TIMBERLINE

Timberline Lodge and Ski Area Complex

2019 MASTER DEVELOPMENT PLAN

Prepared for:

USDA Forest Service
Mt. Hood National Forest
Zigzag Ranger District

Prepared by:

SE GROUP

PREFACE

In 2005 R.L.K. and Company, operators of Timberline Lodge, wrote a pamphlet entitled *The Next 50 Years: Our Vision for the Future* as a public guide for the continued direction of Timberline Lodge and Ski Area. This vision, which was received well by the general public, seeks to maintain "quality recreation within the capabilities of the ecosystem," at Timberline and promotes a pledge to future development that complements the SUP in a way which does not overshadow the historic lodge. It acknowledges a powerful and important "*sense of place"* at Timberline and recognizes an historical context consistent with President's Franklin Delano Roosevelt's original vision for Timberline when he stated "*There will be many [visitors] to Timberline from the outermost parts of our Nation, travelers from the Middle West, the South, and the East*" and then dedicated the Lodge as "*a place to play for generations of Americans in the days to come*." His dedication speech also makes clear that the Lodge was envisioned as a year-round resort, providing future visitors "enjoyment of new opportunities for play in every season of the year." In order to fulfill this vision and maintain Timberline's original purpose R.L.K. and Company practices a principle they refer to as "*preservation through use.*" This principle acknowledges Timberline's original purpose as well as its cultural history and significance and makes it relevant in today's world. It recognizes the attraction and economic engine of recreation that Timberline offers to the region and embraces that it has a mission to operate a robust mountain resort while preserving the original feel and fabric of the original Lodge.

Furthermore, Timberline has adopted *Guiding Principles* and an *ethos* to set the stage for the experience they seek to provide to staff and guests. These *Guiding Principles* establish the following mission statement for the Timberline Lodge and Ski Area;

> ***"To create life-long memories by offering the best in historic lodging, fine dining, and exciting, family-friendly skiing and snowboarding, backed by a high standard in service and hospitality to every guest."***

A Timberline Ethos was established in collaboration with the entire staff, and this too is a guiding statement which informs not only the staff's focus, but the focus of this Master Plan.

We Are Timberline!

- ***We provide exciting family friendly skiing, snowboarding, and year 'round recreation.***
- ***We offer the best in historic lodging, fine dining, meaningful souvenirs, and memorable experiences.***
- ***We practice historic preservation and environmental stewardship.***
- ***We provide a safe and warm friendly atmosphere.***
- ***We provide jobs and economic stimulus for our local community.***
- ***We support each other. We are positive. We are authentic.***
- ***We are Proud to Be Your Host!***

This Timberline Lodge and Ski Area Complex Master Development Plan (MDP) is intended to be the guiding document for future development at Timberline Lodge and Ski Area (Timberline). This MDP exclusively evaluates facilities at Timberline that are directly related to the ski area operation and does not address Timberline Lodge historic preservation and facilities maintenance work, or other non-ski area-related projects. Illustration 1 is a visual representation of the process on which this document is based.

First, an overall resort vision and guiding goals were determined based on market needs, public outreach, resort niche and long-term outlook. These vision and goal statements help inform the entire process; that is, to help answer questions such as, "*What's important to our guests?*", "*What makes our resort special?*", and "*Where should we invest our time, money and resources?*"

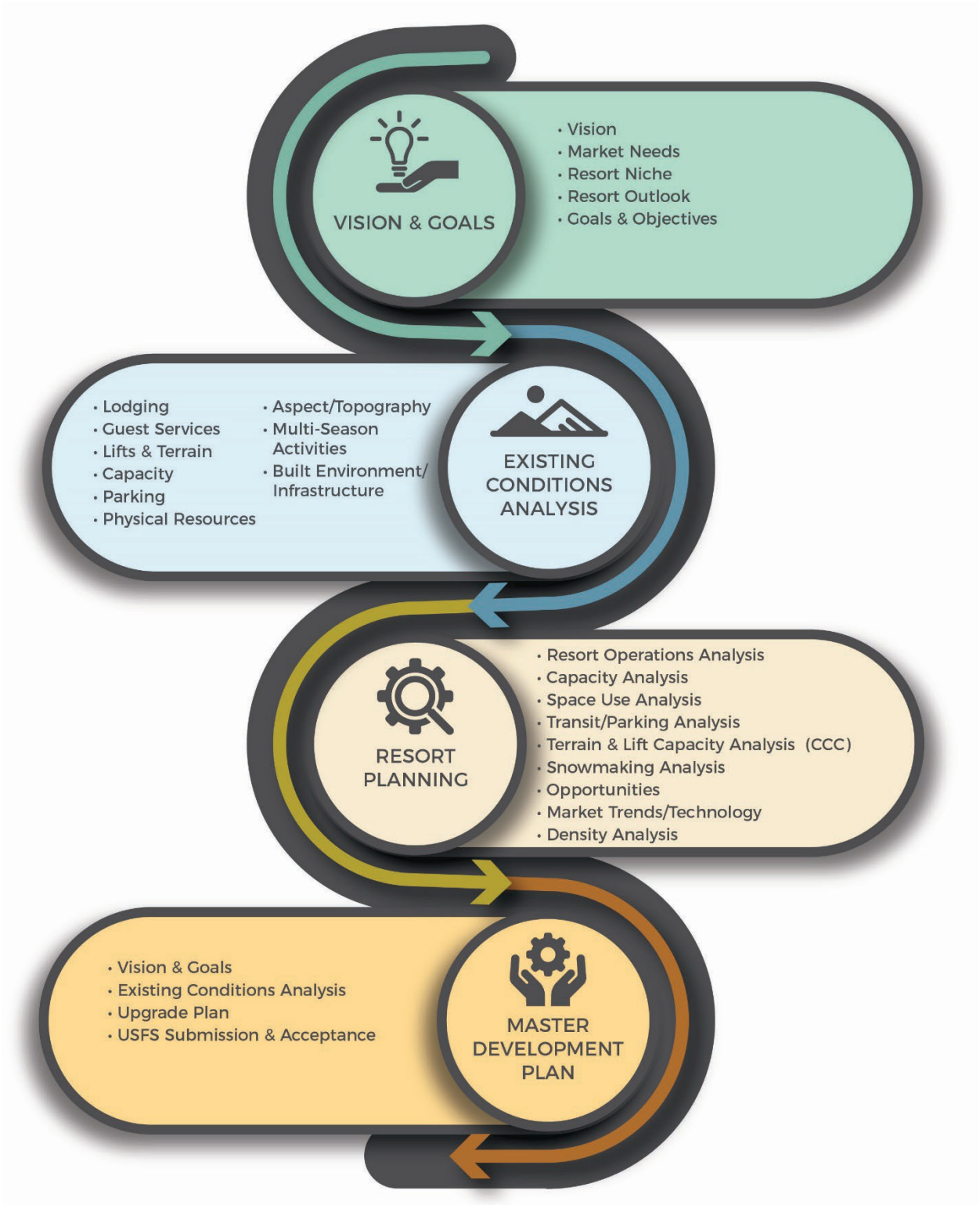
With a vision and goals established, an inventory of existing conditions at the resort was then completed to identify existing strengths, weaknesses, opportunities, and constraints—critical information that drives the resort planning phase. Details collected included the number and condition of lifts, the square footage of guest service spaces, and the number of available parking spaces. Physical resources were also inventoried to help identify ideal locations to develop or areas to avoid due to environmental sensitivity.

The next phase of the MDP process analyzed existing capacities of various facility components to determine imbalances within the operation. Collectively, this analysis identified improvements that would bring existing facilities into better balance in order for the resort to operate more efficiently. This process also helped the resort prioritize projects. Accomplishing these goals will result in a well-balanced resort and provide an adequate array of services and experiences to satisfy guest expectations for a quality recreation experience. The results of this process are documented in this MDP.

This MDP is divided into five chapters, plus appendices:

- Chapter 1—Introduction: provides an overview of the plan, summary of Timberline's location and market, statement of the plan vision and goals, and an overall summary of the Master Development Plan.
- Chapter 2—Design Criteria: defines and describes key mountain planning concepts, assesses physical resources such as topography and slope gradients and discusses applicable Forest Service policy, direction and agreements.
- Chapter 3—Existing Conditions: describes existing resort facilities for both winter and summer, and evaluates the current balance of resort operations, facilities, and infrastructure. This includes lifts, terrain, guest services, snowmaking and parking. This chapter also provides the baseline conditions which drive the upgrade plan.
- Chapter 4—Previously Accepted Projects; Yet to Be Implemented: describes projects that have been previously accepted by the Forest Service but have not yet been implemented. It is anticipated that the majority of these projects will ultimately be implemented as capital becomes available.
- Chapter 5—Upgrade Plan: describes the proposed upgrades and improvements to the experience at Timberline.
- Appendix A: provides terrain specifications details for existing conditions and the upgrade plan.

Illustration 1. The MDP Process



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CHAPTER 1—INTRODUCTION

A. PURPOSE OF A MOUNTAIN RESORT MASTER DEVELOPMENT PLAN

Many mountain resorts across the country are partially or completely located on public lands. Each mountain resort on National Forest System (NFS) lands must obtain a U.S. Department of Agriculture Forest Service (USDA Forest Service or Forest Service) special use permit (SUP) to operate on public lands. Forest Service SUPs require the preparation of a Master Development Plan (MDP) that identifies the existing and desired conditions for the resort and the proposed improvements on the NFS lands within the permit boundary.

This MDP fulfills this requirement and provides direction for the future development and improvement of Timberline, ensuring both a balance of facilities and a wide variety of amenities affording an exceptional recreational experience in a manner which is sustainable to the business, operations, and the surrounding environment. This MDP provides a thorough assessment of existing operations and facilities at Timberline and identifies a comprehensive plan for future improvements to the resort. This MDP replaces the 2009 Timberline Conceptual Master Plan (2009 Master Plan) and is intended to be the guiding document for Timberline over the next ten years.

This MDP was created using an iterative and collaborative process between Timberline planners, Forest Service personnel who administer the SUP, stakeholders, and SE Group. Forest Service "acceptance" of this MDP is consistent with the requirements of Timberline's SUP and replaces the 2009 Master Plan.

Forest Service acceptance of this document as a planning tool for Timberline does not imply authorization to proceed with implementation of any of the projects that are identified herein. Therefore, all projects identified within this MDP that have not been previously approved by a prior NEPA process will require site-specific environmental analysis and approval per the NEPA before they can be implemented. This MDP is intended to be a dynamic document, which may be amended periodically to reflect innovations in facilities and recreation.

Planning and Design Nomenclature

Throughout this document, text highlights (like this one) have been included to explain the various planning and design concepts that are utilized throughout the MDP process. Further descriptions and explanation of these concepts may be found in the Supplemental Information.

B. STAKEHOLDER ENGAGEMENT AND FEEDBACK

Throughout the initial MDP process, R.L.K. and Company, the operators of Timberline, held a number of stakeholder engagements to solicit feedback about the projects planned in the MDP. R.L.K. and Company places a strong emphasis on public involvement, partnerships, and building trust with stakeholders. Following the March 31st, 2018 dismissal of a lawsuit over the decision to build a bike park under the 2009 Master Plan, R.L.K. and Company hired Sustainable Northwest, a regional non-profit, to help re-engage with the community through a series of facilitated stakeholder outreach meetings. The robust series of meetings focused on the company's ethos, mission, and its development philosophy, while also vetting specific draft proposals for this new MDP. A broad spectrum of the public was invited, especially from the local mountain community, the greater historic preservation community, the Oregon outdoor recreation community, local elected officials, representatives from the tourism industry, neighboring Native American tribes, and the greater environmental community, including representatives from the previous lawsuit's plaintiffs.

A full report by Sustainable Northwest was published, and disseminated, and is still available upon request. For the sake of this document, engagement highlights and the resulting actions taken by R.L.K. and Company are provided here.

Consistent Themes

- Growing Oregon population and vital need for transportation and parking solutions.
- Need to accommodate a broader diversity of visitors.
- Rich history, deep cultural connections, and role of Timberline Lodge as a National Historic Landmark and public space.
- Importance of historic preservation, environmental stewardship, and sustainability initiatives.
- The important role that managed recreation plays in a mixed and multiple use public forest.
- Need for four-season operations and attractions including lodging, dining, a mix of outdoor recreation offerings, plus operating as a renowned and highly visited regional tourism destination and "gateway experience" on the Mt. Hood National Forest.
- R.L.K and Company's long-term commitment and excellent reputation (since 1955).
- The benefit of leveraging partnerships and community involvement as pillars of successful operations on public lands, and the need for an on-going dialogue about master planning.

Conclusion & Results of Stakeholder Outreach

Participant feedback expressed general support of the R.L.K. and Company and its master plan vision. It also provided constructive criticism and some new ideas to the various proposals presented in a draft development stage. Generally speaking, one common feedback theme was to "think bigger" and consider connectivity to Government Camp by contemplating a larger footprint. The perennial idea of a gondola link was again brought up and promoted. Concurrently, an opinion was voiced that parking solutions should be contemplated in lower elevations, rather than the more fragile environments of the high country. While R.L.K. and Company has purposely focused within the limit of its SUP boundary, an opportunity to purchase the Summit Ski Area in Government Camp (directly below Timberline) coincidentally presented itself in June of 2018. This recent feedback about the opportunities that controlling a base area in Government Camp presented helped direct and validate R.L.K. and Company's subsequent decision to purchase Summit.

On the other end of the spectrum, a perspective was shared that no additional lodging or parking development should occur on the mountain, and promotion of tourism and recreation on the mountain should cease. This position is essentially a no-action development philosophy which R.L.K. and Company recognizes, but finds unrealistic. Instead, R.L.K. and Company remains dedicated to a solutions-oriented approach to problems through progressive "smart planning." Having said that, R.L.K. and Company has for now decided to withdraw its draft concept for five additional cabins at the Timberline Phlox Point site.

J.S.K. and Company, a subsidiary of R.L.K. and Company, recently acquired Northwest Nordic Inc., the company that owns and operates Summit Ski Area in Government Camp. A range of development concepts for Summit will be developed through additional public outreach in March of 2019 and will be contained in a separate Summit Master Development Plan later in the year. The Molly's parking lot portal proposal included in this MDP will then be considered within that concurrent planning for Summit and will be considered more as an alternative to plans drawn for Summit aimed at achieving the same goal of providing more parking, snow play area, and guest service space.

With the advent of Summit, R.L.K. and Company also recognizes an opportunity to address other feedback that it received in the Timberline outreach sessions. Future development at Summit provides opportunities to expand summer activities as well as winter snow-play activities. It provides opportunities for entry-level ski school offerings, and other more easily affordable and easy access programs to pro-actively reduce barriers to entry into the sport. In addition, winter snow-play at Summit could also reduce public safety risks associated with the informal and unsanctioned snow-play that currently occurs at Timberline and along the roadsides. These were issues that stakeholders also voiced an interest in.

C. LOCATION

Timberline is located entirely on lands under the jurisdiction of the Zigzag Ranger District of the Mt. Hood National Forest in Clackamas County, Oregon. Timberline encompasses approximately 1,415 acres regulated by a 30-year SUP administered by the Forest Service; the current SUP term expires September 30, 2038.

The SUP area is contained within the following Public Lands Survey System areas: Sections 29, 31, and 32, and Protracted Blocks 47, and 49, Township 2S, Range 9E., Willamette Meridian; Sections 6, 7, 8, and 18, Township 3S, Range 9E., Willamette Meridian; Sections 12 and 13, Township 3S, Range 8.2E., Willamette Meridian. Ski area infrastructure operates at elevations ranging from approximately 4,850 feet at the bottom of Jeff Flood-Still Creek Chairlift to 8,540 feet at the top of Palmer Chairlift.

Timberline is approximately 55 miles east of Portland, Oregon, the largest metropolitan area in Oregon, with a population of over 2.3 million (refer to Figure 1). It is accessed by the Timberline Road (OR Hwy 173) via Highway 26 (Mt. Hood Highway). Timberline is a popular ski area and is home to a public building of national significance. It is one of Oregon's most highly visited tourist attractions seeing an approximated two million annual visits. Mt. Hood offers a stark contrast to surrounding environments, making the snow and mountain adventure available at Timberline a serious draw for this market in the winter and summer seasons. The allure of the unique mountain environment at Timberline provides a steady stream of visitors seeking to explore the forest and recreate on their public lands.

D. RESORT SUMMARY

Timberline has a long, storied history. Timberline Lodge was constructed during the Great Depression as part of the Works Progress Administration. The Lodge was dedicated by President Franklin D. Roosevelt on September 28, 1937. In his speech, Roosevelt spoke of his vision for the Lodge—to create a destination for year-round recreation for current and future generations.

After years of war and failed operations, Timberline Lodge had fallen into disrepair. Richard L. Kohnstamm, a social worker from New York City who had recently moved to Portland to work for a non-profit, visited the Lodge in 1954 and was enamored with the building and its potential as a year-round resort and a public place. He felt the Lodge meant a great deal to the people of Oregon and should be preserved for future generations. He applied for and was awarded the operator permit. He quickly set out developing the Lodge and Ski Area by installing a heated pool and constructing new chairlifts.

The Kohnstamm family continues to operate the Lodge and Ski Area today through their company, R.L.K. and Company, and focuses on providing a high-quality guest experience that supports the on-going stewardship of the historic facilities. Timberline Lodge was declared a National Historic Landmark in 1977.

The National Historic Landmark is a year-round destination for skiers and riders, hikers and mountaineers, mountain bike riders, hotel guests, and tourists. The ski area alone hosts over

300,000 guests annually, as shown in Table 1. Timberline is estimated to host over two million annual visits.[1]

Because of its unique history and attributes, Timberline's SUP is a "Resort" permit, unlike other ski resorts on NFS lands that operate under a "Ski Area" Special Use Permit. Among other things, the Resort SUP specifically authorizes four-season public use of the facilities. Year around recreation has been permitted at Timberline since 1937, and therefore, the 2011 Ski Area Recreational Opportunities Enhancement Act (SAROEA) amendment to the 1986 Ski Area Permit Act is not applicable to Timberline.

Timberline's ski season extends throughout the summer—the longest in North America—providing diverse opportunities to a spectrum of visitors. With its unique, four season Resort SUP, Timberline's non-skiing and multi-season activities are, and will continue to be, important guest offerings at the resort because summer recreational activities tend to attract a more diverse range of new guests than do skiing and snowboarding (e.g., more balanced gender demographics, older median age, and more families), which is essential to the continued success of the resort. The alpine, nature-based activities provided at Timberline, coupled with the existing ski area infrastructure and amenities, offer an experience for guests not commonly available on NFS lands.

With ski area visitation representing only about 15 percent of annual visitation at Timberline, a situation that is uncommon for mountain resorts, it is clear that visitation from non-skiing guests is an extremely important consideration when evaluating resort services such as parking, restaurants, rest rooms, and other guest services.

Table 1. Timberline Ski Area Annual Visitation

Season	Winter	Summer	Total
2017/18	245,316	111,203	356,519
2016/17	189,517	82,870	272,387
2015/16	213,934	115,282	329,216
2014/15	182,419	46,360	228,779
2013/14	241,874	127,617	369,491
2012/13	224,657	124,459	349,116
2011/12	226,788	126,079	352,867
2010/11	225,794	118,830	344,624
2009/10	224,755	143,906	368,661
2008/09	169,094	107,487	276,581
AVERAGE	**214,415**	**110,409**	**324,824**

[1] Timberline Lodge History. https://www.timberlinelodge.com/about-us/history

E. PLAN VISION AND GOALS

The primary objective for Timberline is to balance the preservation of the aggregate resources that comprise the overall appeal of Timberline's heritage with the growing demand to visit the site. The population in metro Portland has swelled in recent years and this trend is forecasted to continue. This relatively rapid population growth has corresponded to increasing visitation, putting a strain on Timberline's facilities and resulting in overcrowding. Improvements are required to bring the resorts' facilities into balance with new levels of visitation and market demand and elevate the customer experience to an acceptable level. Thus, the overall goal of the winter- and summer-oriented improvements described in this MDP is not to drive new winter visitation to Timberline, but rather to bring the existing facilities into better balance with existing visitation levels; thus, meeting the ever-changing expectations of its marketplace. Smart planning is necessary to continue to accommodate the public in a way that does not diminish from the experience nor harm or overshadow the historic Timberline Lodge. To that end, this MDP utilizes innovative mountain planning techniques that will enhance the year-round guest experience while maintaining appropriate skier and other user densities and respecting the unique character of Timberline.

Additionally, Timberline has a desire to become the premier learn-to-ski destination in the region. This goal builds upon Timberline's current market position, the incredible beginner and teaching opportunities available, and the overall learning progression Timberline is able to provide across seasons.

Continuing to provide diverse opportunities to a spectrum of visitors is central to Timberline's summer activity goals. Integral to this goal is the resort's recent introduction of mountain bike trails and skills park, which will bring a new type of guest to Timberline in the summer, and further diversify the resort's spectrum of offerings. Timberline will continue to build out its approved mountain bike trail system in the coming years.

Timberline has a tremendous opportunity to introduce guests, who often live in more urban/suburban environments, to the National Forest and a natural alpine environment in a fun and comfortable setting. Opportunities for environmental education, stewardship, and overall public lands awareness are present across Timberline's SUP area. Developed activities in an appropriate setting will promote these opportunities, thereby achieving the goal of encouraging guests to further explore their public lands while feeling comfortable doing so. The Forest Service has acknowledged a demonstrated need to encourage the public, particularly youth, to explore the lands within the National Forests. As an identifiable and accessible portal to NFS lands, Timberline provides a gateway experience for visitors to the Mt. Hood National Forest and has a unique opportunity to meet this need through the provision of a range of recreational opportunities and experiences suitable to the diverse public groups that live in and visit the area.

F. SUMMARY OF THE UPGRADE PLAN AND PREVIOUSLY ACCEPTED PROJECTS

1. UPGRADE PLAN

- Bruno's regrade and reconfiguration of beginner hill
- Expanded snowmaking system

2. PREVIOUSLY ACCEPTED PROJECTS

- Molly's portal (including parking, day lodge/warming hut, tubing hill and snowplay area)
- Pucci Chairlift replacement
- Vehicle maintenance shop and patrol headquarters
- Phase 2 of mountain bike trails and skills park

CHAPTER 2—DESIGN CRITERIA

Establishing design criteria is an important component of mountain planning. The following is an overview of the basic design criteria upon which this MDP is based.

A. REGIONAL DESTINATION RESORTS

Regional destination resorts largely cater to a "drive" market. In the case of Timberline, the resort is a regional destination for nearby cities via automobile. While day-use guests play a large role, the regional destination resort also appeals to vacationers. At some regional destination resorts, lodging is a component (e.g., the Historic Timberline Lodge). However, due to the average length of stay, and perhaps more importantly a regional guest's vacation budget, lodging and related services and amenities are usually less extensive than what is common for national/international destination guests.

B. BASE AREA DESIGN

The relationship between planning at a resort's base area developments and on-mountain lift and terrain network is critically important. This relationship affects the overall function and perception of a resort. Planners rely on resort layout as one tool to establish resort character. The manner in which resort elements are inter-organized, both inside the resort core and within the landscape setting, along with architectural style, help to create the desired character.

Design of the base lands at a mountain resort involves establishing appropriate sizes and locations for the various elements that make up the development program. The complexion and interrelationship of these elements varies considerably depending on the type of resort and its intended character. However, fundamental objectives of base area planning are to integrate the mountain with the base area for the creation of an attractive, cohesive, and functional recreational and social experience. This is essential to creating the feeling of a mountain community and can only be achieved by addressing base area components such as (but not limited to): guest service locations, skier/rider circulation, pedestrians, parking/access requirements, and mass-transit drop-offs.

Skier service facilities are located at base area and on-mountain buildings. Base area staging locations, or portals, are "gateway" facilities that have three main functions:

- Receiving arriving guests (from a parked car or a bus);
- Distributing the skiers onto the mountain's lift and trail systems; and
- Providing the necessary guest services (e.g., tickets and rentals).

The base area configuration at Timberline will be discussed in greater detail throughout this document.

C. MOUNTAIN DESIGN

1. TRAIL DESIGN

a) Slope Gradients and Terrain Breakdown

Terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. Ability level designations are based on the

maximum sustained gradient calculated for each trail, in combination with other factors present that may make a trail more difficult. While short sections of a trail can be more or less steep without affecting the overall run designation, a sustained steeper pitch may cause the trail to be classified with a higher difficulty rating. It is important to understand that slope gradient is not the only factor in assigning a trail ability designation to a specific trail. A variety of factors, such as trail width, terrain features, and the context of other trails on the mountain can cause a trail to be classified under a higher designation.

The following general gradients, reflective of industry norms, are used as the basis to classify the skier difficulty level of the mountain terrain. As previously mentioned, additional considerations can compound with slope gradient and cause a trail to be classified under a higher designation.

Table 2. Terrain Gradients

Skier Ability	Slope Gradient
Beginner	8 to 12%
Novice	to 25%
Low Intermediate	to 35%
Intermediate	to 45%
Advanced Intermediate	to 55%
Expert	over 55%

Source: SE Group, Mountain Planning Guidelines

The distribution of terrain by skier ability level and slope gradient is compared with the market demand for each ability level. It is desirable for the available ski terrain to be capable of accommodating the full range of ability levels reasonably consistent with market demand. The market breakdown for the Pacific Northwest skier market is shown in Table 3.

Table 3. Skier Ability Breakdown

Skier Ability	Percent of Skier Market
Beginner	5%
Novice	15%
Low Intermediate	25%
Intermediate	35%
Advanced Intermediate	15%
Expert	5%

Source: SE Group, Mountain Planning Guidelines

b) Trail System

A resort's trail system should be designed to provide a wide variety of terrain to meet the needs of the entire spectrum of ability levels, as well as the resort's particular market. Each trail should provide an interesting and challenging experience within the ability level for which the

trail is designed. Optimum trail widths vary depending upon topographic conditions and the caliber of the skier/rider being served. The trail network should provide terrain for the full range of ability levels consistent with each level's respective market demand.

In terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business, one of the more important factors has proven to be terrain variety. This means providing developed runs for all ability levels—some groomed on a regular basis and some not (bowls, trees, and terrain parks and pipes).

In summary, a broad range of terrain satisfies skiers/riders from beginner through expert ability levels within the natural topographic characteristics of the ski area.

Timberline operates terrain parks within its developed trail network (currently Paintbrush, Spraypaint, Conway's, Boneyard, Blossom, Schoolyard, and the upper segment of Thunder), which affects the trail system from an operational standpoint and may change the skier/rider ability classification of the trail. It is common at ski areas for the locations and/or configurations of terrain parks to vary from year to year. Terrain parks are not part of the trail system themselves but rather an operational combination of certain trails and uses within the trail system (e.g., moving snow, creating terrain features, additional fencing and signage).

2. LIFT DESIGN

The goal for lift design is to serve the available terrain in an efficient manner (i.e., having the minimum number of lifts possible while fully accessing the terrain and providing sufficient uphill capacity to balance with the available downhill terrain capacity). In addition, the lift design has to take into consideration such factors as wind, round-trip utilization of the terrain pod, access needs, the ability to connect with other lift pods, the need for circulation space at the lower and upper terminal sites, access to residential development, and the presence of natural resources (e.g., visual impacts, wetlands, and riparian areas). The vertical rise, length, and ride time of lifts across a mountain are important measures of overall attractiveness and marketability of any resort.

3. ON-MOUNTAIN GUEST SERVICES

On-mountain guest service facilities are generally used to provide shelter, food service (cafeteria-style or table service), restrooms, and limited retail, as well as ski patrol/first aid and other guest services, in closer proximity to upper-mountain terrain. This eliminates the need for skiers and riders to descend to the base area for similar amenities.

D. CAPACITY ANALYSIS AND DESIGN

In ski area planning, a "design capacity" is established, which represents a daily, at-one-time guest population to which all ski resort functions are balanced. The design capacity is a planning parameter that is used to establish the acceptable size of the primary facilities of a ski resort: ski lifts, ski terrain, guest services, restaurant seats, building space, utilities, parking, etc.

Design capacity is commonly expressed as "comfortable carrying capacity," "skier carrying capacity," "skiers-at-one-time," "persons-at-one-time," and other ski industry-specific terms. These terms refer to a level of utilization that provides a pleasant recreational experience,

without overburdening the resort infrastructure. Accordingly, the design capacity does not normally indicate a maximum level of visitation, but rather the number of visitors that can be "comfortably" accommodated on a daily basis. Design capacity is typically equated to a resort's 5th or 10th busiest day, and peak-day visitation at most resorts is at least 10 percent higher than the design capacity.

This MDP will use the terms "comfortable carrying capacity" (CCC) when referring to Timberline's design capacity. The accurate estimation of the CCC of a mountain is a complex issue and is the single-most important planning criterion for the resort. Related skier service facilities, including base lodge seating, mountain restaurant requirements, restrooms, parking, and other guest services are planned around the proper identification of the mountain's true capacity.

CCC is derived from the resort's supply of vertical transport (the vertical feet served combined with the uphill hourly capacities of the lifts) and demand for vertical transport (the aggregate number of runs desired multiplied by the vertical rise associated with those runs). The CCC is calculated by dividing vertical supply (VTF/day) by vertical demand, and factors in the total amount of time spent in the lift waiting line, on the lift itself, and in the descent.

In addition to CCC of ski area infrastructure, a persons-at-one-time (PAOT) capacity was calculated to capture capacities of all visitors to Timberline, including skiers and riders, mountain bikers, hikers and mountaineers, tourists and sightseers and hotel guests. Additional discussion regarding PAOT can be found in Chapter 3 and Chapter 5 of this MDP.

E. BALANCE OF FACILITIES

The mountain master planning process emphasizes the importance of balancing recreational facility development. The sizes of the various guest service functions are designed to match the CCC of the mountain. The future development of a resort should be designed and coordinated to maintain a balance between accommodating guest needs, resort capacity (lifts, trails, and other amenities such as tubing), and the supporting equipment and facilities (e.g., grooming machines, day lodge services and facilities, utility infrastructure, access, and parking). Note that it is also important to ensure that the resort's CCC balances with these other components, facilities, and services at the resort. Since CCC is primarily derived from the resort's lift network, it is possible to have a CCC that is effectively lower or higher than the capacities of other resort components.

F. MULTI-SEASON RECREATION ACTIVITIES

In light of the increasing challenges of operating a sustainable ski resort given the seasonal nature of the typical six-month operating season, there has recently been a great deal of interest within the industry in developing multi-season recreation facilities and activities for guests. Timberline is one of a select few mountain resorts able to offer alpine skiing during the summer, but summer recreational activities tend to attract a more diverse range of new guests than does skiing. This comprehensive resort planning process assesses the best approach and program for adding multi-season activities and facilities in order to have the greatest potential for success given the unique characteristics that define Timberline and its markets, and then will create a "road map" for their implementation.

A strategic approach must be taken to identify reasonable and realistic opportunities for multi-season recreational activities. This approach involves a case-by-case examination of several important criteria to determine the multi-season recreation elements that have the greatest potential for success. Criteria such as suitability of available land for recreation facilities and/or activities, operational compatibility with existing or proposed facilities, initial fiscal considerations, and visitation potential are all explored within this MDP. Undertaking such a comprehensive exercise leads to a multi-season recreation program comprised of recreation facilities and/or activities that are suitable for implementation and will align with operational goals and performance expectations.

In addition to existing summer skiing opportunities and bike park operations, providing diverse opportunities to a spectrum of visitors is key to Timberline's summer activity goals. Non-skiing and multi-season activities are, and will continue to be, important guest offerings at Timberline because summer recreational activities tend to attract a more diverse range of new guests than do skiing and snowboarding (e.g., more balanced gender demographics, older median age, and more families), which is essential to the continued success of the resort.

As a regional recreation destination, Timberline has the opportunity to both provide and promote interactive, educational, natural resource-based recreation activities for all ages and demographics. Increasingly, there is potential to reach a wide range of ages and demographics, including those not currently being reached, through multi-season recreation activities.

G. INVENTORY OF PHYSICAL RESOURCES

1. TOPOGRAPHY

Topography is the arrangement of natural and artificial physical features of an area and includes the general surface shapes and features within the project area of Timberline. Topography, along with slope gradient, is important to a ski area because it partly defines terrain variety, which is consistently ranked as the second most important criterion in skier choice of a ski destination in Ski Magazine's Reader Resort Ratings, behind snow quality. Timberline lies within the Cascade Range of the Pacific Northwest and is defined by the above-treeline open slopes, steep gladed valleys, and gently sloping forests of the south facing flank of Mt. Hood. It lies entirely on the slopes of Mt. Hood and ranges in elevation from 4,850 to 8,540 feet above sea level for a total vertical rise of 3,690 feet. The lift served ski terrain in the winter season typically ranges in elevation from approximately 7,000 feet to 4,850 feet above sea level, as the upper mountain is only open to snow cat skiing during high snowfall years. During low snowfall years, the upper lifts operate as conditions permit. The base area is located at approximately 5,900 feet above sea level.

The lift and trail pods incorporate a variety of terrain topography, ranging from steep, high alpine slopes on the upper mountain to the moderate and easy groomed cruiser runs within the forests of Mt. Hood National Forest. Slopes range from steep, technical sections to almost flat in the base area. This type of topography allows for a range of ski opportunities. Timberline's infrastructure, parking lots, and lodges are currently found on the eastern side of the ski area, midway between the summit and the lowest elevations of the operational boundary. This is a good topographic scenario for a ski area, as it provides a variety of topographical terrain as well as efficient access and circulation from the base area to that terrain.

2. SLOPE GRADIENTS

Slope gradient defines the angle of the trail, relative to a completely flat surface. As mentioned above, slope gradient helps define terrain variety. In addition, slope gradient defines the difficulty of terrain and therefore what types of skiers (novice, intermediate, etc.) are able to ski that terrain. Slope gradient also dictates trail and infrastructure development, as both completely flat trails and cliff faces are un-skiable and steep slopes are more difficult to build structures on.

The steepest slopes of Timberline are generally located on the uppermost section of the ski area, at the top of the operational boundary. This section features only steep, high-alpine terrain. The lower portion of the ski area contains a mixture of beginner and intermediate slopes with a series of short, steep pitches scattered throughout the lower, forested section of the mountain. Timberline also offers a variety of undeveloped ski opportunities, like glades and ungroomed terrain, as well as a significant amount of acreage dedicated to terrain parks. Terrain parks have their own set of topographic guidelines with north facing, 18 to 35 percent grade terrain generally considered to provide the best opportunities for terrain park building.

Terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. Regardless of the slope gradient for a particular trail, if it feeds into a trail that is rated higher in difficulty, its ability level must be rated accordingly. Conversely, if a trail is fed only by trails of a higher ability level than the maximum slope of the trail would dictate, it also must be rated accordingly.

General slope gradients are defined as:

- **0 to 8% (0 to 5 degrees):** too flat for skiing and riding, but ideal for base area accommodations, and other support facility development.
- **8 to 25% (5 to 15 degrees):** ideal for Beginners and Novices, and typically can support some types of development.
- **25 to 45% (15 to 25 degrees):** ideal for Intermediates, and typically are too steep for development.
- **45 to 70% (25 to 35 degrees):** ideal for Advanced and Expert skiers/riders and pose intermittent avalanche hazards.
- **>70% (>35 degrees):** too steep for all but the highest level of skiing/riding. These areas are typically allocated as Expert only and are closely managed by the resort operator for avalanche control.

The slope gradients at Timberline are depicted on Figure 3.

3. SOILS AND GEOLOGY

The soils and geology within and around a ski area are an important factor to take into consideration because they influence the erosion potential of the area, the drainage capabilities, the vegetation that grows in the area, and other factors that influence ski area management. A watershed-specific report for the Salmon River Watershed provides information on the soils and geology in the area.

Timberline Lodge is located on Mt. Hood, an andesitic volcano of Quaternary age that was built by a succession of lava-flow and lava-dome eruptions. While the volcano has been quiet for over 200 years, the volcano is still classified as active and monitored by the United States Geological Survey (USGS). Mt. Hood is located within the High Cascades geological province within the broader Cascade Mountain Range. This province consists of younger, glaciated hillslopes that are generally moderately sloping deposits of basalts, andesites, and pyroclastic flows. The area is characterized by surface, glacial, and fluvial erosion, streambank failures, and peak flow deposits. The alpine section of the ski area, below the Palmer Snowfield, is primarily comprised of steepened, unconsolidated materials. These steep upper slopes of Mt. Hood—because they are unvegetated, contain loose debris and glacial deposits, and receive a high amount of precipitation—are prone to land sliding and therefore deliver significant sediment amounts downslope. The lower portion of the area is not prone to landslides and mass wasting due to its more gradual slopes. These lower slopes have also allowed for soil development and various vegetative growth. Overall, the soils within Timberline's operational area are strongly influence by alpine glaciation and are moderately deep, gravely soils forming in glaciated till and ash. The area also includes wet meadows and bottomlands, fresh sands and gravels, and perpetual snow and ice in the upper sections.

4. HYDROLOGY

Hydrology influences the availability of water in the project area as well as the movement of snowmelt and groundwater. This can influence a ski area's ability to make snow as well as how snowmelt travels through and impacts the project area. The Upgrade Plan projects encompasses upper portions of the Zigzag and Salmon River watersheds. Within this higher elevation zone, headwater wetland complexes and streams create unique challenges to development. This MDP takes into account known locations of streams and wetlands and strives to maintain "no development" zones within 50 feet of wetlands and streams. These zones would contribute to the protection of water quality and subsequently aquatic habitat for threatened and endangered Pacific salmon populations downstream.

Timberline is located within the Sandy River Basin and specifically within the Salmon River Watershed. The watershed incorporates portions of two major physiographic zones (the Cascade Mountain Range and the Columbia Basin), and encompasses approximately 116 square miles. The hydrology is strongly influenced by Mt. Hood, as the snow and rain that falls on this section of Mt. Hood flows down from the headwaters of the Palmer Snowfield to the valley below. The headwaters of the river receive plentiful rainfall and snow, with approximately 130 inches of precipitation falling per year on its slopes. Timberline is located adjacent to the headwaters of the Palmer Snowfield but the Salmon River is fed by seven major tributaries and the watershed contains ten sub-watersheds. Greatest precipitation for the watershed occurs between November and January and the least amount occurs between July and August. Mt. Hood sustains a snowpack year-round at its upper elevations, which moderates stream flows in the Salmon River by providing water storage over the winter and contributing water in the summer. Despite this, stream flow is significantly impacted by rates of snow accumulation and snowmelt within the watershed. Varying geology and topography in the Salmon River watershed produce hydraulic features such as waterfalls, wetland meadows, and oxbow river channels.

The river flows free of water impoundments for 33 miles from its headwaters to its confluence with the Sandy River at Brightwood. From there, the Sandy River flows to the Columbia River and on to the Pacific Ocean.

5. FISH AND WILDLIFE

Fish and wildlife, as being federally monitored (in the case of the Endangered Species Act) as well as generally being in the public eye, are also an important consideration for ski area development. There are 236 wildlife species that have potential habitat located within the watershed. Of these, 31 are listed as Threatened, Endangered and Protected (TEP), 12 are local species of concern, 46 are snag dependent species, and 8 are introduced species. Given the high variety of species potentially present, site-specific NEPA analyses will be conducted, as warranted, and will be based on current information provided by the Mt. Hood National Forest, U.S. Fish and Wildlife Service, and the State of Oregon.

6. VEGETATION

The vegetative composition of a ski area, beyond influencing the wildlife discussed above, also influences the erosion potential of the land and its ability to retain water. It is therefore important to analyze vegetation within a ski area boundary. Because Timberline is located on the middle to upper slopes of Mt. Hood, the area is primarily within the Mountain Hemlock Zone. In this area, mountain hemlock is common in mid and late successional stands. Other trees like western hemlock, true firs, western white pine, white bark pine, and Douglas-fir are also present. The cold, moist environment present, with deep winter snowpack and short summers, heavily influences the vegetation. The upper elevations of the ski area are within the Alpine zone, which is predominantly mountain hemlock and subalpine fir with small amounts of white bark pine. As the ski area extends also above treeline, hardy shrubs and alpine grasses are also present in the highest sections of the operational boundary.

Vegetation at Timberline is typical of the Mt. Hood National Forest and specifically the Salmon River Watershed at these elevations. The Timberline permit area contains extensive blocks of continuous forest cover dominated by Pacific Silver Fir and Mountain Hemlock. The ski area contains Late Seral forests, which are those forests that include mature and old-growth tree age classes. Portions of Late Seral forests provide important habitat for the northern spotted owl, an endangered species listed under the Endangered Species Act. Late Seral forests also provide habitat for many other species of wildlife. This MDP seeks to maintain as much of the natural vegetation onsite as possible. While some tree removal would be necessary, this MDP seeks to maintain forest cover and subsequent wildlife habitat to the extent possible.

The proposed Molly's Portal in particular is situated on the lower slopes of the SUP area where the forest is characteristic of Late Seral conditions. Additionally, this part of the SUP area contains a large number of dead or dying and diseased trees that were observed during preliminary investigations of the site. Implementation of this MDP would take into account the health of the forest as trees are identified for removal. For example, groups of healthy trees would be retained where possible to protect the forested character of the site. Site-specific NEPA analyses will be conducted, as warranted.

H. APPLICABLE FOREST SERVICE POLICY, DIRECTION AND AGREEMENTS

The Forest Service nationally supports the recreational opportunities that private ski areas provide. The Forest Service and National Ski Areas Association work in partnership to achieve common goals of managing and promoting active participation in alpine recreation and sports by all people.

Timberline operates under a Term Special Use Permit.[2] The permit authorizes the use of NFS lands, on the Mt. Hood National Forest, for the purposes of constructing, operating, and maintain a winter sports lodge including overnight accommodations, alpine ski operations, food service, retail sales, and other ancillary facilities.

The basis for determining the types of activities and facilities appropriate for permitted winter sports resorts operating on NFS lands are expressed in federal laws and Forest Service policy directives, such as the 1990 Mt. Hood National Forest Land and Resource Management Plan, as amended by the Northwest Forest Plan. This guiding document provides the Forest Service with authority and direction pertaining to ski area management on NFS lands.

Timberline and the Forest Service are connected through a committed long-term partnership to provide quality recreational opportunities on NFS lands. By satisfying its current and future visitors, Timberline will grow as a healthy and competitive ski resort within its market niche. This, in turn, would help fulfill Forest Service policy, objectives, and direction for ski area management on the Mt. Hood National Forest and the vitality of the local economy.

1. LAWS AND POLICY DIRECTIVES

The following consists of the formative legal and policy mandates guiding the Forest Service administration of NFS lands and winter sports resorts:

- The Multiple-Use Sustained-Yield Act of 1960 mandates that the Forest Service manage National Forest System lands for "*outdoor recreation*, range, timber, watershed, and wildlife and fish purposes." 16 U.S.C. § 528 (emphasis added).
- The National Forest Management Act (NFMA) requires the Forest Service to develop Forest Plans that provide for multiple uses of forests, including "coordination of *outdoor recreation*, range, timber, watershed, wildlife and fish, and wilderness." 16 U.S.C. § 1604(e)(1) (emphasis added).
- The service-wide Memorandum of Understanding between the National Ski Areas Association and the Forest Service (FS Agreement No. 07-SU-11132424-246), recognizes "that ski areas can help meet increased demand for recreational opportunities in a managed setting." The Forest Service stated its commitment to "evaluate four-season recreation at ski areas to improve economic stability and enhance outdoor recreation opportunities during policy formation, master development planning, and project plans."

[2] The Term Special Use Permit is authorized under the Act of March 4, 1915 as amended July 28, 1956 (Ref. FSM 2710); Section 7 of Granger-Thye Act of April 24, 1950, 16 U.S.C 580d.

a) Mt. Hood National Forest Land and Resource Management Plan Revision

In 1990, the Mt. Hood National Forest completed their Land and Resource Management Plan, commonly referred to as the Forest Plan. This document guides all natural resource management activities and establishes management standards and guidelines for the National Forest. The Northwest Forest Plan of 1994 amended the Forest Plan and established new standards and guidelines for management of late successional and old growth forest. A full list of amendments to the Forest Plan can be found on the Mt. Hood National Forest Planning website.

In the Forest Plan, ski areas are included under Management Area A 11 (Winter Recreation Areas), which emphasizes winter recreation. The stated goal of Management Area A 11 is to "provide high quality winter recreation (and associated summer) opportunities including: downhill skiing, Nordic skiing, snowmobiling, and snowplay within a natural appearing forest environment" (USDA, 1990a). Under the Northwest Forest Plan, MA A 11 lands have been allocated to Administratively Withdrawn Area (AWA).

The Forest Plan also includes Management Area A 4 (Special Interest Area), which includes the Timberline Lodge within the boundary of the A 11 (refer to Figure 2 and 2.1). The goal of these areas is to protect and, where appropriate, foster public recreational use and enjoyment of important historic, cultural, and natural aspects of our national heritage.

Additional Mt. Hood Forest Plan allocations that this MDP considers are:

- Management Area B 7 (General Riparian Areas)
- Management Area B 2 (Scenic Viewshed)

Applicable Northwest Forest Plan land allocations include:

- Tier 1 Key Watersheds
- Riparian Reserves

I. SCENERY RESOURCES

The Forest Plan describes the scenery resources within the context of the older Visual Management System (VMS). This system was replaced by the Scenery Management System (SMS) in 1995 in the document Landscape Aesthetics: A Handbook for Scenery Management; however, the handbook notes the VMS remained in place until a Forest Plan is revised to fully implement the SMS.

1. VISUAL MANAGEMENT SYSTEM

The USFS VMS helps establish Visual Quality Objectives (VQOs) for various landscapes and helps define how the landscapes would be managed, the level of acceptable modification in the area, and under what circumstances modifications are allowed. The VMS and VQOs are outlined in the USDA Handbook 462 – National Forest Landscape Management, Vol 2.

The Forest Plan prescribes VQOs for management areas throughout the forest as viewed from designated viewpoints including US Hwy 26 (Mt. Hood Highway), Timberline Road (OR Hwy

173), and NFS Road 2645 (West Leg Road). Timberline is an A 11 Management Area – Winter Recreation Area and has a prescribed VQO of Partial Retention (for ski facilities) for Foreground (0 to 0.5 mile from viewpoint), Middleground (0.5 to 5 miles from viewpoint), and Background (over 5 miles from viewpoint) views.

Partial retention means that any activity must be visually subordinate to the natural characteristics of the landscape. Landscapes with this designation can be modified, but the resulting changes in patterns of vegetation, line, form, color and texture should not contrast strongly with the adjacent undisturbed landscape.

2. BUILT ENVIRONMENT IMAGE GUIDE

The Built Environment Image Guide (BEIG) has been designed to ensure thoughtful design and management of the built environment, which includes: administrative and recreation structures, landscape structures, site furnishing, structures on roads and trails, and signs installed or operated by the Forest Service, its cooperators, and its permittees.[3] It focuses on the image, appearance, and structural character of facilities. Three core contexts are stressed throughout the BEIG: (1) environmental; (2) cultural; and (3) economic.

The BEIG provides general guidance regarding the image, aesthetics, and overall quality of recreational and administrative structures on NFS lands, but it does not contain enforceable "standards" pertaining to aesthetic quality as would be found in a typical Forest Plan.

It should be noted; the Built Environment Image Guide North Pacific Province is modeled after Timberline Lodge. As such, scenery and aesthetics have always been at the forefront of architectural design at Timberline Ski Area.

J. ACCESSIBILITY TO PUBLIC LANDS

In June 2005 the Forest Service released the *Accessibility Guidebook for Ski Areas Operating on Public Lands, 2005 Update*. This guidebook provides information for ski areas authorized under a SUP to work with the Forest Service in providing equal opportunities for all people, including those with disabilities. Timberline will maintain consistency with this guidebook for future development projects occurring on public lands.

Ski areas operating under special-use authorization from the Forest Service are required to comply with both the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 (Section 504). The ADA applies because Timberline would operate as a "public accommodation;" moreover, Timberline is a business open to the public. Section 504 applies because Timberline would operate under a SUP authorized by the Forest Service. Through the SUP, the ski area agrees to abide by these and all other laws, regulations, and policies of the federal government.

Significant legislation that preceded the ADA includes the Architectural Barriers Act (ABA) of 1968 and the Rehabilitation Act of 1973, as amended. ABA was the first measure passed by Congress to ensure access to facilities. The ABA requires that all facilities built, bought, or

[3] USDA Forest Service. 2001. The Built Environment Image Guide for the National Forests and Grasslands.

leased by or for a Federal agency be accessible. Section 504 of the Rehabilitation Act states: "No otherwise qualified individual with a disability in the United States shall, solely by reason of his disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive Agency."

Through future site-specific NEPA and design development reviews, Timberline will work closely with the Forest Service to ensure accessibility measures are taken to provide equal opportunity to all users of public lands.

K. PROGRAMMATIC AGREEMENT WITH SHPO

In 2004 a Programmatic Agreement between the Forest Service, the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Officer was established. The agreement details the management of cultural resources on Forest Service lands and the management of the Timberline Lodge Historic Building Preservation Plan. This MDP does not contain any proposed projects that would affect the historic nature or historical fabric of the Timberline Lodge. Additionally, the Forest Service, together with R.L.K. and Company and Friends of Timberline, drafted and signed a statement of shared values titled "The Timberline Lodge Collaborative Stewardship Agreement".

L. WINTER SPORTS GUIDEBOOK

In 1992 the Forest Service published the Winter Sports Guidebook to establish master planning guidelines for ski resort on Forest Service lands operating under a SUP. The Winter Sports Guidebook outlined details to include in the master planning process to inform the Forest Service and the public of potential changes that may result from development of public and private lands.

M. REGION 6 SUSTAINABLE RECREATION STRATEGY SUMMARY

The Region 6 Sustainable Recreation Strategy Summary documents the need to manage outdoor recreation in a sustainable way, that is, take a long-term view on decisions about Forest resources. The vision is to "nurture relationships to build strong connections to place; inspire passion, enhance sustainability and provide outdoor experiences that foster stewards who help nurture relationships…" With this vision in mind, the Forest is dedicated to approaching problems and finding solutions in a wholistic approach that encourages outdoor recreation and preservation of resources.

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CHAPTER 3—EXISTING CONDITIONS

A. SUMMARY OF THE EXISTING GUEST EXPERIENCE

Timberline is known for its historical significance as an outdoor recreation site, as well as the abundant snow in the winter and year-round skiing on the Palmer Snowfield. Timberline attracts skiers, snowboarders and mountain bikers to the ski area, hikers and mountaineers to Mt. Hood, hotel guests to Timberline Lodge, and tourists and sightseers to the base area and Timberline Lodge. With Timberline being in close proximity to Portland (about an hour and half drive), it is no wonder Timberline is a gateway experience for visitors to Mt. Hood National Forest, as well as one of Oregon's top tourist attractions hosting approximately two million visitors a year.

Timberline is perched on the side of Mt. Hood, Oregon's highest mountain. The active stratovolcano rises to over 11,000 feet and has numerous glaciers and snowfields. During the winter, Mt. Hood can receive abundant snow with moisture from the Pacific Ocean. In the summer, Timberline takes advantage of Palmer Snowfield by offering summer skiing and riding, and is busy with youth and adult camps. In addition, these users and other guests take advantage of the new mountain bike park.

Mt. Hood also attracts regional, national, and international mountaineers. The south side routes are the most popular, with climbers being directed to skirt the ski area to head for the summit. All climbers must obtain a wilderness permit to enter the Mt. Hood Wilderness Area at the top of the Palmer Snowfield. With climbing primarily taking place during early morning hours, the southern route typically takes ten to twelve hours to summit and return to the Timberline Lodge parking area.

Timberline Lodge is a National Historic Landmark and is a top attraction in the area. With 70 guest rooms, the Lodge can accommodate over 200 guests at full capacity. The building also acts like a museum for all its intricate detail and historic artwork. These include mosaics, carved panels, and unique architectural features that make the Lodge historically significant.

Refer to Figures 4–7 for existing conditions at Timberline.

B. EXISTING LIFT NETWORK

There are seven chairlifts (five detachable quads, one fixed-grip triple and one fixed grip double) and one surface conveyor lift at Timberline. During the summer ski season Timberline also operates four surface lifts on the Palmer Snowfield. In general, the lift system operates efficiently; however, some lifts are getting old and reaching the end of their useful life.

In the winter, all lifts operate except for the four Palmer Snowfield surface lifts, and the Palmer Chairlift rarely operates during the winter months due to weather. For the summer operating mode, the Magic Mile Chairlift operates primarily for access to the Palmer Chairlift and snowfield (and rarely for repeat skiing), and the Palmer Chairlift and four surface lifts are operated for repeat skiing on the snowfield.

The Magic Mile and Palmer chairlifts (both detachable quads) service the upper half of Timberline and operate in both the summer and winter. The trails located off of these lifts offer intermediate, advanced, and expert terrain. These trail areas are above treeline, giving skiers

and riders an open bowl experience. When weather is poor, these lifts can often be shut down due to wind and visibility concerns

The Stormin' Norman Chairlift is the next highest lift at Timberline after the Magic Mile and Palmer chairlifts. The top terminal of the lift is slightly above treeline. This detachable quad was installed in 2000 and has an hourly capacity of 1,500 people per hour (pph). It primarily services intermediate terrain and terrain with terrain park and freestyle features.

The longest lift at Timberline, the Jeff Flood-Still Creek Chairlift is a detachable quad with an hourly capacity of 1,800 pph. It is the most recently installed lift (2007) and services intermediate terrain from the lower elevations of the SUP to above Timberline Lodge and Magic Mile Chairlift bottom terminal.

The Molly's Chairlift is a detachable quad that services the eastern trails at Timberline. These trails are typically intermediate and advanced terrain. The Molly's Chairlift has an hourly capacity of 1,200 pph and was constructed in 2000. The top terminal is located 600 feet south of the Wy'East Day Lodge.

The Pucci Chairlift is a fixed-grip triple with an hourly capacity of 1,330 pph. The lift was designed to operate at 1,800 pph but was lowered to 1,330 pph due to loading and unloading problems. It is the oldest lift in the network. The Pucci Chairlift services beginner and novice terrain with some lower intermediate terrain. The top terminal of the Pucci Chairlift is located south of the Timberline Lodge and west of Wy'East Day Lodge.

Bruno's Chairlift is a fixed-grip double in the beginner learning area. The lift is located south of the Wy'East Day Lodge. This is a good location for beginners to develop their skills close to the day lodge, ski school and other amenities. From the Bruno's Chairlift, beginners usually progress to the Pucci Chairlift, with more beginner and novice terrain.

The following table provides detailed specifications for Timberline's chairlifts only.

Table 4. Chairlift Specifications—Existing Conditions

Lift Name, Lift Type	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (pph)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
Stormin' Norman Chairlift, DC4	6,248	5,464	784	4,411	18	1,500	1,000	160	Doppelmayr/2000
Jeff Flood-Still Creek Chairlift, DC4	6,027	4,847	1,180	6,539	18	1,800	1,000	133	Doppelmayr/2007
Magic Mile Chairlift, DC4	6,988	5,915	1,073	5,333	21	1,600	950	143	Poma/1992
Palmer Chairlift, DC4	8,484	6,952	1,532	5,492	29	1,800	1,000	133	Doppelmayr/1996
Pucci Chairlift, C3	5,915	5,350	565	3,431	17	1,330	450	61	Poma/1987
Molly's Chairlift, DC4	5,815	4,986	829	5,237	16	1,200	1,000	200	Doppelmayr/2000
Bruno's Chairlift, C2	5,885	5,840	45	339	13	630	300	57	Poma/1987

Source: SE Group
Notes:
C2 = fixed-grip double chairlift / *C3* = fixed-grip triple chairlift / *DC4* = detachable four-passenger chairlift

C. EXISTING TERRAIN NETWORK

Evaluation of the existing terrain network requires equal consideration of many factors, chief among them being terrain variety and the distribution of terrain by ability level. Assessment of either of these factors on their own will not provide a complete picture of the current state of terrain at the resort. For example, looking solely at the terrain distribution by ability level there appears to be a surplus of low intermediate terrain and a deficit of beginner and intermediate terrain at Timberline compared to the skier/rider market. Furthermore, Timberline offers a vast amount of undeveloped terrain not counted in this circulation that provide a good variety of advanced and expert terrain when conditions are suitable.

The developed trail network accommodates beginner through expert-level guests on 67 lift-served, named trails spanning approximately 539 acres. Most developed terrain is groomed on a regular basis. For details of the existing conditions terrain specifications, refer to Appendix A.

1. TERRAIN VARIETY

Timberline has a wide variety of terrain options, from developed terrain to undeveloped, off-piste terrain to terrain parks and features. This analysis accounts for three separate types of terrain at Timberline, totaling approximately 1,200 skiable acres:

- Lift-accessed, developed trails and bowls for beginner, intermediate, and expert skiers and riders (totaling about 539 acres)
- Developed and undeveloped (non-thinned or maintained) glades and natural terrain within the ski area boundary that are routinely skied (totaling approximately 661 acres of terrain)
- Developed terrain parks and freestyle features – during the winter, Timberline maintains six terrain parks and one pipe on Paintbrush, Spray Paint, Conway's, the Bonezone, Blossom and Thunder; in the summer, Timberline operates multiple camp features and one public terrain park off of the Magic Mile and Palmer chairlifts

The developed terrain at Timberline contains both the advanced and expert terrain found at the higher elevations, as well as novice and intermediate terrain on the lower elevations of the mountain, which provides for adequate terrain for the full range of ability levels, from beginner skiers and riders up to experts.

All of the above-treeline terrain accessible off of Magic Mile and Palmer chairlifts is included in the developed terrain network statistics. This terrain offers an open meadow, backcountry feel and is often more challenging than the developed terrain on the lower elevations, due to unmaintained snow surface conditions and natural obstacles. This terrain is included in the terrain distribution analysis, as it is critical for Timberline to satisfy advanced and expert level skiers and riders.

Terrain park and freestyle features are an important part of Timberline's operations. Timberline was a freestyle leader from the early days of freestyle skiing with Palmer Snowfield as a testing grounds for many types of features now seen in freestyle terrain parks today.

Terrain Typology at Timberline

1. DEVELOPED ALPINE TERRAIN—The existing developed, or formalized alpine terrain network at Timberline consists of the resort's named, defined, lift-serviced, maintained trails. Despite the importance of undeveloped, alternate-style terrain, formalized runs represent the baseline of the terrain at any resort, as they are where the majority of guests ski/ride. Additionally, developed terrain is usually the only place to ski/ride during the early season, periods of poor or undesirable snow conditions, avalanche closures, and in certain weather conditions. As such, the developed trail network represents an accurate picture of the acreage utilized by the average skier/rider on a consistent basis, as well as that used by virtually all guests during the aforementioned conditions. Therefore, the full capacity of the resort must be accommodated by the total acreage of the developed terrain network, rather than relying on undeveloped terrain (which is not always available).

2. UNDEVELOPED TERRAIN—Undeveloped terrain consists of unnamed terrain that is routinely skied. There is some gladed and undeveloped terrain at Timberline; the topography within the SUP area includes steeps and glades intermingled within, and outside of, the developed and maintained terrain network. This terrain is primarily on the upper half of the mountain. This terrain is monitored by Timberline ski patrol to control access in the early season, periods of poor or undesirable snow conditions, avalanche closures, and in certain weather conditions. There are also densely-treed and less accessible gladed areas. This consists primarily of the natural (non-thinned or maintained) forested areas between the defined skiing areas and ski runs, and also accounts for some of the less accessible treed areas at Timberline.

3. TERRAIN PARKS—Terrain parks consist of various types of freestyle features including jibs, jumps and pipes. Timberline is committed to providing freestyle terrain. Features such as rails, tabletops, jumps, etc. are a very important part of Timberline's operations and are located throughout the resort during the operating season.

Common jib features are benches and tables, boxes, kink (box or rail with one or more changes in direction or elevation), tubes, pole jam (rail attached to a jump at an upward angle), C-rail (arched box or rail), rails, S-rail (S-shaped box or rail), and wall ride (wall-like feature with broad surface for gridding).

Common jumps are hip (jump with landing perpendicular to the takeoff), spine (jump with two landings perpendicular to the takeoff), step-up (jump with a higher landing than takeoff) and table top (jump with a flat top).

Common pipes are halfpipe, quarterpipe (half of halfpipe) and superpipe (oversized halfpipe).

2. TERRAIN DISTRIBUTION BY ABILITY LEVEL

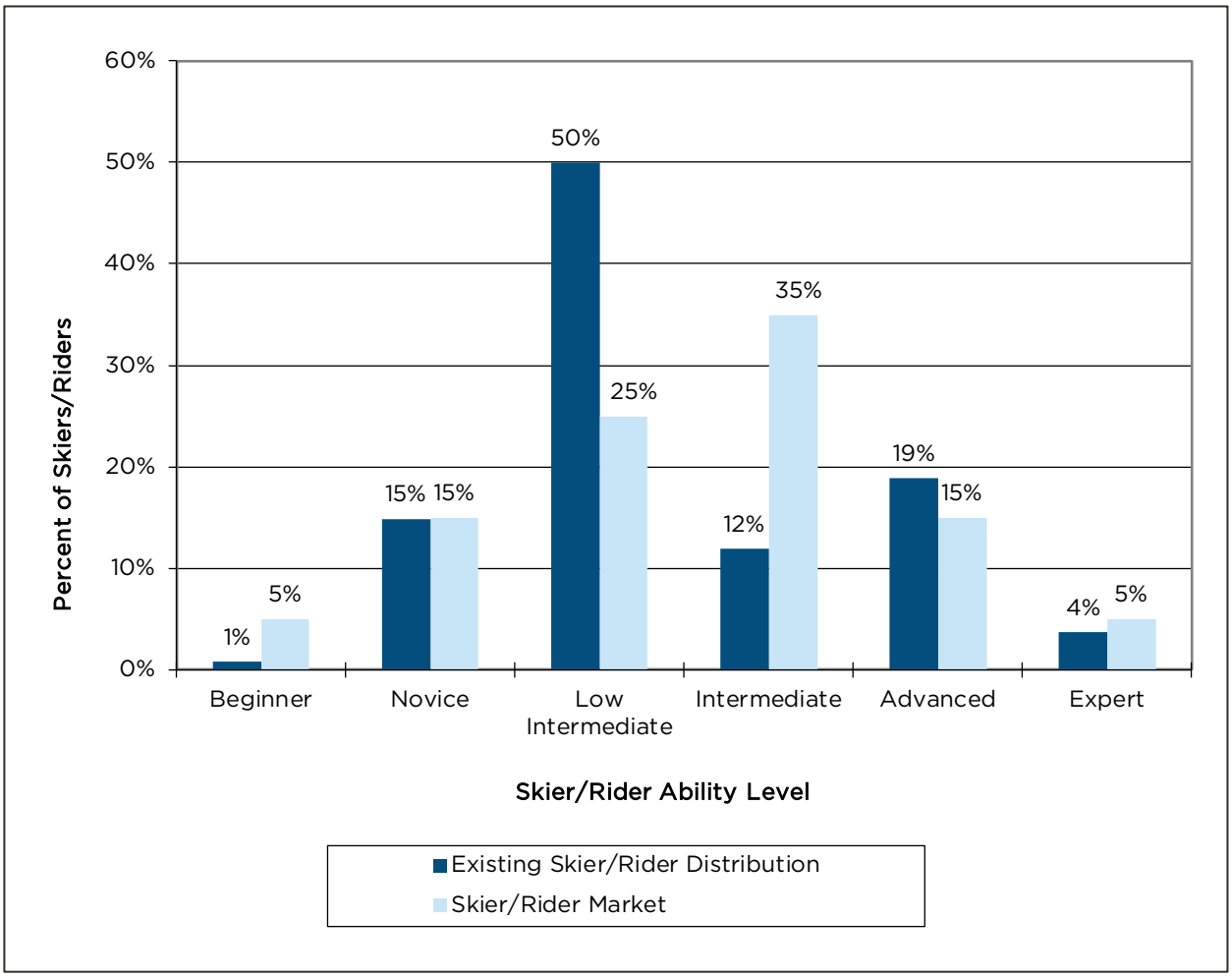
This terrain distribution analysis considers the 539 acres within the developed terrain network at Timberline. The overall terrain distribution through the full range of ability levels is relatively close to the ideal breakdown for the Pacific Northwest market, with the exception of low intermediate and intermediate distributions (there is a surplus of low intermediate terrain and a shortage of intermediate terrain). However, this is simply a factor of the natural topography at Timberline, which tends to be more in the low intermediate range. There is also a shortage of first-time beginner terrain.

Table 5. Terrain Distribution by Ability Level—Existing Conditions

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	1.4	41	1	5
Novice	46.7	840	15	15
Low Intermediate	202.1	2,829	50	25
Intermediate	67.3	673	12	35
Advanced	152.6	1,068	19	15
Expert	69.1	207	4	5
TOTAL	**539.2**	**5,659**	**100**	**100**

Source: SE Group

Chart 1. Terrain Distribution by Ability Level—Existing Conditions



Importance of Terrain Variety

Terrain variety is the key factor in evaluating the quality of the actual skiing and riding guest experience (as opposed to lift quality, restaurant quality, or any other factor).

Terrain variety is consistently ranked as one of the most important criterion in skiers' choice of a ski destination, typically behind only snow quality, and ahead of such other considerations as lifts, value, accessibility, resort service, and others. This is a relatively recent industry trend, representing an evolution in skier/rider tastes and expectations. The implication of the importance of terrain variety is that a resort must have a diverse, interesting, and well-designed developed trail system, but also must have a wide variety of alternate-style terrain, such as mogul runs, bowls, gladed trees, open parks, in-bounds "backcountry-style" (i.e., hike-to) terrain, and terrain parks and pipes. At resorts across the nation, there is a growing trend favoring these more natural, unstructured types of terrain, since the availability of this style of terrain has become one of the more important factors in terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business.

To provide the highest quality guest experience, resorts should offer groomed runs of all ability levels and some level of each of the undeveloped terrain types. Undeveloped terrain is primarily used by advanced and expert level skiers/riders during desirable conditions (e.g., periods of fresh snow, spring corn, etc.). Even though some of these types of terrain only provide skiing/riding opportunities when conditions warrant, they represent the most intriguing terrain, and typically are the areas that skiers/riders strive to access. Terrain variety is increasingly becoming a crucial factor in guests' decisions on where to visit.

D. EXISTING CAPACITY ANALYSIS

This existing conditions analysis evaluates two different capacities: CCC and PAOT. CCC is a ski area modeling tool that considers the utilization of the ski lift and terrain network and skier use of other facilities across the resort during a given day; it is a daily skier population. PAOT is a snap shot of the resort at a given point in time and includes all resort guests including skiing and non-skiing visitors.

It is important to differentiate that while the skier CCC component of PAOT accounts for skier visitation over the course of an entire day, PAOT also includes at-one-time populations for other non-ski activities. Many of these non-ski activities do not extend over an entire day, and therefore **daily** visitation for these non-ski activities can be many times greater than the at-one-time population.

These two analyses were completed for Timberline in order to understand overall resort capacity and how capacity of other attractions at Timberline (Timberline Lodge tourists and guests, Mt. Hood climbers and hikers, and mountain bikers) impact the ski area operations and parking limitations.

1. COMFORTABLE CARRYING CAPACITY

A detailed calculation of the existing CCC was completed for this MDP, as shown in Table 6. The CCC of Timberline is presently calculated at 3,990 guests with all lifts operating. The majority of CCC can be attributed to five detachable quads, with the newest detachable quad, Jeff Flood-Still Creek Chairlift, having the highest CCC. It should be noted that Palmer Chairlift often does not run during the winter months due to weather and snow levels. This effectively drops CCC to 3,240 guests. This number is supported by the fact that historical peak visitation days have maxed out at around 3,100, indicating that there are factors that are limiting Timberline from reaching the 3,990 level, as discussed below.

Timberline currently operates under an approved CCC limit of 4,665, which was based on a theoretical calculation of the original lift capacities.[4] At full operation, Timberline operates with a CCC of 3,990 guests per day.[5] Although the ski lift and terrain network is capable of reaching this capacity, the greatest factor limiting Timberline from reaching their actual CCC is the limited parking capacity and, more importantly, the use of available parking by a significant proportion of non-skiing guests. Other factors limiting the resort from reaching CCC levels of visitation are guest service space and food service seating, which are also used by non-skiing guests. Due to this situation and inadequate available parking for visitors, Timberline's actual operating capacity CCC (which is generally equated to the resort's historical average 5th to 10th busiest day) is approximately 2,200.[6] In support of this number, the average 5th busiest visitation day (i.e., not peak visitation, but days when parking and the other services are maximized) at Timberline over the past five years was 2,231. As such, the competing uses of the parking lots effectively limit the total number of guests that can ski at Timberline. If this present condition persists, Timberline will fail to meet the forecasted trend in visitation and compromise its ability to serve as a gateway experience to Mt. Hood.

[4] USDA Forest Service. 1975. Timberline Lodge Environmental Statement.
[5] USDA Forest Service. 2005a. Timberline Express DEIS.
[6] Ibid.

What is Comfortable Carrying Capacity?

In ski area planning, a "comfortable carrying capacity" (CCC) is established, which represents an at-one-time guest population to which all ski resort functions are balanced. The design capacity is a planning parameter that is used to establish the acceptable size of the primary facilities of a ski resort: ski lifts, ski terrain, guest services, restaurant seats, building space, utilities, parking, etc.

Accordingly, the design capacity does not normally indicate a maximum level of visitation or a "cap" on visitation, but rather the number of visitors that can be "comfortably" accommodated on a daily basis. Design capacity is typically equated to a resort's fifth or tenth busiest day, and peak-day visitation at most resorts is at least 10% higher than the design capacity.

The accurate estimation of the CCC of a mountain is a complex issue and is the single-most important planning criterion for the resort. Related skier service facilities, including base lodge seating, mountain restaurant requirements, restrooms, parking, and other guest services are planned around the proper identification of the mountain's true capacity.

CCC is derived from the resort's supply of vertical transport (the vertical feet served combined with the uphill hourly capacities of the lifts) and demand for vertical transport (the aggregate number of runs desired multiplied by the vertical rise associated with those runs). The CCC is calculated by dividing vertical supply (VTF/day) by vertical demand, and factors in the total amount of time spent in the lift waiting line, on the lift itself, and in the descent.

Table 6. Daily Chairlift Capacity—Existing Conditions

Lift Name, Lift Type	Slope Length (ft.)	Vertical Rise (ft.)	Actual Capacity (pph)	Operating Hours (hrs.)	Up-Mountain Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly (pph)	VTF/ Day (000)	Vertical Demand (ft./day)	Daily Lift Capacity (guests)
Stormin' Norman Chairlift, DC-4	4,411	784	1,500	7.00	1	10	1,335	7,331	12,730	580
Jeff Flood-Still Creek Chairlift, DC-4	6,539	1,180	1,800	7.00	2	10	1,584	13,083	13,934	940
Magic Mile Chairlift, DC-4	5,333	1,073	1,600	7.00	10	5	1,360	10,216	15,968	640
Palmer Chairlift, DC-4	5,492	1,532	1,800	6.50	0	5	1,710	17,032	22,693	750
Pucci Chairlift, C-3	3,431	565	1,330	7.00	5	10	1,131	4,473	8,738	510
Molly's Chairlift, DC-4	5,237	829	1,200	7.00	0	10	1,080	6,264	12,968	480
Bruno's Chairlift, C-2	339	45	630	7.00	0	15	536	169	1,919	90
TOTAL	**30,782**		**9,860**				**8,786**	**58,947**		**3,990**

Source: SE Group
Notes:
C2 = fixed-grip double chairlift/ *C3* = fixed-grip triple chairlift / *DC4* = detachable four-passenger chairlift
Daily Lift Capacity values in this table differ from those found in the 2005 Timberline Express DEIS because of adjustments made in operating assumptions related to lift line waits, skier circulation patterns, etc. that better represent how skiers are distributed throughout the ski area complex.

a) Lift Network Efficiency

An important aspect of resort design is the balancing of uphill lift capacity with downhill trail capacity.

Within the context of ski area design efficiency, the term "Lift Network Efficiency" refers to the amount of effort and cost required to operate and maintain the lift network, as compared to the number of guests served by the lift network. The energy and costs related to the lifts include, but are not limited to: power use, operational labor, maintenance costs and labor, increased indirect administrative costs, and various direct and indirect costs associated with higher staff levels to perform these tasks. From this standpoint, the most efficient scenario is to have the fewest number of lifts possible that can comfortably and effectively serve the capacity and circulation requirements of the resort.

One way to analyze Lift Network Efficiency is to calculate the average CCC per lift at a given resort. While this calculation does not relate to the overall capacity of the resort, it can indicate if 1) the resort is not getting maximum utilization out of its lifts; or 2) if there are more lifts than necessary for the capacity levels of the resort. When calculating this average, conveyors used for teaching, as well as lifts that are used for access only, are not included. Optimally, and in general, the average CCC per lift would likely be close to 1,000 guests. Industry-wide, the average CCC per lift is approximately 650. The average CCC per lift at Timberline is 665. This rating is slightly above the industry-wide average, indicating that overall, the lift network efficiency is relatively good when compared to other ski areas.

2. PERSONS-AT-ONE-TIME

PAOT, by definition, is the number of guests accommodated by a resort, at any one time, which affords a high-quality experience and helps ensure sound stewardship of the land. In essence, PAOT is a guest population which is serviceable by the resort (i.e., attendance level where operations remain functional and optimal).

In the case of Timberline, the calculation of PAOT was identified to better understand the overall dynamics of Timberline as a resort and tourist attraction, not just the ski area operations alone. Specifically, the need to understand the constraining capacity of parking at Timberline has highlighted the need for this analysis. Timberline routinely attracts tourists and sightseers to the base area and Timberline Lodge due to their historic significance. This, in combination with other attractions (skiing, hiking, biking, climbing) and hotel guests, routinely creates an at-capacity parking situation that causes Timberline to turn would-be guests away at the foot of Timberline Road and direct them back onto the crowded Highway 26.

For this analysis, PAOT was categorized into five subcategories: skiers/riders, mountain bikers, Timberline Lodge and Silcox Hut overnight guests, tourists/general milling, hikers/mountaineers. These calculations were completed for both summer-mode and winter-mode operating seasons. (In general, summer-mode operations are when skiing is only offered on the upper mountain/Palmer Snowfield and mountain bike trails are open, and winter-mode operations are when the lower mountain and the Magic Mile Chairlift is fully operational. Typically, summer operations are defined by seven day a week operation between Memorial Day and Labor Day.)

For existing conditions during the winter months, the largest group of daily Timberline users are skiers and riders, with tourists being the second largest group, followed by climbers, and then hotel guests. The skiers PAOT is based on visitation on the 5th busiest day averaged over the past 5 seasons (2,231 skiers). The capacity of the Timberline Lodge is 220 guests at full occupancy. Only 44 guests are accounted for during winter-mode operations, because it was assumed the other Lodge guests were on the mountain skiing and riding and are captured in the skiers PAOT number. This analysis shows that during the winter season, an additional 29% of guests need to be accounted for in guest services functions, such as restaurant seating and base area parking, to comfortably accommodate the resort PAOT (i.e., the PAOT [2,869 guests] is approximately 29% higher than the skiers-at-one-time [2,231 skiers]).

Table 7. Persons-At-One-Time—Existing Conditions

Type of Guest	Winter	Summer
Skiers	2,231	750
Mountain Bikers	0	338
Hotel Guests	58	189
Tourists	350	350
Climbers + Hikers	230	530
TOTAL	**2,869**	**2,157**

Source: SE Group
Notes:
Skiers for winter account for all lifts except Palmer Chairlift, and summer skiers account for Palmer Chairlift only (summer PAOT for Magic Mile Chairlift is 0 because it is used only for access to Palmer Chairlift).
Mountain bikers are from the PAOT calculation in the Mountain Bike Trails and Skills Park EA.
Timberline Lodge guests are from 70 rooms/220 pillows, with 80% occupancy rate, and assumed 20% non-skiers in winter).
Silcox Hut guests are from 24 beds; 90% winter occupancy, 60% summer occupancy; and 65% winter non-skiers, 90% summer non-skiers/hikers/climbers.
Tourists PAOT is estimated at 350 in the summer and winter.
Winter and summer climbers are calculated by assuming 80% of peak climber counts (based on permits issued) of 285 people per day. Summer hikers are estimated at 300 per day.

PAOT represents the resort population at a single point in time during the day. Many of the non-ski activities do not extend over an entire day, and therefore daily visitation for these non-ski activities can be many times greater than the at-one-time population. In order to estimate total daily visitation at Timberline, each PAOT subcategory can be multiplied by an average turnover, which is based on the average duration of the stay. For example, if the average tourist visitor spends approximately 1.5 hours at Timberline, there is an average of six tourist turnovers per day (9-hour day divided by 1.5 hours per visit equals 6 individual visits.) The following table presents an estimated daily visitation level based on PAOT.

Table 8. Estimated Daily Visitation—Existing Conditions

Type of Guest	Winter			Summer		
	PAOT	Average Turnover	Estimated Daily Visits	PAOT	Average Turnover	Estimated Daily Visits
Skiers	2,231	1	2,231	750	1	750
Mountain Bikers	0	3	0	338	3	1,014
Hotel Guests	58	1	58	189	1	189
Tourists	350	6	2,100	350	6	2,100
Climbers	230	1	230	530	1	530
TOTAL	**2,869**		**4,619**	**2,157**		**4,583**

Source: SE Group

E. EXISTING GUEST SERVICES FACILITIES, FOOD SERVICE SEATING & SPACE USE ANALYSIS

1. GUEST SERVICES

Guest services are currently provided in Timberline's base area and on-mountain. The base area services are primarily at the Wy'East Day Lodge. The Day Lodge provides full ski area facilities including beginning of day services (ticketing, rentals, retail, ski school), food and beverage service/seating, ski patrol/first aid, and administrative functions. In addition to the Wy'East Day Lodge, the Phlox Point Cabin offers on-mountain warming hut and food service and the Silcox Hut provides additional bed-and-breakfast lodging on-mountain. Overnight guests at the Silcox Hut are transported to the hut via snow cats and provided dinner and breakfast.

The existing guest service space allocations at Timberline are generally considered adequate for current PAOT visitation levels (2,869 skiing and non-skiing guests). The Wy'East Day Lodge is a spacious building that has several restaurants and services. On-mountain guest services are limited at Timberline, requiring most guests to return to the base area for services. This can result in a less desirable guest experience.

If Timberline were to achieve skier visitation levels that are in line with the CCC of 3,990, then additional guest service space would need to be provided.

Space Use Planning

To provide a balanced resort experience, sufficient guest service space should be provided to accommodate the existing resort CCC. The distribution of the CCC is utilized to determine guest service capacities and space requirements at base area and on-mountain facilities. The CCC should be distributed between each guest service facility location according to the number of guests that would be utilizing the lifts and terrain associated with each facility.

In addition to distributing the CCC amongst the base area and on-mountain facilities, guest service capacity needs and the resulting spatial recommendations are determined through a process of reviewing and analyzing the current operations to determine specific guest service requirements that are unique to the resort. Service functions include:

- *Restaurant Seating: All areas designated for food service seating, including: restaurants, cafeterias, and brown bag areas. Major circulation aisles through seating areas are designated as circulation/waste, not seating space.*
- *Kitchen/Scramble: Includes all food preparation, food service, and food storage.*
- *Bar/Lounge: All serving and seating areas designated as restricted use for the serving and consumption of alcoholic beverages. If used for food service, seats are included in seat counts.*
- *Restrooms: All space associated with restroom facilities (separate women, men, and employees).*
- *Guest Services: Services including resort information desks, kiosks, and lost and found.*
- *Adult Ski School: Includes ski school booking area and any indoor staging areas. Storage directly associated with ski school is included in this total.*
- *Kid's Ski School: Includes all daycare/nursery facilities, including booking areas and lunch rooms associated with ski school functions. Storage and employee lockers directly associated with ski school are included.*
- *Rentals/Repair: All rental shop, repair services, and associated storage areas.*
- *Retail Sales: All retail shops and associated storage areas.*
- *Ticket Sales: All ticketing and season pass sales areas and associated office space.*
- *Public Lockers: All public locker rooms. Any public lockers located along the walls of circulation space are included, as well as the 2 feet directly in front of the locker doors.*
- *Ski Patrol/First Aid: All first aid facilities, including clinic space. Storage and employee lockers directly associated with ski patrol are included in this total.*
- *Administration/Employee Lockers & Lounge/Storage: All administration/ employee/storage space not included in any of the above functions.*

2. SPACE USE ANALYSIS

Based upon a winter PAOT of 2,869 guests, Table 9 presents the recommended space use allocations for Timberline in accordance with industry standards for a resort of similar market orientation and regional context. Square foot figures contained in this table are based on industry averages; they should not be considered absolute requirements.

Table 9. Space Use Recommendations—Resort Total—Existing Conditions

Service Function	Recommended Range	
	Low	High
Ticket Sales/Guest Services	500	610
Public Lockers	1,510	1,840
Rentals/Repair	3,570	4,020
Retail Sales	1,280	1,570
Bar/lounge	1,930	2,360
Adult Ski School	800	980
Kid's Ski School	1,610	1,960
Restaurant Seating	11,790	14,410
Kitchen/Scramble	9,430	11,530
Rest rooms	2,360	2,880
Ski Patrol	940	1,150
Administration	1,280	1,570
Employee Lockers/Lounge	510	630
Storage	1,690	2,500
Circulation/Waste	6,750	10,010
TOTAL SQUARE FEET	**45,950**	**58,020**

Source: SE Group

Guest services spaces at Timberline (including Wy'East Day Lodge, Phlox Point Cabin, and the public guest services space in Timberline Lodge) total 55,737 square feet, which is in line with the recommended allocation.

For Timberline to achieve skier visitation levels that are in line with the CCC of 3,990, while continuing to serve its other non-skiing guests, additional guest service space would need to be provided. This analysis demonstrates that the current amount of guest services space at Timberline is a limiting factor to the resort achieving its potential skier capacity.

3. FOOD SERVICE SEATING

Timberline food services are primarily located in the base area with limited on-mountain food service at Phlox Cabin. The base area food services are offered at Ram's Head, Cascade Dining Room, Blue Ox Bar, Day Lodge Y'Bar and deck, and Wy'East Café. To accommodate the current winter PAOT capacity (including skiers and non-skiing guests), Timberline should provide 813 seats to accommodate the lunchtime capacity. Based on Timberline's 718 currently available seats, the resort would need an additional 95 seats.

Table 10. Restaurant Seats—Existing Conditions

	Base Area	Phlox Cabin	Total Resort
PAOT	2,681	188	2,869
Average Seat Turnover	3.5	4	
Existing Seats	688	30	718
Required Seats	766	47	813
Difference	-78	-17	-95

Source: SE Group
Notes:
Outdoor/sundeck seating was included in the existing seat count.
Silcox Hut seating was not counted because lunch service is not provided.

For Timberline to achieve skier visitation levels that are in line with the CCC of 3,990, while continuing to serve its other non-skiing guests, a total of about 1,200 restaurant seats would be required or about 480 more than currently exist. This analysis demonstrates that the current number of restaurant seats at Timberline is a limiting factor to the resort achieving its potential skier capacity.

F. EXISTING PARKING CAPACITY

Parking at Timberline is provided in six parking lots in or near the base area and between the Main Lot and the Maintenance Lot on Timberline Road. Approximately 1,100 parking spaces are available with most of the parking spaces being located in the Main Lot to the east of Wy'East Day Lodge (510 spaces). The existing parking lots are used by all resort guests and approximately 160 spaces are used by Timberline employees.

During the winter months, the parking lots typically fill up every weekend from Thanksgiving to Memorial Day, plus on holidays, by approximately 9:00 a.m. During these busy periods, Timberline has had to turn cars away due to limited parking, while on-mountain facilities (lifts, trails, on-mountain guest services, etc.) have been observed to have available capacity. There are typically low skier densities and short lift lines on busy days, which demonstrates that visitation and PAOT is being limited by the parking capacity.

During the summer months, the parking lots fill up on peak days; however, user groups arrivals and departures are better spaced out during the summer. Typically, skiers and riders depart the mountain about the same time hikers, tourists and sightseers are arriving. Bike park users arrive and depart continuously throughout the day. Despite this complementary use of parking

spaces, the constant turning over of spaces, during both winter and summer, creates traffic congestion and inefficient use of available parking (i.e., not all available parking spaces are being continually occupied throughout the day), thereby reducing the overall parking capacity by some 10 percent. According to parking counts conducted during the 2008/09 and 2009/10 winter seasons, the peak observed parking capacity at Timberline was 1,016 vehicles.[7]

In addition to accommodating skiers and riders, the Timberline base area facilities must also accommodate a number of other user groups throughout the year, including Timberline Lodge overnight guests, mountain bikers, hikers and mountaineers and tourists. Timberline also does not have an exclusive use permit and shares the parking lot with the Mazamas Climbing Club and other permittees, which run big outing programs out of the parking facilities for the Boy Scouts, the Portland Parks and Recreation programs, and organized climbs. These other organized groups can consume 30 to 50 parking spaces on busy days.

Transportation is a known issue to Timberline due to its multiple functions and popular tourist destination. A guiding document for transportation in the region is the Mt. Hood Multimodal Transportation Plan.[8] The Plan identifies in Group C (third highest priority projects) a Government Camp Intermodal Hub for automobiles and alternative transportation connections and an aerial transportation link project between Mt. Hood Skibowl, Government Camp, and Timberline. These projects would alleviate pressure of traffic on the Timberline Road and parking at the Timberline base area.

To help alleviate the demand for parking at the base area, Timberline started a free shuttle service during the 2017/18 season. The shuttle operates on weekend and holidays from Government Camp to Timberline Lodge. Mt. Hood Express bus service also operates daily from the City of Sandy east to Timberline Lodge.

Table 11. Recommended Parking—Existing Conditions

	Total
PAOT	2,869
Number of guests arriving by car (90% of PAOT)	2,582
Number of guests arriving by shuttle service (10% of PAOT)	287
Required car parking spaces (average 2.7 guests per car)	956
Required employee car parking spaces	160
Total required spaces	1,116
Existing parking spaces	1,100
surplus/deficit	**-16**

Source: SE Group

[7] David Evans and Associates, Inc. 2010. Timberline Lodge – Molly's Base Area Traffic Impact Study
[8] David Evans and Associates, Inc. 2014. Mt. Hood Multimodal Transportation Plan: 2014–2029 15-Year Rolling Plan. https://www.oregon.gov/ODOT/Projects/Project%20Documents/Final-Plan-MHMTP.pdf

As shown in Table 11, the existing parking capacity at Timberline is closely balanced with the PAOT capacity. **This analysis clearly demonstrates that Timberline's existing parking capacity is the definitive limiting factor** ***that establishes the resort PAOT of 2,869 skiing and non-skiing guests*****.**

For Timberline to achieve skier visitation levels that are in line with the CCC of 3,990, while continuing to serve its other non-skiing guests, a total of about 1,500 parking spaces would be required or about 400 more than currently exist. This analysis demonstrates that the current number of parking spaces at Timberline is a limiting factor to the resort achieving its potential skier capacity.

This deficiency creates a challenging parking situation at Timberline. Additional parking or an additional ski area portal would help Timberline operate at full capacity and prevent the need to turn would-be guests away at the foot of Timberline Road and direct them back onto the crowded Highway 26. Without additional parking or a change in the status quo, Timberline will continue to operate under capacity due to the lack of available parking for skiers and other guests.

G. EXISTING RESORT OPERATIONS

1. SKI PATROL/FIRST AID

The Timberline Ski Patrol is based out of the Wy'East Day Lodge with outposts across the mountain. The team is supported by Mt. Hood Ski Patrol, a 300-patroller volunteer group that supports Mt. Hood Meadows, Mt. Hood Skibowl, Summit Ski Area, Timberline and Teacup Nordic (a dedicated Nordic ski center).

2. MAINTENANCE FACILITIES

Timberline's maintenance functions operate out of the maintenance facility located along Timberline Road to the southeast of the Wy'East Day Lodge. The existing maintenance facility is severely undersized for the operational needs of the resort and should be replaced or expanded.

3. SNOWMAKING

Timberline has minimal existing snowmaking coverage in the Bruno's area. The existing snowmaking operation at Bruno's consists of two fan snow guns, that draw water from nearby fire hydrants at the Wy'East Day Lodge, and deposit snow at the top of Bruno's slope. After large snow piles are made at the top of the slope, snow groomers spread the snow down the slope to the base of Bruno's covering an area of about 1.4 acres.

On May 25, 2011, in response to an application by the U.S. Forest Service, the State of Oregon Water Resources Department, Water Right Service Administrator authorized a change of the character of water use at Timberline from domestic to commercial, which authorizes the water to be used for snowmaking purposes.

4. NIGHT LIGHTING

Night skiing is available at Timberline on Fridays and Saturdays, as well as during the holiday season, from 4:00 p.m. to 10:00 p.m. on Bruno's, as well as the Molly's Chairlift and Pucci Chairlift pods. The runs that are currently covered with lighting are: Vicky's Run, Wy'East, Main Run Pucci, Thunder, Bob Elmer, and Wingle's Wiggle. These runs account for 28.5 acres of night skiing and support a night skiing CCC of about 1,000 skiers.

5. MOUNTAIN ROADS

The mountain road system provides access to the top of Timberline and various locations across the mountain on about 8 miles of roads (refer to Figure 5). In general, the mountain roads provide reasonable access to the existing facilities for maintenance and support activities. Two types of roads exist within the ski area boundary; R.L.K and Company maintained roads and NFS roads which are maintained by the USDA Forest Service.

Table 12. Mountain Roads—Existing Conditions

Road Segment	NFS Maintained Roads (miles)	R.L.K. Roads (miles)
Silcox Hut	1.0	--
Water Tank	--	0.4
Magic Mile	--	1.6
Palmer Base	--	0.1
Magic Mile Base Loop	--	0.1
Stormin' Norman	--	1.0
West Leg	2.9	--
Phlox Point	--	0.3
Molly's Base	--	0.3
Pucci's Base	--	0.1
Water Supply	--	0.2
TOTAL	**3.9**	**4.1**

Source: SE Group

6. INFRASTRUCTURE

See Figure 6 for a map showing the location of existing utilities at Timberline.

a) Power and Communications

Existing power and communications lines provide interconnected service to all major facilities: Timberline Lodge, Wy'East Day Lodge, Silcox Hut, all lift terminals, water supply pump house, maintenance facility and sewage treatment facility. Power and communication lines are a combination of above-ground and buried. Timberline has redundant power sources, one along Timberline Road and one along West Leg Road.

b) Water

Timberline's water source is a horizontal well tapping a natural spring located roughly 1.3 miles below Timberline Lodge, at the 5,000-foot level of the mountain (accessed by the West Leg Road). There is an 8,000-gallon collection tank there and a wooden A-frame pump house where water is pumped to a 257,000-gallon domestic water tank and an 80,000-gallon fire suppression tank located upslope from the Timberline Lodge.

The lodge is sprinkled inside, and there is proper backflow prevention and valving that allows use of all 337,000 gallons to fight fire. Water is accessed through six fire hydrants, four around the lodge and two by the day lodge. The Timberline Lodge swimming pool can also be used to draw fire fighting water.

Water from the domestic water tank is directed to Timberline Lodge, and from there distributed to the other base area buildings and Alpine Campground. Water is also pumped from the domestic water tank to a 4,000-gallon tank that provides water to Silcox Hut.

Phlox Point Cabin does not have its own water supply. For operational purposes, five gallons of potable water are transported to the hut on a daily basis.

c) Wastewater

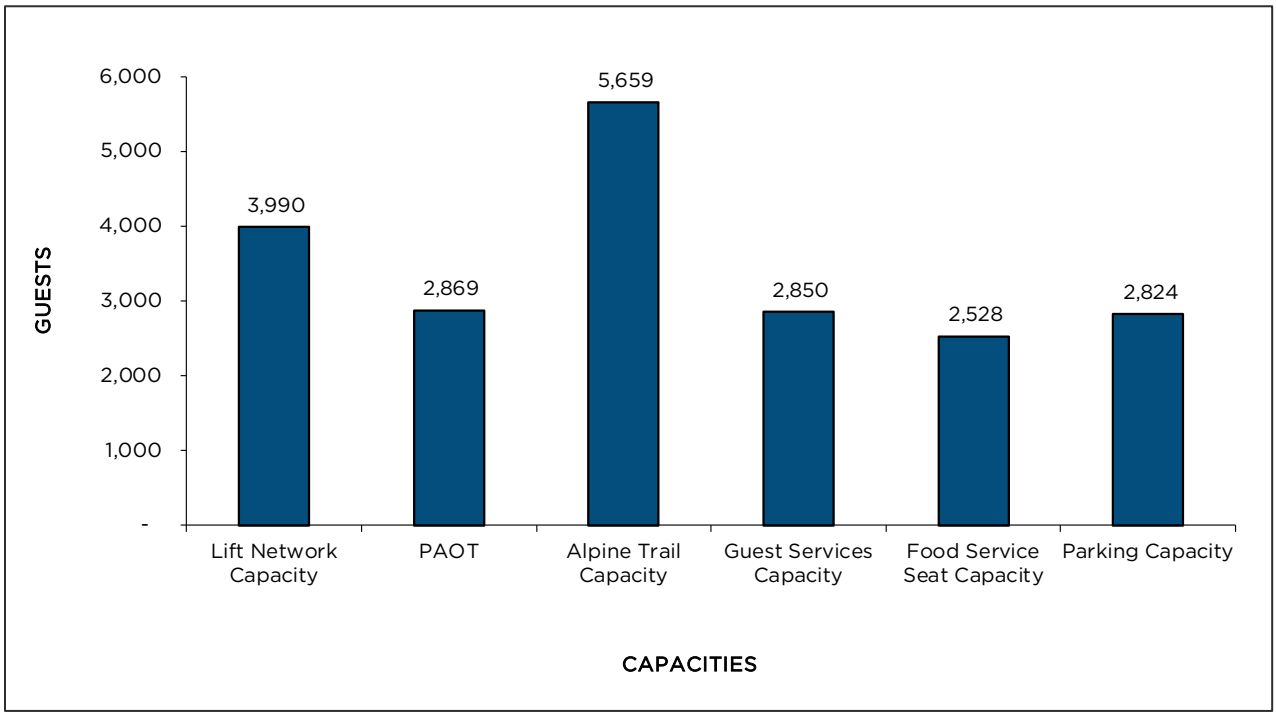
Wastewater from Timberline Lodge, Wy'East Day Lodge and the maintenance facility is treated at the sewage treatment facility adjacent to the maintenance facility, and effluent is piped to a series of drain fields located approximately 0.25 mile to the east-southeast of the treatment facility. Wastewater from Silcox Hut is directed to a small drain field adjacent to the hut.

Residual wastewater from Phlox Point Cabin is collected and transported back to the sewage treatment plant on a daily basis.

H. RESORT CAPACITY BALANCE AND LIMITING FACTORS

Timberline on-mountain facilities currently operate well under existing conditions. The lift and terrain network can easily handle the current visitation levels (2,200 to 2,400 guests on capacity days and around 3,100 guests on peak days). Other aspects of Timberline's operations, specifically parking, restaurant seating, and guest service space are restricting Timberline from reaching its full potential and depressing visitation through limited capacity. Timberline wants to realize better utilization of the resort facilities by addressing the existing deficiencies. There is sufficient mountain (lift and ski terrain) capacity to handle an increase of around 1,700 people per day on capacity days and 900 people per day on peak days. This MDP outlines what would be required to bring the capacities of the other resort components up to meet the need for visitation levels that are in line with the resort's CCC and PAOT. The following chart shows these relationships.

Chart 2. Resort Capacity—Existing Conditions



I. MULTI-SEASON ACTIVITIES

1. SUMMARY OF THE EXISTING MULTI-SEASON ACTIVITIES AND THE GUEST EXPERIENCE

In addition to skiing and riding in the winter season, Timberline offers a variety of summer recreation activities. These expand the recreation experience at Timberline by offering enjoyable opportunities to those who want to experience Mt. Hood National Forest in a non-winter setting. Many guests come to take in the views and explore all that northern Oregon has to offer in a mountain setting. Activities include summer skiing and snowboarding (Timberline has the longest ski season available in North America), mountain biking, scenic lift rides, mountain climbing, and hiking. Refer to Figure 7 for existing non-winter conditions at Timberline.

These offerings provide a variety of activities for guests to choose from. However, with the nearby large population center of Portland, there is significant demand for recreation opportunities in the Mt. Hood National Forest during the summer and shoulder seasons. Mt. Hood is the closest high-altitude peak within northern Oregon and as a result, is a highly-valued destination for residents and tourists alike. While there are opportunities that exist at Timberline for summer recreation, continued expansion of these opportunities will only draw more guests.

2. SUMMER SKIING AND SNOWBOARDING

Timberline is known for its summer skiing, which is typically available from June through August on the Palmer Snowfield. In ideal snow years, the lifts are open 11 months (October through August). Maintenance typically occurs in September. Summer skiing is open to intermediate and more advanced public skiers and snowboarders, as well as ski and snowboard camps. These camps are a significant portion of the summer recreation opportunities at Timberline. Timberline itself offers performance youth race camps, family race camps, masters adult race camps, and freestyle camps. Other camps and groups also use the snowfield, including organized ski camps and Olympic training organizations.

3. MOUNTAIN BIKING

Timberline is in the process of developing a network of lift-assisted mountain biking trails and a skills bike park. The first phase has recently been completed, with the Timberline Bike Park crew completing 7 to 10 miles of easy, intermediate, and advanced trails. The current green trail is approximately 4.5 miles long. Timberline uses the Jeff Flood-Still Creek Chairlift to transport riders and bikes to the top of the trail system. The trail system traverses the terrain served by the Jeff Flood-Still Creek Chairlift and uses switchbacks, wooden bridges, natural landscape contours, grade-reversals, dips, and other techniques to keep riders on the trail and to control their speed. Upon completion, the bike park will consist of trails and features for all ability levels as well as a skills park. The first phase of mountain bike trails was opened to the public during fall of 2018, and the Bike Park Grand Opening is scheduled for summer 2019.

4. SCENIC LIFT RIDES

The Magic Mile Chairlift is open for summer lift rides to an elevation of 7,000 feet where guests can view Mt. Hood, the Palmer Snowfield, and south to Mt. Jefferson. Guests must purchase a ticket to use the lift and can choose to ride up and down, or ride up and walk down.

5. MOUNTAIN CLIMBING

As a developed recreation site, Timberline provides the most easily accessible jump-off spot for alpine climbing of any major volcano in the Cascade Range. The popular south side route is accessed from the Timberline area. Alpine style climbing takes place all year long, with the majority of climbs occurring between May and late September. While climbers rarely patronize the services offered at Timberline Lodge, they are drawn to the easy access, free bathroom facilities, and climbers registration room in the Wy'East Day Lodge.

6. HIKING

Timberline is a jumping off point for a variety of hiking trails within the Mt. Hood National Forest. Within the existing operational boundary, Timberline offers a variety of shorter waking trails that start behind the Timberline Lodge. The trails also offer a hike that travels approximately 1 mile up Mt. Hood, where guests can enjoy the views from Silcox Hut and the Palmer Chairlift. Timberline is also connected to a variety of other, longer trails that extend beyond the operational boundary, including the 39-mile Timberline Trail and the Pacific Crest Trail.

a) Pacific Crest National Scenic Trail

The Pacific Crest Trail (PCT), which spans 2,650 miles from Mexico to Canada through California, Oregon, and Washington, intersects Timberline. Timberline serves as a resupply point for many PCT thru-hikers as well as a starting or end point for those hiking the trail in segments. Timberlines hospitality and Cascade Dining Room food are legendary among PCT thru-hikers.

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CHAPTER 4—
PREVIOUSLY-ACCEPTED PROJECTS, NOT YET IMPLEMENTED

The projects detailed in this section have been previously accepted through prior MDP documents with some having been analyzed through the NEPA review process, and all have not yet been implemented. It is anticipated that the majority of these projects will ultimately be implemented as capital for on-mountain improvements becomes available. Prior to project implementation, the Forest Service will complete all NEPA analyses if not yet completed, review project consistency with Forest Plan standards and guidelines, and determine if additional analysis is warranted due to new or changed conditions.

Previously-accepted projects include:

- 2019 Pucci Chairlift Replacement Categorical Exclusion
- 2012 Timberline Mountain Bike Trails and Skills Park Environmental Assessment
- 2009 Timberline Conceptual Master Plan: Molly's Portal
- 2009 Welcome Plaza
- 1998 Master Plan Amendment Environmental Assessment: Vehicle maintenance shop and ski patrol headquarters

Refer to Figure 8 for previously accepted projects at Timberline.

A. PUCCI CHAIRLIFT REPLACEMENT

Pucci and Bruno's chairlifts are the oldest chairlifts at Timberline. The Pucci Chairlift replacement proposal was accepted in December 2018 by the UDSA Forest Service and the application is pending a 2019 categorical exclusion process. The original chairlift was installed in 1956 and replaced in 1987 with the current chairlift. This fixed-grip triple chairlift has a capacity of 1,330 pph. The bottom terminal is located at an elevation of 5,350 feet and the top terminal is located at an elevation of 5,915 feet.

The Pucci Chairlift would be replaced as a detachable quad with an hourly capacity of 1,800 pph. The chairlift replacement would use the existing lift corridor, resulting in the same slope length and elevation gain as the existing lift and would use eleven out of the twelve existing lift towers. The replacement would add two new towers: one adjacent to the top terminal and the other near the bottom terminal.

The replacement was proposed to facilitate easier and more efficient loading and unloading, which would result in fewer chairlift stoppages due to misloading. The chairlift ride would also be faster than the current lift, reducing ride time from approximately 6.5 minutes to 4.5 minutes. In addition, as the Pucci Chairlift serves as a "step up" from the beginner terrain, providing a more user-friendly chairlift will enhance the beginner and intermediate skier/snowboarder experience. Due to the slight increase in Pucci Chairlift's hourly capacity, overall resort CCC would increase slightly from 3,990 to 4,030 guests following the Pucci Chairlift replacement.

Table 13. Chairlift Specifications—Existing and Previously Accepted

Lift Name, Lift Type	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (pph)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
Stormin' Norman Chairlift, DC4	6,248	5,464	784	4,411	18%	1,500	1,000	160	Doppelmayr/2000
Jeff Flood-Still Creek Chairlift, DC4	6,027	4,847	1,180	6,539	18%	1,800	1,000	133	Doppelmayr/2007
Magic Mile Chairlift, DC4	6,988	5,915	1,073	5,333	21%	1,600	950	143	Poma/1992
Palmer Chairlift, DC4	8,484	6,952	1,532	5,492	29%	1,800	1,000	133	Doppelmayr/1996
Pucci Chairlift, DC4	5,915	5,350	565	3,431	17%	1,800	1,000	133	TBD
Molly's Chairlift, DC4	5,815	4,986	829	5,237	16%	1,200	1,000	200	Doppelmayr/2000
Bruno's, C2	5,885	5,840	45	339	13%	630	300	57	Poma/1987

Source: SE Group
Notes:
C2 = fixed-grip double chairlift / *DC4* = detachable four-passenger chairlift

B. MOUNTAIN BIKE TRAILS AND SKILLS PARK

As part of the 2012 Timberline Mountain Bike Trails and Skills Park Environmental Assessment (EA), the Forest Service approved a lift-assisted mountain biking trail system and skills park. The trail system and skills park were included as an amendment to the 2009 Master Plan and approved with an EA to be constructed over three summer phases.

The project would use a modified chairlift to bring riders and their mountain bikes to the top of the trail system. The lift-assisted mountain biking would use trails between 16 and 66 inches in width to descend from the top of the ski lift to the bottom, using turns and following natural contours as they cross though ski runs and the areas between them at a much less steep grade than the ski runs themselves. Grade-reversals, dips, and other techniques would be used to control speed, keep riders on the trail, and maintain the trails and the natural resources they pass through. The purpose of the project is to develop a high-quality mountain bike park that would appeal to families and feature predominantly beginner and intermediate level trails for riders to learn and improve on. The lift-assisted mountain biking would diversify summer recreation opportunities as well as capitalize on existing infrastructure beyond just the ski season.

Construction of the bike trails and skills park will follow Northwest Forest Plan best management practices, as outlined in the EA. Restoration projects were also proposed at this time to correct existing sedimentation issues in the West Fork Salmon River and Still Creek watersheds resulting from the roads and ski area facilities.

C. MOLLY'S PORTAL

Molly's Portal was put forth and previously accepted in the 2009 Conceptual Master Plan. See Chapter 5 for details.

D. WELCOME PLAZA

In 2009, at the direction of the USDA Forest Service, R.L.K. and Company was asked to participate in a formal design review with Henebery Eddy Architects of Portland, Oregon to address design deficiencies at the egress to Timberline Lodge, with specific focus being put on the east end main entrance to the Wy'East Day Lodge. A complete design package was completed late in 2009, and in 2010 the project was funded by a Federal Highways FLAP Grant. The project however failed to deploy within the grant's time period, and expired. FLAP Grant funding has now been restored and is scheduled for a secondary and cursory design review in 2019, and construction is scheduled for the summer of 2020. The main focus of the design is to improve the functionality and safety at the junction of Timberline Road and its confluence and relationship with the "crescent" parking lot and drop off area at the Day Lodge, the "chute" approach road to Timberline Lodge, and the main lower parking lot. The multi-purpose intent is to reduce confusion amongst drivers (both entering and leaving the Timberline complex), better organize vehicular and pedestrian circulation at the arrival area, provide directional signage for both vehicles and pedestrians, provide a better "path of travel" accessing local trails and the Day Lodge, and enhance the aesthetic "curb appeal" and "sense of arrival" to Timberline during all seasons of the year.

E. MASTER PLAN AMENDMENT – VEHICLE MAINTENANCE SHOP AND SKI PATROL HEADQUATERS

As part of the 1998 Timberline Lodge Master Plan Amendment EA, a new vehicle maintenance shop, storage space, and ski patrol headquarters was conceptually approved.

The existing maintenance shop lacks the space for sufficient vehicle maintenance facilities, and room to store the ski area's support equipment and supplies, which are presently stored in the open along the egress route from Timberline Lodge. In addition, the existing first aid/ski patrol base is currently in a small room in the Wy'East Day Lodge. This inhibits the ski patrol's ability to access the ski area and transport injured visitors because of the lack of space and congestion between skier vehicle traffic and rescue vehicles.

The proposed maintenance shop and storage facility would expand the existing maintenance facility by approximately 10,000 square feet and most likely be located immediately south of the existing maintenance shop (or be accomplished with an addition to the existing building). The building would allow the support equipment and other supplies to be stored inside, which would improve the scenic quality of the area. It would also provide a larger space and a better location for the first aid/ski patrol headquarters, which would allow ski patrol to perform its duties more efficiently as well as eliminate congestion caused by emergency care and search and rescue vehicles operating from the Day Lodge.

Table 14. Master Development Plan Previous NEPA Approvals Tracking Matrix

Project	Date and Title of Approving Document
Pucci Chairlift Replacement	2019 Pucci Chairlift Replacement Environmental review scheduled to start in CY 2019
Mountain Bike Trails and Skills Bike Park	Timberline Mountain Bike Trails and Skills Park Environmental Assessment Decision Notice and Finding of No Significant Impact November 2012
Molly's Portal	NEPA to be completed; no scheduled start date
Welcome Plaza	NEPA to be completed; no scheduled start date
Vehicle Maintenance Shop	1998 Master Plan Amendment Environmental Assessment Decision Notice and Finding of No Significant Impact

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CHAPTER 5—UPGRADE PLAN

The proposed Upgrade Plan for Timberline builds upon previous planning and approvals at the resort to continue the evolution of the recreational experience and better accommodate the growth in winter time skier and rider visits at Timberline.

The three primary projects of the Upgrade Plan include: Molly's Portal, expansion of the snowmaking system, and re-grading and reconfiguration of the Bruno's beginner area.

This section responds to the findings of the existing conditions analysis, with the assumption that the improvements from Chapter 4 will be implemented. Accordingly, the Upgrade Plan is tailored to improve Timberline's ability to respond to its market/skier demands through the increase in visitation, better utilization of available terrain, increased capacity of guest service facilities, and development of additional mountain bike trails and a skills park. The projects in the Upgrade Plan are anticipated to be completed over the next ten to twelve years, depending on environmental analysis timeframe for certain projects.

The examination of facilities presented in this chapter correlates with Figures 9–11.

A. UPGRADED LIFT NETWORK

The upgrade plan includes new lift installations that will enhance the learning progression and make better use of the available terrain at Timberline.

1. NEW LIFT INSTALLATIONS – BRUNO'S AREA

The Upgrade Plan includes the removal of the existing Bruno's Chairlift (a fixed-grip double) and replacing it with three carpets.

a) Beginner Surface Lifts

In order for Timberline to achieve its goal of providing excellent customer service, and to accommodate entry level skiers with a quality first time experience and learning environment, a reconfiguration of the Bruno's beginner hill is necessary to improve the progression from first time on skis to initiating controlled turns on steeper slopes for speed control. Some re-grading of the previously imported top soils would be employed to provide a slope more conducive to instructing first time skiers and snowboarders, and to provide grades to enhance their progression of skills. The goal would be to provide a consistent grade optimal for beginner level skiers, as well as some varying terrain grades where skiers can best start and stop on their own, while learning to control their speed. Two new carpet lifts would be installed to provide optimal use of the terrain, and the existing Bruno's Chairlift would be replaced with a new carpet that is aligned to take greater advantage of the slope length available at this area. The progression of slope gradients from the shortest carpet to the longest would be 8 to 10 percent (4 to 6 degrees) on the short carpet for first-timers; 10 to 12 percent (6 to 7 degrees) on the middle carpet for developing beginners; and 12 to 16 percent (7 to 9 degrees) on the Bruno's replacement carpet for advanced beginners.

A 250-foot snow-tubing surface lift is also planned in the Molly's Portal snowplay zone.

2. COMPLETE UPGRADED LIFT NETWORK SPECFICATIONS

The specifications of the complete upgraded lift network are depicted in Table 15.

Table 15. Lift Specifications—Upgrade Plan

Lift Name, Lift Type	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Capacity (pph)	Rope Speed (fpm)	Carrier Spacing (ft.)	Lift Maker/ Year Installed
Stormin' Norman Chairlift, DC4	6,248	5,464	784	4,411	18	1,500	1,000	160	Doppelmayr/2000
Jeff Flood-Still Creek Chairlift, DC4	6,027	4,847	1,180	6,539	18	1,800	1,000	133	Doppelmayr/2007
Magic Mile Chairlift, DC4	6,988	5,915	1,073	5,333	21	1,600	950	143	Poma/1992
Palmer Chairlift, DC4	8,484	6,952	1,532	5,492	29	1,800	1,000	133	Doppelmayr/1996
Pucci Chairlift, DC4	5,915	5,350	565	3,431	17	1,800	1,000	133	TBD
Molly's Chairlift, DC4	5,815	4,986	829	5,237	16	1,200	1,000	200	Doppelmayr/2000
Bruno's I, Carpet	5,887	5,877	10	110	9	600	150	15	TBD
Bruno's II, Carpet	5,873	5,845	23	231	10	600	150	15	TBD
Bruno's III, Carpet	5,885	5,832	53	354	15	600	150	15	TBD

Source: SE Group
Notes:
DC4 = detachable four-passenger chairlift
Four surface lifts of variable lengths are installed on the Palmer Snowfield for summer ski operations
A surface lift at the Molly's Portal is proposed for snow-tubing use only

B. UPGRADED TERRAIN NETWORK

The terrain network under the Upgrade Plan is essentially the same as under existing conditions. The two exceptions are the grading required and slight expansion of beginner slopes at the Bruno's area, that increases total trail area from 539 to 541 acres, and any grading required to connect the Molly's Portal with the existing terrain network. A complete terrain specification table can be found in Appendix A, Table A.2.

C. UPGRADED CAPACITY ANALYSIS

1. COMFORTABLE CARRYING CAPACITY

The calculation of Timberline's CCC under the Upgrade Plan is an important measure by which the resort's guest service facilities can be evaluated and planned. Due to the parking and restaurant seating limitations, Timberline's existing CCC of 3,990 guests per day is not exceeded throughout the season, and the resort's effective CCC, or skier PAOT, is about 2,200 guests. A primary goal of this MDP and the Upgrade Plan is to outline changes and improvements that would be required to bring the capacities of all resort components into balance so that the potential CCC of the resort can be realized. Refer to Table 16 for detailed CCC calculations.

Table 16. Daily Lift Capacity—Upgrade Plan

Lift Name, Lift Type	Slope Length (ft.)	Vertical Rise (ft.)	Actual Capacity (pph)	Operating Hours (hrs.)	Up-Mountain Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly (pph)	VTF/Day (000)	Vertical Demand (ft./day)	Daily Lift Capacity (guests)
Stormin' Norman Chairlift, DC4	4,411	784	1,500	7.00	0	10	1,350	7,413	12,730	580
Jeff Flood-Still Creek Chairlift, DC4	6,539	1,180	1,800	7.00	0	10	1,620	13,380	14,298	940
Magic Mile Chairlift, DC4	5,333	1,073	1,600	7.00	10	5	1,360	10,216	15,968	640
Palmer Chairlift, DC4	5,492	1,532	1,800	6.50	0	5	1,710	17,032	22,693	750
Pucci Chairlift, DC4	3,431	565	1,800	7.00	5	10	1,530	6,053	11,003	550
Molly's Chairlift, DC4	5,237	829	1,200	7.00	0	10	1,080	6,264	12,968	480
Bruno's I, Carpet	110	10	600	7.00	0	10	540	38	1,080	40
Bruno's II, Carpet	231	23	600	7.00	0	10	540	87	1,551	60
Bruno's III, Carpet	354	53	600	7.00	0	10	540	200	2,587	80
TOTAL	**31,139**		**11,500**				**10,270**	**60,683**		**4,120**

Source: SE Group
Notes:
Daily Lift Capacity values in this table differ from those found in the 2005 Timberline Express DEIS because of adjustments made in operating assumptions related to lift line waits, skier circulation patterns, etc. that better represent how skiers are distributed throughout the ski area complex

2. PERSONS-AT-ONE-TIME

As discussed in Chapter 3, PAOT is a snap shot of the resort visitation at a given point in time and accounts for both skiing and non-skiing guests.

For this analysis, PAOT was categorized into five subcategories: skiers/riders, mountain bikers, Timberline Lodge and Silcox Hut overnight guests, tourist/general milling, hikers/mountaineers. These calculations were completed for both summer and winter seasons.

For the Upgrade Plan during the winter months, the largest group of at-one-time Timberline users are skiers and riders, with snow players being the second largest group, followed by tourists, then climbers, and then hotel guests. The upgrade skiers PAOT is 3,370, based on the upgrade plan overall CCC number (4,120) less the Palmer Chairlift CCC (750), which infrequently operates in the winter due to inhospitable weather and unfavorable operating conditions. The capacity of the Timberline Lodge is 220 guests at full occupancy. Only 44 guests are accounted for in the winter PAOT calculation, because it was assumed the other Lodge guests were on the mountain skiing and riding and are captured in the skiers PAOT number. This analysis shows that during the winter season, an additional 31 percent of guests need to be accounted for in guest services functions, such as restaurant seating and base area parking, to comfortably accommodate the resort PAOT (i.e., the overall PAOT [4,408 guests] is approximately 31 percent higher than the skiers-at-one-time [3,370 skiers]).

During the summer months, the largest at-one-time user group is still skiers and riders, but to a lesser extent than in winter, with the second largest group being climbers, then tourists, then mountain bikers, and finally hotel guests. During these busy periods, facilities are less stressed due to the timing of each user group using the facilities. Typically, skiers and riders in the summer take advantage of the cold night and hard snow conditions in the early morning. They typically leave the mountain around noon, when tourist and day hikers might be arriving at the base area. In this regard, the turnover of the parking facilities works in favor of Timberline.

Table 17. Persons-At-One-Time—Upgrade Plan

Type of Guest	Winter	Summer
Skiers	3,370	750
Snow Players	400	0
Mountain Bikers	0	338
Hotel Guests	58	189
Tourists	350	350
Climbers + Hikers	230	530
TOTAL	**4,408**	**2,157**

Source: SE Group
Notes:
Skiers for winter account for all lifts except Palmer Chairlift, and summer skiers account for Palmer Chairlift only (summer PAOT for Magic Mile Chairlift is 0 because it is used only for access to Palmer Chairlift).
Snow players are based on 360 snow tubers and 40 other snow players at the Molly's Portal.
Mountain bikers are from the PAOT calculation in the Mountain Bike Trails and Skills Park EA.
Timberline Lodge guests are from 70 rooms/220 pillows, with 80% occupancy rate, and assumed 20% non-skiers in winter.
Silcox Hut guests are from 24 beds; 90% winter occupancy, 60% summer occupancy; and 65% winter non-skiers, 90% summer non-skiers/hikers/climbers.
Tourists PAOT is estimated at 350 in the summer and winter.
Summer and winter climbers are calculated by assuming 80% of peak climber counts (based on permits issued) of 285 people per day. Summer hikers are estimated at 300 per day.

PAOT represents the resort population at a single point in time during the day. Many of the non-ski activities do not extend over an entire day, and therefore daily visitation for these non-ski activities can be many times greater than the at-one-time population. In order to estimate total daily visitation at Timberline, each PAOT subcategory can be multiplied by an average turnover, which is based on the average duration of the stay. The highest to lowest **daily** winter visitation to Timberline is skiers/riders, tourists, snow players, climbers and hotel guests. The highest to lowest **daily** summer visitation to Timberline is tourists, mountain bikers, skiers/riders, climbers/hikers, and hotel guests. The following table presents an estimated daily visitation level based on PAOT.

Table 18. Estimated Daily Visitation—Upgrade Plan

Type of Guest	Winter			Summer		
	PAOT	Average Turnover	Estimated Daily Visits	PAOT	Average Turnover	Estimated Daily Visits
Skiers	3,370	1	3,370	750	1	750
Snow Players	400	4	1,600	0	4	0
Mountain Bikers	0	3	0	338	3	1,014
Hotel Guests	58	1	58	189	1	189
Tourists	350	6	2,100	350	6	2,100
Climbers + Hikers	230	1	230	530	1	530
TOTAL	**4,408**		**7,358**	**2,157**		**4,583**

Source: SE Group

D. UPGRADED GUEST SERVICES FACILITIES, FOOD SERVICE SEATING & SPACE USE ANALYSIS

1. MOLLY'S PORTAL

A central project of the Upgrade Plan is the new portal at the bottom terminal of Molly's Chairlift. This would include a day lodge, parking, tubing hill and a snowplay area. The Molly's Portal proposal included in this MDP will be considered in concert with similar parking, snow play and guest services proposals at Summit, which will be presented in a Summit Master Development Plan document that is projected for submittal to the USDA Forest Service in late 2019. The timing for implementation of the Molly's Portal will then be considered within the context of the overall Timberline and Summit ski area complex and will be responsive to future needs based on how well proposed Summit improvements achieve the overall goals of Timberline for providing more parking, snow play area, and guest service space.

a) Access from Timberline Road

The proposed access to the new portal would be off of Timberline Road, which is a State Highway under the jurisdiction of the Oregon Department of Transportation (ODOT). In 2009 and 2010 a thorough traffic study was completed by David Evans and Associates, a professionally engineered intersection and driveway was designed, and an approach permit was approved by ODOT. It is anticipated that these plans and this study will need to be revisited prior to moving into the next level of analysis, but that they will prove to be valuable planning tools. Nevertheless, Timberline recognizes that the configuration of the driveway and parking lots is subject to change based upon future ODOT and USDA Forest Service review.

The proposed portal would require the construction of a short entrance drive approximately 1,200 feet off of Timberline Road. As stated previously, the proposed location of this intersection and driveway has been engineered by David Evans and Associates and subsequently approved by ODOT; however, it is anticipated that it would be subject to renewed review and approval by ODOT.

Guests would access the portal by turning left onto the new entrance drive as they make their way up Timberline Road. A new sign would be constructed at the entrance informing guests that this is a day use skier portal and there is access to Timberline's Snowplay area. Approximately 200 feet in, a sign would direct employees to turn left to a designated employee parking area. To the right, a sign would direct snowplay visitors to designated spaces. At approximately 800 feet from Timberline Road, a sign would direct guests to the drop-off zone for the proposed day lodge, and day skier and snowboarder parking. A drop-off zone and traffic circle would be constructed in front of the proposed day lodge.

This entry plaza would be constructed to highlight the forested character of Mt. Hood. Compared to the existing Wy'East Day Lodge, situated at treeline, the proposed portal is dominated by large trees and forested landscapes. This MDP seeks to preserve groups of the healthiest trees throughout the parking areas while at the same time removing dead and diseased trees for public safety. The day lodge and snowplay area would be nestled into the existing forest to preserve the character of the natural community.

Illustration 2. Rendering of Molly's Portal

b) Day Lodge

A new day lodge would be built to house skier and tubing services at the new base area. The day lodge would be situated at the end of the proposed driveway. In front of the lodge, an entry plaza would be constructed for a guest drop-off/pick-up zone. Guests would walk in on the top floor of the proposed day lodge. On this level, guests would expect to find a guest service counter, ticket sales, and food vending service. The main floor would be constructed with a large seating area/warming room for brown bag lunches and groups to gather. There would be a fireplace situated at one end of the building for guests to gather around. On the western side of the building, an approximate 2,000-square foot deck would be constructed for outdoor seating. The north end of the deck is envisioned to be a circular seating area that would provide views of Mt. Hood through the trees. The deck would wrap around the building to the south and provide access to the entry plaza.

The lower level of the day lodge would contain restrooms, public lockers, a skier lounge with seasonal lockers and changing area, administrative space, and storage areas. A small ski patrol station would be constructed adjacent to the entrance/exit. Guests would exit the lower level and ski across a bridge to access the loading area for the existing Molly's Chairlift. Alternatively, a set of stairs adjacent to the lodge would provide access from the plaza level directly to the ski area.

The new day lodge could also serve to help Timberline meet future needs for year-round recreation programming. As part of this program, interpretive information about Mt. Hood and the surrounding ecosystem could be displayed in a section of the day lodge during summer months. Alternatively, Timberline may pursue discussions with local summer ski and snowboard camps to lease space in the day lodge. These options, as well as others yet to be identified, could easily be incorporated into the day lodge design using partitions. It is assumed that these details, as well as the adoption of a summer recreation business plan by Timberline, would be finalized during future design of the day lodge under NEPA review of the proposed action.

Illustration 3. Rendering of Molly's Portal

c) Snowplay Area

The proposed snowplay area would consist of a four-to-six lane tubing hill and surface lift, as well as a separate play area for general snowplay (e.g., building snowmen, snow forts, etc.). The proposed tubing hill would be approximately 500 feet in length and 150 feet at its widest point. A 250-foot surface lift or carpet (for snow-tubing only) would be used to provide a conveyance system to a staging area at the top of the hill. The staging area would be cut into the hill to create a level space of approximately 300 square feet. A small retaining wall would likely be needed to stabilize the cut slope. Each lane would be approximately 15 to 20 feet wide, including snow berms between each lane to separate users. The upper 200 feet of the lane would slope at approximately 25 percent and lead onto a level run-out zone approximately 300 feet in length. The runout zone would terminate upslope of the proposed day lodge allowing

for easy access to the facilities from the tubing hill. The expected at-one-time capacity of the tubing hill is estimated at 360 guests, based on a rate of 60 pph per lane, and a maximum of six lanes.

The general snowplay area would be situated on level ground adjacent to the tubing lanes. Snow berms would be used to create user separation and reduce the incidence of a tuber sliding through the area. The snowplay area PAOT is estimated to be 40 guests; combined PAOT of the tubing hill and snowplay area is estimated to be 400 guests.

2. SPACE USE ANALYSIS

The Upgrade Plan winter PAOT of 4,408 guests is 1,539 higher than the existing PAOT of 2,869. With the existing guest services space adequately accommodating the existing resort PAOT, the additional 1,539 of PAOT would be accommodated in the new Molly's day lodge, and Table 19 presents the proposed space use allocations of the proposed day lodge in accordance with industry standards for a resort of similar market orientation and regional context as Timberline. Square foot figures contained in this table are based on industry averages; they should not be considered absolute requirements.

Table 19. Space Use Analysis—Molly's Portal—Upgrade Plan

Service Function	Recommended Range	
	Low	High
Ticket Sales/Guest Services	390	480
Public Lockers	1,180	1,450
Rentals/Repair	200	240
Retail Sales	170	200
Bar/lounge	510	630
Adult Ski School		
Kid's Ski School		
Restaurant Seating	8,290	10,140
Kitchen/Scramble	830	1,010
Rest rooms	1,080	1,320
Ski Patrol	150	180
Administration		
Employee Lockers/Lounge	160	190
Storage	390	480
Circulation/Waste	970	1,190
TOTAL SQUARE FEET	**14,320**	**17,510**

Source: SE Group
Notes:
Rentals/repair space is for snow tube rentals, repairs and storage

3. FOOD SERVICE SEATING

The Upgrade Plan adds more restaurant seats to address the demand for food service seating currently experienced at Timberline. The new restaurant seating space at Molly's Portal will create a significant enhancement to the recreational environment at Timberline as visitation increases with available parking.

The Molly's Portal is proposed to add an additional 537 seats to Timberline. Table 20 summarizes the seating requirements at Timberline, based on a logical distribution of the PAOT to each service building/location, and the need to balance the location of guests during the lunch period to alleviate crowding of lifts, terrain, and guest service facilities.

Table 20. Restaurant Seats—Upgrade Plan

	Base Area	Phlox	Molly's	Total Resort
Lunchtime Capacity (CCC)	2,408	120	1,880	4,408
Average Seat Turnover	3.5	4.0	3.5	
Existing Seats	688	30		718
Required Seats	688	30	537	1,255
Seats Proposed	-	-	537	537

Source: SE Group
Notes:
Outdoor/sundeck seating was included in the existing seat count.
Silcox Hut seating was not counted because lunch service is not provided.
Lunchtime Capacity requirements at Wy'East Day Lodge and Phlox Point Cabin is reduced in the upgrade plan to account for new seating capacity proposed at Molly's Portal.

E. UPGRADED PARKING CAPACITY AND RESORT ACCESS

The new Molly's Portal would include new parking lots for guests and employees. Approximately 800 new spaces would be constructed. Of these, approximately 120 spaces would be used for employee parking. Employees would be encouraged to park in this portal to make additional parking available for guests in the existing parking lot at the top of the Timberline Road. Employees could then ride the existing Molly's Chairlift to access work stations at the existing base area facilities, or alternatively, Timberline would run a year-round employee shuttle service to transport workers from the proposed portal to the upper base area.

The remaining 680 spaces would be used for skiing and snowplay guests. Assuming average vehicle occupancy of 2.7 people, this portal would be expected to service a capacity of approximately 1,840 guests, 400 snow players and 1,440 skiers/riders. This would not exceed the permitted maximum CCC of the ski area. Instead, this new portal is expected to relieve the overcrowding of the existing capacities at Wy'East Day Lodge, Phlox Point Cabins, and the existing parking lots.

During winter months, snow management in the parking area would consist of plowing and moving snow to designated storage areas. R.L.K. and Company would apply to ODOT to include the new lot in the Oregon Sno–Park program. Snow storage is expected to be situated along the southwestern edge of the proposed parking area and in between parking bays. Storage areas would be excavated below the grade of the parking lot to serve as retention

basins during snowmelt in the spring/summer. Additional storm water management facilities (e.g., ditches and sediment traps) would be incorporated into the parking lot design to convey snowmelt into adjacent drainages.

The proposed parking lot is envisioned to help Timberline in future four-season recreation planning. If new summer recreation is based out of the new day lodge, guests would use the associated parking spaces. Employees would be able to park in the designated area and ride a shuttle to the lodge. This would help to ensure that there is adequate guest parking at Timberline Lodge during summer months. The parking area could also serve as overflow summer parking for Timberline Lodge guests. It is anticipated that transportation shuttles between parking lots could be incorporated into the schedule of the Mt. Hood Express.

Table 21. Recommended Parking at Staging Portals—Upgrade Plan

	Base Area	Molly's Portal	Total
PAOT	2,364	2,044	4,408
Number of guests arriving by car (90% of PAOT)	2,128	1,840	3,955
# of guests arriving by shuttle service (10% of PAOT)	236	204	439
Required car parking spaces (average 2.7 guests per car)	788	680	1,465
Required employee car parking spaces	55	120	175
Total required spaces	843	800	1,640
Existing parking spaces at base area	1,100	0	1,100

Source: SE Group

F. PROPOSED RESORT OPERATIONS

1. SKI PATROL/FIRST AID

A small ski patrol station (approximately 150 square feet) would be included in the Molly's Portal day lodge. In addition, a portion of the previously accepted maintenance shop would be dedicated to ski patrol and first aid. This would allow ski patrol to perform its duties more efficiently as well as eliminate congestion caused by emergency care and search and rescue vehicles operating from the Day Lodge.

2. MAINTENANCE FACILITIES

Timberline would construct a 3-bay building of approximately 10,000 square feet, immediately south of the existing maintenance shop, or modify and add on to the existing shop. The facility would primarily serve as a garage for the snow grooming vehicle fleet and a storage area for supplies and equipment. It would also house the ski patrol headquarters and medical/patient care facilities, and it would serve as the search and rescue command center.

The exterior design and location of the building would be utilitarian, recognizing functional requirements, but compatible with visual quality objectives of the area and follow BEIG guidelines.

The interior would feature a clean and safe workspace, and state of the art equipment for waste and emission management as well as other environmental and worker safety concerns.

This location and its proximity to the slopes will greatly improve the Ski Patrol's ability to perform their duties serving the public more efficiently, and moving search and rescue operations to this site will eliminate the congestion currently caused by emergency vehicles in the chute.

An additional benefit to moving Ski Patrol and search and rescue to the new facility is that R.L.K. and Company will be able to provide additional needed skier services to the Wy'East Day Lodge. Services such as day care will be considered for the space previously occupied by the Ski Patrol.

3. SNOWMAKING

An expanded snowmaking system is planned as part of the Upgrade Plan (refer to Figure 10). The planned snowmaking coverage would extend from the top of Pucci Chairlift to the base of Jeff Flood-Still Creek Chairlift, following Main Run Pucci, Brother Beau, and lower Uncle Jon's Band. The expanded Bruno's beginner terrain would also be covered by the new system and would no longer use fire hydrants for water supply. The overall expanded snowmaking system would cover more than 21 acres of terrain. Accompanying snowmaking water pipe, electricity to supply the snowmaking guns, and snowmaking guns would need to be installed. The snowmaking pipe and power lines would be constructed in existing ski ways to the extent that is practical to reduce the extent of vegetation removal.

Water for snowmaking would be drawn from Timberline's existing water supply system. A new water storage tank, with a capacity of 375,000 to 500,000 gallons, and a snowmaking water pumping facility would be constructed in an existing tree clearing adjacent to lower Uncle Jon's Band at the 5,000-foot elevation. Snowmaking water would be drawn directly from the storage tank, and the tank would be filled and replenished with water on an as-available basis from the existing resort water supply system (i.e., domestic water uses would have priority). Power for the snowmaking pumps would come from the snow gun power line on lower Uncle Jon's Band trail.

4. NIGHT LIGHTING

No new lighting for night skiing would be installed as part of the Upgrade Plan.

5. INFRASTRUCTURE AND UTILITIES

a) Power and Communication

It is expected that power lines would be trenched to the proposed Molly's Portal facilities within the alignment of the proposed driveway. Communication lines would also be trenched to the proposed portal within the proposed driveway alignment, and communication lines would likely be placed in a common trench with the power lines.

b) Water

For domestic water, Timberline's preference would be to drill a new well to provide the main source of water to the new Molly's day lodge. Using Amec Earth and Environmental, R.L.K. and Company drilled a test well in the vicinity of the proposed day lodge to evaluate this option in the late summer of 2010. It is believed that development of this groundwater will provide a sufficient supply. A second option could include tying into the existing water system. The existing water system would need to be evaluated to determine its ability to provide water to the proposed portal. In particular, the current water system has a filtration and treatment facility located in the mountain department shop. While it may be possible to tie into the existing water line from the pump house, a new filtration and treatment facility would need to be constructed at the proposed portal.

Water for the planned maintenance facility will be plumbed in from the existing maintenance facility supply.

c) Wastewater

For Molly's wastewater, Timberline prefers to treat on-site. Under this option, Timberline would construct a new wastewater facility and drain field to treat effluent coming from the proposed day lodge. The wastewater treatment system would be comprised of four components: septic and sludge tanks, advanced treatment units, UV disinfection, and drain field laterals. It would be designed to produce a high-quality effluent that could be discharged through the drain field. This system could be buried under parking lots and be visually unobtrusive to the visitor.

An alternative Molly's wastewater treatment option would be to treat offsite. Under this option, Timberline would construct a pump station and associated infrastructure to transport wastewater from the proposed day lodge upslope to the existing wastewater treatment facility. The current facility is capable of treating 110,000 gallons per day and would be able to accommodate effluent from the proposed day lodge. However, this facility is currently limited by its drain fields, which are at capacity. Additional drain fields may need to be constructed under this alternative.

Wastewater from the planned maintenance facility will be plumbed into the existing maintenance facility wastewater line.

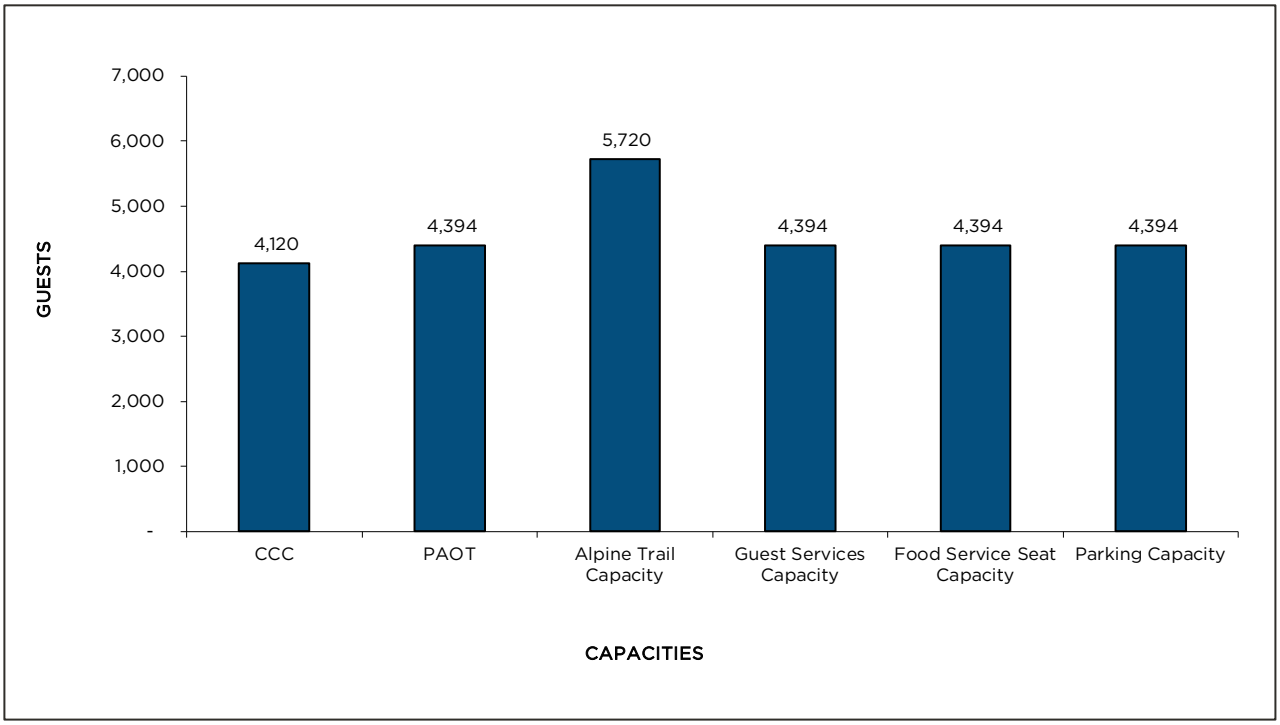
6. MOUNTAIN ROADS

No new mountain roads would be constructed for the Upgrade Plan projects.

G. RESORT CAPACITY BALANCE AND LIMITING FACTORS

The overall balance of the Upgrade Plan is evaluated by calculating the capacities of the resort's various facilities and comparing those facilities to the resort's CCC. With the full build-out of the mountain bike park, the construction of Molly's Portal, as well as regrading and reconfiguring Bruno's area and construction of snowmaking to the bottom of Jeff Flood-Still Creek Chairlift, Timberline will improve the overall guest experience during both the summer and winter. The proposed Molly's Portal would add much need parking and guest service facilities. These facilities would allow Timberline's on-mountain facilities (lifts and terrain) to reach full capacity, as originally designed. Refer to each capacity discussion in the Chapter 5: Upgrade Plan for additional details about capacity calculations.

Chart 3. Resort Capacity—Upgrade Plan



H. UPGRADED MULTI-SEASON ACTIVITIES

As discussed in Chapter 4, the last phase of the mountain bike trails and skills park features would be constructed during the summers of 2019 and 2020. No other summer or multi-season activities are proposed at this time.

APPENDIX A. ADDITIONAL TABLES

Table A-1. Terrain Specifications—Existing Conditions

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
A01_Upper Kruser	6,238	5,936	302	1,669	124	4.8	19	30	Low Intermediate
A02_Lower Kruser	5,917	4,854	1,063	6,754	116	18.0	16	28	Low Intermediate
A03_Paintbrush	5,935	5,542	393	2,358	107	5.8	17	27	Low Intermediate
A04_Spraypaint	6,114	5,906	207	1,097	81	2.0	19	31	Low Intermediate
A05_Norm's	6,250	5,558	692	3,779	113	9.8	19	28	Low Intermediate
A06_Conways	6,240	5,660	580	3,337	112	8.5	18	27	Low Intermediate
A07_Lodge Getback	6,236	5,923	312	2,401	84	4.6	13	27	Novice
A08_The Bonezone	6,070	5,703	367	2,361	92	5.0	16	27	Low Intermediate
B01_Upper Glade	5,924	5,463	461	2,998	147	10.1	16	23	Novice
B02_Lower Glade	5,518	5,397	121	892	111	2.3	14	24	Novice
B03_Nona's Bologna	5,682	5,630	52	377	99	0.9	14	18	Novice
B04_Upper Mustang Sally	5,876	5,689	187	1,012	142	3.3	19	31	Low Intermediate
B05_Mid Middle Mustang Sally	5,589	5,500	89	480	131	1.4	19	29	Low Intermediate
B06_Mid Upper Mustang Sally	5,675	5,596	79	625	157	2.3	13	22	Low Intermediate
B07_Mid Lower Mustang Sally	5,490	5,421	69	630	115	1.7	11	20	Low Intermediate
B08_Lower Mustang Sally	5,380	5,085	295	1,426	69	2.2	21	40	Advanced
B09_Upper Alpine	5,766	5,508	258	2,007	57	2.6	13	32	Low Intermediate
B10_Lower Alpine	5,454	5,312	142	1,093	82	2.1	13	22	Low Intermediate
B11_Christine's	5,894	5,848	45	301	171	1.2	15	21	Novice
B12_Buzz Cut	4,990	4,867	123	522	46	0.5	25	52	Advanced
B13_EZ Way	4,979	4,884	94	819	26	0.5	12	21	Novice
B14_Phlox	5,730	5,627	103	862	67	1.3	12	20	Novice
B15_Walt's Baby	5,620	5,349	271	2,097	81	3.9	13	24	Novice

Table A-1. Terrain Specifications—Existing Conditions (*cont.*)

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
B16_Pete's Plunder	5,248	5,098	150	877	112	2.3	17	23	Intermediate
B17_Upper Jojami	5,511	5,465	46	284	134	0.9	16	18	Novice
B18_Middle Jojami	5,458	5,081	377	2,336	132	7.1	16	39	Intermediate
B19_Lower Jojami	5,061	4,855	206	718	74	1.2	30	45	Advanced
B20_Upper Uncle Johns Band	5,461	5,420	41	265	155	0.9	16	19	Novice
B21_Lower Uncle Johns Band	5,004	4,850	154	611	94	1.3	26	43	Intermediate
B22_Lower Big Brother Beau	5,170	5,069	101	742	110	1.9	14	18	Novice
B23_Upper Big Brother Beau	5,335	5,268	67	340	81	0.6	20	28	Low Intermediate
B23_Upper Big Brother Beau	5,346	5,343	3	472	73	0.8	1	8	Novice
B24_Mid Big Brother Beau	5,251	5,186	65	246	134	0.8	28	29	Low Intermediate
B25_Upper Middle Uncle Johns Band	5,416	5,139	277	1,485	98	3.4	19	29	Low Intermediate
B26_Lower Middle Uncle Johns Band	5,126	5,013	113	708	124	2.0	16	20	Low Intermediate
B27_Upper Upper Glade	6,026	5,992	35	235	82	0.4	15	17	Novice
C01_Coffel's Run	6,993	6,186	807	3,654	322	27.0	23	32	Low Intermediate
C02_Kip's Run	6,991	6,116	874	4,239	406	39.5	21	38	Intermediate
C03_Gordo's Mile	6,990	5,921	1,069	5,398	380	47.0	20	31	Low Intermediate
C04_Otto Lang	6,937	5,923	1,015	6,031	266	36.8	17	33	Low Intermediate
D01_Outer West	8,494	6,964	1,530	5,711	379	49.7	28	42	Advanced
D02_Willis	8,478	6,950	1,528	5,600	650	83.6	29	42	Advanced
D03_Bean's Run	8,459	6,980	1,479	5,843	506	67.9	27	55	Expert
E01_Upper Thunder	5,919	5,661	258	1,532	81	2.8	17	25	Low Intermediate
E02_Lower Thunder	5,661	5,350	311	2,049	112	5.3	15	41	Intermediate

Table A-1. Terrain Specifications—Existing Conditions (*cont.*)

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
E03_Lift Line	5,913	5,682	231	1,280	56	1.6	18	28	Low Intermediate
E04_Lower Lift Line	5,670	5,506	163	848	59	1.1	20	29	Low Intermediate
E05_Upper Main Run Pucci	5,920	5,688	232	1,382	70	2.2	17	28	Low Intermediate
E06_Lower Main Run Pucci	5,681	5,530	150	806	100	1.9	19	26	Low Intermediate
E07_Upper West Leg Road	5,882	5,361	522	6,118	39	5.5	9	28	Novice
E08_Mid West leg	5,530	5,463	67	536	71	0.9	13	20	Novice
E09_Lower West Leg Road	5,375	4,849	526	8,905	41	8.4	6	16	Novice
E10_Waterline	5,344	5,234	110	1,087	45	1.1	10	20	Novice
E11_Wingle's Wiggle	5,598	5,438	160	865	57	1.1	19	50	Advanced
E12_Bob Elmer	5,635	5,478	157	700	76	1.2	23	47	Advanced
E13_Schoolyard	5,433	5,360	73	416	68	0.7	18	25	Novice
F01_Joszi	5,668	5,439	230	812	117	2.2	30	43	Advanced
F02_Wy's East	5,566	5,379	187	778	95	1.7	25	52	Advanced
F03_West Run	5,536	5,322	213	1,163	73	2.0	19	48	Advanced
F04_Back Way	5,348	4,995	354	3,454	95	7.6	10	31	Low Intermediate
F05_Cut Off	5,129	5,017	112	350	89	0.7	34	42	Advanced
F06_West Pitch	5,194	4,999	194	581	91	1.2	36	60	Expert
F07_Molly's Run	5,629	5,267	362	1,933	94	4.2	19	51	Advanced
F08_Upper Vicky's Run	5,814	5,774	40	212	83	0.4	19	21	Novice
F09_Lower Vicky's Run	5,760	5,000	760	4,931	105	11.8	16	48	Intermediate
F10_Huck Bowl	5,266	5,044	222	1,278	76	2.2	18	54	Advanced
I1_Bruno's	5,885	5,840	45	356	169	1.4	13	17	Beginner
TOTAL				128,061		539.2			

Table A-2. Terrain Specifications—Upgrade Plan

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
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A02_Lower Kruser	5,917	4,854	1,063	6,754	116	18.0	16	28	Low Intermediate
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B08_Lower Mustang Sally	5,380	5,085	295	1,426	69	2.2	21	40	Advanced
B09_Upper Alpine	5,766	5,508	258	2,007	57	2.6	13	32	Low Intermediate
B10_Lower Alpine	5,454	5,312	142	1,093	82	2.1	13	22	Low Intermediate
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B13_EZ Way	4,979	4,884	94	819	26	0.5	12	21	Novice

Table A-2. Terrain Specifications—Upgrade Plan (*cont.*)

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
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B15_Walt's Baby	5,620	5,349	271	2,097	81	3.9	13	24	Novice
B16_Pete's Plunder	5,248	5,098	150	877	112	2.3	17	23	Intermediate
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B23_Upper Big Brother Beau	5,335	5,268	67	340	81	0.6	20	28	Low Intermediate
B23_Upper Big Brother Beau	5,346	5,343	3	472	73	0.8	1	8	Novice
B24_Mid Big Brother Beau	5,251	5,186	65	246	134	0.8	28	29	Low Intermediate
B25_Upper Middle Uncle Johns Band	5,416	5,139	277	1,485	98	3.4	19	29	Low Intermediate
B26_Lower Middle Uncle Johns Band	5,126	5,013	113	708	124	2.0	16	20	Low Intermediate
B27_Upper Upper Glade	6,026	5,992	35	235	82	0.4	15	17	Novice
C01_Coffel's Run	6,993	6,186	807	3,654	322	27.0	23	32	Low Intermediate
C02_Kip's Run	6,991	6,116	874	4,239	406	39.5	21	38	Intermediate
C03_Gordo's Mile	6,990	5,921	1,069	5,398	380	47.0	20	31	Low Intermediate
C04_Otto Lang	6,937	5,923	1,015	6,031	266	36.8	17	33	Low Intermediate
D01_Outer West	8,494	6,964	1,530	5,711	379	49.7	28	42	Advanced

Table A-2. Terrain Specifications—Upgrade Plan (*cont.*)

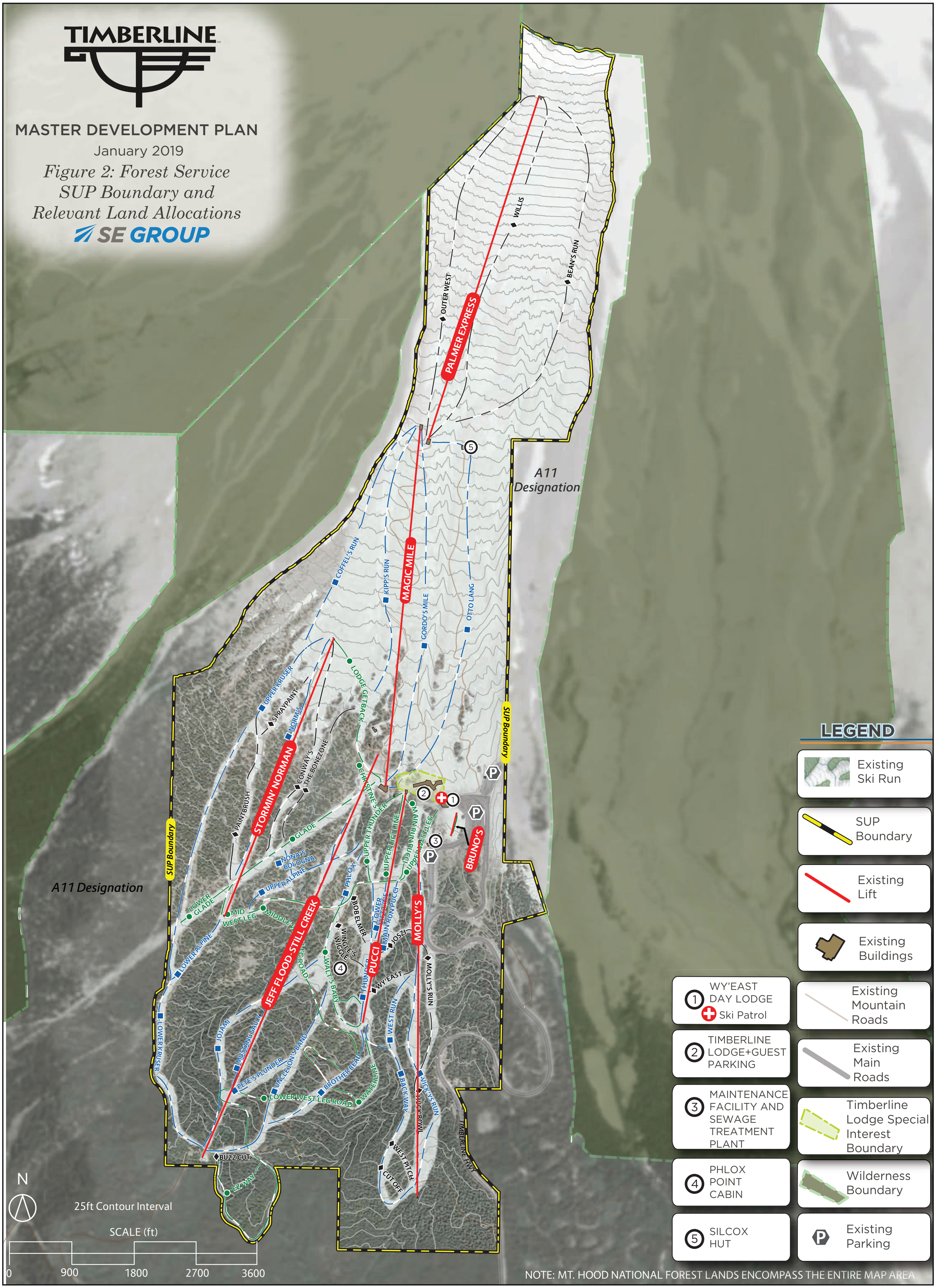
Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
D02_Willis	8,478	6,950	1,528	5,600	650	83.6	29	42	Advanced
D03_Bean's Run	8,459	6,980	1,479	5,843	506	67.9	27	55	Expert
E01_Upper Thunder	5,919	5,661	258	1,532	81	2.8	17	25	Low Intermediate
E02_Lower Thunder	5,661	5,350	311	2,049	112	5.3	15	41	Intermediate
E03_Lift Line	5,913	5,682	231	1,280	56	1.6	18	28	Low Intermediate
E04_Lower Lift Line	5,670	5,506	163	848	59	1.1	20	29	Low Intermediate
E05_Upper Main Run Pucci	5,920	5,688	232	1,382	70	2.2	17	28	Low Intermediate
E06_Lower Main Run Pucci	5,681	5,530	150	806	100	1.9	19	26	Low Intermediate
E07_Upper West Leg Road	5,882	5,361	522	6,118	39	5.5	9	28	Novice
E08_Mid West leg	5,530	5,463	67	536	71	0.9	13	20	Novice
E09_Lower West Leg Road	5,375	4,849	526	8,905	41	8.4	6	16	Novice
E10_Waterline	5,344	5,234	110	1,087	45	1.1	10	20	Novice
E11_Wingle's Wiggle	5,598	5,438	160	865	57	1.1	19	50	Advanced
E12_Bob Elmer	5,635	5,478	157	700	76	1.2	23	47	Advanced
E13_Schoolyard	5,433	5,360	73	416	68	0.7	18	25	Novice
F01_Joszi	5,668	5,439	230	812	117	2.2	30	43	Advanced
F02_Wy's East	5,566	5,379	187	778	95	1.7	25	52	Advanced
F03_West Run	5,536	5,322	213	1,163	73	2.0	19	48	Advanced
F04_Back Way	5,348	4,995	354	3,454	95	7.6	10	31	Low Intermediate
F05_Cut Off	5,129	5,017	112	350	89	0.7	34	42	Advanced
F06_West Pitch	5,194	4,999	194	581	91	1.2	36	60	Expert

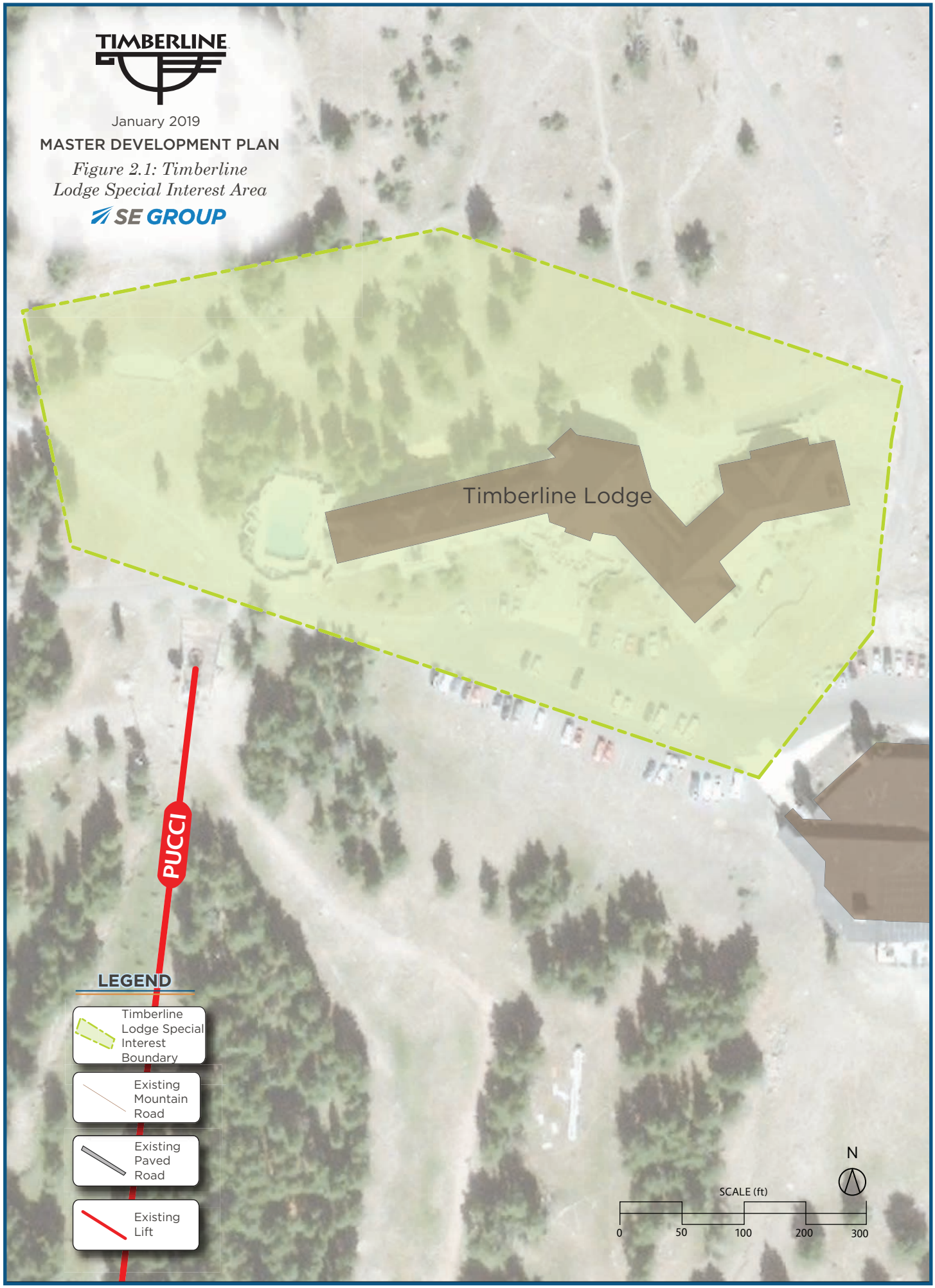
Table A-2. Terrain Specifications—Upgrade Plan (*cont.*)

Trail/Area Name	Top Elevation (ft.)	Bottom Elevation (ft.)	Vertical Drop (ft.)	Slope Length (ft.)	Avg. Width (ft.)	Slope Area (acres)	Avg. Grade (%)	Max. Grade (%)	Skier/Rider Ability Level
F07_Molly's Run	5,629	5,267	362	1,933	94	4.2	19	51	Advanced
F08_Upper Vicky's Run	5,814	5,774	40	212	83	0.4	19	21	Novice
F09_Lower Vicky's Run	5,760	5,000	760	4,931	105	11.8	16	48	Intermediate
F10_Huck Bowl	5,266	5,044	222	1,278	76	2.2	18	54	Advanced
G1_Bruno's I	5,885	5,832	53	464	120	1.3	11	12	Beginner
G2_Bruno's II	5,887	5,877	10	110	95	0.2	9	9	Beginner
G1_Bruno's I	5,885	5,832	53	513	160	1.9	10	12	Beginner
TOTAL				128,792		541.2			

FIGURES


TIMBERLINE
January 2019
MASTER DEVELOPMENT PLAN
Figure 1: Vicinity Map
SE GROUP
Hood River
35
Mt. Hood
TIMBERLINE
Government Camp
84
Washington
Oregon
26
Columbia River
Sandy
205
Vancouver
Portland
5
Washington
Oregon
N
SCALE (ft)
0
250,000
500,000
1500
1,000,000


TIMBERLINE
MASTER DEVELOPMENT PLAN
January 2019
Figure 2: Forest Service SUP Boundary and Relevant Land Allocations
SE GROUP
A11 Designation
A11 Designation
SUP Boundary
SUP Boundary
PALMER EXPRESS
MAGIC MILE
STORMIN' NORMAN
JEFF FLOOD-STILL CREEK
PUCCI
MOLLY'S
BRUNO'S
WILLIS
BEAN'S RUN
OUTER WEST
COFFEL'S RUN
KIPP'S RUN
GORDO'S MILE
OTTO LANG
LODGE GETBACK
UPPER KRUSER
SPRAYPAINT
NORM'S
PAINTBRUSH
GLADE
LOWER GLADE
MID WEST LEG
LOWER ALPINE
UPPER ALPINE
PHLOX
BOB ELMER
JOSZI
WY'EAST
MOLLY'S RUN
WEST RUN
LOWER KRUSER
JOJAMI
PETE'S PLUNDER
LOWER WEST LEG ROAD
BROTHER BEAU
WATERLINE
BACK WAY
BUZZ CUT
EZ WAY
WEST PITCH
CUT OFF
TIMBERLINE HWY
N
25ft Contour Interval
SCALE (ft)
0
900
1800
2700
3600
LEGEND
Existing Ski Run
SUP Boundary
Existing Lift
Existing Buildings
Existing Mountain Roads
Existing Main Roads
Timberline Lodge Special Interest Boundary
Wilderness Boundary
Existing Parking
1 WY'EAST DAY LODGE
Ski Patrol
2 TIMBERLINE LODGE+GUEST PARKING
3 MAINTENANCE FACILITY AND SEWAGE TREATMENT PLANT
4 PHLOX POINT CABIN
5 SILCOX HUT
NOTE: MT. HOOD NATIONAL FOREST LANDS ENCOMPASS THE ENTIRE MAP AREA


TIMBERLINE
January 2019
MASTER DEVELOPMENT PLAN
Figure 2.1: Timberline Lodge Special Interest Area
SE GROUP
Timberline Lodge
PUCCI
LEGEND
Timberline Lodge Special Interest Boundary
Existing Mountain Road
Existing Paved Road
Existing Lift
N
SCALE (ft)
0
50
100
200
300

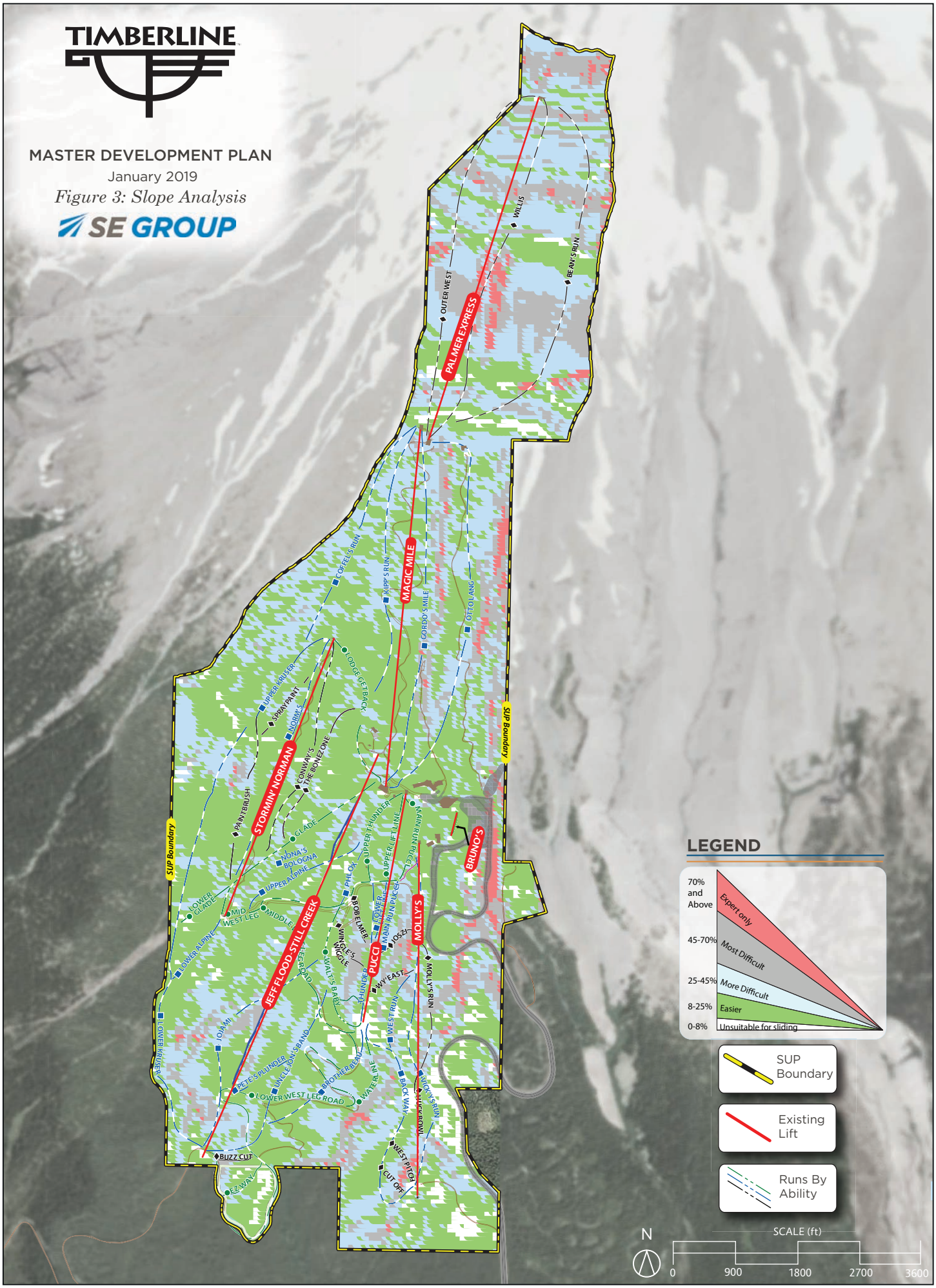
TIMBERLINE

MASTER DEVELOPMENT PLAN

January 2019

Figure 3: Slope Analysis

SE GROUP



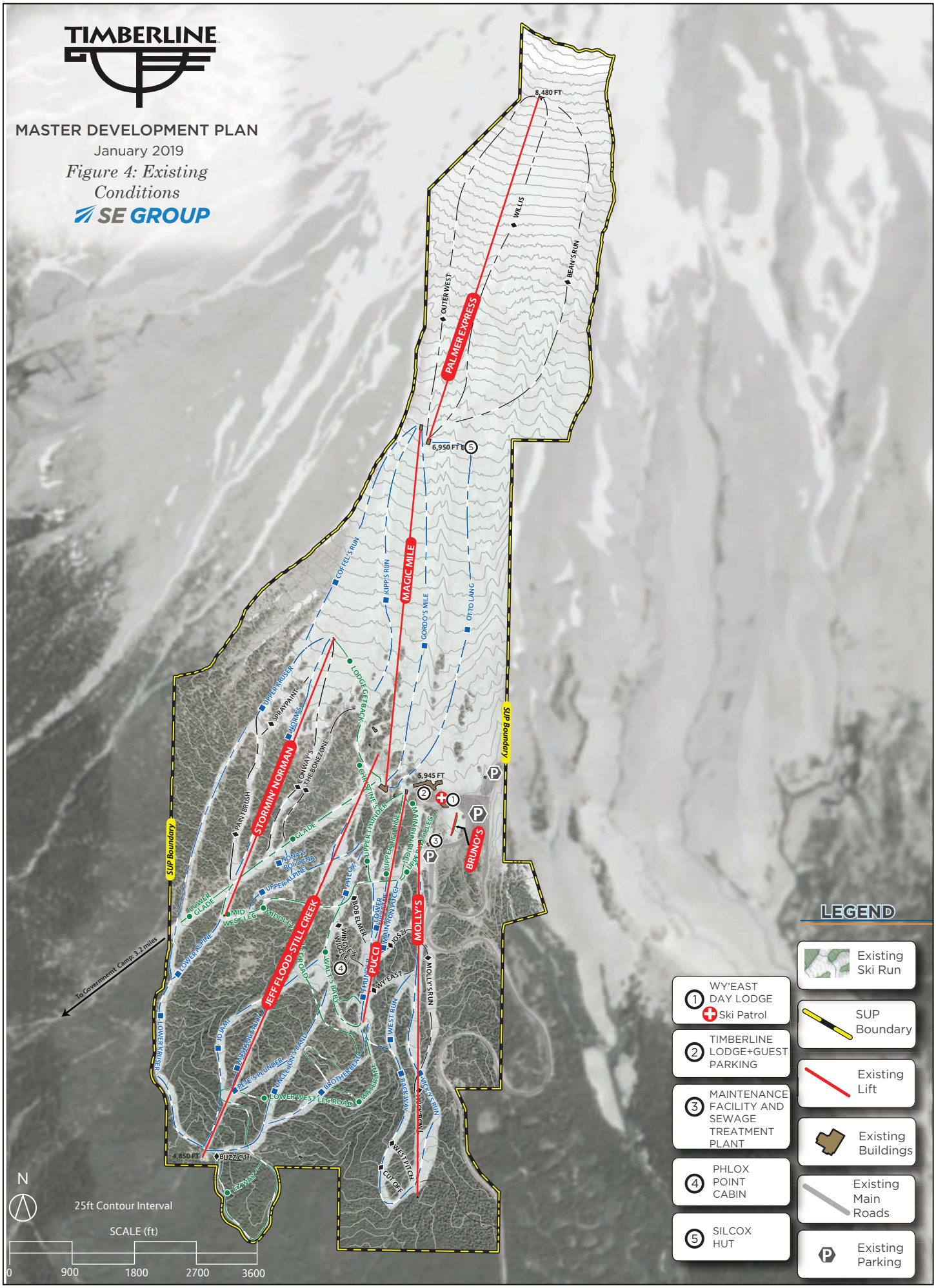
TIMBERLINE

MASTER DEVELOPMENT PLAN

January 2019

Figure 4: Existing Conditions

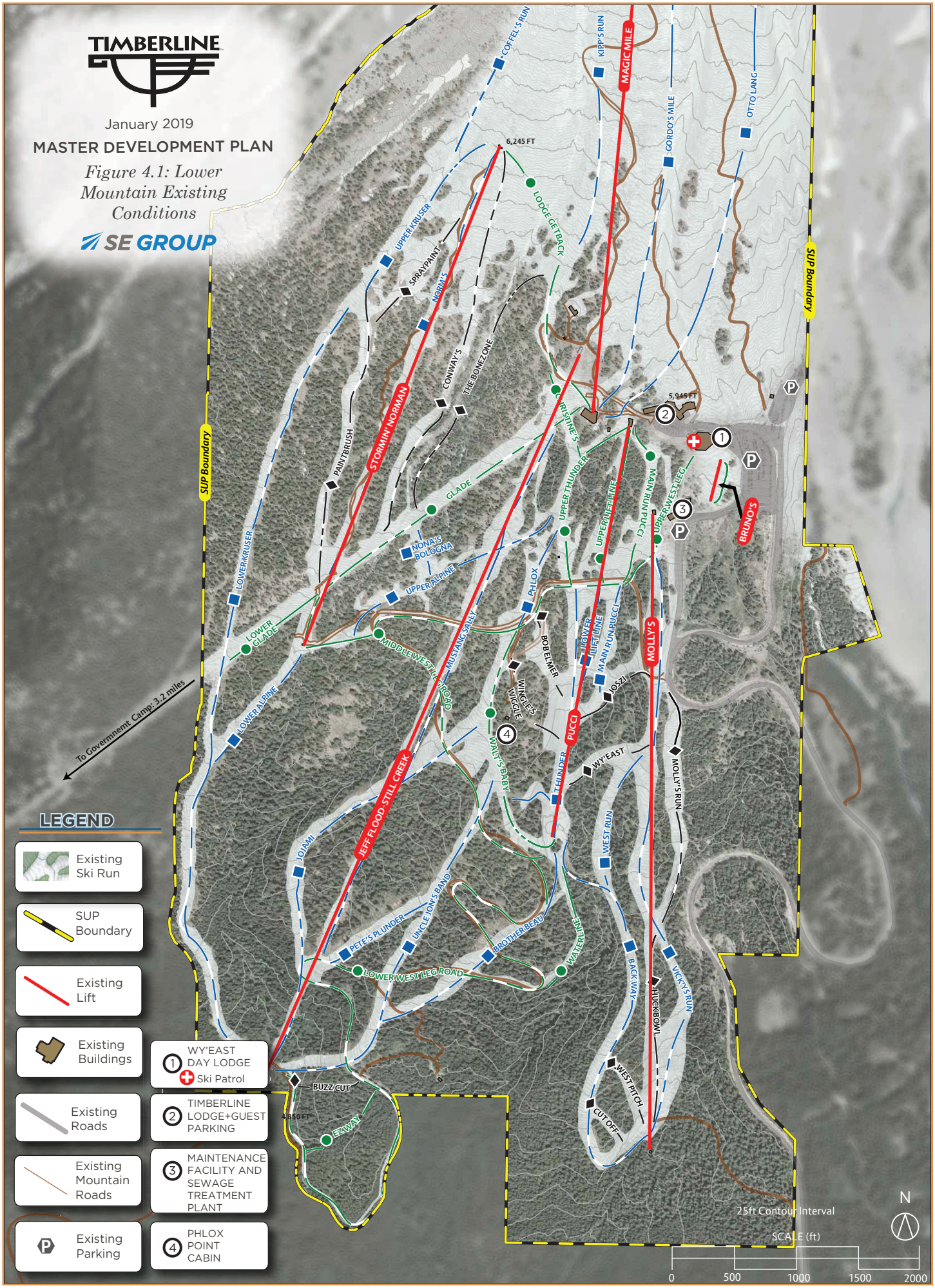
SE GROUP



LEGEND

- 1 WY'EAST DAY LODGE + Ski Patrol
- 2 TIMBERLINE LODGE+GUEST PARKING
- 3 MAINTENANCE FACILITY AND SEWAGE TREATMENT PLANT
- 4 PHLOX POINT CABIN
- 5 SILCOX HUT

- Existing Ski Run
- SUP Boundary
- Existing Lift
- Existing Buildings
- Existing Main Roads
- Existing Parking


TIMBERLINE
January 2019
MASTER DEVELOPMENT PLAN
Figure 4.1: Lower Mountain Existing Conditions
SE GROUP
COFFEL'S RUN
KIPP'S RUN
MAGIC MILE
GORDO'S MILE
OTTO LANG
SUP Boundary
6,245 FT
LODGE GETBACK
UPPER KRUSER
SPRAYPAINT
NORM'S
CONWAY'S
THE BONEZONE
STORMIN' NORMAN
PAINTBRUSH
CHRISTINE'S
UPPER THUNDER
UPPER LIFTLINE
MAIN RUN PUCCI
UPPER WEST LEG
5,945 FT
BRUNO'S
GLADE
NONA'S BOLOGNA
LOWER KRUSER
UPPER ALPINE
LOWER GLADE
PHLOX
MIDDLE WEST LEG ROAD
MUSTANG SALLY
BOB ELMER
LOWER LIFTLINE
MAIN RUN PUCCI
OSZI
MOLLY'S
WINGLE'S WINGLE
PUCCI
WY'EAST
MOLLY'S RUN
LOWER ALPINE
To Government Camp: 3.2 miles
JEFF FLOOD STILL CREEK
WALT'S BABY
THUNDER
WEST RUN
JOJAMI
UNCLE JON'S BAND
PETE'S PLUNDER
BROTHER BEAU
WATERLINE
LOWER WEST LEG ROAD
BACK WAY
VICKY'S RUN
HUCKLEBOWL
WEST PITCH
CUT OFF
BUZZ CUT
EZ AWAY
LEGEND
Existing Ski Run
SUP Boundary
Existing Lift
Existing Buildings
Existing Roads
Existing Mountain Roads
Existing Parking
1 WY'EAST DAY LODGE Ski Patrol
2 TIMBERLINE LODGE+GUEST PARKING
3 MAINTENANCE FACILITY AND SEWAGE TREATMENT PLANT
4 PHLOX POINT CABIN
25ft Contour Interval
SCALE (ft)
0
500
1000
1500
2000
N

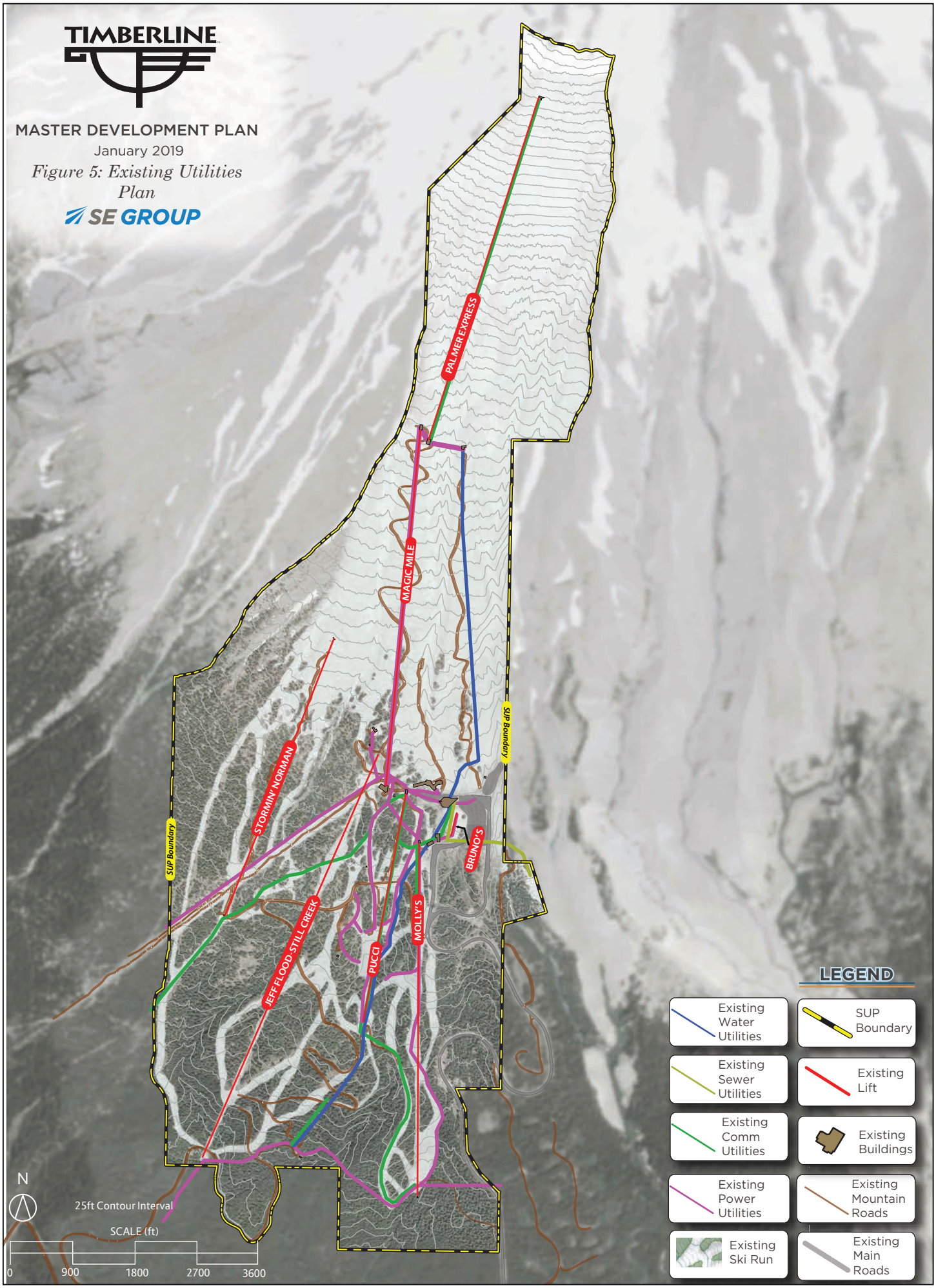
TIMBERLINE

MASTER DEVELOPMENT PLAN

January 2019

Figure 5: Existing Utilities Plan

SE GROUP



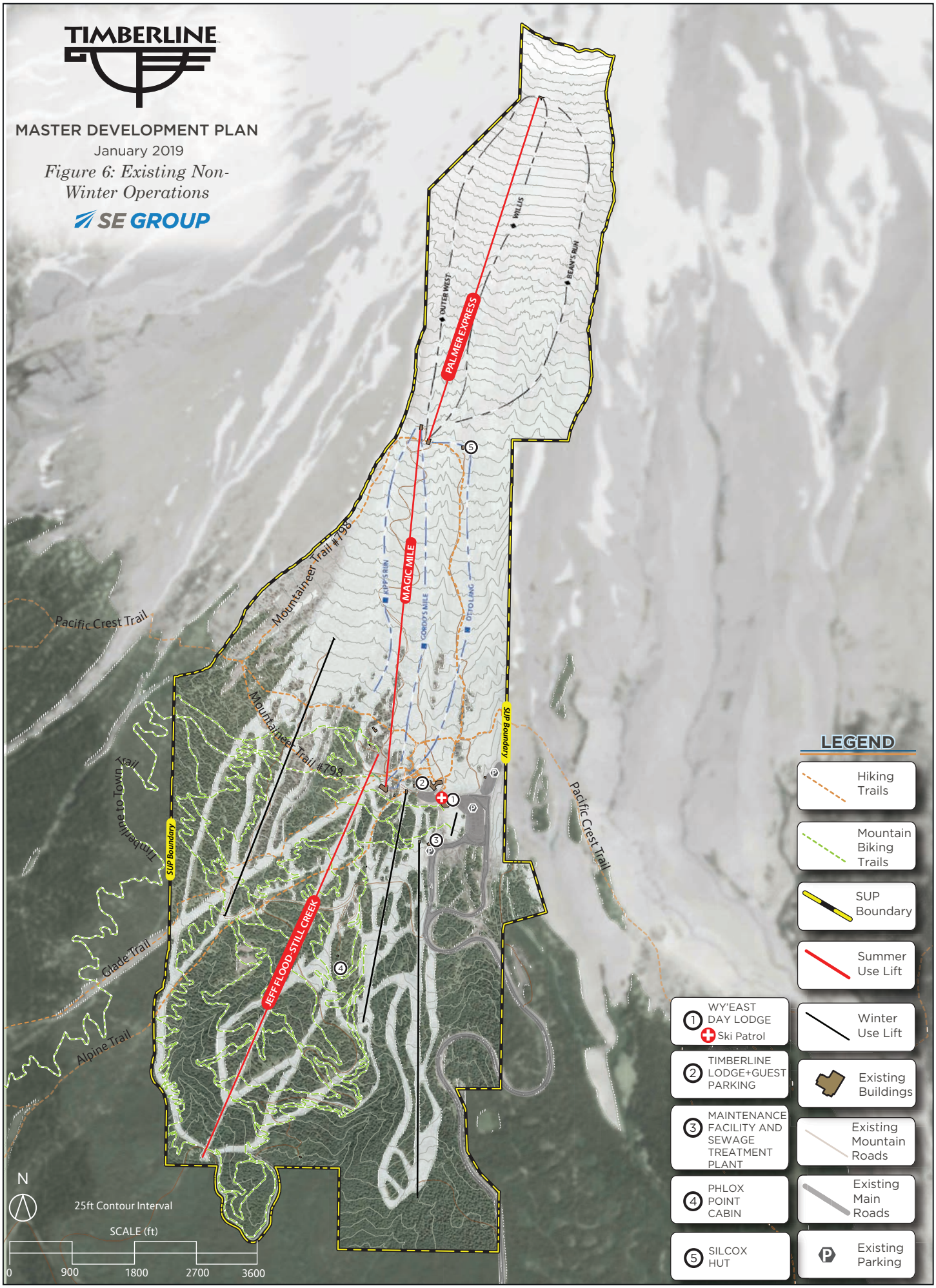
TIMBERLINE

MASTER DEVELOPMENT PLAN

January 2019

Figure 6: Existing Non-Winter Operations

SE GROUP



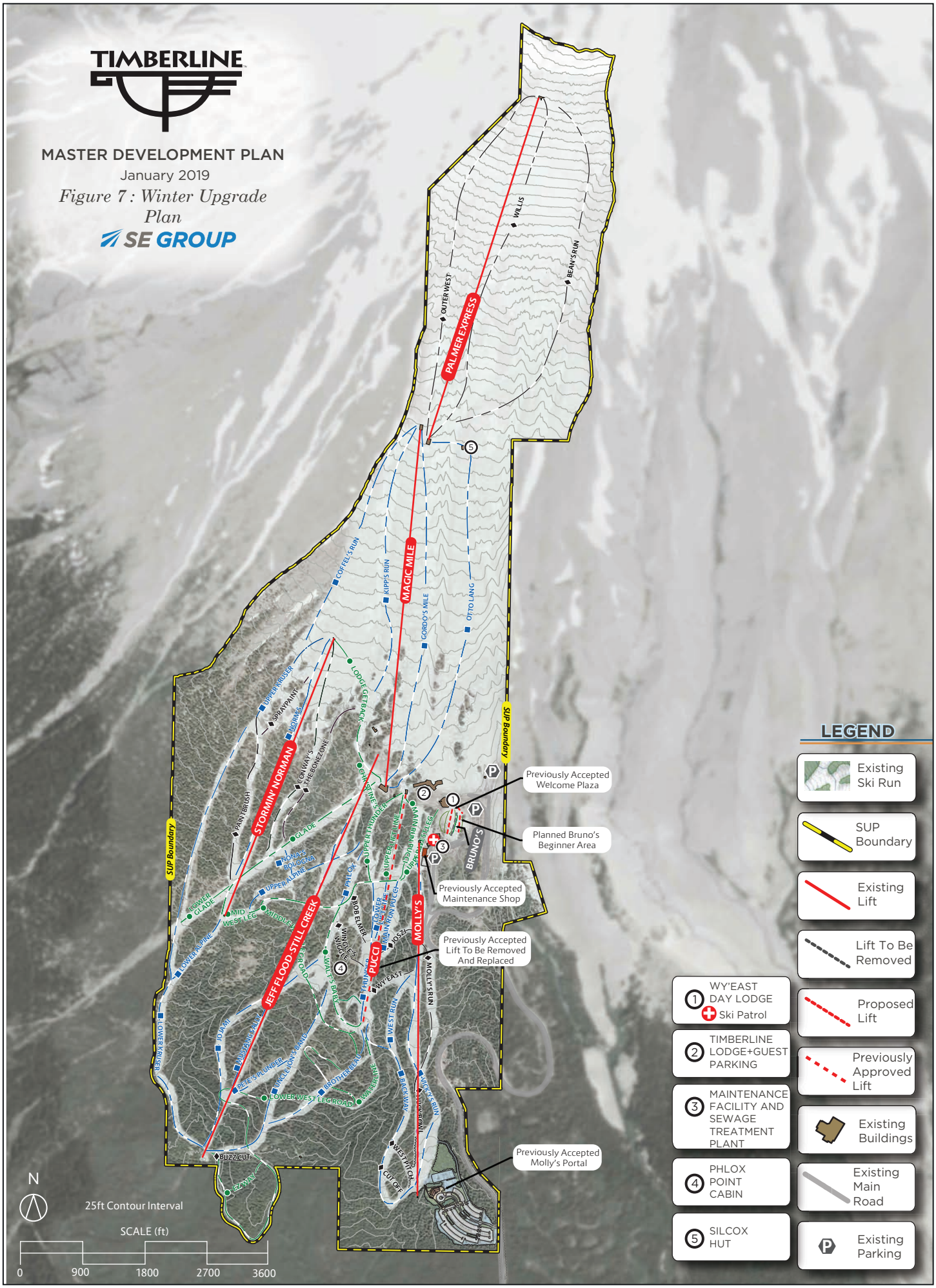
TIMBERLINE

MASTER DEVELOPMENT PLAN

January 2019

Figure 7 : Winter Upgrade Plan

SE GROUP



LEGEND

- Existing Ski Run
- SUP Boundary
- Existing Lift
- Lift To Be Removed
- Proposed Lift
- Previously Approved Lift
- Existing Buildings
- Existing Main Road
- Existing Parking

1. WY'EAST DAY LODGE + Ski Patrol
2. TIMBERLINE LODGE+GUEST PARKING
3. MAINTENANCE FACILITY AND SEWAGE TREATMENT PLANT
4. PHLOX POINT CABIN
5. SILCOX HUT

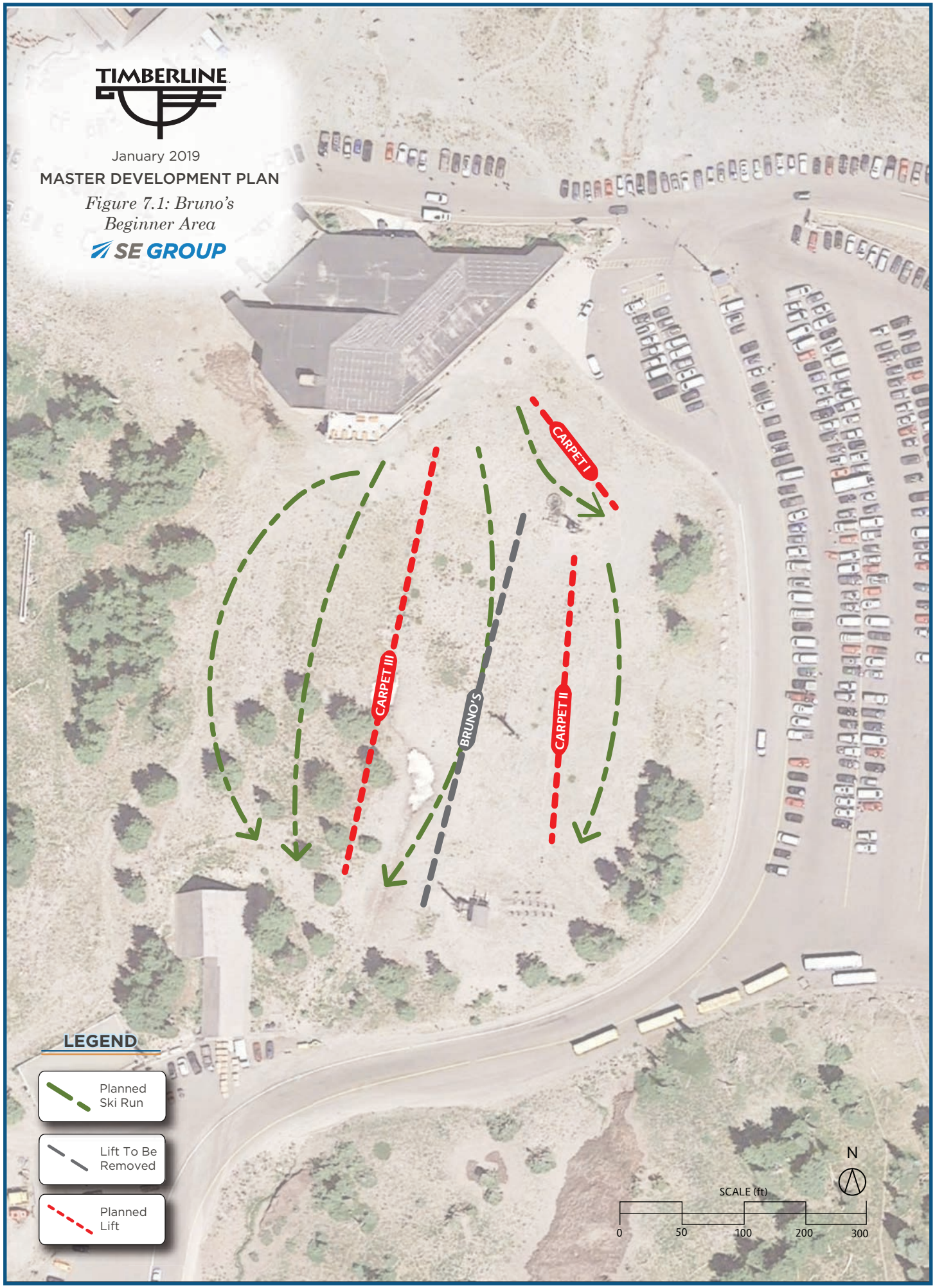
TIMBERLINE

January 2019

MASTER DEVELOPMENT PLAN

Figure 7.1: Bruno's Beginner Area

SE GROUP



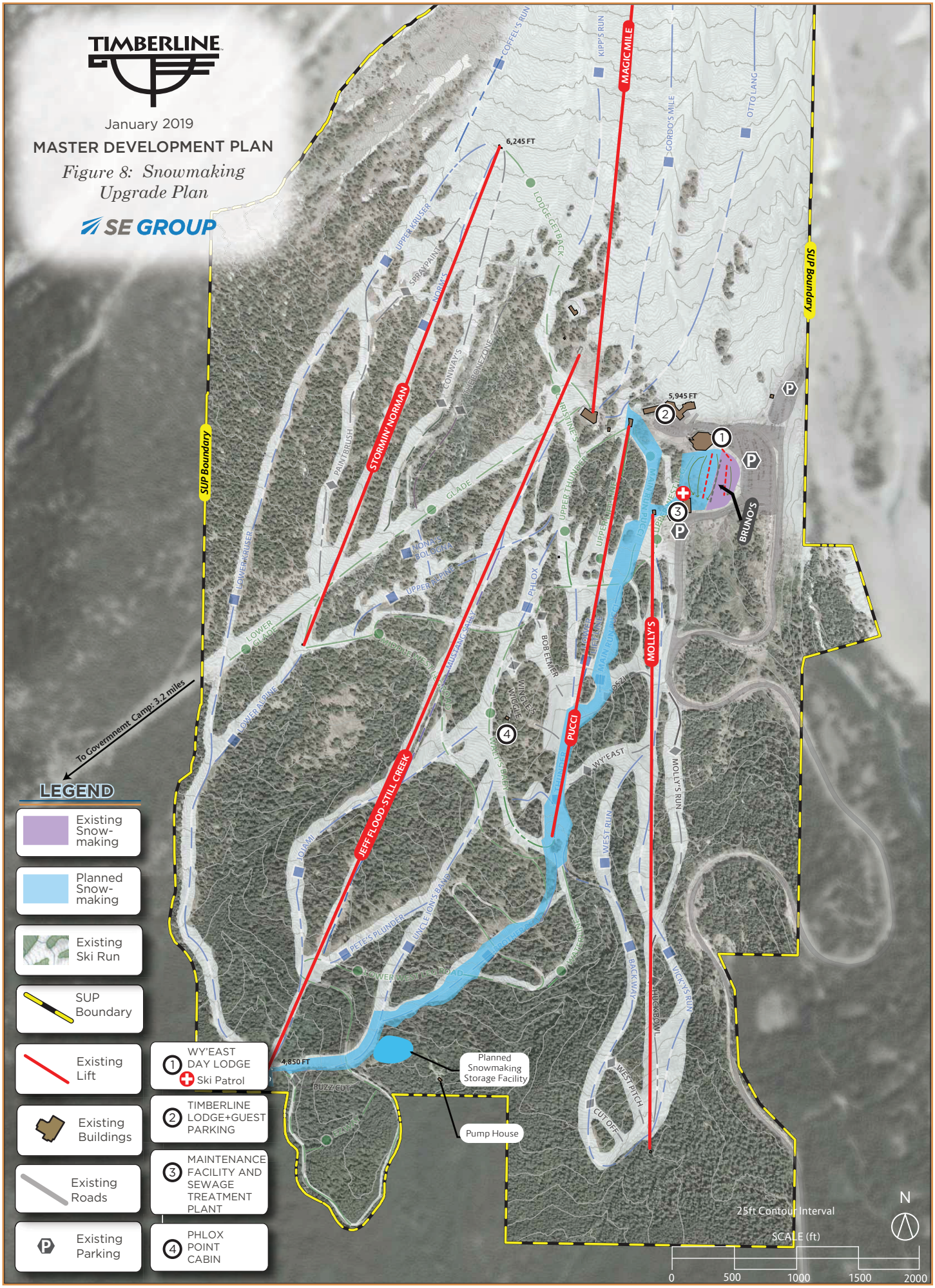
TIMBERLINE

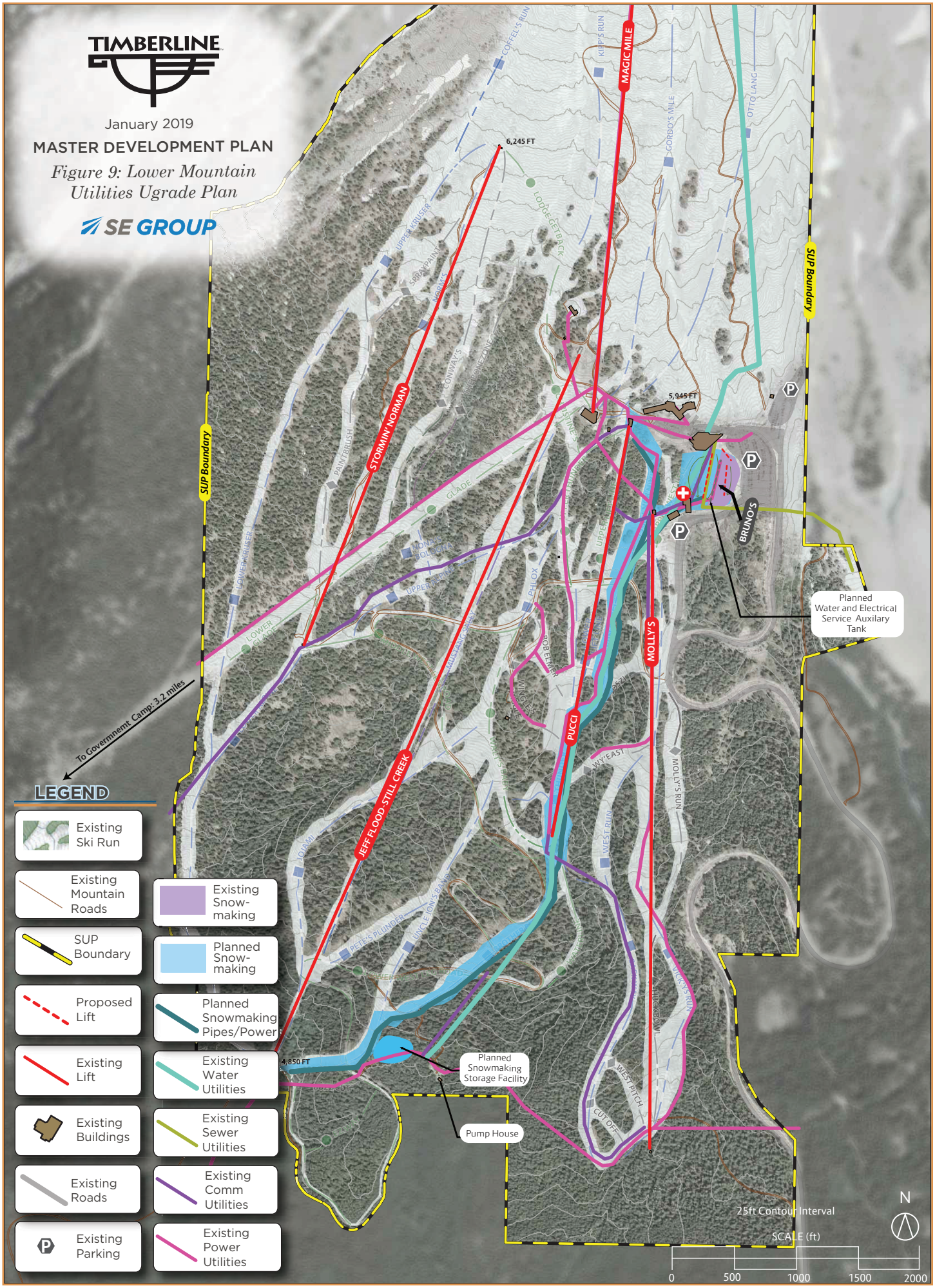
January 2019

MASTER DEVELOPMENT PLAN

Figure 7.2: Molly's Portal Concept

SE GROUP


TIMBERLINE
January 2019
MASTER DEVELOPMENT PLAN
Figure 8: Snowmaking Upgrade Plan
SE GROUP
6,245 FT
5,945 FT
4,850 FT
MAGIC MILE
STORMIN' NORMAN
JEFF FLOOD-STILL CREEK
PUCCI
MOLLY'S
SUP Boundary
SUP Boundary
BRUNO'S
To Government Camp: 3.2 miles
LEGEND
Existing Snow-making
Planned Snow-making
Existing Ski Run
SUP Boundary
Existing Lift
Existing Buildings
Existing Roads
Existing Parking
1 WY'EAST DAY LODGE Ski Patrol
2 TIMBERLINE LODGE+GUEST PARKING
3 MAINTENANCE FACILITY AND SEWAGE TREATMENT PLANT
4 PHLOX POINT CABIN
Planned Snowmaking Storage Facility
Pump House
25ft Contour Interval
SCALE (ft)
0
500
1000
1500
2000
N


TIMBERLINE
January 2019
MASTER DEVELOPMENT PLAN
Figure 9: Lower Mountain Utilities Ugrade Plan
SE GROUP
6,245 FT
5,945 FT
4,850 FT
MAGIC MILE
STORMIN' NORMAN
JEFF FLOOD STILL CREEK
PUCCI
MOLLY'S
BRUNO'S
SUP Boundary
SUP Boundary
Planned Water and Electrical Service Auxilary Tank
Planned Snowmaking Storage Facility
Pump House
To Government Camp: 3.2 miles
LEGEND
Existing Ski Run
Existing Mountain Roads
SUP Boundary
Proposed Lift
Existing Lift
Existing Buildings
Existing Roads
Existing Parking
Existing Snow-making
Planned Snow-making
Planned Snowmaking Pipes/Power
Existing Water Utilities
Existing Sewer Utilities
Existing Comm Utilities
Existing Power Utilities
25ft Contour Interval
SCALE (ft)
0
500
1000
1500
2000
N