of this core area (as described in Chapter 5) was developed with consideration of its long-term compatibility with existing and planned uses, and of its landscape-scale effects on habitats on and adjacent to the resort.

Target acreages also reflect the results of potential treatments to reduce fire risk; Chapter 5 identifies high priority areas for fuel reduction treatments and target acreages assume treatment of a similar acreage over the long-term. Finally, target acreages reflect a somewhat more varied landscape that will result from habitat enhancement, fuel reduction treatments, and other timber harvest operations.

Most forest stands at the resort are and will continue to be dominated by trees in CWHR size class 4 (i.e., 11–24 inches). However, enhancing habitat, reducing fire hazards, and maximizing sustained production of high quality timber products will cause some increase in the acreage of stands dominated by smaller and larger trees. The resulting short-term changes and long-term targets are summarized for each zone in *Objectives, Targets, and Practices by Zone*.

## DESIGN AND MANAGEMENT PRACTICES

Management practices describe the types of management actions that will be implemented to support attainment of resource management targets and fulfillment of regulatory requirements. Examples of management practices include erosion control BMPs, pre-project biological surveys, and access and seasonal use restrictions. Management practices may need to be modified to remain consistent with regulatory standards, or may be modified because more effective practices have been developed. Consequently, the adaptive management component of the HMP describes the process by which management practices may be modified, added to, or deleted from the HMP.

## **RATIONALE FOR DESIGN AND MANAGEMENT PRACTICES**

This HMP includes seven sets of design and management practices. These are:

- ▶ design practices,
- ▶ construction-related management practices,
- ▶ management practices for the road and trail system,
- ▶ management practices for ski runs and associated facilities,
- ▶ management practices for timber harvest operations,
- ▶ management practices for invasive plant control, and
- ▶ management practices for access and use.

Together, these sets of design and management practices guide Northstar in its stewardship of the natural resources of the resort. Each set has its own rationale for inclusion in the HMP, and for the practices included in it. These rationales are described below.

### **Design Practices**

In concept, all movement of people, animals, and materials, as well as the transmission of light and sound, may be altered by a project's design. For example, storm water drainage and irrigation runoff can be controlled through facilities that reduce alterations to current hydrology. Similarly, lighting can be designed to reduce the escape of light into habitat, and fencing or other barriers can be used to reduce several detrimental effects, especially disturbance by humans and pets. Therefore, Northstar incorporates into its projects' designs practicable elements not only to reduce appreciable effects on natural resources, but also to support the coexistence of human uses and habitat values. Many of these elements are based on principles of minimizing alterations to the natural features of project sites, and of incorporating natural features into project designs.

At the resort, design practices differ among zones because of differences in land uses and habitat values. However, Northstar applies several design practices in all zones, including the following:

- ▶ Design development to limit overall land disturbance.
- ▶ Design development to minimize the removal of trees greater than 30 inches in diameter at breast height (DBH).
- ▶ Use silvicultural treatments for forest management that are compatible with recreational activities at the resort to minimize or avoid the need for additional disturbance of forests.
- ▶ Use barriers, signage, and trail locations to discourage human and pet disturbance of adjacent natural vegetation.
- ▶ Reduce the visual contrast of ski facilities with the surrounding landscape by using architectural treatments and natural materials or non-reflective paint.
- ▶ Design lighting to minimize glare and the escape of light into areas of natural vegetation.
- ▶ Protect riparian, aquatic, and meadow focal species and their habitats in all zones by implementing the following measures:
  - To the extent feasible, implement project designs and land uses that would minimize the removal of riparian habitat, with an emphasis on the Schaffer Creek watershed due to its high resource value.

- To the extent feasible, design trails and structures to avoid and/or minimize disturbance or fragmentation of riparian and meadow habitats.
- In the design process, fulfill all relevant terms and conditions of permits and approvals.

Additional practices that are specific to particular zones are described under the applicable zones in the section *Objectives, Targets, and Practices by Zone* and listed in Table 4-1, at the end of this chapter.

Although habitat values are an important consideration in the design process, it is also important to recognize that many considerations affect the design of development. For example, where roads or trails cross streams, structures that span the entire active floodplain are not always feasible. In some of these instances, structures may be avoided by creating a seasonal crossing on top of snow; in other instances, structures or alternative designs within the active floodplain may be necessary. Also, for ski operations, seasonal crossings on top of snow may require pruning of some riparian shrubs to reduce their height. Although a portion of their shoot system would be removed, the lower portion of the shoot system would remain, and the root system would be intact, and thus, this pruning should not substantially reduce the vigor of these shrubs. (This pruning would occur in the fall after the mule deer fawning season and the willow flycatcher nesting season [i.e., after July 31].)

Similarly, larger trees are important habitat components, and thus an effort is made to retain them. But, the resort is a forested landscape, and development projects can not necessarily avoid the removal of all trees greater than 30 inches in DBH; also, for safety considerations, hazard trees often require removal, even if greater than 30 inches. Additionally, trimming of riparian vegetation along stream corridors may occur in the fall after the mule deer fawning season and the willow flycatcher nesting season (after July 31). Trimming would facilitate ski operations while leaving the root system of the vegetation undisturbed, and would occur only in locations where crossing through riparian zones are required by skiers during relatively low snow-depth conditions.

Forest management is also an important consideration in the design process. Most silvicultural methods included in the California Forest Practice Rules, are also compatible with the resort's goals of offering skiing opportunities in a forested mountain environment. For example, silvicultural prescriptions such as thinning and selection that increase tree growth rates and improve overall forest productivity, can also improve conditions for activities such as tree skiing. Thus, coordination of the design process with forest management planning is a practice in all zones of the resort.

To provide a diverse ski experience that is consistent with the current and planned land uses of each HMP zone, the design of ski pods will use several different methods of trail design. These methods include graded, traditional, and tree island ski runs. Snowmaking installations are also contemplated in all zones that have skiing, except D2 and E2. Table 4-2 summarizes their application in each HMP zone. These ski run designs and their application in HMP zones are also described in more detail below.

### ***Lift Line Clearing***

Ski lift construction requires that all trees are cleared for the required ski lift width. Clearing widths will conform to American National Standards Institute (ANSI) standards, which vary with manufacturer, type, and model of lift. In general, surface lifts require less tree clearing, but more surface disturbance than do aerial lifts.

Line clearing will be performed to facilitate proposed lifts and the alignment will be sited to minimize adverse effects on drainages and late-seral forest. The visual effects of the lift line will be reduced through the design of the ski under trail for aerial lifts (e.g., retention of islands of trees within the lift line trail), and through tree thinning at the limits of the lift line for surface lifts. In Zone E, lift clearing will be minimized because aerial lifts will not be constructed in this zone.

<b>Table 4-2 HMP Ski Improvement Prescriptions</b>							
Construction Prescriptions	HMP Zone						
	A	B	C1	D1	D2	D3	E2
Lift Line Clearing	Clearing and grading as necessary will be performed to facilitate proposed lifts and skiing under the lifts as required.	Clearing and grading as necessary will be performed to facilitate proposed lifts and skiing under the lifts as required.	Clearing and grading as necessary will be performed to facilitate proposed lifts and skiing under the lifts as required.	Clearing will be performed to facilitate proposed lifts and skiing under the lifts as required. Lift alignment will be modified to the extent possible to minimize impacts to drainages and visual impacts by utilizing islands and feathering of the lift line.	Clearing will be performed to facilitate proposed lifts and skiing under the lifts as required. Lift alignment will be modified to the extent possible to minimize impacts to drainages and late-seral forest health. Tree islands will be used to help reduce visual impacts.	Clearing will be performed to facilitate proposed lifts and skiing under the lifts as required. Lift alignment will be modified to the extent possible to minimize impacts to drainages. Tree islands, if suitable tree densities are available, will be used to help reduce visual impacts.	Clearing and grading for the surface lift will be performed to facilitate the proposed Lift. Lift alignment will be modified to the extent possible to minimize impacts to drainages and late-seral forest. Aerial lifts will not be constructed in this zone.
Graded Run	Graded runs will be constructed as required to facilitate skier access and circulation. Run alignment will respect the fall line to minimize grading to the extent possible while facilitating skier access and skiability.	Graded runs will be constructed as required to facilitate skier access and circulation. Run alignment will respect the fall line to minimize grading to the extent possible while facilitating skier access and skiability.	Graded runs will be constructed as required to facilitate skier access and circulation. Run alignment will respect the fall line to minimize grading to the extent possible while facilitating skier access and skiability.	Graded area will be minimized and will only occur at terminal locations and on access trails or off fall line areas to facilitate skiability.	Graded area will be minimized and will only occur at terminal locations and on access trails or off fall line areas to facilitate skiability. Where feasible, existing roads will be utilized and improved to minimize the area of disturbance.	Graded runs may be constructed as required to facilitate skiability, access and circulation. Where feasible, existing roads will be utilized and improved to minimize the area of disturbance.	Graded runs will not be constructed.
Traditional Run	Traditional Runs will be constructed.	Traditional Runs will be constructed.	Traditional Runs will be constructed.	Traditional Runs will not be constructed. Grading will occur where necessary to facilitate skier access off slopes, for rough terrain,	Traditional Runs will not be constructed. Grading will occur where necessary to facilitate skier access off slopes, for rough terrain,	Two traditional runs may be constructed and small segments of access runs are proposed to facilitate skier circulation. The run	Traditional Runs will not be constructed.

Table 4-2 HMP Ski Improvement Prescriptions							
Construction Prescriptions	HMP Zone						
	A	B	C1	D1	D2	D3	E2
				and circulation to and from the ski pod.	and circulation to and from the ski pod. The run alignments will minimize to the extent possible impacts to drainages and late-seral forest health.	alignments will minimize to the extent possible impacts to drainages.	
Tree Island Run	Tree Island runs may be constructed. This prescription may be utilized in some sections of this zone.	Tree Island runs may be constructed. This prescription may be utilized in some sections of this zone.	Tree Island runs may be constructed. This prescription may be incorporated into this zone.	Tree Island runs will be predominant in this zone.	Runs will be designed with tree islands. Run design will minimize to the extent possible impacts to drainages and late-seral forest health.	Tree island runs will be used in this zone. Run design will minimize to the extent possible impacts to drainages.	No tree island runs will be constructed.
Tree Skiing	Forest management compatible with tree skiing will be performed in this zone; however traditional runs will be predominant in this zone.	Forest management compatible with tree skiing will be performed in this zone; however traditional runs will be predominant in this zone.	Forest management compatible with tree skiing will be performed in this zone; however traditional and tree island runs will be predominant in this zone.	Tree skiing will occur in this zone and is compatible with forest management prescriptions..	Forest management focusing on fuels treatments and late-seral enhancements will be performed in this zone. Treatments will be designed to minimize impacts to drainages and promote late-seral forest health. Tree skiing will be compatible with fuels treatments and late-seral forest enhancement.	Forest management focusing on fuels treatments and tree skiing will be performed in this zone. Treatments will be designed to minimize impacts to drainages.	Forest management for late-seral enhancement will be performed in this zone. Tree skiing will be compatible with fuels treatment and late-seral forest enhancement.

Note: No new runs are proposed in Zone E1 and E3.