NORTHSTAR COMMUNITY WILDFIRE PROTECTION PLAN

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Provided by

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INTRODUCTION

The goal of a Community Wildfire Protection Plan (CWPP) is to reduce or eliminate the loss of life, property, and resources caused by a wildfire. For the Northstar Community, this will be conducted through public input, planning, and forest fuels management practices. The first line of defense against a catastrophic wildfire in Northstar is taking the necessary steps to prevent a wildfire from starting in the first place; however, in case of a fire, the focus will be on containing it to as small a size as possible. The second line of defense is to enforce defensible space requirements around structures, manage fuels in common and boundary areas by creating firebreaks, clearly specifying evacuation routes, and promoting a healthy forest ecosystem. The final line of defense is the hardening of structures by promoting education to the property owner and following the Placer County Building Code.

On December 3, 2003, the Healthy Forests Restoration Act (HFRA) was signed into law. Among other things, this legislation supplies statutory incentives for the Forest Service and Bureau of Land Management to consider local communities as they develop and implement forest management and hazardous fuel reduction projects. For a community to take full advantage of this opportunity, it must first prepare a CWPP.

A CWPP has importance in and of itself because it is mindful of the community values for which it is formulated. The CWPP defines a precise fuels management program and addresses the concerns of the public about wildfires. The interest of multiple community groups was taken into consideration during the development of the CWPP. This CWPP expands and updates the Northstar Fuels Management Plan and the original CWPP adopted in 2005. Since the 2008 start of the fuels management program, 1,643 acres have been treated within and outside the district boundary. These treatments have decreased the threat of wildfire in and around the Northstar community. The CWPP is the supervising document of the Northstar Fire Department Fuels Management program.

METHODOLOGY

The Northstar Fire Department used the following approaches to assess and document both the risks and hazards in its community and the surrounding lands. This assessment used the latest satellite-based mapping technology and field verification provided by Privately Contracted Foresters, California State Foresters, California State Fuels Management Specialists, and the Northstar Fire Department Fire Chief and Forester. This methodology quantifies:

- current risks and hazards
- documents the risk and hazard abatement to date
- supplies proposed mitigation costs and timelines for future mitigation efforts

The assessment methodology applies to public and private land parcels within and outside Northstar community boundaries.

In developing the CWPP for the Northstar community, all previously collected data, analysis, plans, maps, and reports were used. Northstar Fire Department has made every attempt to work closely with the public, major private landowners, local fire agencies, regional government, and the state and federal agencies

whose properties or jurisdictions affect this plan. Public meetings were held to communicate this methodology as well as to solicit public input. The Northstar Fire Department intends for this CWPP to reflect the community's values, needs, environmental concerns, and opportunities within this plan's boundaries and to be effective in reducing the wildfire threat to the Northstar community.

COMMUNITY PROFILE

History

In 1972, the Northstar Fire Department was formed as a Placer County Services Area governed by the Placer County Board of Supervisors. In 1991, the Northstar Community Services District was created as an independent district within Placer County; a five-member board governs the district. The five board members set district policy, and a general manager manages the district. The district provides fire protection, water, sewer, road maintenance, snow removal, and recreational services.

Topographical Factors

The Northstar Community Service District is in the Sierra Nevada Mountain range at the east end of Placer County. The community of Northstar is in a classic Wildland/Urban Interface area (WUI), which adds responsibility and demands to both structural and wildland firefighting. If the district experiences multiple calls, the limited resources are severely taxed. County roads are heavily affected by snow-clearing operations in the winter and maintenance and repairs in the spring and summer. Northstar is a popular year-round visitor destination, which causes traffic congestion. All these items contribute to the prompt response of firefighting and emergency medical resources**.**

Climate

According to the Köppen Climate Classification System, Northstar falls under a dry-summer wet-winter Continental Climate. Winters typically bring rain, ice, and snow to the area. Northstar's annual snow totals regularly surpass the 200-inch mark. Portions of the community at higher elevation levels can see totals above 300 inches. Wet winters tend to encourage the growth of vegetation as spring and summer begin. Summers are typically warm and dry, with thunderstorms that can produce lightning strikes. Due to the lack of humidity, vegetation that grows throughout the spring can become dry and combustible during the summer months. Northstar's wet winters and dry summers contribute to a higher risk of wildfires. This risk grows exponentially as the average temperature increases and humidity decreases.

SERVICES AND STAFFING

The Northstar Community Services District makes up 2.9 square miles, with a sphere of influence approaching 25 square miles. The Northstar Fire Department provides structural and wildland fire protection, fire suppression, fire prevention, and public education. The Fire Department also provides emergency medical services at the Advanced Life Support level (Paramedic). The Northstar Fire Department is a provider and recipient of mutual aid throughout the Truckee/North Tahoe region. The forested lands within and surrounding Northstar are State Responsibility Area [SRA] and Federal [DPA]

Direct Protection Area lands. This means wildland fire protection falls within the purview of CAL FIRE or the United States Forest Service [USFS]. The Northstar Fire Department has sixteen full-time shift personnel, one full-time Fire Chief, one Division Chief, one Forester and a Forestry Assistant. Seasonal staffing includes five Firefighters and one Defensible Space Inspector. Three shift platoons provide staffing 24-hours a day, seven days a week, every day of the year. The Fire Chief, Division Chief, Forester, Assistant Forester and non-Firefighter Seasonal employees work a 40-hour workweek.

The Northstar Fire Department currently has the following:

- Fire stations = 2
- Aerial ladder truck = 1
- Type I fire engines = 3
- Type III fire engines = 3
- Command vehicles = 2
- Utility/rescue vehicle = 1
- Utility vehicles = 2
- Snowmobiles = 2
- OHV emergency/rescue vehicle =1
- Forestry/Fuels Management Vehicle = 1
- Defensible Space vehicle = 1
- Various snow removal equipment to assure seamless services during the winter months.

Past and Future Growth

Modern-day development started in the Northstar area in the early 1970s, with the first homes completed in 1972. Development has had both positive and negative effects on the forest itself and the potential for wildfire. Exhibit 1 is a detailed map of the Northstar CSD boundaries, including property ownership details. The potential for the growth in wildfire has intensified by having an increased amount of people recreating in the forest. In addition, with the introduction of residential and commercial property within forested areas, structure protection has taken priority over fire suppression. This allows wildland fires to grow in intensity until enough firefighting resources can arrive to start suppressing the actual wildland fire. On the positive side of development, the construction of roads has increased access within the forest and the availability of water for fighting a wildfire. Early detection of wildfire has improved with people present in the forest, cell phones, webcams, satellite, and drone technology. With adequate funding, agencies also can manage forest fuels properly and support a healthy fire-resistant forest ecosystem.

In 1999, the year of the first Fuels Management Plan, the total square feet of building area, including commercial buildings, comprised of 2,320,857 square feet. In 2016, that number increased to 2,945,809 square feet, and in 2020, that number was 3,033,223.32 square feet. For 2021, the number was 3,302,581 square feet. The community is a high-profile destination resort with a significant interest in year-round recreation. This has increased the susceptibility for a wildfire. The infrastructure to support development has created the need for added planning and mitigation through the CWPP process. The mitigations have included an added fire station and staffing, aggressive fire protection ordinances, and the addition of a Forester to manage all the Forestry/Fuels Management-related programs.

FOREST HISTORY IN THE NORTHSTAR AREA

Fire

Northstar is found within a fire-dependent ecosystem. For thousands of years, fire shaped the landscape into its natural structure and composition of the Sierra Nevada Mountains. Fires set deliberately by Native Americans for cultural practices, as well as those caused by lightning strikes, began shaping the forest in this region even before the Western Migration Settlement era started. These fires, which were frequent and light in intensity, removed any fuels that had accumulated on the ground since the last fire. Early accounts from the first settlers talked about a forest being an open-growth pine forest with large trees and little to no understory. Through the general absence of fire by suppression efforts and the negative stigma on controlled burning that has developed over the past century, the forest has regressed into an unnatural state. The overstocked forests in the Northern Sierra Nevada hold a larger component of red fir (*Abies magnifica*) and white fir (*Abies concolor*) and a dense understory of seedlings, brush, and downed woody material. With the amount of highly combustible material that has been given the opportunity to build now through decades of mismanagement and neglect, fires will continue to be more intense and unpredictable unless there is immediate action.

Fire Occurrence

In 1988 Carol Rice of Wildland Resources Management completed a fire history report just to the west of Northstar in Donner State Park. Her report carefully studied the cross-sections of select older trees to note the years in which the trees had fire scarring. Tree's produce new rings around the circumference of their trunk each year, just beneath the outer bark, signifying its growth during that time span. Each season of growth leaves a distinct ring pattern. For example, trees tend to grow quickly during the spring, which leaves a light-colored and less dense ring around the previous year's wood. During late summer and early fall, a darker dense ring forms outside the spring-growth ring. This growth pattern shows an annual ring and is what allows us to figure out the years where a wildfire may have damaged a tree. Carol Rice's report showed that between 1635 and 1900, a fire occurred in the park, on average, every 9.1 years. This can be applied to the entire Truckee/Northstar area.

Logging

Logging started in the Truckee area in the late nineteenth century. Two separate mills began operations in the vicinity of Trout Creek. A timber survey completed during the summer of 1912 said that a large portion of flat topography draining into Trout and Alder Creeks had been "logged over some years ago." It also mentioned that early logging favored removing pine species, which inevitably left a residual forest of mostly young red and white fir trees.

Historical logging has changed the composition and size of the trees in the forest in the Northstar area. Before logging, Jeffrey pine (*Pinus jeffreyi*) dominated the east and south slopes, a mixture of older pine with an understory of fir in the flatlands, and a mix of pine and fir trees on the north slopes. Within the Northstar Community today, the forests hold a much higher percentage of red and white firs than pine species. In wet areas that had historical disturbance by logging, a disproportionate number of lodgepole pine (*Pinus contorta*) flourish.

CURRENT FOREST CONDITIONS IN CWPP AREA

Forested Areas

Due to the combination of a changing forest management philosophy and the loss of often occurring low-intensity natural wildfires, the forest has developed into an unhealthy state. Through selective logging of the Jeffrey pine and sugar pine (*Pinus lambertiana*) before the turn of the century, as well as the near-total absence of fire over the last 100-years, the composition of conifer species has changed, resulting in a buildup of understory brush, and accumulated dead fuels. Early logging focused on removing the larger and genetically superior pine trees, leaving a forest understory of true fir and genetically inferior trees to become the new forest over-story. The forest now consists of a higher percentage of tree species that are less tolerant of drought conditions, beetle infestations, disease, and fire. The forest also holds a higher number of trees per acre, leaving them to compete for water, nutrients, and sunlight. This leaves the forest susceptible to insect and disease attacks, especially during years of drought.

Brush Covered Areas

Brush fields can create conditions that cause a wildfire to move very quickly and burn at a higher-than-average intensity level. Typically, two to five-foot-tall manzanita dominates the east and southeastern slopes of the district. If left unmanaged, the brush will continue to grow while creating its own litter layer. This will increase the rate of spread and intensity of a wildfire. The brush can also inhibit or significantly reduce the growth of native tree seedlings. In general, when brush fields are overgrown and continuous in nature, they inhibit tree growth by taking away or limiting available water nutrients and sunlight.

Treated Areas

Where completed forest fuels-reduction exists, there is a need for annual inspections and scheduled maintenance. In most cases, shrub-covered areas reduce a severe or dangerous fire threat to a manageable fire threat. Timber-covered areas become altered from an unhealthy even-aged conifer stand, with accumulated forest floor fuels, to a Shaded Fuel Break. A detailed breakdown of fuels treatments and the classification of a computer-generated forest fuels model are on pages 5 through 15.

COMMUNITY RISK ASSESSMENT

Forest Fuels Modeling

Fuel models describe vegetation in terms of firefighting. The characterization of each fuel model is defined by the amount, size, and depth of fuel. Fuel models, along with fuel moisture, live fuel moisture, the slope of the ground, and wind (speed and direction), predict what a wildfire will do and is otherwise known as fire behavior.

For the 2022 CWPP update, the Northstar Fire Department had made the effort to update the forest fuel modeling analysis applying the current fuel modeling tools and to expand the boundaries for analysis. The choice of two consulting firms for forest fuels modeling helped show where forest fuels reduction should

be emphasized as well as what level of treatment. Additionally, forest fuels modeling helped in the analysis of finding priority areas for forest fuels reduction.

By comparing two different forest fuels modeling methods, it helped to decide the accuracy of the study and find relevance in priority areas for treatment.

The Conservation Science Partners performed the first forest fuels modeling study (CSP) from Truckee, California. The second was by Wildland Rx Inc. from Nampa, Idaho.

Conservation Science Partners Analysis

Conservation Science Partners (CSP) performed three groups of fire simulation analyses for their report. The report created on November 11, 2020, held the following: 1) fire behavior analysis and mapping of potential fire behavior characteristics using the FlamMap program, 2) fire spread rate analysis and mapping using the FARSITE program, and 3) analysis and mapping of crown fire potential within a 300-foot buffer of designated evacuation routes.

Methods:
Fuels base maps and moisture conditions
The base maps used in the analyses were obtained from the LANDFIRE program database (www.landfire.gov; Rollins 2009). Base map layers included: elevation, slope, aspect, surface fuel model, canopy cover, stand height, canopy base height, and canopy bulk density. The fuels layers (surface fuel model, canopy cover, stand height, canopy base height, and canopy bulk density) were derived from the 2020 "capable fuels" data-set (https://www.landfire.gov/lf_remap.php). This dataset uses 2016 Landfire remapped data and adjusts fuel layers to incorporate regrowth from disturbance that occurred between 2009-2016. These base layers are the most exact layers available for the fire simulations, though there may still be differences between the modeled fuel conditions and the observable conditions on the ground. Dry fuel moisture conditions simulate likely fuel conditions during dry summer months (Table 1).

Variable	Value
1-hour fuels	2%
10-hour fuels	3%
100-hour fuels	6%
Live herbaceous fuels	25%
Live woody fuels	60%
Foliar moisture content	90%

Table 1. Fuel moisture variable inputs for fire simulations.

Weather conditions
Modeling was performed for fire behavior conditions under two weather scenarios: average weather conditions and extreme (95th percentile) weather conditions. The average and extreme conditions were derived from 10-years (2011-2020) of fire season (June-October). Weather data was collected at the Truckee-Tahoe (KTRK) weather station, which is approximately two miles north of Northstar Fire Station 32. We derived average and 95th percentile high temperature, low temperature, and wind gust speed (Table 2). We also estimated the average wind direction (205°) and applied this value in all

simulations. Gridded wind vectors were used to incorporate local topography into fire behavior estimates (Finney 2006).

Table 2. Weather variable inputs for fire simulations under average and extreme fire weather conditions.

Variable	Average	Extreme
Wind direction	205° (southwesterly)	205° (southwesterly)
Wind Speed	20 mph	31 mph
Daytime temperature	76° F	86° F
Nighttime temperature	36° F	56° F
Relative humidity	15%	15%

FlamMap fire behavior analysis

Fire behavior simulations were performed using the FlamMap fire simulator within FlamMap 6.0 software (Finney 2006). We modeled five fire behavior characteristics using the FlamMap fire simulator within FlamMap 6.0 software: rate of spread (feet/minute), midflame wind speed (mph), flame length (feet), fire-line intensity (kW/m), and crown fire potential. Crown fire potential is measured as one of four categories: no fire, surface fire, passive crown fire, and active crown fire. We used the Finney (2004b) crown fire calculation method. Fire behavior metrics are summarized for the area defined by the NCSD boundary.

FARSITE fire behavior analysis

Fire spread simulations were performed using the FARSITE fire simulator within FlamMap 6.0 software (Finney 2004a). We simulated fire spread from nine ignition points specified by the Northstar Fire Department. The crown fire calculation method followed Finney (2004b). Fire model variable inputs are listed in Table 3. Fires were simulated from a single point ignition and were allowed to grow without any specified barriers for eight hours and using either average or extreme weather conditions. Output includes fire growth by hourly intervals.

Table 3. Fire model variable inputs for the FARSITE fire simulation.

Variable	Average condition
Perimeter resolution	60 m
Distance resolution	30 m
Time step	60 minutes
Ember spot probability	70%
Spot delay	0 minutes
Minimum spotting distance	30 m
Background spotting grid resolution	15 m
Start hour	11:00
End hour	20:00

Evacuation route analysis

Routes specified as primary, secondary, and tertiary evacuation routes in the Northstar CWPP were digitized from a web-based map and we derived a 300-foot buffer (150-feet on each side from the centerline). This buffer was overlaid on the map of crown fire activity derived from the FlamMap analysis.

Results: FlamMap fire behavior analysis

The mean rate of spread within the NCSD was 14 feet/minute under average weather conditions, and 23 feet/minute under extreme weather conditions. The mean midflame wind speed within the NCSD was 3 mph under average weather conditions, and 4 mph under extreme weather conditions. The mean flame length within the NCSD was 3 feet under average weather conditions and 4 feet under extreme weather conditions. The mean fire-line intensity within the NCSD was 420 kW/m under average weather conditions and 723 kW/m under extreme weather conditions. Summary statistics are provided in Tables 4 (average weather) and 5 (extreme weather).

Within the NCSD boundary, under average weather conditions, 64% of the area experienced a surface fire, 23% experienced a passive crown fire, 1% of the area experienced an active crown fire, and 13% experienced no fire. Under extreme weather conditions, 57% of the area experienced a surface fire, 16% experienced a passive crown fire, 14% of the area experienced an active crown fire, and 13% experienced no fire.

Table 4. Summary statistics for FlamMap simulations within the NCSD under average weather conditions.

Variable	Minimum value	Maximum value	Mean	Standard Deviation
Rate of spread (feet/minute)	0	219	14	25
Midflame wind speed (mph)	0	14	3	2
Flame length (feet)	0	28	3	3
Fireline intensity (kW/m)	0	27726	420	1122

Table 5. Summary statistics for FlamMap simulations within the NCSD under extreme weather conditions.

Variable	Minimum value	Maximum value	Mean	Standard Deviation
Rate of spread (feet/minute)	0	446	23	41
Midflame wind speed (mph)	0	20	4	3
Flame length (feet)	0	40	4	4
Fireline intensity (kW/m)	0	43018	723	1800

FARSITE fire behavior analysis

Fire spread was more extensive under extreme weather conditions. The maps of fire spread from the nine ignition points under average and extreme weather conditions are provided in the supplementary appendix.

Evacuation route analysis
Within the evacuation route boundary and under average weather conditions, 55% of the area experienced a surface fire, 19% experienced a passive crown fire, 1% of the area experienced an active crown fire, and 27% experienced no fire. Under extreme weather conditions, 45% of the area experienced a surface fire, 18% experienced a passive crown fire, 13% of the area experienced an active crown fire, and 24% experienced no fire. The areas where an active crown fire was concentrated under extreme weather conditions included Highlands View Rd, Skidder Trail, Grouse Ridge Rd, and Big Springs Dr.

References
Finney, M. A. 2004a. FARSITE: Fire Area Simulator–model development and evaluation. Research Paper
RMRS-RP-4 Revised. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. (1,667 KB; 47 pages).
Finney, M.A. 2004b. Chapter 9, Landscape fire simulation and fuel treatment optimization. In: J.L. Hayes,
A.A. Ager, J.R. Barbour, (tech. eds). Methods for integrated modeling of landscape change: Interior Northwest Landscape Analysis System. PNW-GTR-610. p 117-131.
Finney, M.A. 2006. An overview of FlamMap fire modeling capabilities. In: Fuels management—how to measure success: conference proceedings. 2006 March 28-30; Portland, Oregon. Proceedings RMRS-P-41. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 213-220. (647 KB; 13 pages).
Rollins, M.G. 2009. LANDFIRE: A nationally consistent vegetation, wildland fire, and fuel assessment. International Journal of Wildland Fire 18:235-249.

Wildland Rx Inc. Analysis

Introduction
The use of fire behavior outputs is solely up to the requesting agency. The intent of the fire behavior assessment is for the development of a risk assessment that will allow the agency to evaluate the need for treatments that will reduce the impacts of a wildfire on a community. It will also be used to evaluate where the most need is found.

Fire Behavior modeling used for this analysis includes:

Interagency Fuels Treatment Decision Support System
The Interagency Fuels Treatment Decision Support System (IFTDSS) is a web-based application designed to make fuels treatment planning and analysis more efficient and effective. IFTDSS supplies access to data and models through one simple user interface. It is available to all interested users, regardless of agency or organizational affiliation.

IFTDSS is designed to address the planning needs of users with a variety of skills, backgrounds, and needs. A simple and intuitive interface supplies the ability to model fire behavior across an area of interest under a variety of weather conditions and easily generate downloadable maps, graphs, and tables of model results. Additionally, the application supplies a step-by-step process for evaluating a variety of fuels treatment impacts (thin, clear cut, prescribed burn) on fire behavior and comparing results to

decide which modeled treatment best achieves desired results in terms of reduced fire behavior potential. It can be used at a variety of scales from local to landscape level. The following web pages give you the intent and history of the program.

https://iftdss.firenet.gov/landing_page/about.html

https://iftdss.firenet.gov/landing_page/history.html

This program uses FLAMMAP as its basic modeling program with enhancements.
Fire Behavior Modeling Descriptions
(From http://www.fire.org/)

FLAMMAP

FLAMMAP is a fire behavior mapping and analysis program that computes potential fire behavior characteristics (spread rate, flame length, fire-line intensity, etc.) over an entire FARSITE landscape for constant weather and fuel moisture conditions.

- FLAMMAP software creates raster maps of potential fire behavior characteristics (spread rate, flame length, crown fire activity, etc.) and environmental conditions (dead fuel moistures, midflame wind speeds, and solar irradiance) over an entire FARSITE landscape. These raster maps can be viewed in FLAMMAP or exported for use in a GIS, image, or word processor.

- FLAMMAP is not a replacement for FARSITE or a complete fire growth simulation model. There is no temporal component in FLAMMAP. It uses spatial information on topography and fuels to calculate fire behavior characteristics in one instant.
- It uses the same spatial and tabular data as FARSITE:
  - a Landscape (.LCP) File,
  - Initial Fuel Moistures (.FMS) File,
  - optional Custom Fuel Model (.FMD),
  - optional Conversion (.CNV),
  - optional Weather (.WTR), and
  - optional Wind (.WND) Files.
- It incorporates the following fire behavior models:
  - Rothermel's 1972 surface fire model,
  - Van Wagner's 1977 crown fire initiation model,
  - Rothermel's 1991 crown fire spread model, and
  - Nelson's 2000 dead fuel moisture model.
- FLAMMAP runs under Microsoft Windows operating systems (Windows 95, 98, me, NT, 2000, and XP) and features a graphical user interface.
- Users may need the support of a geographic information system (GIS) analyst to use FLAMMAP because it requires spatial coincident landscape raster information to run.
  FLAMMAP is widely used by the USDI National Park Service, USDA Forest Service, and other federal and state land management agencies in support of fire management activities. It is designed for use by users familiar with fuels, weather, topography, wildfire situations, and the associated terminology. Because of its complexity, only users with the proper fire behavior

training and experience should use FLAMMAP, where the outputs are to be used for making fire and land management decisions.

Fire Behavior Outputs

Wildland Fire Behavior

The wildland fire behavior analysis developed for the CWPP update was designed to meet two goals. The first was to examine the existing fire hazard and potential losses if a wildfire were to occur. Secondly to set up the best treatment locations and prioritizations for those treatments based on expected fire behavior with input from the firefighting agencies and local community members. The 2014 version of Landfire data was used to supply the spatial data for the modeling, which includes elevation, slope, aspect, fuel model, canopy cover canopy height, crow base height and crown bulk density. In the treatment areas, this data was confirmed by random sampling on the ground. The Landfire data was then changed to match what was evaluated with on the ground sampling. The treatment areas that changes were made to in the Landfire data were the areas treated from 2014 to 2020.

Two important fire behavior outputs are derived from FLAMMAP and were used in designing the resistance to control maps and tables for the analysis.

Flame Length - used to decide suppression tactics based on how close you can get to the fire
Fire Type - based on the flame length and availability of ladder fuels, the fire can be a surface, torching, or actively crowning wildfire.

Crown Fire Activity. Fire type or Crown fire activity is an important output from FLAMMAP. It considers multiple factors to decide if the fire is surface, passively crowning (torching) or actively crowning in any cell of the fuels grid.

- Fire type 1 is a surface fire; the fire is generally on the ground, high likelihood of initial attack success.
- Fire type 2 is a passive crown fire (torching and short-range spotting).
- Fire type 3 is an active crown fire (fire actively moving in the crowns of trees with mid to long-range spotting).

The other Fire Behavior indicator Flame Length is useful in deciding resistance to control flame lengths. Flame lengths greater than 4 feet are very difficult to control. Again, using the same parameters for the weather and the FLAMMAP model to figure out flame length, a fire behavior specialist can develop areas resistance to control. Fire type, Flame length and Rate of spread modeling output maps can be found below.

The following figure (Figure 1) depicts the modeling inputs and outputs for each 30 by 30-meter cell in the spatial grid (approximate every quarter acre). The surface fuel data and mapping done for this document used spatial input data that was randomly ground verified. This allows decision-makers to have the best information possible on potential fire behavior and expected losses in the analysis area.

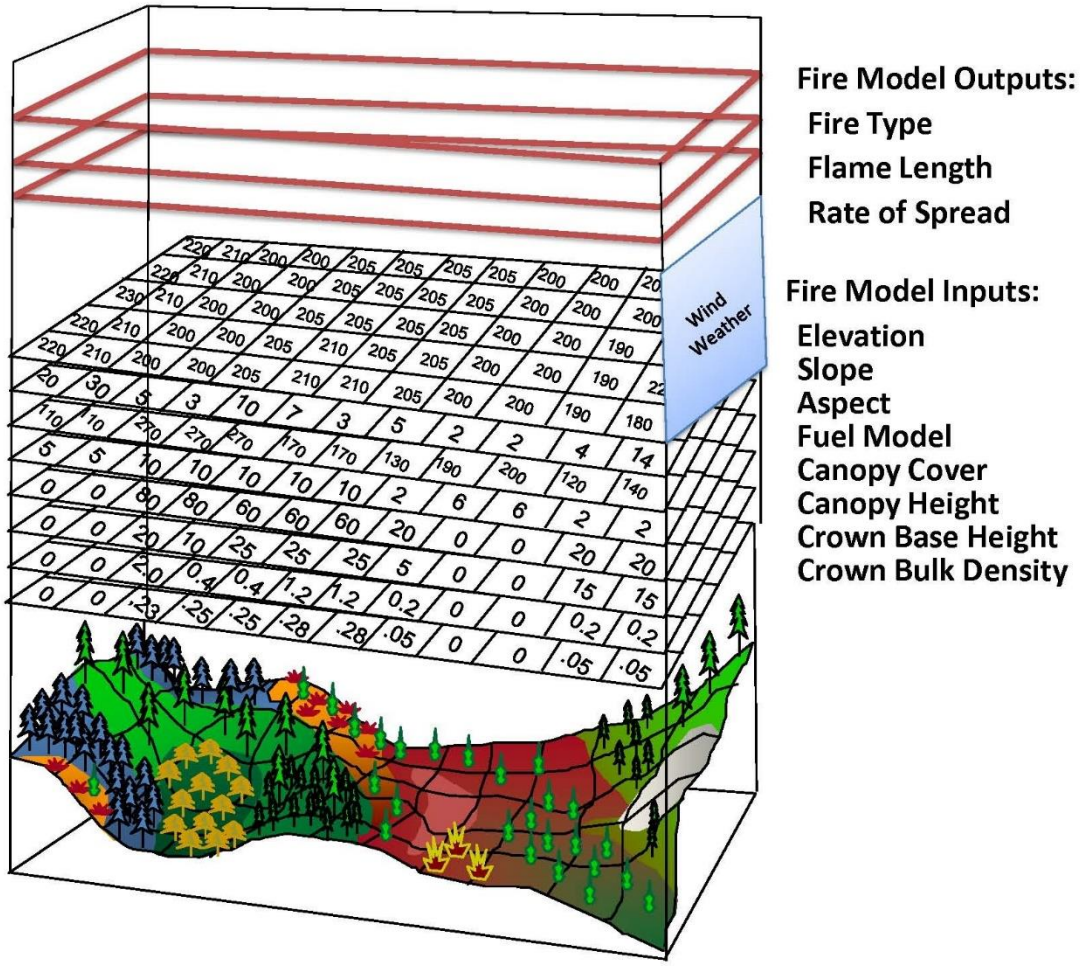


Figure 1. Diagram of Model inputs and outputs

Flame Length

Flame length is a good visual indicator of fire behavior and is easier to interpret what suppression action can be implemented under the following interpretations (Figure 2). Figure 3 is a photo of how flame length is visually interpreted.

Flame Length		Interpretation
Less Than 4 feet		• Fire can generally be attacked at the head or flanks by persons with hand tools and or engines. • Handlines should hold the fire
4 to 8 feet		• Fire is too intense for a direct attack on the head by persons using hand tools. • Handlines cannot be relied on to hold the fire.

		• Equipment such as dozers, fire engines, and retardant aircraft can be effective
8 to 11 feet		• Fire may present serious control problems --torching out, crowning, and spotting. • Control efforts at the fire head will probably be ineffective
Over 11 feet		• Crowning spotting and major fire runs are probable. • Control efforts at the head of the fire are ineffective

Figure 2. Flame Length interpretations

Figure 3. Flame Length

The fire behavior requires inputs from a weather station as well as the information found in the Landfire data used to give the model spatial data to run as well.

Weather data

The IFTDSS program chose Little Valley Weather station for its weather analysis for the 97th percentile weather, which is a worst-case weather scenario.

- 1 Hour Fuel Moisture was 3%,
- 10 Hour was 4%
- 100 Hour was 7%
- Live herbaceous 87%
- Live woody was 109%
- The wind was 20mph at 20 feet about the ground from 259 to 270

These weather inputs were derived from the Little Valley weather station data and could be experienced late summer early fall on a typical warm, dry day.

Fire Behavior Pre and Post Treatment Northstar Community Area

The same weather and modeling were used to develop and map the following fire behavior outputs for the Community Service District and the Area of Responsibility. The following tables were created from the last group of fire behavior maps on pages 5 through 8, which focus on the areas with the most treatments.

Table 1 Flame Length

Flame Length (In feet)	Pretreatment Acreage	Pretreatment Percentage	Post Treatment 2020 Acreage	Post Treatment Percentage of Area
0-4	3974.81	76.65%	4443.96	85.70%
4-8	687.10	13.25%	390.35	7.53%
8-11	298.54	5.76%	170.32	3.28%
11-20	193.45	3.73%	147.26	2.84%
+20	31.47	0.61%	33.47	0.65%

Table 2 Fire Type

Fire Type	Pretreatment Acreage	Pretreatment Percent of Area	Post treatment 2020 Acreage	Post Treatment Percentage of Area
Surface Fire	2845.89	54.88%	3635.48	70.11%
Passive Crown Fire	1931.83	37.26%	1141.35	22.01%
Active Crown Fire	18.03	0.35%	18.92	0.36%

NORTHSTAR CSD HAZARD PRIORITIES

For the year 2022, Fire Chief Sean Bailey and Forester Joe Barron have used forest fuels modeling and surveyed areas that posed a threat to the Northstar community to decide how best to mitigate the fire hazard. This survey yielded six specific determinations. Shown below are the six updated Hazard Priority determinations for 2022:

Updated 2022 Hazard Priorities

Current Priority No. 1 – For the next 7 to10-years, and with proper funding, the goal will be to establish forest fuels reduction buffer zones along the evacuation route for the entire Community of Northstar. The definition of an established Evacuation Route will consist of setting up the following:

- 300' (foot) fuel break from every road within the Community of Northstar. This will be 150' from each side of the centerline where applicable.
- 300' (foot) clearance from any residential, commercial, utility facility or named area(s) of last resort that exists within identified open space common areas.
- Supply adequate clearance around district-owned utilities ranging from ten feet and greater.
- Supply forest fuels reduction beyond the 300' fuel break to the NCSD district boundary.
- Project work will begin in 2022 and be done through a combination of enterprise funds, Measure U, partner matching, grant and other future available funding sources.
- During and or following this work, forest fuels reduction work will be applied beyond the 300' zone to treat within the entire District (Community) boundary.

Forest fuels reduction work will prioritize treatment starting within priority evacuation routes. Priority areas will be as follows:

1. Main Evacuation Routes – Northstar Drive, Big Springs Drive, Highlands View Road, Martis Landing, Basque Drive, Skidder Trail, and Mill Site Road.
2. Secondary Evacuation Routes – Ridgeline Road, Indian Hills, Deer Path, Wolf Tree, Lodgepole, Conifer, Gold Bend, Currant Road, Larkspur Lane, Grouse Ridge, Silver Fox, North Summit Place, and Overlook Place.
3. Tertiary – White Fir Court, Wagon Wheel, Oxen Run, Logging Trail, Whistle Punk, Bitter Brush, Rocky Point, Bear Trap, Mill Camp, Cross Cut Court, Beaver Pond, Silver Strike, Aspen Grove, Eagle Feather Court, Red Tail Court, Woods Point Way, Ski Trails and Coyote Fork.

Current Priority No. 2 – Increase the level of residential and commercial defensible space inspections so that the entire Community of Northstar has met District, State of California, and Placer County compliance. Once the entire community has met compliance, re-inspections will occur no later than every three years. The target goal will be to inspect one-third of the community each year. An increase in staffing may be needed to meet this Priority.

Current Priority No. 3 –Strategically remove dead, diseased, dying and pest-infected trees as needed within the CWPP area to promote forest and watershed health and to identify and perform maintenance as needed. The CWPP area extends 1.5 miles in any direction from any developed area.

Tree mortality has become a year-round project. The increase in pest attacks, forest disease, and drought cycles has accelerated tree death. Tree mortality will be captured where it has been considered necessary

and where applicable with the California Forest Practice Rules. If tree mortality has decreases to a manageable level, the program will go back to reducing the number of dead, diseased, dying, and pest-infected trees to a bi-annual schedule.

Current Priority No. 4 – Strengthen a buffer zone around the entire Northstar Community Boundary. The priority for boundary enhancement is the Western boundary. The western boundary is a priority, followed by the Southern, Eastern, and Northern boundaries, respectively. Buffer zone widths will be determined by slope, prevailing winds, and fuel arrangements.

Current Priority No. 5 – Continue working with the United States Army Corps of Engineers (USACE) beyond the completed 78-acre project and treating all USACE acres that are a direct threat to the Community of Northstar and Zone 4. Additionally, a management schedule will be designed. Continued forest fuels treatments for this federal land will need to be grant-funded.

Current Priority No. 6 – Continue enhancing and supporting previously treated acres annually to ensure that previously treated areas remain in a declared "Maintenance Mode." Continued support through NCSD Fuels Management (Measure U) grant and owner-based matching funding are essential to keep treated areas in this status.

STATE AND LOCAL LAWS/ORDINANCES AFFECTING THE MANAGEMENT OF FUELS ON PRIVATE PROPERTY IN NORTHSTAR

State Fire Laws

California Public Resources Code, PRC § 4291 and Title 14 of the California Code of Regulations CCR, subsection 1299.3 list items that must be maintained around the home to lessen fire hazards. PRC § 4291 states that: A person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times do all of the following:

1. Maintain defensible space no greater than 100-feet from each side of the structure, but not beyond the property line unless allowed by state law, local ordinance, or regulation and as provided in paragraph 2) below. The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion.

2. A greater distance than that required under paragraph 1, above, may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state

law, local ordinance, rule, or regulation includes findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on the adjacent property shall only be conducted following written consent by the adjacent landowner.

3. An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph 1, above, if a fire expert, designated by the director, provides findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.

4. Remove that portion of any tree that extends within 10 feet of the outlet of any chimney or stovepipe.

5. Maintain any tree, shrub, or other plants adjacent to or overhanging a building free of dead or dying wood.

6. Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.

There are informative pamphlets, literature, and Internet sites as references available from the Northstar Fire Department (530-562-1212) or www.northstarcsd.org/FireDept.WelcomePage.

Local Fire Ordinances

Ordinance 38-22 (Appendix B) is a Wildland Fire Prevention Ordinance which, among other things, acknowledges the state designation of the Northstar community as a very high fire severity zone. This ordinance classifies lands within the Northstar Community Services District (NCSD) for fire hazards as residential and commercial parcels, defensible forest and fuel reduction zones, sets maintenance standards and defines penalties.

Ordinance 36-19 (Appendix C) adopts the 2019 California Fire Code and an emergency response impact for fire suppression and emergency services; prescribing regulations governing conditions hazardous to life and property from fire, hazardous materials or explosion; providing for the issuance of permits for hazardous uses or operations; and authorizing the establishment of a bureau of fire prevention and providing officers therefore and defining their powers and duties; and furthermore, adopting those amendments to the 2019 California Fire Code as stated herein.

These ordinances support the Northstar Fuels Management Plan, which was originally prepared in 1999 and the CWPP, which was officially signed into effect and adopted on July 20, 2005. Amendments to these ordinances will be necessary over time based on information gathered and priority work that has been completed.

STRUCTURAL IGNITABILITY

To address issues related to the ignitability of structures within the Northstar community, ordinances have been adopted, sections have been added and procedures have been put into place, as follows:

NCSD Ordinance 38-22 (Appendix B) expands the scope of Public Resources Code § 4291 and 14 CCR 1299.3. Code 4291 mandates that field inspections are performed annually by the Northstar Fire Department to ensure that the community is 100-percent compliant with these regulations. This ordinance allows the NCSD to classify lands within the community for fire hazard, to set maintenance standards and to define penalties. This ordinance also allows the enhanced provisions of this CWPP to be implemented, thereby reducing structural ignitability.

The NCSD Ordinance 36-19 (Appendix C) adopts the California Fire Code and Appendices, 2019 edition, the administrative provisions in the California Fire Code. Additionally, Ordinance 36-19 adopts an emergency response impact for fire suppression and emergency services; prescribing regulations governing conditions hazardous to life and property from fire, hazardous materials, or explosion; providing for the issuance of permits for hazardous uses or operations; maintaining the Bureau of Fire Prevention, providing officers therefore and defining their powers and duties; and adopting amendments to the 2019 California Fire Code.

Wildland Urban Interface – Ignition Resistant Building Construction Recommendations

One of the major goals of wildfire control in general, and pre-fire management hazard reduction, is to reduce the loss of life and property. The historical pattern of building loss during Interface fires shows that vegetation fuel management must go hand-in-glove with ignition-resistant building construction to maximize the effectiveness of fire loss mitigation measures.

Building loss and survival on the 1961 Bel Air fire, which destroyed 505 houses, was well documented. The report ***"Decision Analysis of Fire Protection Strategy for the Santa Monica Mountains"*** found that 71% of the buildings with 26-50 feet of brush clearance survived the fire. However, the survival rate of buildings exposed to the fire increased to 95% for houses that had both brush clearance and ignition resistant building construction (in this case non-wood roof covering). A similar pattern was seen in the 1990 Santa Barbara Paint fire.

On the Paint fire, which destroyed 479 houses and major buildings, the survival rate was 86% for houses with both non-flammable roofing and 30 feet of brush clearance. Only 4% of the 438 houses surveyed in the Paint fire survived where non-flammable roofing and 30 feet of brush clearance were absent. The modeling of structure loss and survival on the Paint fire revealed that brush clearance alone only "explained" or accounted for 11% of the variation seen in the structure survival patterns. When brush clearance was combined with roof type in the model, and the effect of defensive actions was accounted for, the model explained 59% of the variability in structure loss.

This is strong evidence that vegetation management *alone* will not fully explain or mitigate building loss on wildfires. Hence the need for a comprehensive approach in this plan, using a combination of vegetation management and addressing recommendations for ignition-resistant building construction. There is also strong evidence that this comprehensive approach will significantly reduce the Interfaces losses. The ***"Los***

Angeles Times" (1 April 2004) reporting on the Southern California conflagrations of October 2003 clearly revealed the need for, and effectiveness of, combining vegetation management and ignition resistant building construction for reducing the building loss in wildfires:

> "Amid the ashes of the costliest wildfires in California's history lies evidence of a crucial lesson: Fire-resistant construction and vigilant removal of flammable vegetation significantly improved the offs of a home's survival, according to a Times analysis of fire records from more the 2,300 destroyed structures.
>
> In fact, according to the Times analysis – which covered homes destroyed by the deadliest of the blazes, San Diego County's Cedar Fire – houses built since 1990 were far less likely to burn than those constructed in any earlier decade. Houses built during the 1990s were damaged or destroyed at less than half the rate of houses built earlier."

The communities and homeowners covered by this plan have, for the past 40 years, had recommendations that can be (and have been) taken to reduce the ignitability of structures. An outcome of the 1961 Bel Air fire was the publication of ***"Fire Safety Guides for California Watersheds"*** by the County Supervisors Association of California in 1965. These recommendations have been updated over the years. The current version of these "Fire Safe Guides" is ***"Structural Fire Prevention Field Guide for Mitigation of Wildfires"*** and can be found at -- https://osfm.fire.ca.gov/media/8479/fppguidepdf99.pdf

> These recommendations for ignition resistant building construction include:
>
> - Roofing
> - Eaves & Balconies
> - Exterior Walls
> - Rafters
> - Windows
> - Doors
> - Attic Ventilation Openings
> - Underfloor Areas

In response to the persistent loss of life and property in wildfires, the most important of the recommendations is now a requirement. All new buildings, and significant re-roofing of existing buildings, in the communities covered by this plan, must have ignition resistant roofing (California Building Code §1503).

Added information/recommendations for home-hardening (as it pertains to eaves and balconies, exterior walls, rafters, windows, doors, attic ventilation openings and under-floor areas) can be found on Northstar Fire Department's website at https://www.northstarcsd.org/defensible-space.

FUELS MANAGEMENT METHODS

Pile Burning

This method involves the use of creating piles of manageable sizes when the material cannot be effectively hauled away or chipped. It is a cost-effective method where the material is strategically stacked in open areas, thus minimizing scorch to residual trees.

Once stacked, the pile is then left to cure and becomes covered with water-proof material enabling a dry part of the pile to be burned when weather conditions allow. Pile burning operations take place between late fall through early spring. The Northstar Fire Department's protocol is to pile burn when proper conditions allow. This includes smoke dispersion, precipitation levels, and population density.

Tools for pile burning include fire gel (Aluma-gel), 1-2 drip torches consisting of a mixture of diesel fuel and gasoline to ignite the pile. Once the pile is ignited, a person ignites one to five piles, consistently keeping the pile burning and ensuring 100 percent consumption. A pile burning operation can consist of one to two hundred fifty piles per day to burn.

Placer County requires that a Burn Variance be sent through the Prescribed Fire Information Reporting System (PFIRS). This burn variance requires a strategy to pile burning, taking into consideration public and government notification, atmospheric conditions, and possible adverse effects to the local and adjacent communities. A nominal fee is included to obtain an air-pollution permit from the local air quality control board.

A seven-person crew can burn approximately twenty-five to fifty piles within one acre between $2,800 and $3,300. Added expenses such as drip torch mix, Aluma-gel, and next-day pile consolidation and mop-up can bring the average cost to burn up between $2,900 and $3,500 per acre.

Mastication

Mastication is completed by large and small machines with rotation heads that chew the vegetation or slash in place. Hydro Axe, Trac Mac and Shar are well-known models. These machines run either on wheels for slopes of up to 20 percent or on tracks, for slopes of up to 30 percent. The cutting heads are either a spinning disc with blades or a rolling drum with blades. The cutting heads are capable of little or no-side-to side movement. The rolling-drum type can cut closer to the ground and tends to be safer by not throwing pieces in all directions. Another type of machine is the Slash Buster. It is a tracked excavator with a rotary cutting head attached to the boom. It can sit in one place and cutting in all directions. The Slash Buster can be used on slopes of up to 40 percent. Tracked versions of masticators are known to have low pounds per square inch (P.S.I.) rating. For example, a John Deere masticator (350 excavator), which has a service weight of 76,557 pounds and is equipped with extra-wide trackpads, can have a P.S.I. ground pressure rating of 6.1. Topography and material depending, excavators can masticate an acre of land at an average cost of $2,000-$6,000 per day.

Tree & Brush Clearing and Thinning by Hand

This method uses a 4 to 10-person crew equipped with chain saws, brush cutters, and pole saws. Hand crew work includes the thinning and limbing of trees, cutting of brush, and dead material/ground fuels. Hand crew biomass disposal methods range from chipping, pile burning, and hauling.

The cost per acre varies depending on the project site, level of treatment and the method of biomass disposal. Hand crew costs can range from between $3,100 to $5,800 per acre.

Logging and Biomass Operation

Logging and biomass operations can be used to thin trees and brush within common areas and forested areas. Logging and biomass operations are market-dependent and can, at times, create a profit. Creating a profit, break-even, or declare a loss for a biomass operation can also depend on the size and species of the trees being removed. The quality of the material is incorporated into tree value, and most fuels reduction projects focus on removing the less desirable species and quality trees. A biomass operation can use equipment such as a feller/buncher to grab a selected tree and cut it two to three inches above the ground. The trees are then pulled to a location where, if the trees are small, they are chipped to create "hog fuel" for a co-generation plant. Larger trees are cut into logs for timber or firewood. After the logging operation, crews will cut brush, pile logging slash for burning, and cut the lower limbs on remaining trees to reduce ladder fuels. Other operations can be done by a hand crew, a chipper, and a tub grinder. Currently, the cost per acre for logging ranges from $3,800 to $6,800 per acre. Long distances to the mill for timber and or biomass involve a high cost for hauling and defeat the purpose of air quality/carbon sequestration goals. During the recession years, low timber prices, low volumes of timber to extract, and no local biomass facilities affected sustainable options for biomass treatment. As of 2017, biomass facilities outside the local area have limited availability due to oversaturation of material . Alternative options such as an "in-house" biomass facility and "air curtain" burners are being researched to help alleviate the need for outside resources and to reduce the cost per acre. As of 2022, the Northstar Community Services District is in the preliminary process of setting up a 1–2-megawatt biomass facility. If the facility is set up the district will be able to use 1,000 Bone Dry Tons (BDT) per project season and supply a heating source for facilities within the district.

STANDARDS

The brush fields within the CWPP area must be changed to produce flame heights of less than 4 feet. Following fuels treatment work, ongoing maintenance must be in place with a schedule of re-entry based on the vegetation type. For example, a brush field on a south-facing slope may require re-entry in 3-5 years, while a bush field on a north-facing slope may require re-entry in 5-8 years.

Timber stands must be thinned based on stand density requirements in respect to the forest slope, aspect and historical species components. Historically, for this portion of the Sierra Nevada, California Forest Practice Rules for Site III and IV stand-density requirements are recognized:

- 50-90 square feet of basal area for pine species stands
- 75 square feet of basal area for mixed conifer stands, (generally a pine and true fir mix)
- 75-90 square feet of basal area for a true fir stand

This activity should cover all forested areas within the Northstar Community Services District Boundary, excluding Zone 4.

FUELS REDUCTION AND MAINTENANCE PLAN

Fuels treatment will be implemented based on the priorities set up in this CWPP. Preferred treatment options will be pursued based on information provided by the Fire Chief and the Forester assigned to each management area, priority level and scheduled maintenance, and as funding is available. Once the fuels reduction zones have been treated, forest fuels will begin the build process again. All areas within the project boundary will need to be checked and treated periodically to support the 300-foot defense zone and 1/4-mile threat zone and to maintain secure safety zones and escape routes as identified within the CWPP. Additionally, the 1-1/2-mile CWPP perimeter project boundary will need to be treated for fuels reduction and to address healthy forest concerns.

An ongoing, running database with an assigned polygon for each project within the CWPP has been developed. Assigned to the polygon will be basic information which includes, the type of fuel model, stand density, treatment history, cost projections and actual treatment costs. Additionally, the data will include current fuels conditions and the next scheduled treatment date. Database records will be kept giving a history and description of the work and level of intensity completed in each project area. Priorities for maintenance within the project areas will mirror those set up in the project priorities.

Funding for the work needed to be performed, as found within the CWPP, may come from many sources. Funding sources will need to be set up for each individual project.

EXHIBIT 1 – Northstar Community Land Ownership Map

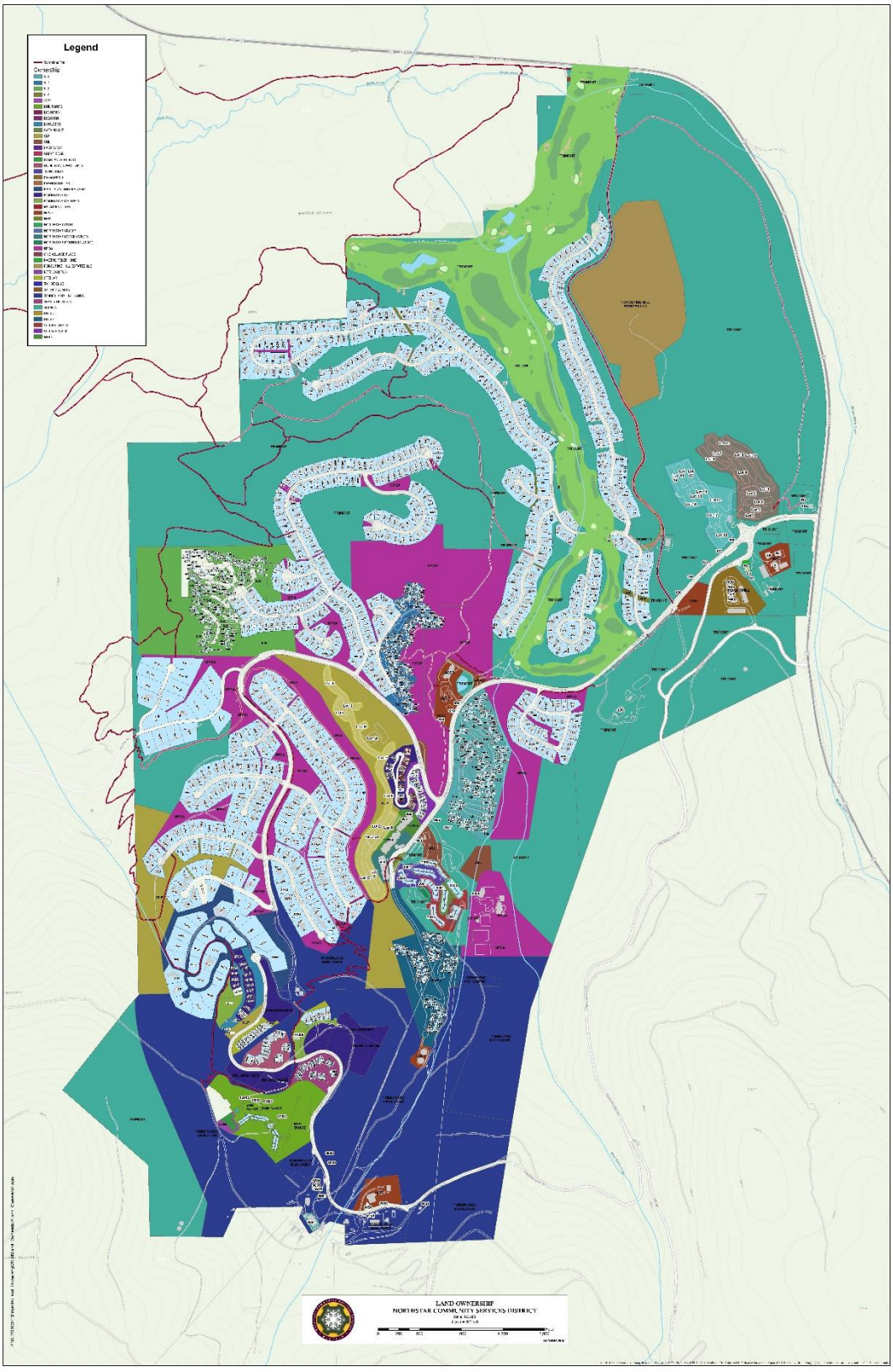
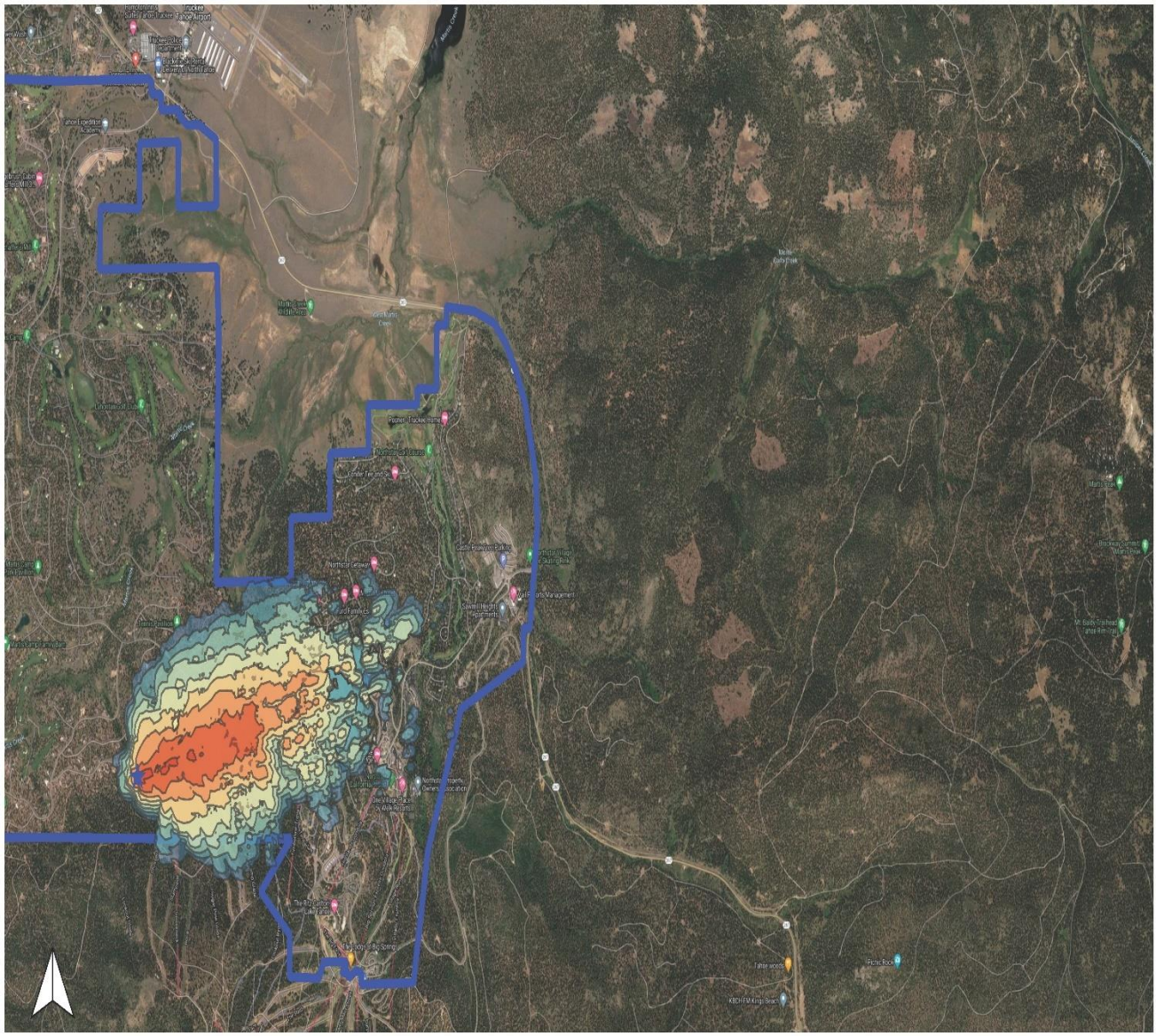


EXHIBIT 2 – Conservation Science Partners (CSP) Fire Simulation Run



0 0.5 1 1.5 2 mi

Elapsed hours

0.0 - 1.0	4.0 - 5.0	8.0 - 9.0
1.0 - 2.0	5.0 - 6.0	★ Ignition
2.0 - 3.0	6.0 - 7.0	
3.0 - 4.0	7.0 - 8.0	

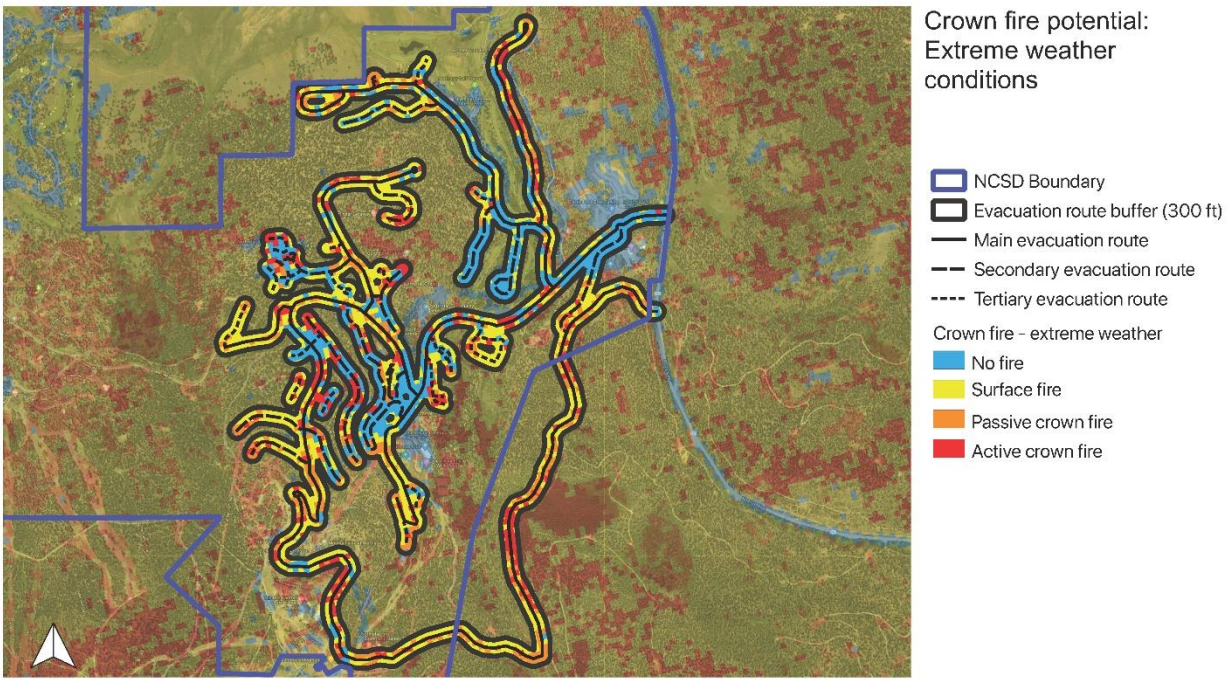
FARSITE fire simulations for the Northstar Community Services District. This simulation was based on a nine-hour period (11am-8pm) under red flag fire conditions (95th percentile temperature and wind speed; June-October, 2011-2020), including: a daytime temperature of 86 degrees, a nighttime temperature of 56 degrees, and sustained westerly winds at 31 mph. Fire spread assumes no interventions.

Author: C. Levine www.csp-inc.org

FARSITE simulation:
Ignition site #1
(extreme weather conditions)

CONSERVATION SCIENCE PARTNERS

EXHIBIT 3 – Conservation Science Partners (CSP) Evacuation Route Study

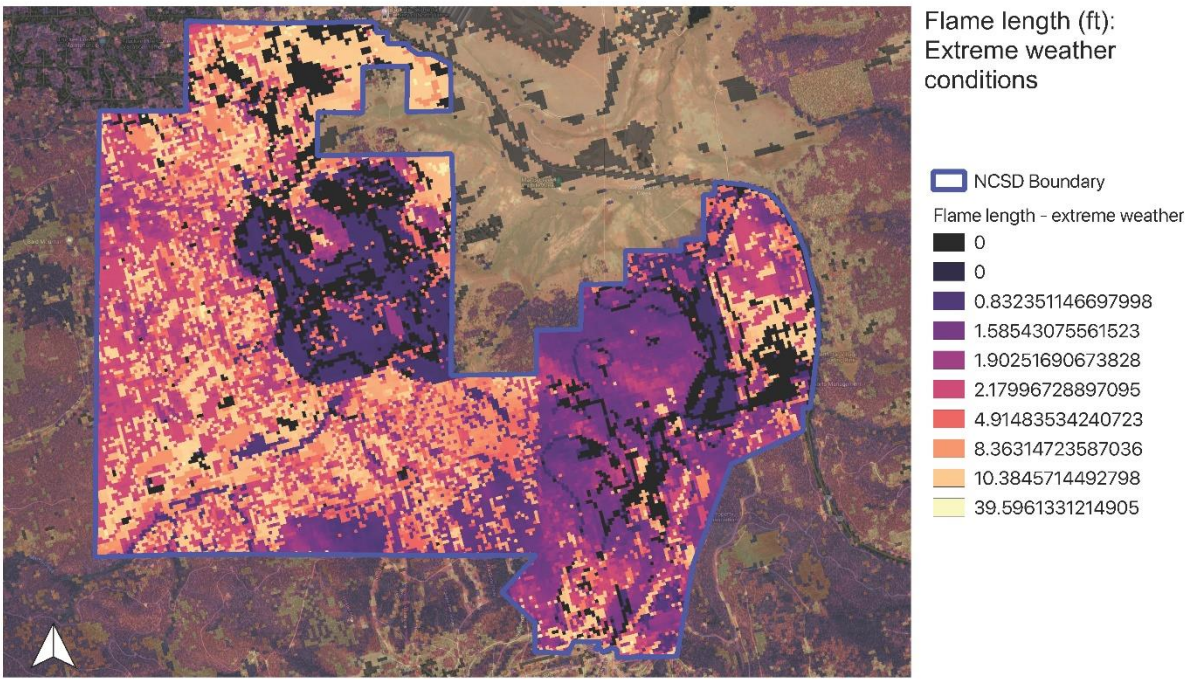


Crown fire potential within a 300 ft buffer of primary, secondary, and tertiary evacuation routes. This simulation was based on red flag weather conditions (95th percentile temperature and wind speed; June-October, 2011-2020), including: a daytime temperature of 86 degrees, a nighttime temperature of 56 degrees, and sustained westerly winds at 31 mph.

CONSERVATION SCIENCE PARTNERS

Author: C. Levine www.csp-inc.org

EXHIBIT 4 – CSP Flame Length Study in Extreme Weather Conditions

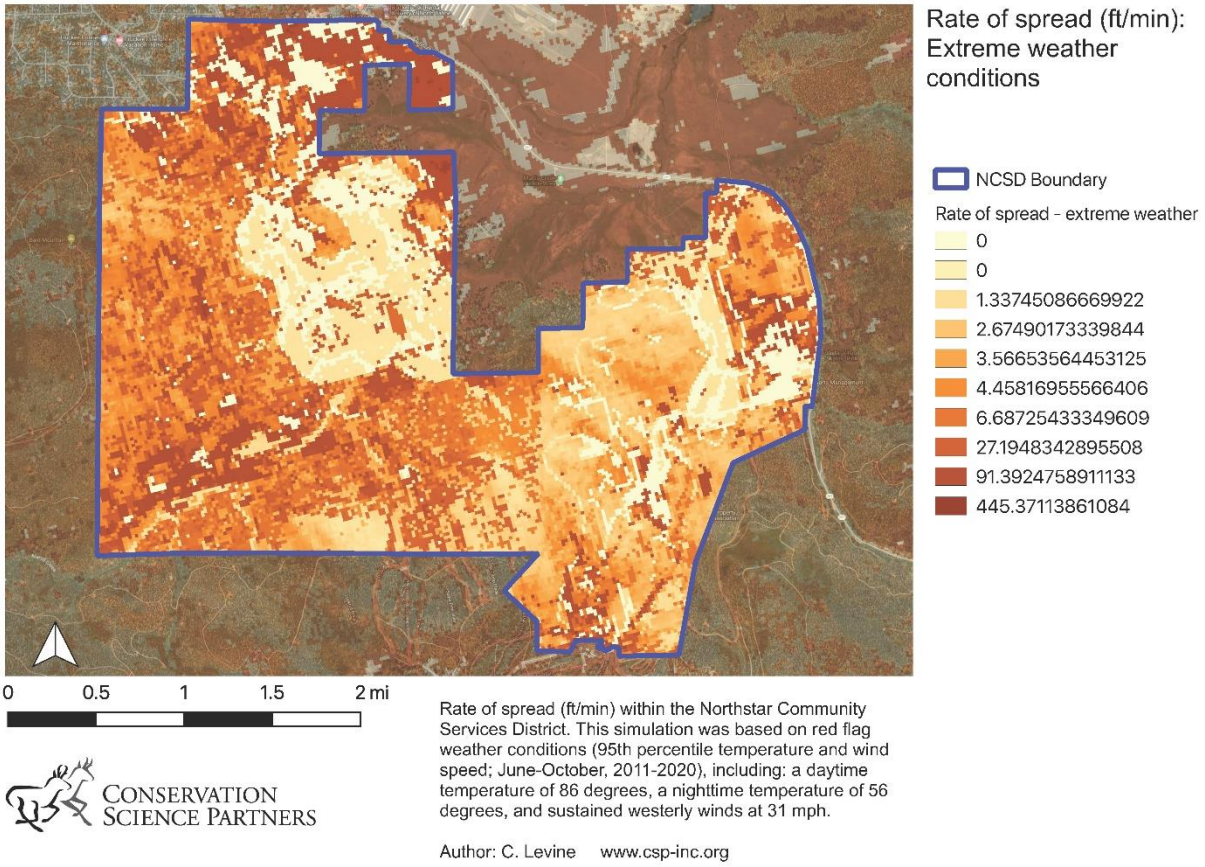


Flame length (ft) within the Northstar Community Services District. This simulation was based on red flag weather conditions (95th percentile temperature and wind speed; June-October, 2011-2020), including: a daytime temperature of 86 degrees, a nighttime temperature of 56 degrees, and sustained westerly winds at 31 mph.

Author: C. Levine www.csp-inc.org

CONSERVATION SCIENCE PARTNERS

EXHIBIT 5 – CSP Rate of Spread Study in Extreme Weather Conditions



Rate of spread (ft/min) within the Northstar Community Services District. This simulation was based on red flag weather conditions (95th percentile temperature and wind speed; June-October, 2011-2020), including: a daytime temperature of 86 degrees, a nighttime temperature of 56 degrees, and sustained westerly winds at 31 mph.

Author: C. Levine www.csp-inc.org

EXHIBIT 6 – Defense & Threat Zones

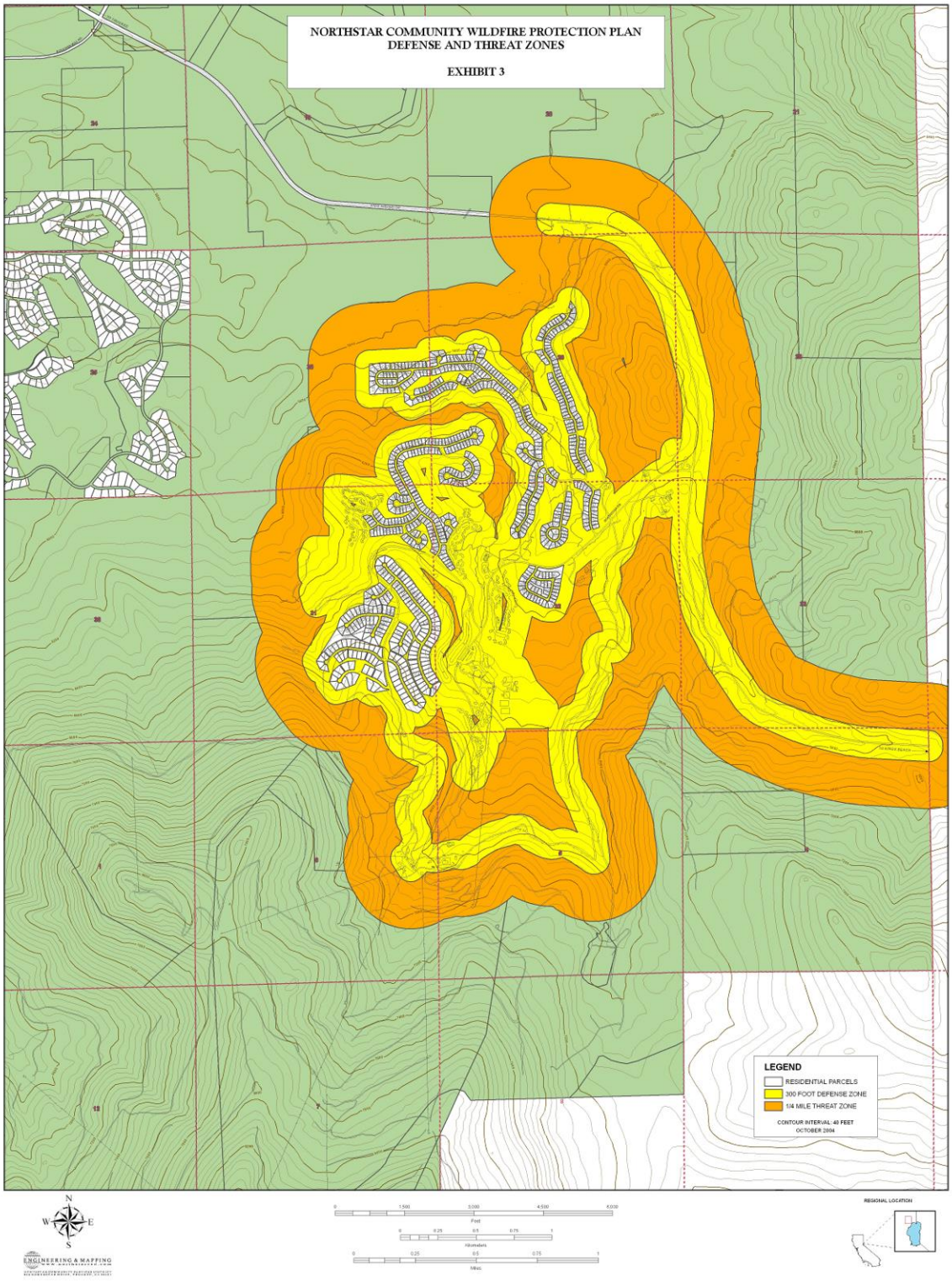


EXHIBIT 7 – Defense & Threat Zones (DETAILED)

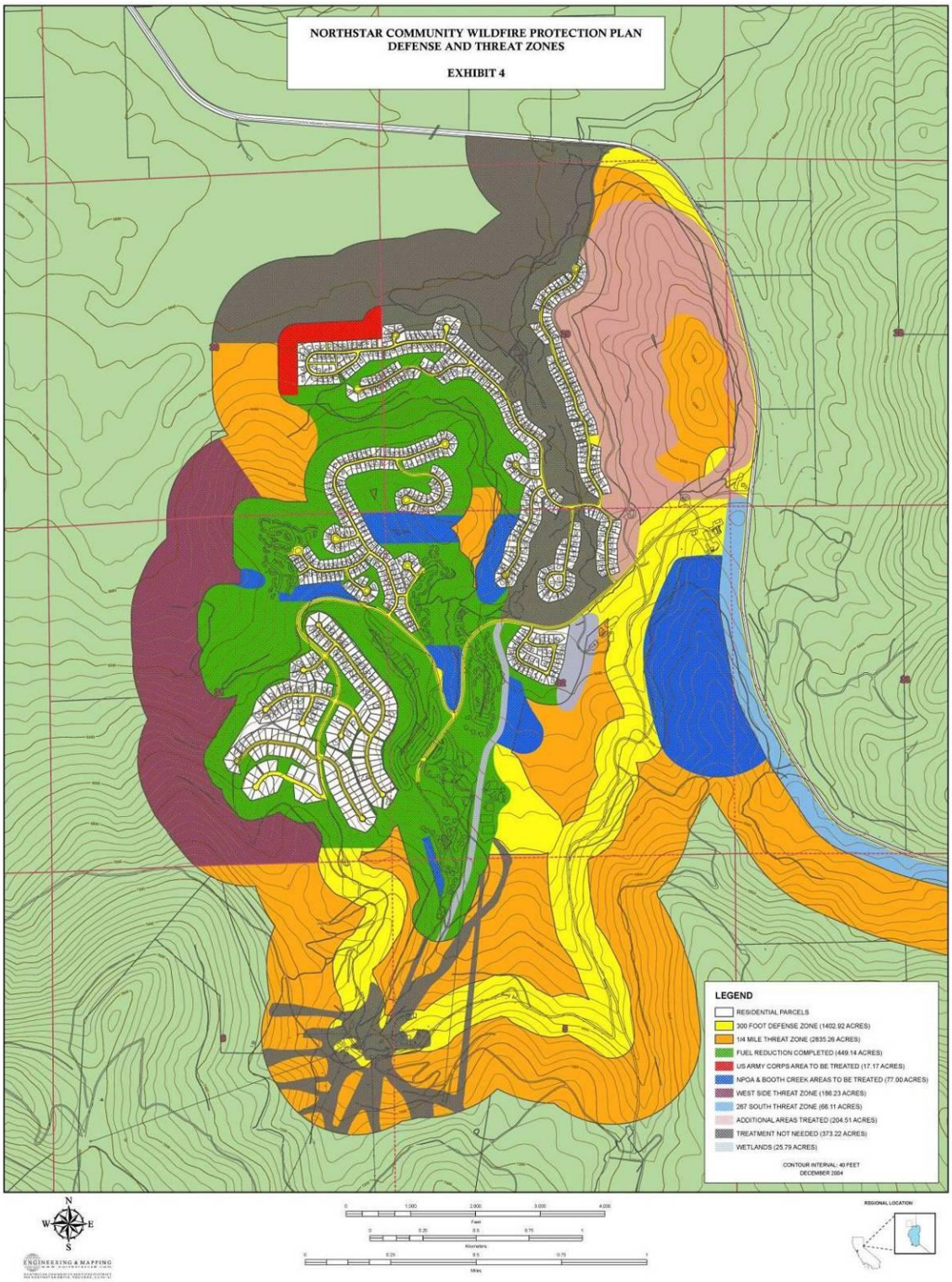


EXHIBIT 8 – Northstar California Land Ownership Map

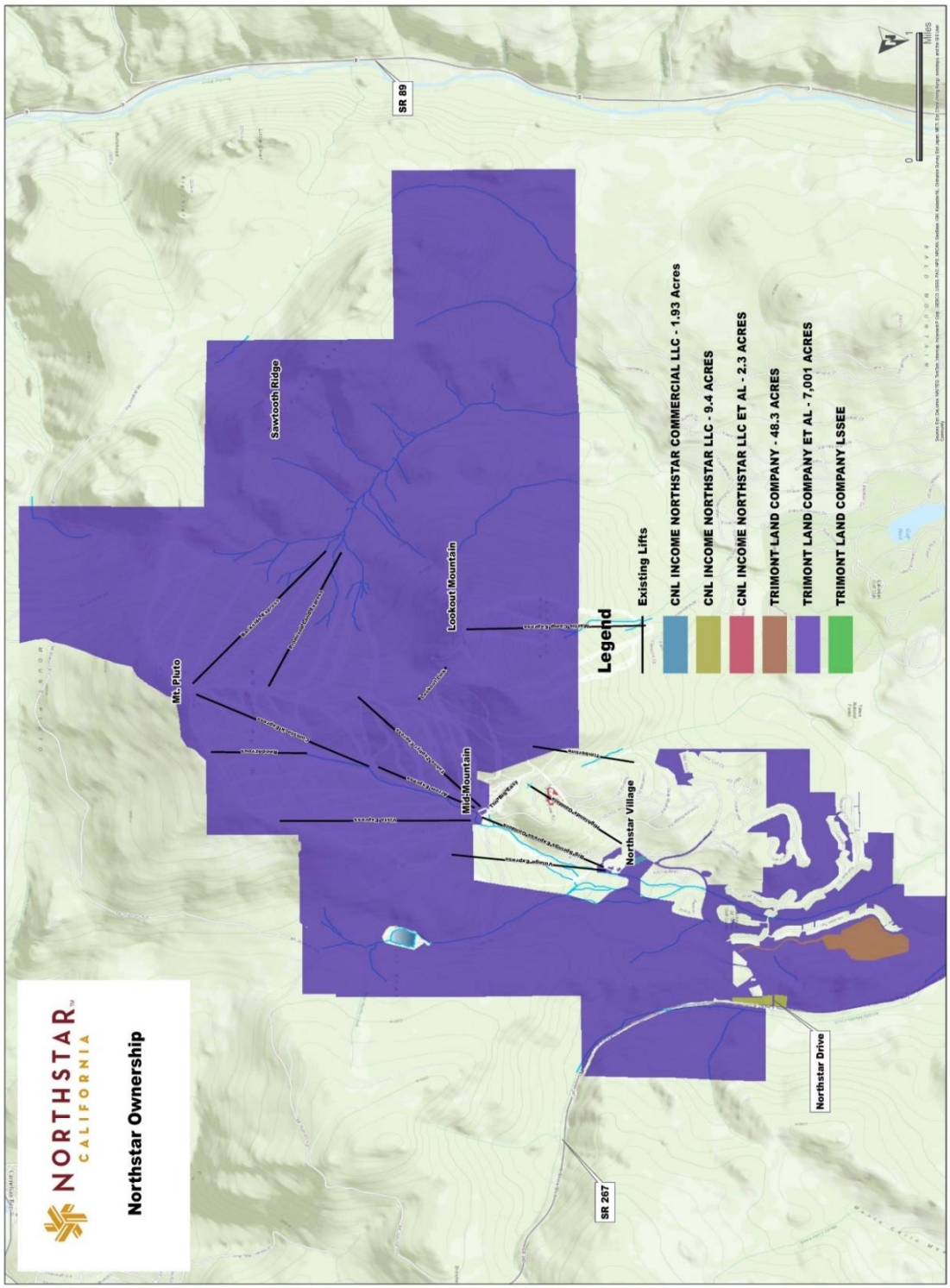


EXHIBIT 9 – Northstar California Fuels Reduction (2010-2013)

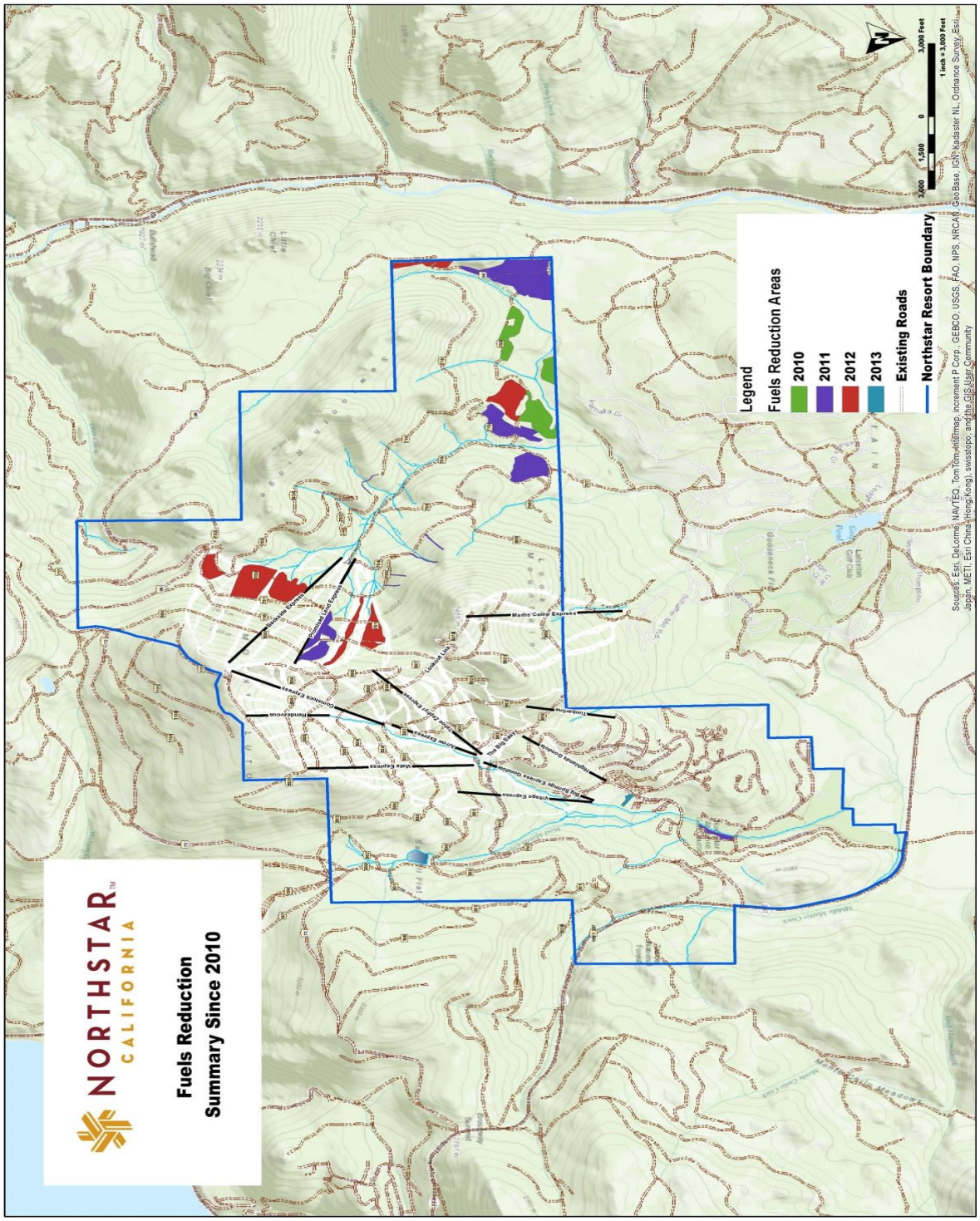


EXHIBIT 10 – Northstar California Fuels Reduction (2005-2018)

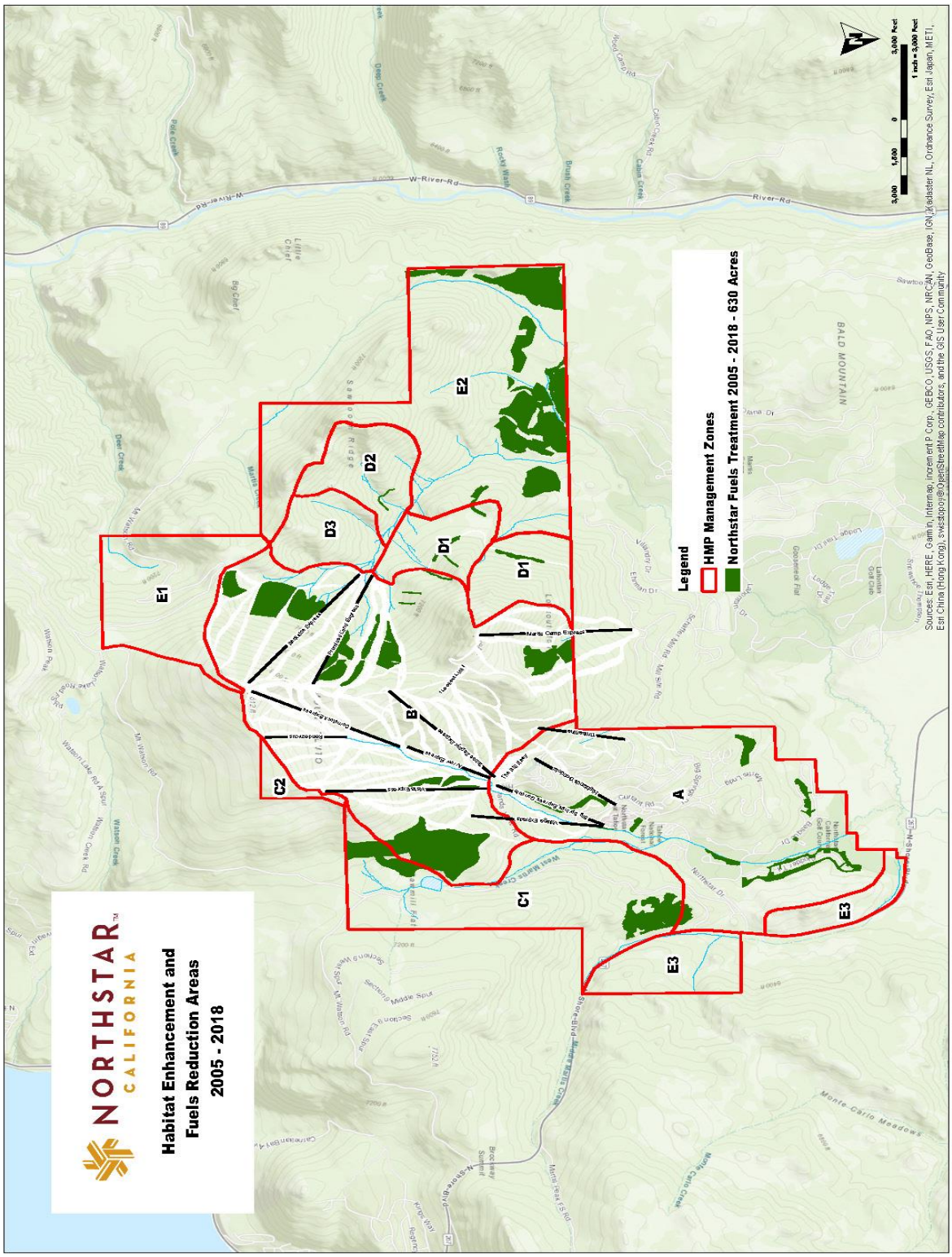
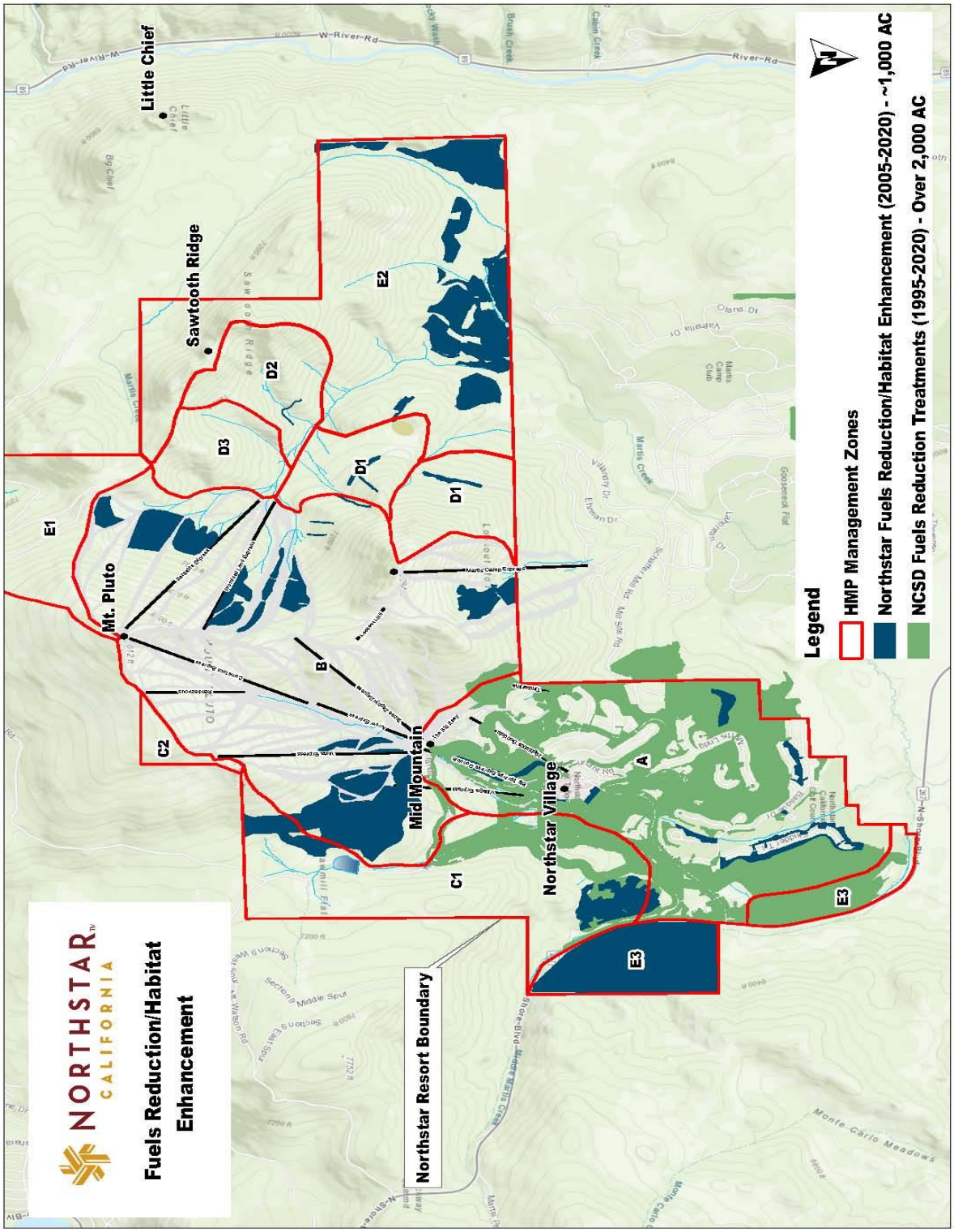


EXHIBIT 11 – Northstar California Fuels Reduction (1995-2020)



APPENDIX A – GLOSSARY

ASPECT
The direction a slope faces.

BASAL AREA
Area of the cross-section of a tree stem, generally at breast height (1.3 meters or 4.5 feet) and inclusive of bark.

BRUSH
A growth of shrubs, usually of the type being undesirable to livestock or timber management. A collective term that refers to strands of vegetation dominated by shrubby, woody plants, or low- growing trees.

CONIFER
Cone-bearing trees, shrubs and mostly evergreens such as pine, spruce, and true firs.

DEFENSIBLE SPACE
That area which lies between a structure and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and which provides a space for firefighters to safely defend a structure.

EXTREME FIRE BEHAVIOR
Extreme implies a level of wildfire behavior characteristics that ordinarily precludes methods of direct-fire-control action. One or more of the following is usually involved: high rates of spread, prolific crowning and/or spotting, presence of fire whirls and a strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically and, at times, dangerously.

FIRE BEHAVIOR
The manner in which a fire reacts to the variables of fuel, weather, and topography.

FIREBRAND
Any burning material such as leaves wood, glowing charcoal, or sparks that could start a fire.

FIRE ENVIRONMENT
The surrounding conditions influence and modifying forces of fuel, weather and topography that determine fire behavior.

FIRE WEATHER
Weather conditions which influence fire starts, fire behavior and fire suppression.

FUEL
Any combustible material. With regard to wildfire, fuel typically refers to living and dead vegetation.

FUEL BREAK
A wide strip of land strategically located to fight anticipated fires, where hazardous fuels have been replaced with less and/or less burnable fuels. They divide fire-prone areas into smaller parcels for easier fire control and provide access for firefighting. They can provide an additional buffer zone between defensible space and escape routes.

FUEL LOADING
The evaluation of specific fuel components and their value expressed in tons per acre.

FUEL TYPE
An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that would cause a predictable rate of spread or difficulty of control under specified weather conditions.

HORIZONTAL CONTINUITY
The degree at which fuels form a continuous layer on a particular horizontal plane.

LADDER FUEL
Fuels which provide vertical continuity between strata. Fire is able to move from surface fuels into tree crowns with relative ease when ladder fuels are present.

LITTER
A surface layer of loose organic debris in forests, consisting of freshly fallen or slightly decomposed organic materials such as leaves, needles, or twigs.

RECEPTIVE FUEL BED
An arrangement of combustible material that is likely to produce a detectable fire when ignited.

SLASH
Debris such as branches leaves and bark from tree cutting or other vegetation-management practices.

SPOTTING
Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the main fire.

TREE CANOPY/ TREE CROWN
The upper part of a tree or other woody plant, carrying the main branch stem and foliage.

WILDFIRE
Any fire occurring in a wildland setting.

WILDLAND/ URBAN INTERFACE (WUI)
Where native vegetation fuel types interface with man-made fuel types, that is, human encroachment into wildland areas.

APPENDIX B – NORTHSTAR CSD ORDINANCE 38-22

BOARD OF DIRECTORS

NORTHSTAR COMMUNITY SERVICES DISTRICT

ORDINANCE NO. 38-22

ORDINANCE AMENDING ORDINANCE 35-19, REGARDING WILDLAND FIRE PREVENTION AND DEFENSIBLE SPACE REQUIREMENTS

ADOPTED MARCH 16, 2022

EFFECTIVE APRIL 15, 2022

WHEREAS, the Northstar Community Services District ("District") is a community services district organized and operating under the authority of Government Code sections 61000 *et seq*.; and

WHEREAS, pursuant to Government Code section 61100, subdivision (d), the District may exercise any of the powers of a fire protection district pursuant Health and Safety Code sections 13800 *et seq*.; and

WHEREAS, through the Northstar Fire Department ("NFD"), the District provides wildfire protection services, including structural and wildland fire protection, fire suppression, fire prevention, and public education services within District boundaries, excluding the annexed Zone 4 territory and any areas within the Truckee Fire Protection District, as depicted in the Boundary Map maintained by the NFD ("NFD Boundaries"); and

WHEREAS, Health and Safety Code section 13861, subdivisions (h) and (i) authorize the District to adopt ordinances to establish and enforce rules and regulations for the administration, operation, and maintenance of its fire protection services; and

WHEREAS, pursuant to Health and Safety Code section 13869, the District adopted by reference the 2019 California Fire Code, as amended in Ordinance 36-19; and

WHEREAS, fires threaten the preservation of the public peace, health and safety, and are extremely costly, making it necessary that cities, counties, special districts, state agencies, and federal agencies work together to minimize the threat of fires and maximize the ability to extinguish them quickly; and

WHEREAS, the lands within the NFD Boundary are State Responsibility Area ("SRA") lands, designated by the California Department of Forestry and Fire Protection ("CalFire") as a Very High Fire Severity Zone, pursuant to Government Code sections 51181 et seq. and California Code of Regulations, title 14, section 1280; and

WHEREAS, pursuant to Public Resources Code section 4291 and California Code of Regulations, title 14, section 1299, the State imposes minimum fire safety standards related to defensible space that are applicable to the perimeters and access to all residential, commercial, and industrial building construction

within SRA lands, and include fuel breaks and greenbelts; however, these regulations do not supersede local regulations which equal or exceed minimum regulations adopted by the State; and

WHEREAS, there is an increased threat of wildfire when open burning, recreational fires are allowed during high fire hazard conditions; and

WHEREAS, improperly extinguished recreational fires have the potential to escape the confines of their fire ring and threaten to, and do, spread to nearby wildland and structures; and

WHEREAS, by issuing a moratorium on open burning, recreational fires during high fire hazard conditions (wildland fire season), the threat of wildfire can be reduced; and

WHEREAS, road and street networks and parking lots, whether public or private, shall provide for safe access for emergency wildland fire equipment and civilian concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency; and

WHEREAS, the large visitor population and purchasers of property within the NFD Boundaries are often not familiar with the local elevated fire dangers; and

WHEREAS, there is a need to inform purchasers of real property within the NFD Boundaries of the state and local requirements to have and maintain defensible space for their property, in order to protect and benefit themselves, their neighborhood, and the community; and

WHEREAS, the District seeks to adopt wildland fire prevention and defensible space regulations equaling or exceeding the minimum regulations adopted by the State of California, to insure the preservation of the public peace, health, and safety.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE NORTHSTAR COMMUNITY SERVICES DISTRICT ORDAINS AS FOLLOWS:

Section 1.

The District finds all of the above recitals to be true and correct and expressly finds that the regulations contained herein are reasonably necessary because of local climatic, geological, and topographical conditions unique to the Northstar area, and are further required to reduce the possibility of a fire originating within the NFD Boundaries spreading to the adjacent Lake Tahoe Basin, an area of national importance and significance. The NFD Fire Chief ("Fire Chief") or the Fire Chief's designee shall enforce the requirements of this Ordinance.

Section 2. Purpose of Ordinance.

The purpose of this Ordinance is to:

a. Classify lands within the NFD Boundaries so that NFD officials and others with similar wildland fire prevention and suppression responsibility are able to identify proper measures that will retard the rate of spread and reduce the potential intensity of uncontrolled fires that threaten to destroy natural resources, life, or property, and require that those measures be taken.

b. Set local defensible space, fuels reduction, and wildland fire prevention standards.

c. Define penalties for violations of such standards.

Section 3. Definitions.

a. Co-dominant Trees – Trees with crowns forming the general level of the forest canopy and receiving full light from above, but comparatively little light from the sides. Trees that usually have medium-sized crowns but are crowded on the sides.

b. Common Open Space – Any parcel or area of land essentially unimproved and set aside, dedicated, designated, or reserved for the public use, for the common use of owners and occupants of land adjoining or neighboring such open space, or for purposes intended to preserve important natural features of the site.

c. Defensible Space – A minimum area of space that landowners are required to create on their property between a building or structure and the plants, brush, and trees or other items surrounding the building or structure that could ignite in the event of a fire.

d. Development – The conversion of undeveloped land by obtaining necessary permits, creating multiple building lots, constructing of structures and/or installing or modifying infrastructure such as sewers, fire hydrants, water or electric lines, and streets and curbs.

e. Dominant Trees – Trees with well-developed crowns extending above the general forest canopy and receiving full light from above and partly from the sides.

f. Evacuation Route – Any private or publicly maintained, paved or unpaved road deemed by the NFD as a possible means of ingress or egress travel for civilians or emergency response during a natural disaster evacuation.

g. Flammable Vegetation – Any material, live or dead, which can ignite, burn, and transmit fire to any structure or other vegetation.

h. Fuel Break – A natural or manmade change in fuel characteristics and continuity to reduce fire spread to structures and or natural resources and provide a safer location to fight fire.

i. Hazardous Fuel – Hazardous fuel is any kind of living or dead vegetation that is flammable and endangers the public safety by creating a fire hazard, including but not limited to seasonal recurrent weeds, pine needles, brush, etc.

j. Intermediate Trees – Trees that are shorter than dominant and co-dominant trees, but tops extend partially into the co-dominants. They receive little direct light from above and none at all from the sides.

k. Logging Slash – Logging slash is coarse and fine woody debris laying on the forest floor generated during logging operations.

l. Open Burning – Any material burned on the ground or in an open receptacle other than a furnace, incinerator, or other equipment connected to a stack or chimney.

m. Residential and Commercial Parcels – Residential and Commercial Parcels shall include all improved and unimproved, permitted residential and commercial lots, and all common area parcels maintained or owned by condominium or townhome developments, homeowners, or property-owners associations and similar common-ownership organizations within NFD Boundaries.

n. Safety Zones – Identified areas of safe refuge in a high fire hazard area which may be natural (bare ground, rock outcroppings, wet areas/water bodies), man-made (parking areas, sufficiently wide roads), or other areas where fuel has been removed and fire is less likely to burn.

o. Shrub – A woody plant which is smaller than a tree and has several main stems arising at or near the ground. Synonyms: bush, brush, woody plant, etc.

p. Suppressed Trees – Trees that have crowns in the lower layers of the canopy. They receive virtually no direct sunlight and generally grow very slowly.

q. Temporary Areas of Refuge – Preplanned areas where people and/or firefighters can immediately take refuge for temporary shelter and short-term relief.

Section 4. Defensible Space Standards for Residential and Commercial Parcels.

Owners of Residential and Commercial Parcels shall:

a. Comply with all requirements set forth in California Public Resources Code sections 4291 through 4299, Government Code sections 51181 and 51182, Placer County Code, Chapter 9, 9.32, Part 4, California Code of Regulations, Title 14, section 1299.03 – 1299.04, as amended from time to time, and any additional regulations adopted thereunder.

b. Comply with the following additional treatments within 100 feet of a structure or the property lines whichever is less:

1. Provide five feet of clearance ("Buffer") by removing all combustible ground fuels and vegetation around the perimeter of any structure, leaving only dirt/mineral soil, clay, or rock of an owner's choice.

2. Beyond the Buffer, reduce all ground fuels and maintain an average pine needle/forest duff /woodchip/decorative mulch depth of one inch, and in no case exceed a maximum depth of two inches.

3. Remove any overhanging tree limbs that are within ten feet horizontally or vertically of any structure.

4. Remove all flammable vegetation within 10 feet of any part of the structure.

5. Maintain a 10-foot minimum clearance next to parking lots; more may be required.

6. Maintain shrubs on the entire property according to the minimum horizontal spacing between edges of shrubs based on the slope of the property as follows:

    i. 0-20% slope - Two times the height of the shrub
    ii. 21-40% slope - Four times the height of the shrub
    iii. Greater than 40% slope - Six times the height of the shrub

7. Maintain a minimum vertical space between the top of a shrub and the bottom of lower tree branches equal to three times the height of the shrub.

8. Remove all standing dead, diseased, pest-infested, or dying trees on the entire property.

9. All trees the NFD or the State classifies as intermediate, co-dominant, or dominant must maintain spacing distances between tree canopies or groups of trees based on the slope of the property as follows:

    i. 0-20% slope - 10 feet of canopy spacing
    ii. ii. 21-40% slope - 20 feet of canopy spacing
    iii. Greater than 40% slope - 30 feet of canopy spacing.

10. All ground-level transformers or other utility boxes that may cause a spark must be kept free a distance ranging of 3 feet to 5 feet and clear of all highly flammable vegetation and ground fuels as determined by the District.

11. Unless located or stored in an enclosed structure protected from any and all flying embers, all firewood and woodpiles within 30 feet of a structure must be fully wrapped with a National Fire Protection Association (NFPA) - or NFD-approved fire-retardant tarp. All firewood and woodpiles stored beyond 30 feet from a structure must:

    i. have sufficient clearance so as not to convey fire to the surrounding vegetation;
    ii. maintain a minimum 10 feet of ground clearance down to mineral soil; and
    iii. not be located under a tree canopy.
    iv. maintain the minimum 30-foot distance from any structure on neighboring property.

12. All suppressed trees acting as ladder fuels must be removed.

Section 5. Forest Fuels Reduction Standards for Areas Beyond 100 Feet from a Structure.

Owners of Common Open Space or parcels that are undeveloped, unentitled, or unpermitted shall comply with the following standards beyond 100 feet from any structure to the property line:

a. Stocking: The forest stands must be thinned in accordance with the species components as follows:

    1. Pure pine stands shall be thinned to a range of 50-75 square feet of basal area;
    2. Mixed conifer stands shall be thinned to an average of 75 square feet of basal area; and,

3. True fir forest stands shall be thinned to a range of 75-90 square feet of basal area.

b. Understory: Trees in the understory shall be thinned so as to be below the level that provides a fire ladder into larger diameter trees.

c. Limbing: All trees must be limbed 6-15 feet from the ground to the drip line.

d. Brush Components: Brush components consisting of native flammable vegetation shall be removed according to the site's land capability and fire characteristics. Brush removal shall consist of a range of actions, from complete removal to creation of mosaics, depending on the site characteristics, slope, aspect, brush flammability characteristics and proximity to structures, roads, and trails.

e. Logging slash: Logging slash over the entire parcel shall be chipped, or pile burned, hauled away or mechanically treated where appropriate and authorized to reduce fuel load on the parcel.

f. Transformers and Utility Boxes: All ground-level transformers or other utility boxes that may cause a spark must be kept free a distance ranging of 3 feet to 5 feet and clear of all highly flammable vegetation and ground fuels as determined by the District.

g. Firewood: All firewood stored must:

i. have sufficient clearance so as not to convey fire to the surrounding vegetation;
ii. maintain a minimum 10 feet of ground clearance down to mineral soil; and
iii. not be located under a tree canopy.
iv. Maintain the minimum 30 feet distance from any structure on neighboring property.

Section 6. Development.

As a condition of approval of development and prior to the start of vertical construction, owners and developers of real property within the NFD Boundaries must have a 300-foot fuel break around all future planned, designed structures, or the abatement of the entire parcel, whichever is greater. The fuel break or the abatement of the entire parcel must meet the applicable standards set forth in Section 4 and/or Section 5 above. (A 300-foot fuel break must be achieved regardless if such a fuel break encompasses other land ownership outside and beyond the development's parcel or property.)

Section 7. Evacuation Routes.

Owners of Residential or Commercial parcels, and/or Common Open Space shall also be required to maintain defensible space and/or forest fuels reduction compliance for those areas of their property falling within one hundred and fifty (150) feet of the centerline of the District's identified Evacuation Routes.

Section 8. Temporary Areas of Refuge and/or Safety Zones.

Owners of Residential or Commercial parcels, and/or Common Open Space that contain Temporary Areas of Refuge and/or Safety Zones (as determined by the NFD) are required to maintain defensible space and/or forest fuels reduction compliance for those areas.

Section 9. Approval of Landscape Plans.

Owners of all Residential or Commercial parcels shall submit any landscape plan that must be approved by a homeowners' or property-owners' association or similar common-ownership organization, or that is otherwise subject to advance review under the provisions of deed covenants, conditions, and restrictions ("Landscape Plan") to the NFD for approval before implementation of the Landscape Plan. The Landscape Plan shall describe the landscaping in sufficient detail so that the Fire Chief or the Fire Chief's designee can evaluate the Landscape Plan for compliance with this Ordinance, and the NFD's review of the Plan will be limited to such compliance. Prior to any submission of a Landscape Plan, the property must be in compliance with applicable Defensible Space requirements. The NFD's approval of the Landscape Plan shall be valid for 2 years from the date of approval. Any material change in landscaping plans must be re-submitted for review and approval by the NFD.

Upon completion of the landscaping, such work must be inspected by the NFD for proper sign-off.

Section 10. Disclosure and Inspection Required Prior to Close of Escrow.

a. Prior to the sale, transfer, or exchange of ownership of any single-family residential real property within NFD Boundaries, the seller shall provide a disclosure notice to the buyer if the home was constructed before January 1, 2010, that included the following information:

1) A statement as follows: "This home is located in a high or very high fire hazard severity zone and this home was built before the implementation of the Wildfire Urban Interface building codes which help to fire harden a home. To better protect your home from wildfire, you might need to consider improvements. Information on fire hardening, including current building standards and information on minimum annual vegetation management standards to protect homes from wildfires, can be obtained on the internet website http://www.readyforwildfire.org."

2) On or after July 1, 2025, a list of low-cost retrofits develop and listed pursuant to Section 51189 of the Government code. The notice shall disclose which listed retrofits, if any, have been completed during the time that the seller has owned the property.

3) A list of the following features that may make the home vulnerable to wildfire and flying embers. The notice shall disclose which of the listed features, if any, that exist on the home of which the seller is aware:

a) Eave, soffit, and roof ventilation where the vents have openings in excess of one-eighth of an inch or are not flame and ember resistant.

b) Roof coverings made of untreated wood shingles or shakes.

c) Combustible landscaping or other materials within five feet of the home and under the footprint of any attached deck.

d) Single pane or nontempered glass windows.

e) Loose or missing bird stopping or roof flashing.

f) Rain gutters without metal or noncombustible gutter covers.

g) If, pursuant to Section 51182 of the Government Code, a seller has obtained a final inspection report described in that section, the seller shall provide to the buyer a copy of that report or information on where a copy of the report may be obtained.

b. Prior to the sale, transfer, or exchange of ownership of any real property within the NFD Boundaries, buyers of such real property shall be required to read and sign a defensible space disclosure document, acknowledging the high risk of wildfire to the area and the laws requiring their obligation to ensure defensible space.

c. Within the six-month period prior to the sale, transfer, or exchange of ownership of any residential or commercial real property within the NFD Boundaries, the seller of such real property shall obtain a defensible space inspection report by the NFD pursuant to the applicable defensible space requirements referenced in this Ordinance and provide the buyer with a copy of that inspection report.

d. Satisfaction of the requirements of subdivision © of Section 10 shall be at the NFD's discretion if the real property has been inspected and found by the NFD to be in compliance with the applicable defensible space requirements referenced in this Ordinance obtained within a one-year period preceding the date the seller enters into the sale, transfer, or exchange of ownership of any residential or commercial real property.

e. If the accumulation of snow or other conditions prevent a full inspection prior to the transfer of ownership, the NFD will provide a partial inspection of the property based on what can be accessed at the time of escrow. The partial or full inspection on an approved District inspection form will satisfy the requirements for subdivision © of Section 10 at the District's discretion.

f. If the seller of residential or commercial real property within the NFD Boundaries has not obtained a defensible space inspection report in accordance with Section 10, the buyer shall sign a disclosure agreement acknowledging that they will obtain a defensible space inspection within one year following the date of the close of escrow or transfer of ownership.

g. If the buyer of residential or commercial real property purchases a residential or commercial real property within the jurisdictional boundaries of the District that is non-compliant with the applicable defensible space requirements referenced in this Ordinance, the buyer will sign a disclosure agreement acknowledging that the property will be brought under compliance within one-year of the date of escrow closure or transfer of ownership.

h. Miscellaneous Implementation:

1. This Ordinance shall apply regardless of whether a title company is involved. A courtesy copy of this Ordinance will be delivered, within 30 days of the effective date, to any and all title companies that have a physical office located in the

jurisdictional boundaries of the District, north shore of Lake Tahoe and the town of Truckee.

2. Involuntary transactions, such as foreclosures, are exempt from Section 10 of this Ordinance.

3. The request for an inspection shall be placed by the seller or seller's agent. Either the seller or seller's agent may contact the NFD by email or by phone to request an inspection. Once the inspection is completed, a copy of the inspection report will be transmitted back to the seller by email in a reasonable amount of time (usually 3 business days).

4. Once a property enters escrow, the title insurance company may contact the NFD by email or phone to request a copy of the inspection report. A copy of the inspection report will be transmitted to the title insurance company by email in a reasonable amount of time (usually 3 business days).

5. If the seller has failed to request a defensible space inspection prior to escrow, the title insurance company may contact the NFD by email or phone to request an inspection.

6. The seller or title insurance company shall provide a copy of the completed inspection report to the buyer of the real property.

7. If an inspection report identifies violations of the applicable defensible space requirements referenced in this Ordinance, the seller is not required to make corrections prior to the close of escrow or transfer of ownership. The new property owner shall be responsible for correcting any and all remaining violations within the time frame noted on the inspection report. Failure to do so will subject the buyer to enforcement measures identified in Section 15 of this Ordinance.

Section 11. Open Burning and Recreational Fires.

a. Open burning campfires, bonfires, portable outdoor fireplaces, charcoal barbeques, ceremonial fires, and recreational fires, as defined in the 2019 California Fire Code, and any other type of burning of materials, shall be prohibited within the NFD Boundaries when atmospheric conditions or other local circumstances make such fires hazardous including when, in the judgment of the Fire Chief or Fire Chief's designee, the menace of destruction by wildfire to life, improved property, or natural resources is due to factors that may cause the rapid spread of wildfire. Such factors include: high winds, low fuel moistures, fire weather, the issuance of red flag warnings, severe threat of wildland fire, and the issuance of a fire restriction "suspending burning" on lands within or adjacent to the District by CalFire or by the United States Forest Service (USFS).

EXEMPTIONS:

1. UL or ASMI listed manufactured GAS (LPG or NG) outdoor flame devices, such as: Gas BBQs or Gas Fire-pits that comply with the Fire Code.

2. Charcoal BBQs for a commercial restaurant, catering operation or special event, with

additional restrictions as determined by NFD staff.

3. Pellet-fed smokers.

4. Outdoor permanent or mobile fire pits wherein products of combustion first pass through a stack or chimney with all openings protected by a metal screen and/or spark arrestor with screen openings between 3/8 inch to ½ inch.

b. Open burning will be prohibited on the issuance of a fire restriction "suspending burning" on lands within or adjacent to the District by CalFire or by the USFS. This is often referred to as a "burn ban" and "wildland fire season." During this time period, wildland fires can burn out of control.

c. Open burning, regardless of the time of year, will be under the direction of the Fire Chief or the Fire Chief's Designee and will require written approval.

d. The Fire Chief may delay or prolong a ban on open burning, based on local fire conditions.

Section 12. Consultation and Advice from District Staff.

Property owners are urged to consult with or request advice from the District and the NFD regarding the classification of the owner's property, the methods for complying with this Ordinance, or other information about it. The ultimate responsibility for compliance with this Ordinance rests with the property owner.

Section 13. Final Authority.

The District shall have the final authority on the determination of compliance with the provisions of this Ordinance.

Section 14. Exclusions from Ordinance.

This Ordinance shall not apply to any land within the NFD Boundaries that is habitat for endangered or threatened wildlife species, or that has historical or archeological significance or is otherwise declared excluded by state or federal law.

Section 15. Abatement and Enforcement.

a. Pursuant to Government Code section 51186, if the owner of any such real property fails to correct the violations of the defensible space requirements referenced in this Ordinance, the NFD may cause the corrections to be made and the expense incurred shall become lien on the property that is subject of the corrections when such lien is recorded.

b. Pursuant to Health and Safety Code sections 13871, every owner or occupant of any parcel of real property within the NFD Boundaries who violates this Ordinance or fails to correct or eliminate a fire hazard after written order of the NFD shall be subject to citation for:

i. An infraction punishable by a fine of not less than one hundred dollars ($100) and not more than one thousand dollars ($1,000); or,

ii. A misdemeanor, punishable by a fine of not less than one hundred dollars ($100) and not more than one thousand dollars ($1,000), imprisonment not to exceed 180 days, or both such fine and imprisonment.

iii. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

Section 16. Appeals.

Any person affected by this Ordinance or wishing to appeal a determination by the Fire Chief or their designee to create a defensible space or any such order to abate violations of this Ordinance, shall do so in writing within 30 days of receipt of a notice of violation from the NNNFD by delivering such writing to the District clerk during normal District business hours (Monday through Friday, 8:00 a.m. to 4:00 p.m.). Such writing shall include a request for a hearing before the District Board of Directors. Any civil enforcement actions by the NFD shall be suspended pending hearing and decision of the appeal (which shall be heard by a majority of the Board of Directors of the District).

Section 17. Partial Invalidity.

If any section, sub-section, paragraph, clause or word of this Ordinance is determined in a final ruling by a court of competent jurisdiction to be invalid or unenforceable, such finding shall not invalidate any other section, sub-section, paragraph, clause or word of this Ordinance, which shall remain in effect.

Section 20. Effective Date of Ordinance; Amendment of Previous Ordinance.

This Ordinance shall take effect and be in force 30 days from the date of its adoption. The clerk of the District is directed to post or publish this Ordinance as required by law. On its effective date, this Ordinance will supersede, in its entirety, District Ordinance No. 35-19, except that any pending enforcement or abatement actions shall remain and be pursued until resolution.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Northstar Community Services District on March 16, 2022 by the following roll call vote:

AYES:	**FORNI, MOLL, WITHERSPOON**
NOES:	**NONE**
ABSENT:	**BROWN, IVES**
ABSTAIN:	**NONE**

Michael Moll, Vice President, Board of Directors

Julie Zangara, Secretary of the Board

APPENDIX C – NORTHSTAR CSD ORDINANCE 36-19, CALIFORNIA FIRE CODE

BOARD OF DIRECTORS
NORTHSTAR COMMUNITY SERVICES DISTRICT

ORDINANCE NO. 36-19

AN ORDINANCE ADOPTING AND AMENDING THE 2019 EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE (TITLE 24, CALIFORNIA CODE OF REGULATIONS), PART 9 (2019 CALIFORNIA FIRE CODE) AND APPENDICES; AND REPEALING ORDINANCE NO. 33-16 OF THE NORTHSTAR COMMUNITY SERVICES DISTRICT AND ALL OTHER ORDINANCES AND PARTS OF ORDINANCES IN CONFLICT HEREWITH.

WHEREAS, the Northstar Community Services District ("District") is a community services district organized and operating under the authority of Government Code sections 61000 *et seq.*; and

WHEREAS, pursuant to Government Code section 61100, subdivision (d), the District may exercise any of the powers of a fire protection district pursuant to Health and Safety Code sections 13800 *et seq.*; and

WHEREAS, pursuant to Health and Safety Code section 13869, the District may adopt by reference the 2019 California Fire Code, which sets building standards related to fire and hazardous condition prevention; and

WHEREAS, pursuant to Health and Safety Code sections 13869.7, 17958.5, and 17958.7, the District may adopt standards more stringent than state standards when such modifications are reasonably necessary because of local climatic, geological, and/or topographical conditions; and

WHEREAS, the Board of Directors has adopted express findings on the necessity of the modifications and has directed that those findings be submitted to the County of Placer with a copy of this Ordinance for ratification.

NOW, THEREFORE, the Board of Directors of the Northstar Community Services District ordains as follows:

SECTION 1. FINDINGS OF FACT

The District makes certain modifications (listed below) to the 2019 California Fire Code, pursuant to Health and Safety Code sections 13869.7, 17958.5, and 17958.7. The modifications specified herein are reasonably necessary because of local climatic, geological and/or topographic conditions. The District has adopted, pursuant to Section 17958.7 of the California Health and Safety Code, the findings of facts relative to these conditions by Resolution 19-15 of the Northstar Community Services District, dated October 16, 2019.

SECTION 2. ADOPTION OF CODE WITH EXCLUSIONS

Pursuant to Health and Safety Code section 13869, the District adopts by reference the 2019 California Fire Code in its entirety, including appendices, and incorporates those sections and appendices of the 2018 International Fire Code not adopted by the State, except for the exclusions listed below:

105.6.17-105.6.19, 308.1.4, 309, 311.5, 311.6, 403.1, 403.2.1-403.2.4, 403.3, 403.4, 403.6, 403.7, 403.8 (adopting 403.8.1-403.8.1.7), 403.9, 403.10.2, 403.10.3, 403.11, 403.12, 404.1-404.4, 405.1-405.4, 405.6-405.9, 406, 805-807 (adopting 807.5.2), 808, 904.1.1, 1101, 1103.1, 1103.3-1103.6, 1103.9 (adopting 1103.9.1), 1103.10, 1104-1106, Chapter 25, Chapter 26, Appendix A, Appendix E, Appendix F, Appendix G, Appendix J, Appendix K, Appendix L, and Appendix M.

Appendices not adopted can be used for reference in enforcing other sections of the 2019 California Fire Code.

SECTION 3. LOCAL AMENDMENTS

The following sections are hereby adopted as modifications or additions to the 2019 California Fire Code:

Chapter 1
Scope and Administration

Section 101
Scope and General Requirements

101.1 is hereby amended as follows: **Title.** These regulations shall be known as the *Fire Code* of the **Northstar Community Services District**, hereinafter referred to as "this Ordinance."

Section 104
General Authority and Responsibilities

104.7.2 is hereby amended as follows: **Technical assistance**. To determine the acceptability of building design, Fire Department access, high technology processes, products, procedures, facility hazardous materials control, fire and life safety, material

acceptability and uses relating to the design, operation, occupancy of a building or premises subject to the review and inspection by the District. The Chief of the Northstar Fire Department (Fire Chief) is authorized to require the owner or the person in possession or control of the building or premises to provide payment to the District for services related to such review and inspection. Payment will cover any and all costs to the District for the retention of a fire and life safety consulting or engineering firm for plan review, inspections and/or preparation or review of technical reports. Such payment will be used to cover actual costs incurred by the District for such services. The owner or person in possession or control of the building or premises shall pay amounts for services before occupancy. The Fire Chief is authorized to collect payment, in advance of services, as a monetary deposit. Any amount of deposit that exceeds service cost shall be refunded.

Such services shall be carried out by a qualified firm or organization with experience and expertise in fire protection engineering, hazard-specific specialists, laboratories or fire safety consulting firms or organizations acceptable to the Fire Chief. All work shall be carried out under the direction of the Fire Chief and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes to the Fire Chief.

The Fire Chief is authorized to require design submittals prepared by the property owner or the owner's representative to bear the stamp and signature of a California registered professional engineer or licensed California state contractor in the fields of fire alarm design and installation and/or fire sprinkler design and installation.

Section 105
Permits

105.6.27(1) is hereby amended to include the following additional exception: At or above 5,000 feet of elevation, a permit is not required for individual containers with a 125-gallon (473 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 125 gallons (473 L), serving occupancies in Group R-3.

Section 106
Fees

106.6 is hereby added as follows: **Emergency response**, **permit, plans review, and inspection fees.** A schedule of fees adopted by the Northstar Community Services District for emergency response, plan review, inspections, and the issuance of permits by the Northstar Fire Department may be found in the most current District fee schedule (Health & Safety Code, § 17951).

106.6.1 is hereby added as follows: **Cost recovery fees**. Fire service fees may be charged to any person, firm, corporation or business that through negligence, violation of the law, or as a result of carelessness, is responsible for the cause of the Fire District

to respond to the scene of an incident. A district board may charge a fee to cover the cost of any service which the district provides or the cost of enforcing any regulation for which the fee is charged (Health & Safety Code, § 13916). The fee shall not exceed the actual cost of suppressing the fire and/or responding to the scene of an incident.

Section 109
Board of Appeals

109.1 is hereby amended as follows: **Board of appeals established.** In order to hear and decide appeals of orders, decisions, or determinations made by the Fire Chief relative to the application and interpretation of this Ordinance, there shall be and is hereby created a board of appeals, comprised of the Board of Directors of the District. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the Fire Chief.

109.3 is hereby deleted.

Section 110
Violations

110.4 is hereby amended as follows: **Violation penalties**. Persons who shall violate a provision of this Ordinance or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this Ordinance, shall be guilty of a misdemeanor or infraction, punishable by:

1. A fine not exceeding $100.00 for a first violation;
2. A fine not exceeding $500.00 for a second violation of the same provision within one year; and
3. A fine not exceeding $1000.00 for each additional violation of the same provision within one year, or by imprisonment not exceeding 180 days, or both such fine and imprisonment.

Each day that a violation continues after due notice has been served shall be deemed a separate offense. (Health & Safety Code, §§ 13145, 17995.)

110.4.2 is hereby added as follows**: Citations.** The Fire Chief, or his/her duly authorized representative, may issue citations for infractions or misdemeanor violations of this Ordinance pursuant to Health and Safety Code section 13871 and Penal Code section 853.6.

Section 112
Stop Work Order

112.4 is hereby amended as follows: **Failure to comply**. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than one hundred ($100) dollars or more than one thousand ($1,000) dollars. (Health & Safety Code, §§ 13145, 17995.)

Section 114
Reserving of Rights

114.1 is hereby added as follows: **General.** There is reserved, to the Board of Directors of the District, the right to amend, modify, supplement, revoke in whole, or in part, any of the provisions contained or incorporated herein, at any time and from time to time.

114.2 is hereby added as follows: **Limitation of Rights**. Nothing herein contained shall be deemed to limit or restrict the rights, duties or obligations given, granted or opposed upon this District by the laws of the State of California now in effect or hereinafter adopted.

Chapter 2
Definitions

Section 202 is hereby amended to include the following additional definitions:

APPROVED. As accepted by the Fire Chief of or his/her authorized representative, or as approved pursuant to the standards now existing or hereafter adopted by the District.
CAMPFIRE. A fire which is used for cooking, personal warmth, lighting, or aesthetic purposes. This includes fires contained within outdoor fireplaces and enclosed stoves with flues or chimneys, stoves using jellied, liquid, solid, or gaseous fuels, portable barbecue pits, braziers, or space heating devices which are used outside of any structure, mobile home, or any living accommodation mounted on a vehicle.
DISTRICT COUNSEL. The attorney for the District.
DISTRICT. The Northstar Community Services District and all areas within the exterior boundaries thereof as now or hereafter established.
EXECUTIVE BODY. The Board of Directors of the District.
FIRE CHIEF. The chief officer of the Northstar Fire Department serving the District, or his/her duly authorized representative, also referred to herein as the fire code official.
JURISDICTION. All areas within the District boundaries.
OPEN BURNING. The burning of materials wherein products of combustion are emitted directly into the ambient air from an outdoor source. For purposes of this definition, recreational fires, ceremonial fires, and outdoor fireplaces are considered open

burning. Open burning does not include road flares used by safety or emergency personnel.
PERSON(S). All persons, firms, associates, organizations, corporations, individuals or other agency.
SHALL. Means mandatory.
MAY. Means permissive.

Chapter 3
General Requirements

Section 302 is hereby amended to include **CAMPFIRE** as a term defined in Chapter 2.

Section 307
Prohibited open burning

307.1.1 is hereby amended to read as follows: **Prohibited open burning.** Open burning camp fires, bonfires, portable outdoor fireplaces, charcoal barbeques, ceremonial fires, and recreational fires, as defined in the 2019 California Fire Code and amended by this Ordinance, and any other type of burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from within the District's jurisdiction, shall be prohibited when atmospheric conditions or other local circumstances make such fires hazardous including when, in the judgment of the Fire Chief or the Fire Chief's designee, the menace of destruction by wildfire to life, improved property, or natural resources is due to factors that may cause the rapid spread of wildfire. Such factors include: high winds, low fuel moistures, fire weather, the issuance of red flag warnings, severe threat of wildland fire, and the issuance of a fire restriction "suspending burning" on lands within or adjacent to the District by CalFire or by the United States Forest Service (USFS).

Exceptions:

1. Prescribed burning for the purpose of reducing the impact of wildland fire when authorized by the Fire Chief.
2. UL- or ASME-listed manufactured Gas (LPG or NG) outdoor flame devices, such as gas barbecues or gas fire-pits that comply with this Ordinance.
3. Charcoal barbecues for a commercial restaurant, catering operation or special event, with additional restrictions as determined by the Northstar Fire Department.
4. Pellet-fed smokers.

Section 308.1.9
Open Flames

308.1.9 is hereby added as follows: **Natural gas outdoor open flame appliances (i.e. barbecues, ovens, fire pits, heaters, etc.).** All-natural gas outdoor flame appliances shall be installed with the following specifications:

A. Gas shut-off valve located at stub out.

B. Gas shut-off valve accessible at the appliance.
C. Timer device to regulate maximum operating time to three (3) hours.
D. Ten (10) foot vertical and horizontal clearance to all combustibles measured from the open flame, not including the support structure. For devices per manufacturer's installation guidelines that have less of a combustible clearance may be installed at the discretion of the Fire Code Official.
E. Two (2) feet maximum flame height.
F. All parts/assemblies to be UL, ASME, ANSI or CSA listed.
G. Submit a site plan showing location and design.
H. Provide cut sheets for appliance design.
I. Surface supporting appliance system shall be ignition resistant material approved by the California State Fire Marshal.

Chapter 4
Emergency Planning

Section 401.3
Emergency Responder Notification

401.3.5 is hereby added as follows: **911 Enhanced emergency phone system**. An enhanced 911 emergency phone system shall be required in all commercial buildings with mixed occupancy R-1 or R-2 Residences. It is the property owner's responsibility to provide each unit with access to call 911 in case of emergencies. The system must report to the local 911 dispatch center with the address and unit number displayed on the dispatcher's screen. Testing and approval of the system shall be approved by the Fire Chief or his/her designee.

Chapter 5
Fire Service Features

Section 503
Fire Apparatus Access Roads

503.2.1 is hereby amended as follows: **Dimensions.** Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, curbs and gutters, except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 15 feet (4572 mm). All driveways in the district shall not be less than 12 feet (3658 mm) wide.

503.2.5 is hereby amended as follows: **Dead ends.** Dead-end fire apparatus access roads and driveways in excess of 150 feet (45720 mm) in length shall be provided with an approved area for turning around fire apparatus.

503.2.6 is hereby amended as follows: **Bridges and elevated surfaces.** Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with any current County bridge standard.

Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the fire code official.

503.4.2 is hereby added as follows: **No parking in fire lanes**. No person shall stop, park, or leave standing any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or official traffic control device along the edge of any highway, at any curb, or in any location in a publicly or privately owned or operated off-street parking facility, designated as a fire lane by the fire department or fire district with jurisdiction over the area in which the place is located. The designation shall be indicated (1) by a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane; (2) by outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from a vehicle; or (3) by a red curb or red paint on the edge of the roadway upon which is clearly marked the words "FIRE LANE".

503.4.3 is hereby added as follows: **No parking in front of hydrants**. No person shall stop, park, or leave standing any vehicle within 15 feet of a fire hydrant except as follows: (a) If the vehicle is attended by a licensed driver who is seated in the front seat and who can immediately move such vehicle in case of necessity, (b) If the vehicle is owned or operated by a fire department and is clearly marked as a fire department vehicle.

503.4.4 is hereby added as follows: **Fire Lanes Signage Based on Road Width**. Fire lanes signage shall be based on road width as required in Appendix D as adopted locally.

503.6 is hereby amended as follows: **Security Gates.** The installation of security gates across a fire apparatus access road shall be approved by the Fire Chief. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with U.L. 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

Security gates shall meet the following additional standards:

- **A.** Radio signal "click to enter" system using a fire department approved frequency. Activation of the gate shall occur within fifty (50) feet from the transmitter.
- **B.** Closure delay range between 30 and 45 seconds.
- **C.** Reflectors on both sides of swing arms.

D. Knox Box (#3261 series).
E. Knox Pad Lock (#3770 Exterior Model) on meter box/electrical breaker box access.
F. Knox Key switch (#3502 or 3503 Model) access for both Northstar Fire Department and Truckee Fire Protection District.
G. Gate mechanical boxes to be protected from vehicle impact (Bollards or similar protection).
H. Snow and ice protection shall be installed for all mechanical boxes and swing arm operations, to include heat tape, heated mats, and rubber gaskets.
I. Gates to be 2 feet wider than the road being served.
J. Gates shall automatically open from the interior without special code or device. (Magnetic strip or pressure pad assemblies are acceptable.)
K. All electric gates shall fail in the open position, i.e., loss of power, battery failure. All gates shall be equipped, at a minimum, with 12-hour battery back-up.
L. Gate components shall be maintained in an operative condition at all times and replaced and repaired when defective.
M. Vertical clearances shall be no less than 15 feet.

Section 505
Premise Identification

505.1 is hereby amended as follows: **Address Identification.** New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Where required by the fire code official, address numbers shall be provided in additional approved locations to facilitate emergency response. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 6 inches (152.4 mm) high with a minimum stroke width of 0.5 inches (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address numbers shall be maintained. Commercial buildings shall use numbers that contrast with the size of the structure with a minimum size of 10 inches (304.8 mm).

Section 506
Key Boxes

506.1 is hereby amended as follows: **Key Boxes Where Required**. Key boxes (3200 series residential and 4400 series commercial), key locks, key cabinets, and electric key switches shall be mounted and installed on all gates, fences, main entry doors or lobbies in an area approved by the Fire Chief. The Fire Chief shall determine the number and location of key boxes for each structure. The key box shall be of an approved type (Knox Box) and shall contain keys to gain necessary access as required by the Fire Chief. Key boxes are required in the following locations:

a. All new construction, residential and/or commercial structures.

b. Residential renovation projects that add more than 500 square feet of new enclosed inhabitable space.
c. Existing commercial structures.

Section 507
Fire Hydrant Systems

507.5.1.1 is hereby amended as follows: **Hydrant for standpipe systems.** Buildings equipped with a standpipe system installed in accordance with Section 905 shall have a fire hydrant within 50 feet (15240 mm) of the fire department connections.

Exception: The distance shall be permitted to exceed 50 feet (15240 mm) where approved by the fire code official.

507.5.7 is hereby added as follows: **Snow removal.** Unless prevented from doing so due to climatic conditions, no person shall place, push or dump snow on or around any fire hydrant or fire department connection, and a minimum clear space of 6 feet (1829 mm) shall be maintained to the front and sides of any hydrant or fire department connection.

Section 510.4.2
System Design

510.4.2.9 is hereby added as follows: **Cell Towers**. All new cell towers must provide Band 14 spectrum.

Chapter 6
Building Service and Systems

Section 603
Fuel-Fired Appliances

603.9 is hereby amended as follows: **Gas Meters**. Above-ground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with Section 312 or otherwise protected in an approved manner.

1. The meter assembly shall be installed on the gable end of the building or under an engineered deck, as close as practical to the building wall.
2. A protective cover, designed to be equal or greater than the building design load (determined by the building department), approved by the supplier, shall be installed over the meter assembly, securely supported by the ground or diagonally to the building wall. When supported by the ground, the footing for the supports shall be founded a minimum of six inches below finished grade.
3. Door covers prohibited.

Section 604
Electrical Equipment, Wiring and Hazards

604.1.1 is hereby added as follows: **Electrical Disconnect.** When the main electrical disconnect is located on the interior of a building, the installation of a remote main power electrical shunt trip/switch shall be required on the exterior in a location that is protected from the elements as approved in advance and in writing by the fire code official. A remote main power electrical shunt trip/switch shall have a permanently mounted, weatherproof placard. The placard shall be no smaller than 8 inches in width and 12 inches in height with reflective letters no smaller than 1 inch in height marked with "MAIN POWER SHUNT TRIP/SWITCH" and placed on the exterior of the house near the main power electrical shunt trip/switch.

Section 607
Commercial Kitchen Hoods

607.3.3.1 is hereby amended as follows: **Inspection.** Hoods, grease-removal devices, fans, ducts, and other appurtenances shall be inspected at intervals specified in Table 609.3.3.1 or as approved by the fire code official. Inspections shall be completed by qualified individuals.

Exceptions:

- **A.** Commercial kitchen hood operations with R-1 and R-2 Occupancies located above shall be cleaned every 6 months.
- **B.** Commercial Operations with no residential occupancies located above the structure shall be inspected at intervals specified in Table 607.3.3.1 with cleaning intervals not to exceed 12 months.

Chapter 9
Fire Protection Systems

Section 901
General

901.6.4 is hereby added as follows: **Owner's Responsibility.** It is the property owner's responsibility to ensure all fire suppression systems, fire alarm systems, equipment, and devices are maintained fully functioning and operational at all times. If requested by the District, the property owner shall provide certification that an appropriately licensed contractor has inspected and tested the fire protection systems, including the operation of any provided backflow preventer. The owner shall provide the requested information within 30 days.

901.7.7 is hereby added as follows: **False Alarms.** Any owner that fails to repair or correct a faulty fire protection/alarm system that produces a false alarm shall be liable for any and all charges for Fire Department response services at the formula rate prescribed by the District.

Section 903
Automatic Sprinkler Systems

903.2 is hereby amended as follows: **Where required.** The provisions of this Chapter, and, or those requirements in the California Fire Code relating to automatic sprinkler systems shall apply to a structure, and the entire structure shall be made to comply with these provisions, under any of the following circumstances:

- **A.** All new buildings regardless of occupancy type or square footage.
- **B.** When there is a change in use in all, or a portion, of an existing structure which would cause occupancy classification to change.
- **C.** Additions to be made to an existing structure so as to increase the Total Fire Area of the original structure to greater than twenty percent (20%).
- **D.** Remodels, alterations and/or repairs to an existing building involving demolition, removal or repair of more than 50% of the gross square footage of the building, the building, the building shall meet the requirements for a newly constructed building. For the purpose of this section, a 50% threshold shall be applied if the project involves any of the following:

    1. The removal, demolition or repair of more than 50% of the exterior weight bearing walls; or
    2. The removal, demolition or repair of more than 50% of the interior floor square footage.

    Exceptions:
    1. Low life safety hazard structures, such as stand-alone public restrooms and ski lift operator structures that are less than **500** square feet shall be evaluated by the Fire Chief on a case-by-case basis.
    2. Whenever there are practical difficulties involved, the Fire Chief shall have the authority to grant modifications in individual cases provided the modifications do not lessen the health, life and fire safety requirements as permitted in Section 104.8 of the California Fire Code.

Application of this requirement becomes effective when a building permit is applied for through the Placer County Building Department for new construction after the effective date of this Ordinance. All fire sprinkler system plans shall be submitted to the Northstar Fire Department.

For the application of National Fire Protection Association (NFPA) 13D, in one- and two-family dwellings, the underground supply pipe shall be hydrostatically tested at 150 psi for two hours, and the system shall be flushed. Above ground piping shall be hydrostatically tested at 150 psi for two hours. All testing shall be witnessed by the fire code official.

For the application of NFPA 13D in one-and two-family dwellings, fire sprinklers shall be required in all accessible openings under stairwells.

For the application of NFPA 13D, in one- and two-family dwellings, hydraulic design, and an informational sign shall be attached to the riser system as listed in NFPA 13.

For the application of NFPA 13D, in one- and two-family dwellings, all risers shall be designed and constructed per the District's Residential Riser Detail.

For the application of NFPA 13D, in one- and two-family dwellings, a cabinet with at least one spare sprinkler head of each type and temperature with corresponding sprinkler head wrenches shall be required and located in the riser room.

903.4, Exception 1 is hereby amended as follows:

1. Automatic sprinkler systems with a local supervisory or alarm system protecting one- and two-family dwellings.

903.4.2 is hereby amended as follows: **Alarms.** *One exterior* approved audible device (10-inch minimum size bell and/or an electronic audible notification device producing a minimum of 110 db. read from the street), located on the exterior of the building in an approved location, shall be connected to each automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. *Visible alarm notification appliances shall not be required except when required by Section 907.*

903.4.4 is hereby added as follows: **Residential occupancy notification**. All residential occupancies require audible notification in all sleeping rooms of a sprinkler water flow alarm. This notification must be at least 75db at pillow height. This can be accomplished by way of interconnected smoke detection systems or horns in each sleeping area.

Chapter 12
Energy Systems

Section 1203
Emergency and Standby Power Systems

1203.7 is hereby added as follows: **Standby Power Generator NCSD Requirements.** Any new structure or remodel that has electrical power supplied by a secondary or auxiliary power unit with automatic startup and/or automatic power transfer capabilities shall have an auxiliary power disconnect accessible to Fire Department personnel. This auxiliary power disconnect must be mounted within three (3) feet of the exterior's main electrical disconnect or the main power electrical shunt trip/switch.

A. Northstar Fire Department (NFD) requires the generator installation to be a part of the Placer County Permit process.

B. Provide a site plan showing the location of the generator and service/auxiliary power disconnect.
C. Provide cut sheets for the generator.
D. A permanently mounted, weatherproof placard. The placard shall be no smaller than 8 inches in width and 12 inches in height with reflective letters no smaller than 1 inch in height marked with "STANDBY POWER AUXILIARY POWER DISCONNECT" and placed on the exterior of the house near the service/auxiliary power disconnect.

Exception: Whenever there are practical difficulties involved, the Fire Chief shall have the authority to grant modifications in individual cases provided the modifications do not lessen the health, life, and fire safety requirements as permitted in Section 104.8 of the California Fire Code.

Section 1204
Solar Photovoltaic Power Systems

1204.1.1 is hereby added as follows**: Battery-based photovoltaic systems.** Buildings with battery-based solar power systems must provide for a disconnect such that the inverter will be prevented from powering-up using stored energy from the batteries – thus, seizing the continued supply of power.

1204.5.3 is hereby amended as follows: **Rapid shutdown switch.** A rapid shutdown switch shall have a permanently mounted, weatherproof placard. The placard shall be no smaller than 8 inches in width and 12 inches in height with reflective letters no smaller than 1 inch in height marked with "SOLAR PV SYSTEM RAPID SHUTDOWN SWITCH" and placed on the exterior of the house near the rapid shutdown switch.

Exception: Whenever there are practical difficulties involved, the Fire Chief shall have the authority to grant modifications in individual cases provided the modifications do not lessen the health, life, and fire safety requirements as permitted in Section 104.8 of the California Fire Code.

Chapter 33
Fire Safety During Construction and Demolition

Section 3310
Access for Firefighting

3310.3 is hereby added as follows: **Premise Identification**. Prior to and during construction, an approved address sign shall be provided at each fire and emergency vehicle access road entry into the project.

Section 3312
Water Supply for Fire Protection

3312.1 is hereby amended as follows**: When required**. Fire hydrants shall be installed and approved for continuous service or another approved temporary or permanent water supply for fire protection shall be made available prior to combustible materials arriving on site or vertical construction commencing.

Chapter 49
Requirements of Wildland-Urban Interface Fire Areas

Section 4905
Wildfire Protection Building Construction

4905.4 is hereby added as follows: **Roof covering standard.** All new construction, including additions, requires a Class A roof covering or assembly. All re-roofing requires Class A roof covering or assembly as a minimum. Re-roofing in excess of 50% of an existing structure within any one-year period will necessitate that the entire roof is a Class A roof covering or assembly as a minimum. Class B or C fire retardant treated and/or non-treated wood shake or shingles are not approved as a roof covering material for Class A assembly.

Chapter 50
Hazardous Materials-General Provisions

Section 5001
General

5001.7 is hereby added as follows: **Liability for Damages**. Any damages or cost resulting from the careless handling, spill or discharge of any hazardous materials shall constituent debt against any such person, firm or corporation causing such spill or discharge. This debt is collectible by the Fire Chief in the same manner as in the case of an obligation under a contract, expressed or implied.

Chapter 56
Explosives

Section 5601.2
Permits Required

5601.2 is hereby amended as follows: **Permit required**. Permits shall be required as set forth in Section 105.6 and regulated in accordance with this section. Where explosives permits are required, they shall be issued by the Fire Chief, or his/her representative, and the County Sheriff's Department. Where fireworks permits are required, they shall be issued by the Fire Chief and the County Board of Supervisors. The authorities having jurisdiction may request documentation regarding all aspects of

the fireworks presentation while protecting all proprietary information for the purposes of permit issuance.

Chapter 57
Flammable and Combustible Liquids

Section 5704
Storage

5704.2.9.6.1 is hereby amended as follows: **Locations where above-ground tanks are prohibited**. Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited unless approved by the Fire Chief. When permitted by the fire chief, all above ground tanks or vault installations for the storage of Class I, II or III flammable and combustible liquids shall comply with those requirements as set forth by the California Fire Code. The California Fire Code shall also apply to installations other than motor vehicle fuel dispensing stations where above-ground storage is required.

Section 5706
Special Operations

5706.2.4.4 is hereby amended as follows: **Locations where above-ground tanks are prohibited**. Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited unless approved by the Fire Chief. When permitted by the fire chief, all above ground tanks or vault installations for the storage of Class I, II or III flammable and combustible liquids shall comply with those requirements as set forth by the California Fire Code. The California Fire Code shall also apply to installations other than motor vehicle fuel dispensing stations where above-ground storage is required.

Chapter 58
Flammable Gas and Cryogenic Fluids

Section 5806
Flammable Cryogenic Fluids

5806.2 is hereby amended as follows: **Limitation.** Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited unless approved by the Fire Chief. When permitted by the Fire Chief, all stationary containers for the storage of flammable cryogenic fluids shall comply with those requirements as set forth by the California Fire Code. The California Fire Code shall also apply to installations other than motor vehicle fuel dispensing stations where above-ground storage is required.

Chapter 61
Liquified Petroleum Gases

Section 6101
General

6101.3 is hereby amended as follows: **Construction documents.** Where a single LP-gas container is more than 1,200 gallons (4542 L) in water capacity or the aggregate water capacity of LP-gas containers is more than 2,400 gallons (9084 L), the installer shall submit construction documents for such installation.

6101.3.1 is hereby added as follows: **Placer County Code.** Placer County Building and Development Code Article 15.12 is added as a standard for reference throughout the jurisdiction limits of the District for the installation, maintenance, and inspection of liquified petroleum gas containers.

Section 6104
Location of LP-Gas Containers

6104.2 is hereby amended as follows: **Maximum capacity for storage and dispensing within established limits.** Within the limits established by law restricting the storage and dispensing of liquefied petroleum gas in excess of an aggregate of 2,000-gallon (7570 L) water capacity, such storage and/or dispensing may be permitted only when approved by authorities having jurisdiction, a Special/Conditional Use Permit is issued by the County, and the storage is located at least one-half (1/2) mile from all of the following:

1. property zoned or designated for residential use;
2. existing residential development with a density greater than one (1) dwelling unit per acre; and any hotel or motel.

Section 6107
Safety Precautions and Devices

6107.5 is hereby added as follows: **Protecting Appurtenances from the Elements.** A protective cover shall be installed over all gas meters, regulators, valves and equipment to provide protection against sliding, drifting, and impact of snow and ice. The minimum design for the protective cover shall be equal to or greater than the Building Design Load (determined by the Placer Building Department) and shall be securely supported to the ground or diagonally to the building wall.

Appendices

Appendix B
Fire Flow Requirements for Buildings

Appendix B, Section B105.2 is hereby amended as follows: **B105.2 Buildings other than one- and two-family dwellings, R-3 and R-4 buildings and townhouses.** The

minimum fire-flow and flow duration for buildings other than one- and two-family dwellings, Group R-3, and R-4 buildings and townhouses shall be as specified in Table B105.2 and B105.1(2).
Exception:
The resulting fire-flow shall not be less than 1,500 gallons per minute (5,678 L/min) for the prescribed duration as specified in Table B105.2 and B105.1(2).

Appendix C
Fire Hydrant Locations and Distribution

Appendix C, Table C102.1 is hereby amended such that the average spacing of hydrants shall be no greater than 300 feet regardless of fire-flow (GPM) requirements.

SECTION 4. REPEAL OF PRIOR ORDINANCE

This Ordinance repeals and replaces Northstar Community Services District Ordinance No. 33-16 in its entirety and all other ordinances or parts of ordinances in conflict herewith.

SECTION 5. SEVERABILITY

Notwithstanding a declaration that any section, paragraph, sentence or word of this Ordinance or the California Fire Code as adopted and amended herein is for any reason invalid, all other portions of this Ordinance shall remain in full force and effect.

SECTION 6. EFFECTIVE DATE AND PUBLICATION

This Ordinance shall take effect and be in full force and effect upon ratification of the Placer County Board of Supervisors and submission of a copy of this Ordinance to the California Building Standards Commission, or January 1, 2020, whichever is later. The Clerk of the District is directed to post or publish this Ordinance as required by law.

PASSED AND ADOPTED at a duly held meeting of the Board of Directors of the Northstar Community Services District on by the following roll call vote:

AYES: **BROWN, CRAVENS, IVES, STEWART, WITHERSPOON**

NOES: **NONE**

ABSENT: **NONE**

ABSTAIN: **NONE**

Cathy Stewart, President of the Board

ATTEST:

Julie Zangara, Secretary of the Board

APPENDIX D – NORTHSTAR CSD HAZARD PRIORITIES HISTORY (1999-2019)

Hazard Priorities, (1999-2008)

Original Priority No. 1 – Complete and maintain fuel reductions in those areas identified as the defense zone in Exhibits 3 and 4. This goal represents the completion of the 1999 Fuels Management Plan. Fuels maintenance within the defense zone is a part of this priority.

This will be accomplished through continued enforcement of Northstar Community Service's District Ordinance 35-19.

Original Priority No. 2 – Perform fuel reductions work in the adjacent Army Corps property at the end of Basque Drive, as identified in Exhibit 4. This property is located within the defense zone boundary.

This proposed project is within the Martis Valley Wildlife Management Area, and it is not known what may be required for environmental review processes.

Original Priority No. 3 – Complete the fuels reductions identified in Exhibit 4 as the U.S. Highway 267 south corridor. This will preserve an escape route and help prevent a fire from starting in this corridor and burning into the Northstar community. In 2004, we had two fires in this corridor.

Original Priority No. 4 – Complete fuels reductions within the area identified as the westside threat zone in Exhibit 4. This area has been identified as the first area within the threat zone to receive treatment because of the fuels and topography. This area poses the most immediate threat within this zone.

Original Priority No. 5 – Create a shaded fuel-break system within the threat zone identified in Exhibit 3. It may be of variable width, due to vegetation types, slope, prevailing winds, terrain features, access, and likely fire start-areas.

Original Priority No. 6 – Strategically remove dead trees as needed within the CWPP area to promote forest and watershed health, and to identify and perform maintenance as needed. The CWPP area extends 1.5 miles in any direction from any developed area.

Hazard Priorities, (2009-2013)

Original Priority No. 1 – Complete and maintain fuel reductions in those areas identified as the defense zone in Exhibits 3 and 4. This goal represents the completion of the 1999 Fuels Management Plan. Fuels maintenance within the defense zone is a part of this priority. This will be accomplished through continued enforcement of Northstar Community Service's District Ordinance 35-19.

Priority No. 1 Update – This on-going work has reached a desired level of fuels management treatment to fulfill the priority. Future grants and the Northstar CSD/NFD homeowner initiative, "Measure E," will allow ongoing work to be done to maintain the priorities' objective.

Original Priority No. 2 – Perform fuel reductions in the adjacent United States Army Corps property at the end of Basque Drive, identified in Exhibit 4. This property is located within the defense zone

boundary. This proposed project is within the Martis Valley Wildlife Management Area, and it is not known what may be required for environmental review processes. The minimum cost for this project is estimated at $25,000 for fuels management.

Priority No. 2 Update – For 2014, a California Fire Safe Council, which is a federally funded grant project, was awarded to complete fuels management work adjacent to the neighboring United States Army Corps property. Initial cost estimate treatments have exceeded the original $25,000 estimate due to increased mortality and accumulated fuels since the initial assessment; however, project work will leave forested adjacent to the Army Corps property in a management condition. On-going discussions have been in place to assist in getting the Army Corps property treated, and no future treatments are in place.

Original Priority No. 3 – Complete the fuels reductions identified in Exhibit 4 as the U.S. Highway 267 south corridor. This will preserve an escape route and help prevent a fire from starting in this corridor and burning into the Northstar community. In 2004, we had two fires in this corridor. Cost is estimated at $96,000 for fuels management.

Priority No. 3 Update – Developers within the community of Northstar have paid for a major portion of this corridor to be treated. Future treatments leading into maintenance are needed, however, newer priorities will take precedence.

Original Priority No. 4 – Complete fuel reductions within the area identified as the westside threat zone in Exhibit 4. This area has been identified as the first area within the threat zone to receive treatment because of the fuels and topography. This area poses the most immediate threat within this zone. The cost is estimated at $270,000 for fuels management.

Priority No. 4 Update – Approximately 90% of this work has been completed; however, the remaining 10% to complete is adjacent to a small portion of residences and in the southwest portion of the district's boundary. These remaining areas have been identified for treatment in future grant funding options and will be listed in the upcoming Management Plan.

Original Priority No. 5 – Create a shaded fuel-break system within the threat zone identified in Exhibit 3. It may be of variable width, due to vegetation types, slope, prevailing winds, terrain features, access, and likely fire start-areas.

Priority No. 5 Update – Within the District, the 300' Defense Zone has a shaded fuel break established and now be considered in maintenance mode. Shaded fuel breaks created in the ¼ mile threat zone have been established within the district boundary but limited outside the district boundary. The quarter-mile threat zone required treatment outside the district boundary, needing a working relationship with adjacent landowners. Some adjacent landowners have performed work meeting the District's goals; however, other landowners have their own objectives or other financial obligations that are keeping this priority from being fully completed. During the development of this priority in the original CWPP document, this priority was a generalized priority.

Original Priority No. 6 – To strategically remove dead trees as needed within the CWPP area to promote forest and watershed health and to identify and perform maintenance as needed. The CWPP area extends 1.5 miles in any direction from any developed area.

Priority No. 6 Update – Annual work is expected to meet this priority. Tree mortality is inevitable and, in recent years, has been accelerated due to reduced amounts of precipitation and an increase in insect and fungal attacks. Continual maintenance work within the CWPP boundary will help slow down the mortality rate and provide additional spacing and improve overall forest health. Annually, a dead/diseased and dying tree list is created, and dedicated work for this priority is assigned.

Amended Priority No. 7 – This Priority established in 2009 recognizes areas outside the 1/4-mile threat zone as a priority for treatment. These areas are shown in Exhibit 6 and, in some cases, maybe located outside the NCSD boundary and adjacent to neighboring property owners. Some of these outlying areas have been proposed for work through recent Federal Funding Requests. The benefits of treating areas outside the district boundary will statistically reduce the chances of a catastrophic wildfire and allow treatment in areas that are limited or restricted in access by ground equipment.

- Estimated costs are based on rates provided by a Registered Professional Forester.
- Designation of project boundaries, tree marking, designation of archeological sites, wetland and watercourse boundaries, supervision of a chipping crew at $145 per acre.
- Since the writing this CWPP, the average cost for removal of timber has increased $928 to $1,184 per acre, and an average cost for removal of heavy, dense brush fields is $2,500 per acre by hand crew and $1,100 - $1,300 per acre by a mastication machine.

Priority No. 7 Update – Fuels treatment work outside the NCSD boundary remains a priority, and following the 2011 CWPP update, Northstar California, (Vail Resorts) has completed a federal grant for project work that is located outside the 1/4-mile threat zone to the southwest of the district. This work allowed a significant fuel break to be established in a remote territory to the southwest of the district boundary. In 2010, Northstar California treated approximately 100 acres, and in December 2012, they created a document identifying areas within and outside the district boundary that future grants will focus on.

Hazard Priorities, (2014-2016)

This update of Hazard Priorities was identified by the retired Northstar Fire Chief, Mark Shadowens, and Forester, Joe Barron. These 6 Hazard Priorities were established since most of the previous Hazard Priorities had been completed.

Priority No. 1 – Complete fuels management work in the area identified as Porcupine Hill, which lies in the northeast portion of the district along U.S. Highway 267 and the Northstar Golf Course. Ongoing work has been to establish a 300’ buffer zone from the highway and to eventually treat the entire property.

Priority No. 1 Update – This on-going work has reached the desired level of fuels management treatment to fulfill the priority. State of California, Cal Fire, State Responsibility Area (SRA)/Tree Mortality Funding has allowed multiple focus area treatments to occur. A 32-acre, 300’ fuels buffer project was established in the 2016-2017 project season, protecting the eastern boundary of the residential properties on Skidder Trail. Treatment of this area will allow it to be in a “Maintenance Mode,” thus reducing the cost per acre of future treatments. Additional strategic areas within Porcupine Hill were treated from the U.S. Highway 267 boundary up to 1,000 feet above the highway. Due to the size of this area and the amount of vegetation present, Porcupine Hill will always be a focus area of treatment; however, it will not be Priority Number 1 in this current CWPP update.

Priority No. 2 – Create a shaded fuel break in the eastern portion of the district boundary from the residential area of Beaver Pond moving north towards U.S. Highway 267.

Priority No. 2 Update – Priority project work has strengthened the eastern boundary, and one large fuels reduction project remains to be completed. In addition, there are smaller fuels reduction project treatments needed; however, they are not deemed to be classified as an immediate Priority Number 2. The remaining eastern boundary priority project will create a sustainable fuel break between outside the Northstar district boundary and Highlands View Road. Selective areas of the eastern boundary were treated during this priority focus. The most significant project completed for this priority was a Placer County, Clean Air Grant. This project work in the Priority 2 focus area was treated; however, it did not alleviate the entire eastern boundary treatment concerns. To help complete the fuels issue along the eastern boundary, a 28-acre project was created and approved as part of a CAL FIRE Timber Harvest Plan. This project, which lies east of the Beaver Pond residential area, will complement past fuels reduction projects, provide a significant fuels buffer west of Highlands View Road, and with the project being under a timber harvest plan; treatment will allow a significant fuel break to be established. The project has not been performed prior to this CWPP update since it is waiting for the proper grant funding to execute the project.

Priority No. 3 – In the south portion of the district lies 90+ acres of forested land that requires fuels treatment beginning at the southern edge of the Northstar Village to the top of the southern portion of Highland's View Road. The Big Springs Gondola, which travels from the Northstar Village to Mid Mountain, lies within this priority area.

Priority No. 3 Update – For this updated CWPP, Priority Number 3 has been upgraded to Priority Number 1. Since this update, 25 acres have been treated, and 47 acres are scheduled for treatment in 2017. A Cal Fire Timber Harvest Plan was approved in August 2016, which allowed conventional logging to be integrated into fuels management. The initial advantage is the ability to remove larger diameter trees, which in turn improves canopy spacing and preferred species diversity. In addition, mechanical logging has allowed a higher amount of downed and dead forest fuels to be removed per treatment. The CAL FIRE Timber Harvest Plan will expire in 2023.

Priority No. 4 – Create a 500' buffer zone south of the Northstar Property Owners Association (NPOA) Recreation Center and east of the Ski Trails Condominium Association Complex. Future work in the Northstar Fire Department's Management Plan will work beyond the 500' buffer zone.

Priority No. 4 Update – Project work was accomplished, but not completed during this project update. The Northstar Fire Department (NFD) and the Northstar Property Owners Association (NPOA) participated in this project together. The NFD treated areas outside the perimeter of the recreation center, and NPOA treated areas within the interior of the recreation center. Progress was made in the southern boundary of the recreation center through hand crew work and through a timber harvest plan; however, multiple treatments still exist in the outer perimeter of the recreation center due to advanced tree mortality, forest disease, age mortality, drought, and bark beetle mortality. To the south of the recreation center, dense tree stands with heavy downed fuel accumulations exist that will require multiple hand crew entries. This is due to the proximity of watercourses, which require hand crew treatments and buffer zone regulations. Additional work will be put together to the north of the recreation center and be part of the newly identified Priority 3.

Priority No. 5 – Work in a partnership with the United States Army Corps of Engineers on a fuels management project on their property located in the northwest corner portion of the district. Fuels reduction has been completed on the district side; however, extensive work in the neighboring property is needed.

Priority No. 5 Update – During the fall/winter of 2016, a series of productive meetings with members of the United States Army Corps of Engineers (USACE) assigned to the Sacramento District has made progress in putting together a 78-acre fuels reduction project adjacent to the Northstar CSD and Martis Camp. At the time of this update, the USACE is working on its federal environmental compliance requirements, and the Northstar Fire Department is working on a prescription and finding appropriate funding for the project. It is estimated that this priority will be "Shovel Ready" by the summer of 2018 and will be moved to Priority 6 for the updated CWPP.

Priority No. 6 – To continue strategically removing dead, diseased and dying trees within the CWPP area to promote forest and watershed health and to identify and perform maintenance where needed. The CWPP area extends 1.5 miles in any direction from any developed area.

Priority No. 6 Update – Since this Priority, the State of California has endured five years of drought. The community of Northstar has suffered from advanced tree mortality resulting from bark beetle attacks, forest disease, and mature trees reaching the end of their lifespan. Outside funding was needed to catch up with the advanced tree mortality and decline. Cal Fire State Responsibility Area (SRA), Fire Prevention Funds have helped alleviate this ongoing issue. A focus of removing these identified trees has been scheduled two times per project season. One session of tree removal has taken place in early spring and a second in late fall. The objective is to remove trees before the acceleration of tree mortality increases during summer months and to schedule a treatment again in the fall, which will help mitigate tree mortality in the spring. Funding for 2017 and 2018 is in place, and the Northstar Fire Department will continue to seek additional funding until tree mortality is at a manageable level. At the time of this update, there is no forecasted timeframe to keep tree mortality at a manageable level.

Hazard Priorities, (2017-2019)

Priority No. 1 – Treat and maintain 90-acres of forested land that is positioned south of the Northstar Village, and ending below the Northstar Fire Department, Station #32 on 9100 Highlands View Drive. Most of this area is part of an approved Cal Fire Timber Harvest Plan (THP). Portions of this area have received some level of treatment or are scheduled for treatment. It is the goal to have this entire area treated and designated as being in a maintenance mode.

Priority No. 1 Update – Since the establishment of this priority, 38-priority acres were treated. These acres were identified as immediate acres requiring treatment due to fire danger and insect and pest attacks. The remaining 52-acres were inspected and determined that past treatments prior to this priority still require an initial or re-entry and will be pursued in smaller scale future projects. The acres remaining still exist under a CAL FIRE Timber Harvest Plan (THP); however, the expiration of the THP is approaching.

Priority No. 2 – Maintain past fuels management treatment areas within the 1,855-acre Northstar Community Services District boundary (CSD). This will be areas that have previously been treated to

ensure compliance. Historically, maintenance areas that consist of brush have required a return treatment every 3-5 years, and forested areas every 8-10 years. Five (5) consecutive years of drought in California has advanced tree and brush mortality, which has expanded the number of acres that require attention. At the time of this priority, 250 acres require maintenance treatment.

Priority No. 2 Update – Since the inception of this priority, the Northstar CSD boundary has expanded, providing water and sewer services. Within the community of Northstar, an emphasis on establishing maintenance acres has been strived for. Continued tree mortality and aggressive brush growth have been challenging in declaring open space common areas as "Maintenance Areas." This priority will remain intact as annually; the Fuels Management Department must capture tree mortality and reduce brush-fields on a priority basis. Priority fuels reduction acres will be implemented annually, targeting the highest priority areas, and working towards the lowest each year until a maintenance cycle can be achieved. For the 2020 project season, an evaluation of completing mastication work in-house will occur.

Priority No. 3 – Provide a fuels buffer along a riparian corridor that exists from the northern border of the Northstar Property Owners Association Recreation Center, heading north to the southern boundary of the residential properties of Beaver Pond. This project area is 24 acres in size.

Priority No. 3 Update –This priority is in continued work and identified as a necessity due to continued mortality within the riparian area corridor. Since the inception of this priority, outside pathology professionals have identified multiple insect and diseases present in both deciduous and conifer species. With the issues present, both funding from Measure E and grant funding has been applied to creating a fuels buffer but require additional work due to continued tree mortality and the complexities and cost of biomass removal. This priority will remain a priority and expand its boundary for both forest fuels management and health.

Priority No. 4 – To continue strengthening and maintaining a buffer zone that will be a minimum of 500' feet in width. The buffer zone will begin at the Cal Trans boundary line parallel of U.S. Highway 267 from Highlands View Road heading north through Northstar Drive and ending at the Golf Course Maintenance Road.

Priority No. 4 Update – California Fire Safe Council (CFSC) funding has allowed 65 acres from Northstar Drive heading North and 8 acres heading south for a total of 73 acres to be treated, and treatment will go into the 2020 season. This work will get approximately 80% of the desired focus areas treated and declared in a maintenance mode. The Fuels Management Department will seek additional funding to treat additional acres south of Northstar Drive past Highlands View Road. This work will complement upcoming funding from the National Forest Foundation, which is funding an extensive forest fuels buffer along the eastern boundary of US Highway 267 involving multiple landowners and agencies. US Highway 267 is considered a major evacuation route in the event of a wildfire.

Priority No. 5 – To strategically remove dead, diseased and dying trees as needed within the CWPP area to promote forest and watershed health and to identify and perform maintenance as needed. The CWPP area extends 1.5 miles in any direction from any developed area.

Priority No. 5 Update – Since this priority was established, the Northstar Fire Department has removed a range of 400-500 dead deciduous and conifer trees just from individual focus trees. Originally,

capturing tree mortality was a bi-annual process beginning in the spring and ending in the fall. Now this work has been geared to an all-season focus. Capturing tree mortality year-round will continue until the Fuels Management Department determines the schedule can go back to a bi-annual basis, and this will remain as one of the top priorities.

Priority No. 6 – Continue to work in a partnership with the United States Army Corps of Engineers (USACE) and neighboring communities such as Martis Camp, Lahontan, Schaffer's Mill, Waddle Ranch, and the Truckee Airport District. For this Priority, the NFD is working on a 78-acre fuels management project with the USACE and a 43-acre project with the Community of Martis Camp. This is the beginning of future partnership projects that will help strengthen the boundary of the Northstar Community Services District and help our neighbors with guidance and grant funding to protect their areas of interest.

Priority No. 6 Update – Since this priority was established, the Northstar Fire Department has acquired a CAL FIRE, Fire Prevention grant, which is valid until March 2022. The approved funding has allowed 78-acres to be treated, which is in the northwest section of the Northstar boundary. It lies directly west of Tompkins Circle/Basque. 43-acres were successfully treated in 2018 in the western boundary between Northstar and Martis Camp, which is directly west of The Retreat at Northstar. This priority is currently being met, and it is the objective to continue future partnership projects with the entities identified to continue strengthening the boundaries between the district neighbors.

Priority No. 7 – Treat 28-acres outside the eastern boundary of the Northstar Community Services District boundary, below Highlands View Road. This project area is part of an approved Cal Fire Timber Harvest Plan. This project will require an initial entry from mechanical treatment, followed with multiple hand crew thinning operations and clean up.

Priority No. 7 Update – There have been several attempts in obtaining funding for this project area, and the new focus has been treating the entire eastern boundary beyond the 28-acres. Northstar California (Vail Resorts) has contributed time and funding to treat the dead within the 28-acres until sufficient funding can be obtained for this area. It is expected to change this Priority to the entire Eastern Boundary of the District due to increased mortality.

Priority No. 8 & 9 – Acres have been identified for fuels reduction/forest health treatment within a meadow and along the shoreline to the south of the Northstar Reservoir. This project work will reduce the dead and dying conifer trees and reduce the amount of overstocked young trees that are taking over the meadow area.

Priority No. 8 & 9 Update – Funding has been obtained from the CFSC to begin forest fuels reduction work at the Northstar Reservoir. This will be considered Phase One (1) of a series of treatments, and it is expected that the boundary will increase due to encroaching tree mortality and the improvement of evacuation routes that are identified as "off-road" or "Secondary" routes.

APPENDIX E – CONE FIRE, 2002

Cone Fire Tests Fuel Reduction Treatment Effectiveness

Blacks Mt Experimental Forest and the Cone Fire, September 26, 2002
By Gary Nakamura, UC Cooperative Extension (Many photos courtesy of USFS PWS Research Station. Ecological Research Project, Redding, CA.)

The September 26, 2002, Cone Fire evaluated the effectiveness of a variety of fuel-reduction treatments under severe fire behavior conditions of wind (10 mph), low humidity and low fuel moisture. In 1996, an Ecological Research Study was established at Blacks Mt Experimental Forest using timber harvest, biomass harvest and prescribed fire to create different stand structures and fuel conditions. Eastside pine-type forest with 2 to 3 age classes (200 year, 100 year and <100 year, **(Photo 1)** Ponderosa and Jeffrey pine, incense cedar and white fir, was thinned to: 1) Maintain high structural diversity, while reducing ladder fuels **(Photo 2)**: and 2) Create low structural diversity (uniform stand structure) by harvesting all large, over-story trees, snags and thinning the ladder fuels, creating uniformly sized and spaced trees of the 100-year-old age class **(Photo 3)**. Large, 250 to 300-acre, treatment units were thinned to these two structures and prescribed fire was applied to half of each unit, further reducing logging slash, surface fuels and fire hazard.

Photo 1 - Original stand structure, Research Natural Area B.

Photo 2 - Unit 41, High structural diversity, without prescribed fire.

Photo 3 - Unit 46, low structural diversity unit, prescribe burned, October 2000.

The Cone Fire burned from the NW and into Units 46, 43 and 41 **(Photo 4)**. The fire was driven by low-speed winds from the NW (10 mph), but the humidity was very low, in the teens and single digits, even at night, causing fire conditions to be considered severe. Fuel moisture was also very low (3 inches) with material at 8% moisture (critical levels are 12% or less).

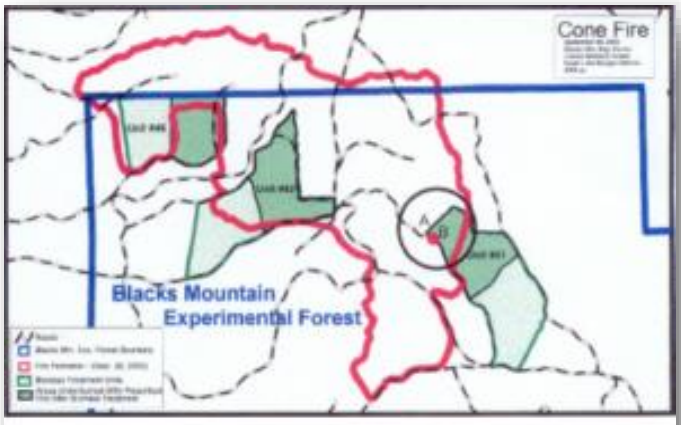


Photo 4 - Map of Cone Fire, September 26, 2002. Fire boundary in red. Unit 46 in upper left corner; Unit 43 in center; Unit 41 in center right.

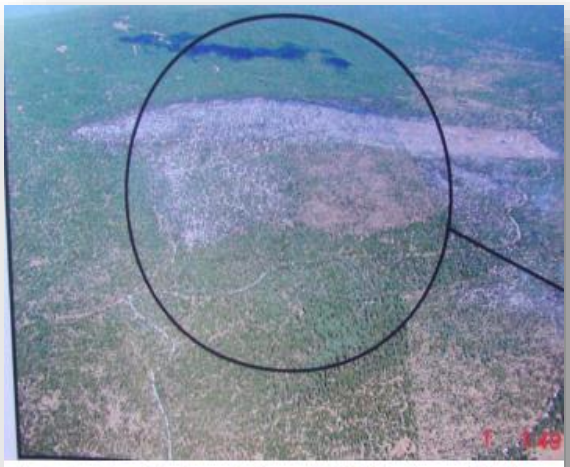


Photo 5 - Cone Fire burned through Unit 46 w/o prescribed burn (circle center left); burned around Unit 46 with prescribed fire (circle center right).

(Photo 5) is an oblique aerial photo showing fire behavior in Unit 46, a low-diversity unit. **(Photo 6)** On the left side, thinned without prescribed fire, the Cone Fire burned into the unit and killed trees; on the right side, thinned with prescribed fire, the Cone Fire was unable to burn. **(Photo 7)** Further to the right and above Unit 46, an untreated stand burned severely.

Photo 6 - Unit 46, thinned only, on the left. Thinned and prescribe burned in 2000, on the right. Cone Fire did not enter the area which was prescribe burned, but did severly burn the thinned only unit.

Photo 7 - Untreated stand adjacent to Unit 46

Photo 8 shows the fire behavior at the interface between untreated forests. The Cone Fire dropped from the crowns (flame lengths 1.5 times tree height or about 100 feet) to the ground when it entered Unit 41, but the radiant heat from the adjacent crown fire was sufficient to scorch and likely kill trees a few hundred feet into Unit 41 (**Photo 9**). However, the wildfire did extinguish itself in Unit 41 (**Photo 10**).

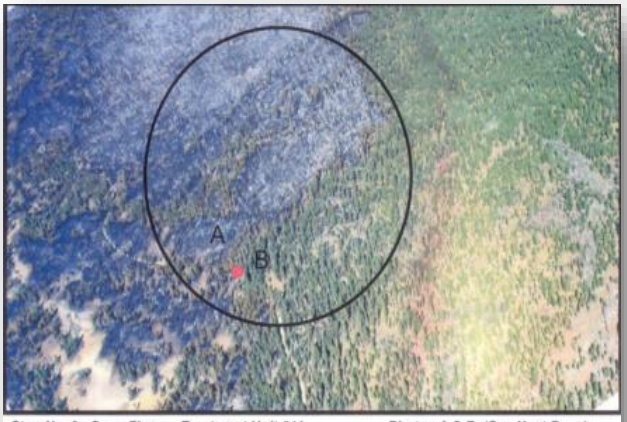


Photo 8 - Untreated forest, left side; Unit 41 with prescribed fire on right side. Vertical pink line is fire retardant. See photo 4 to locate this photo.

Photo 9 - Untreated forest shown in Photo 8. Crown fire with 100 flame lengths.

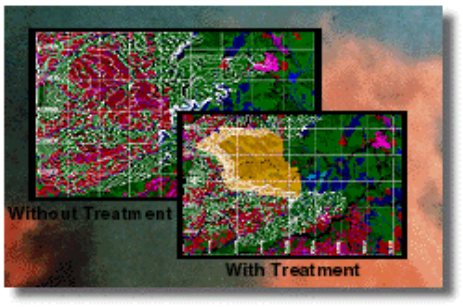
Photo 10 - Unit 41 with prescribed burn. Cone Fire dropped to the ground here.

Photo 11 is in the center of the untreated forest, showing the most severely burned area. No trees are alive, and few have any needles remaining. The forest floor is completely consumed.

Photo 11 - center of the untreated forest, NW of unit 41.

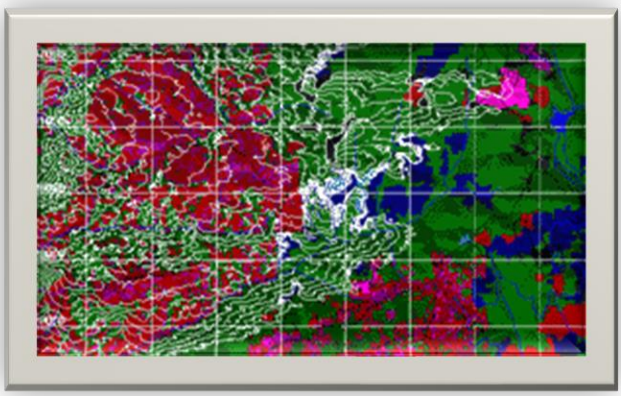
Conclusions - The Cone Fire evaluated the fuel treatments applied at Blacks Mt Experimental Forest under severe fire behavior conditions of wind, low humidity, and low-fuel moisture. Units which received both thinning of ladder fuels (biomass harvest) and a follow-up-prescribed fire to further reduce surface fuels had the wildfire drop to the ground where they extinguished or could be safely suppressed, while units which were just thinned of ladder fuels had sufficient surface fuels to severely scorch trees. The untreated forest burned the most severely, with total tree kill, forest floor consumption and canopy consumption.

APPENDIX F – OLD GULCH FIRE, 1992

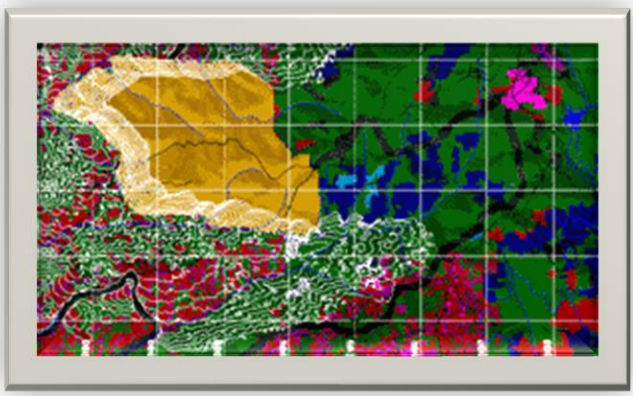


How Pre-fire Management Project Helped in the Old Gulch Fire

FARSITE, a spatial fire spread model, was used to assess the relative effectiveness of pre-fire fuel modification projects on potential outcomes from a 1992 wildfire in Calaveras County, California. This very large and damaging wildfire burned approximately 17,000 acres and cost nearly $29 million in suppression costs and damages. Recent pre-fire projects involving significant fuel modification altered fire behavior on two fronts and were considered important in reducing final fire size and damage. This analysis uses computer modeling to assess the tradeoffs associated with these treatments. In both instances, the fuel treatment project showed significant effects on reduced fire spread rate, fire line intensity and eventual fire size at the end of the simulation period. These results were interpreted against similar modeled scenarios without the fuel modifications in place. The example shown below compares the growth of the fire over a 24-hour period with and without the Skull Ranch Forest Improvement and Fuel Reduction Project. As is evident, as the fire crosses into the treated area (gold) its advance is significantly reduced. Modeled fire size at the end of the simulations was 4,114 acres with the project and 6,220 acres without the project. More importantly, the project effectively clipped the fire front from its up canyon advance on the community of Arnold (as shown in pink in the upper right), where property values were assessed at greater than 1.6 billion dollars.



NO TREATMENT

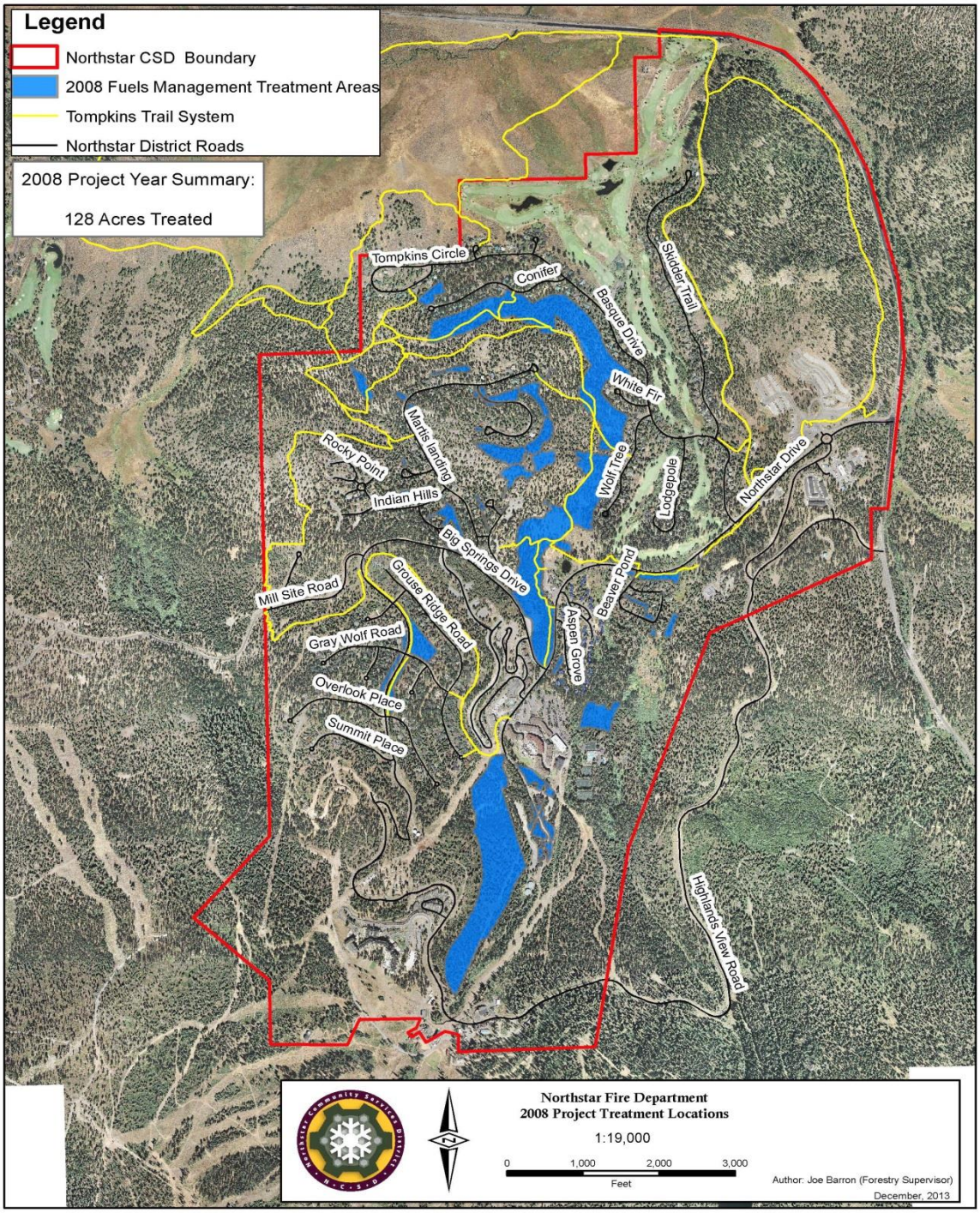


WITH TREATMENT

The “Full Report on exploring FARSITE modeling of pre-fire projects on the Old Gulch Fire” is no longer available as a resource from the State of California.

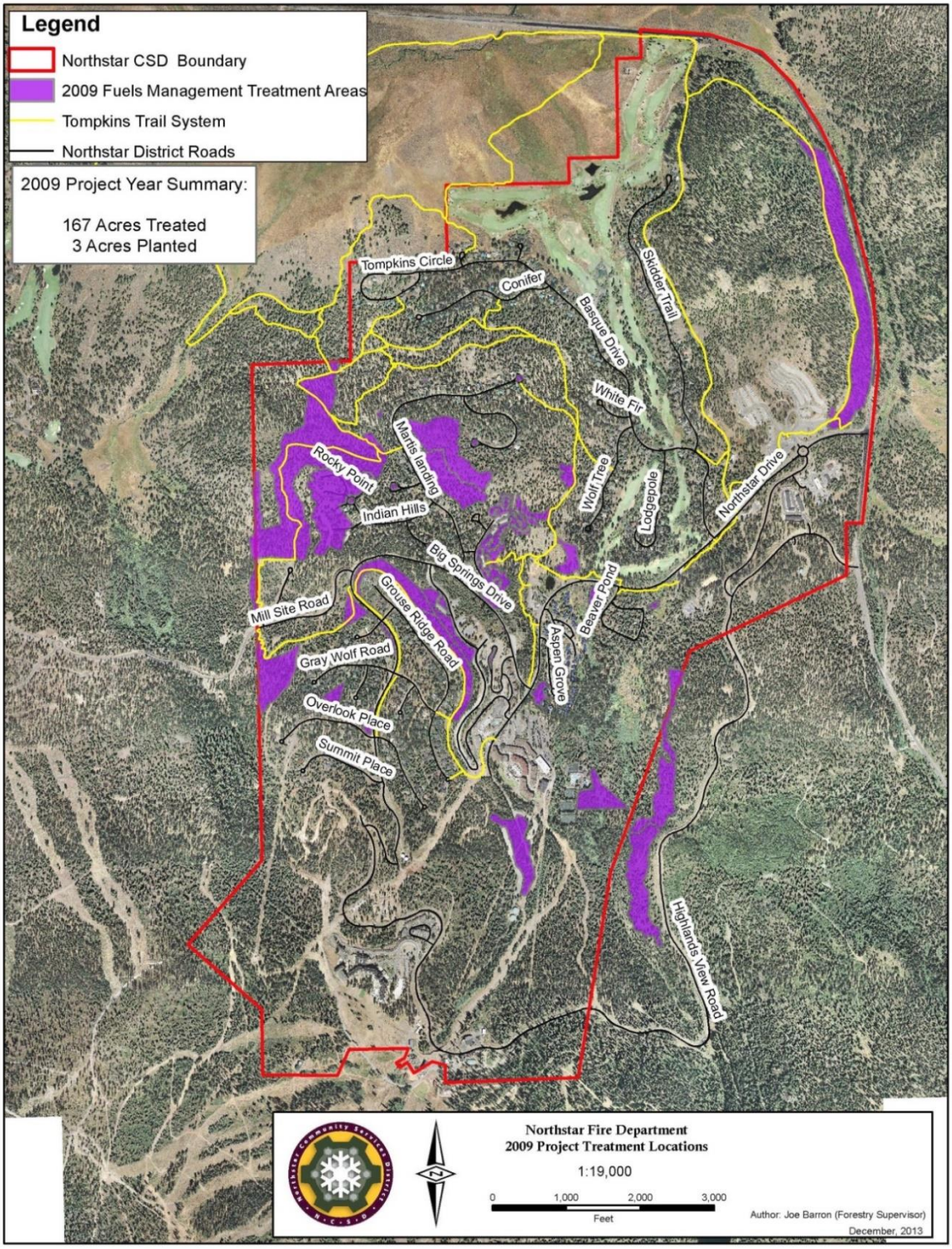
APPENDIX G – FUELS MANAGEMENT TREATMENT AREA MAPS (2008-2021)

2008 Northstar Fire Department Fuels Management Treatment Areas:



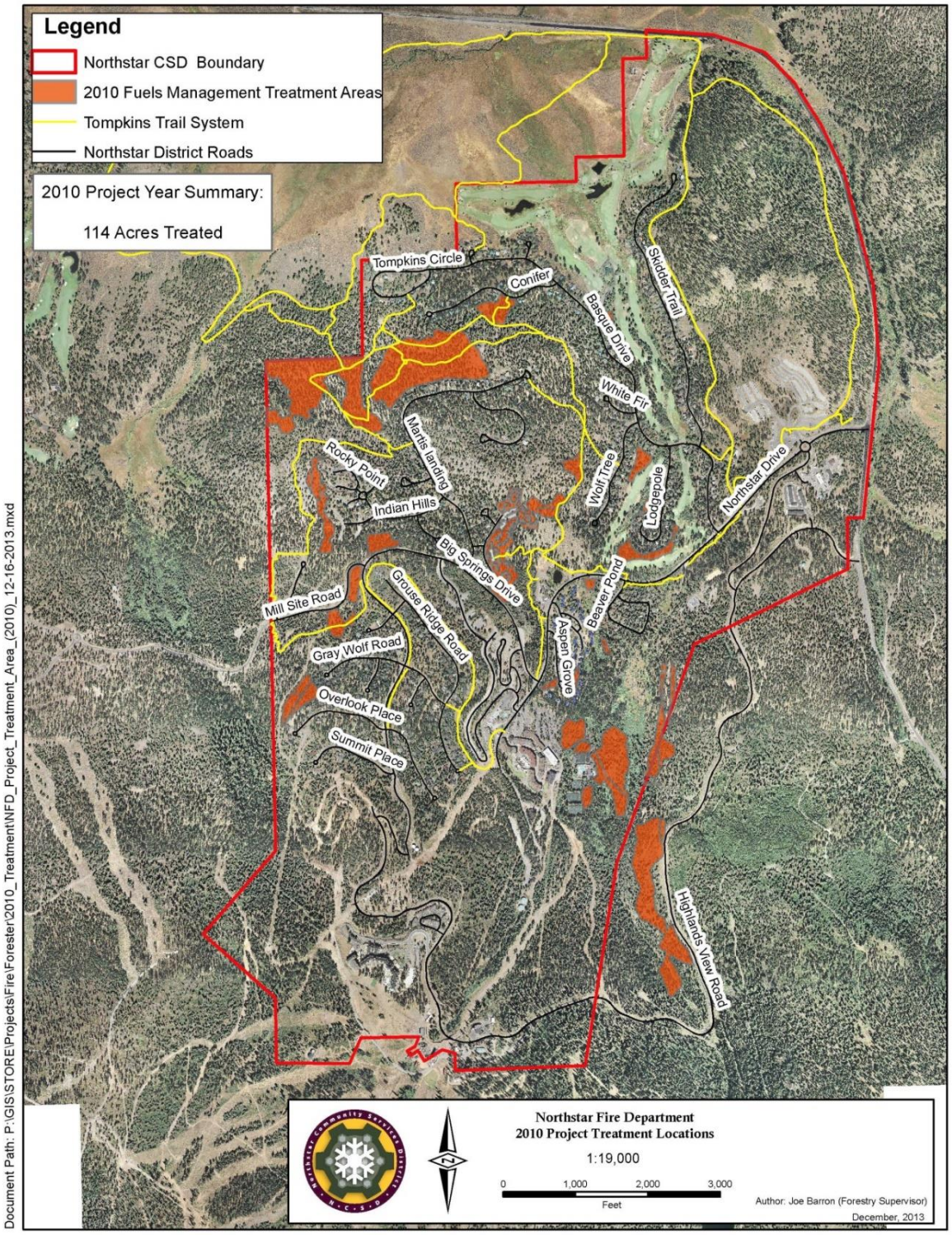
♦ Areas in blue depict 128 acres of fuels reduction forest health treatment that was completed within the NCSD boundary for 2008. The work done was based on federal funding, District compliance and forest enhancement work.

2009 Northstar Fire Department Fuels Management Treatment Areas:



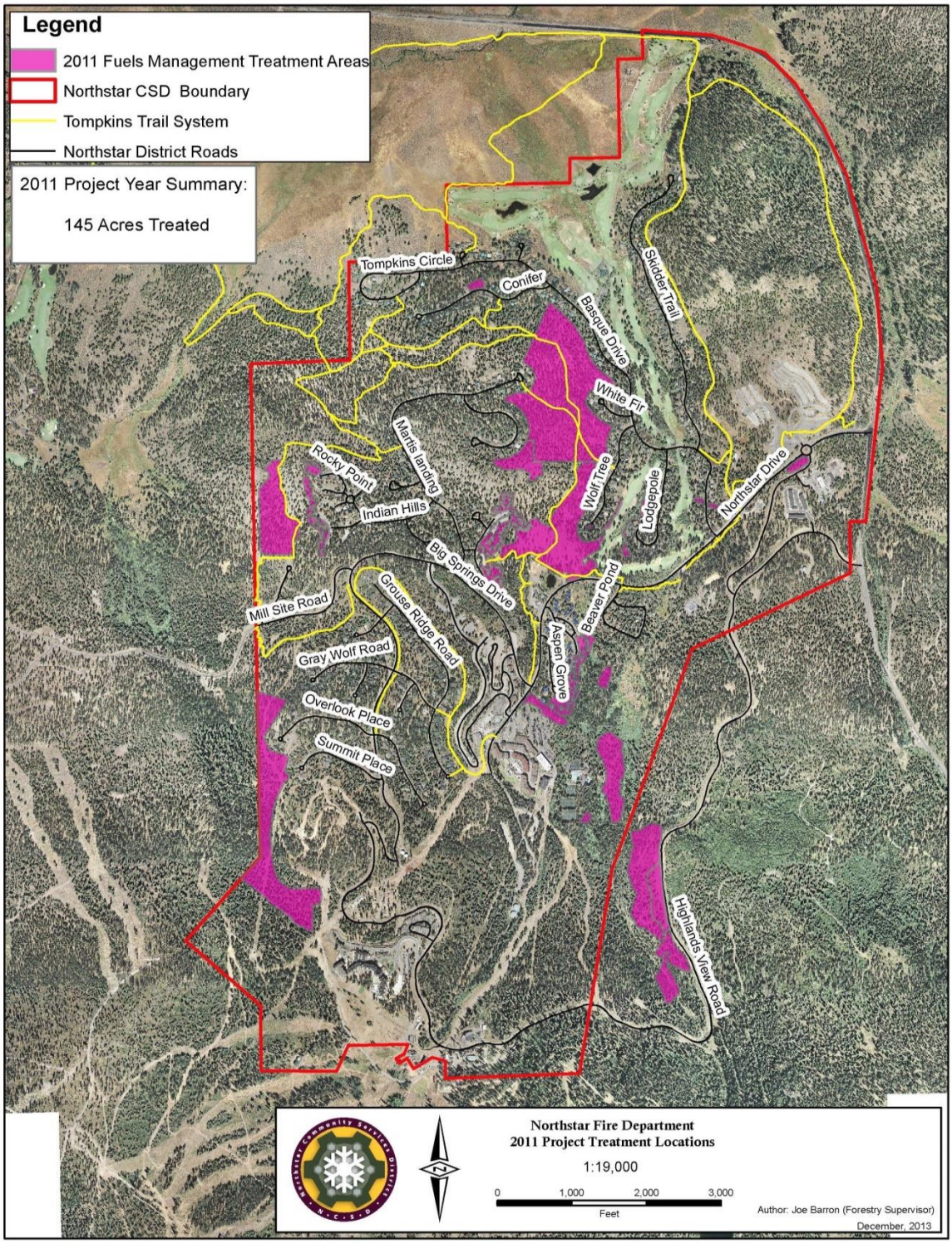
♦ Areas in purple depict compliance fuels reduction and forest health treatment within and outside the NCSD boundary completed in 2009. Project work consisted of seedling planting, compliance work, Measure E funded work, and a Supplemental Environmental Project (SEP).

2010 Northstar Fire Department Fuels Management Treatment Areas:



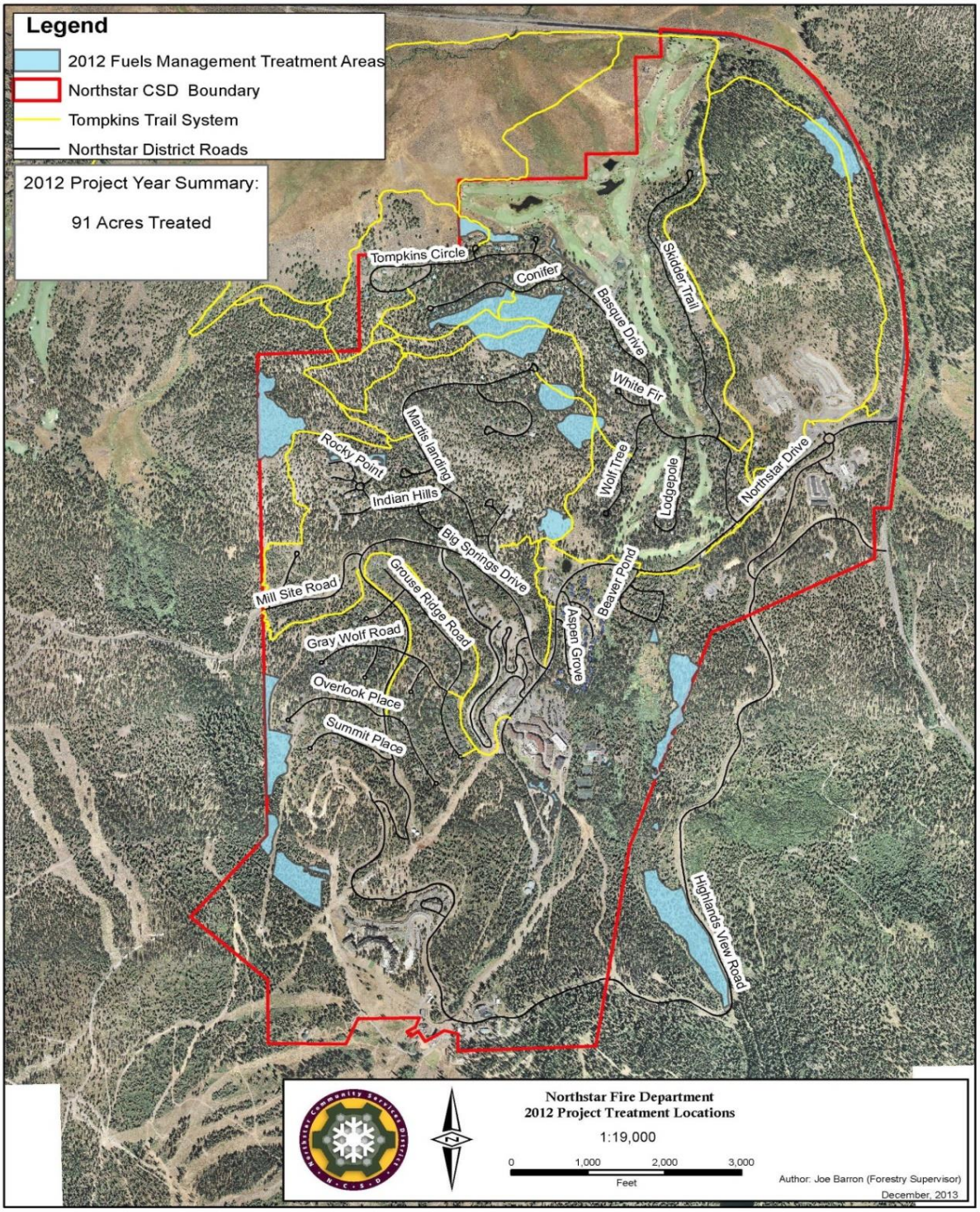
♦ Areas in orange depict compliance fuels reduction and forest health treatment within and outside the NCSD boundary. This work completed in 2010 consisted of compliance work, Measure E-funded work, and a Supplemental Environmental Project (SEP).

2011 Northstar Fire Department Fuels Management Treatment Areas:



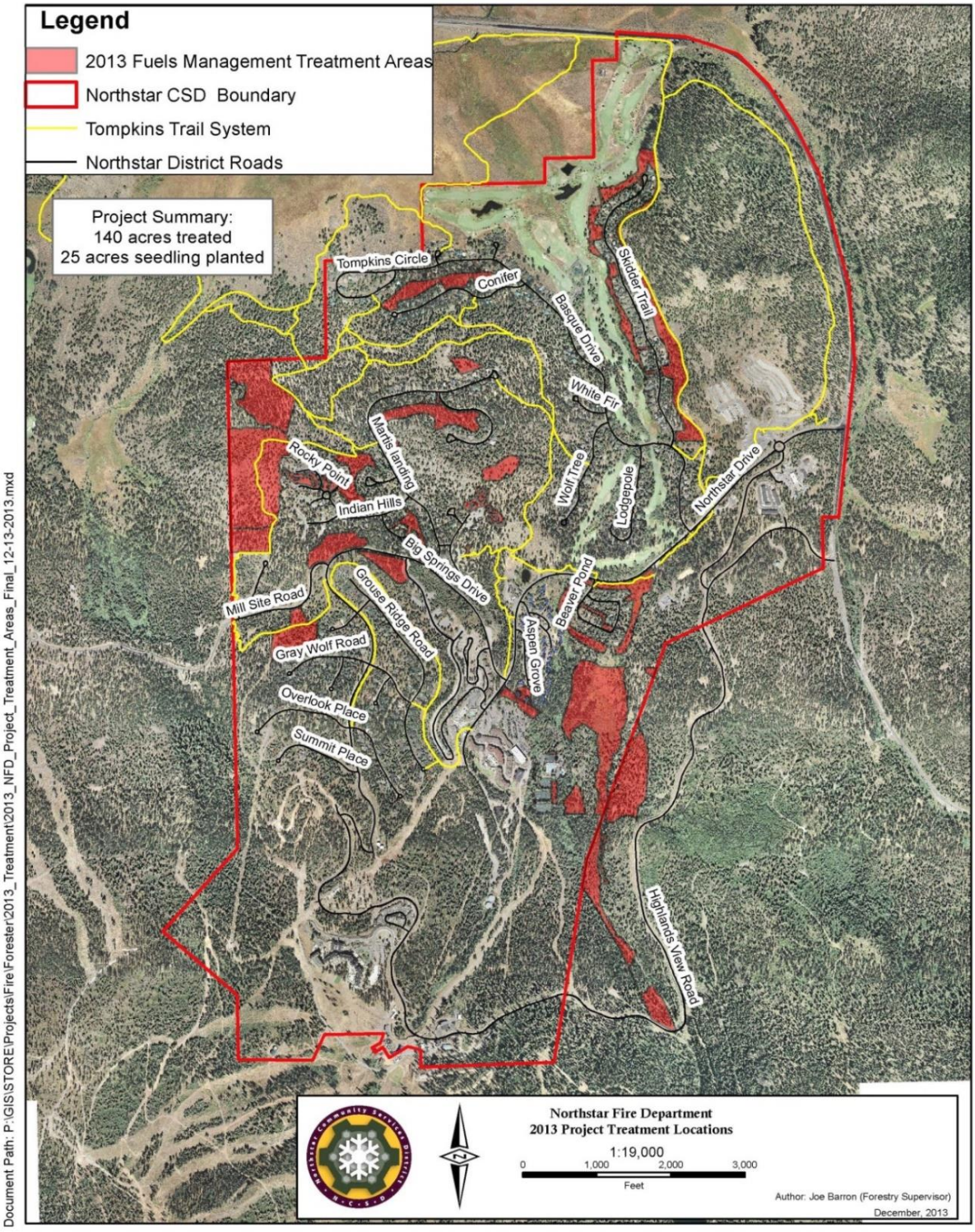
♦ Areas in dark pink depict compliance fuels reduction and forest health treatment within and outside the NCSD boundary. This work completed in 2011 consisted of federally funded work, compliance work, Measure E-funded work, and a Supplemental Environmental Project (SEP).

2012 Northstar Fire Department Fuels Management Treatment Areas:



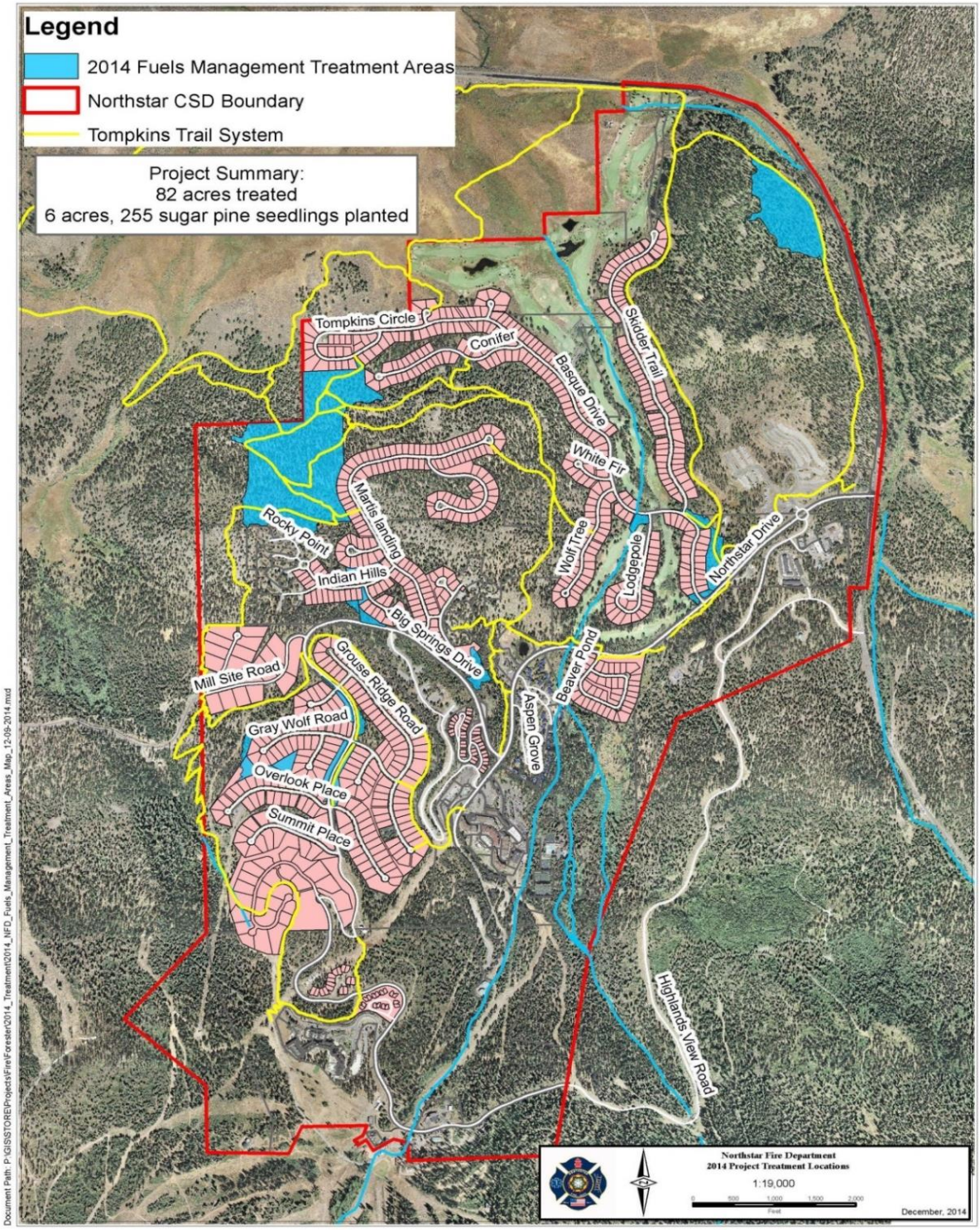
♦ Areas in light blue depict fuels reduction and forest health treatments within and outside the NCSD boundary completed in 2012. Project work consisted of compliance work, and State of California funded work.

2013 Northstar Fire Department Fuels Management Treatment Areas:



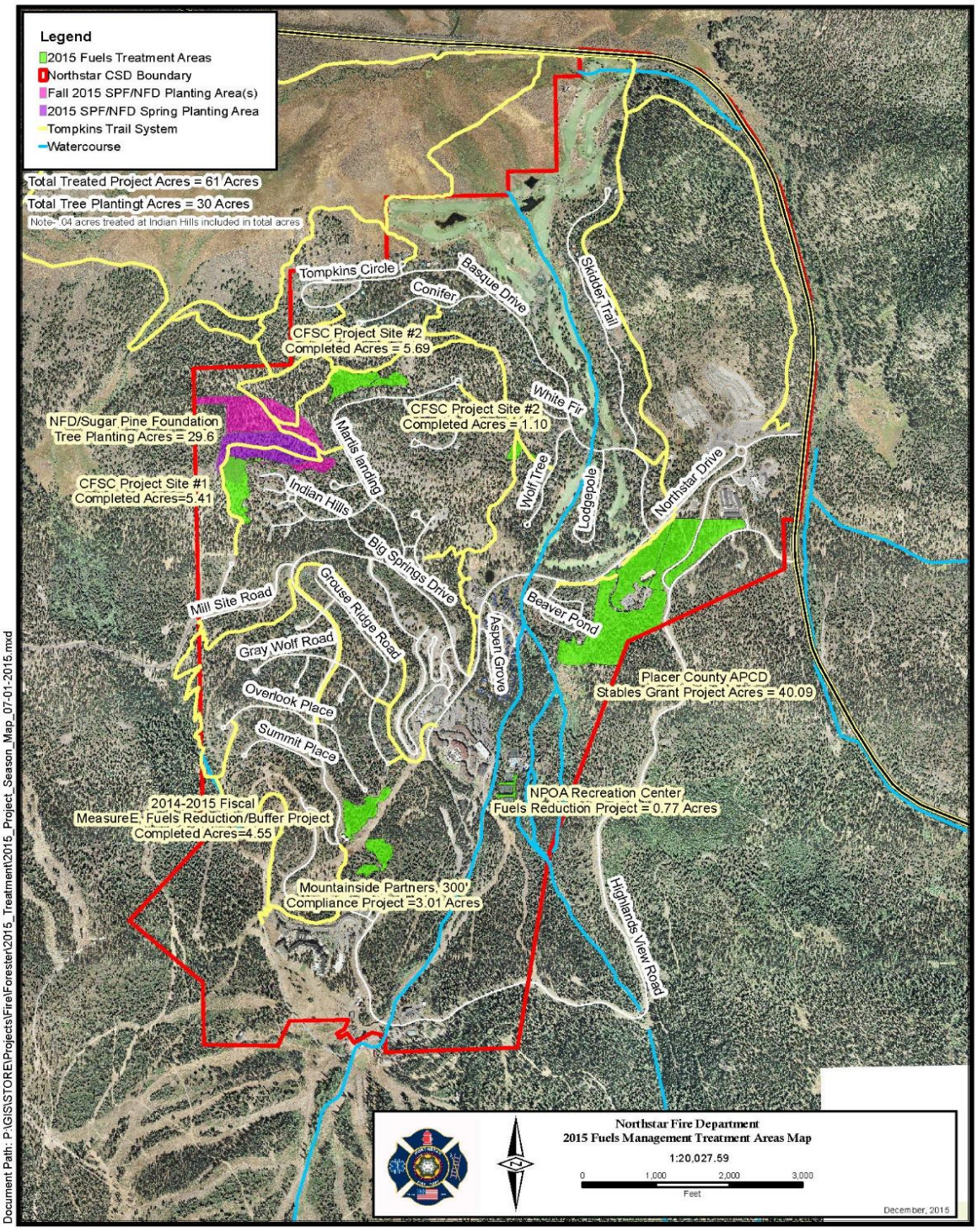
♦ Areas in red depict fuels reduction and forest health treatments within and outside the NCSD boundary completed in 2013. Project work consisted of seedling planting, compliance work, State, and federally funded work, in addition to a Supplemental Environmental Project (SEP).

2014 Northstar Fire Department Fuels Management Treatment Areas:



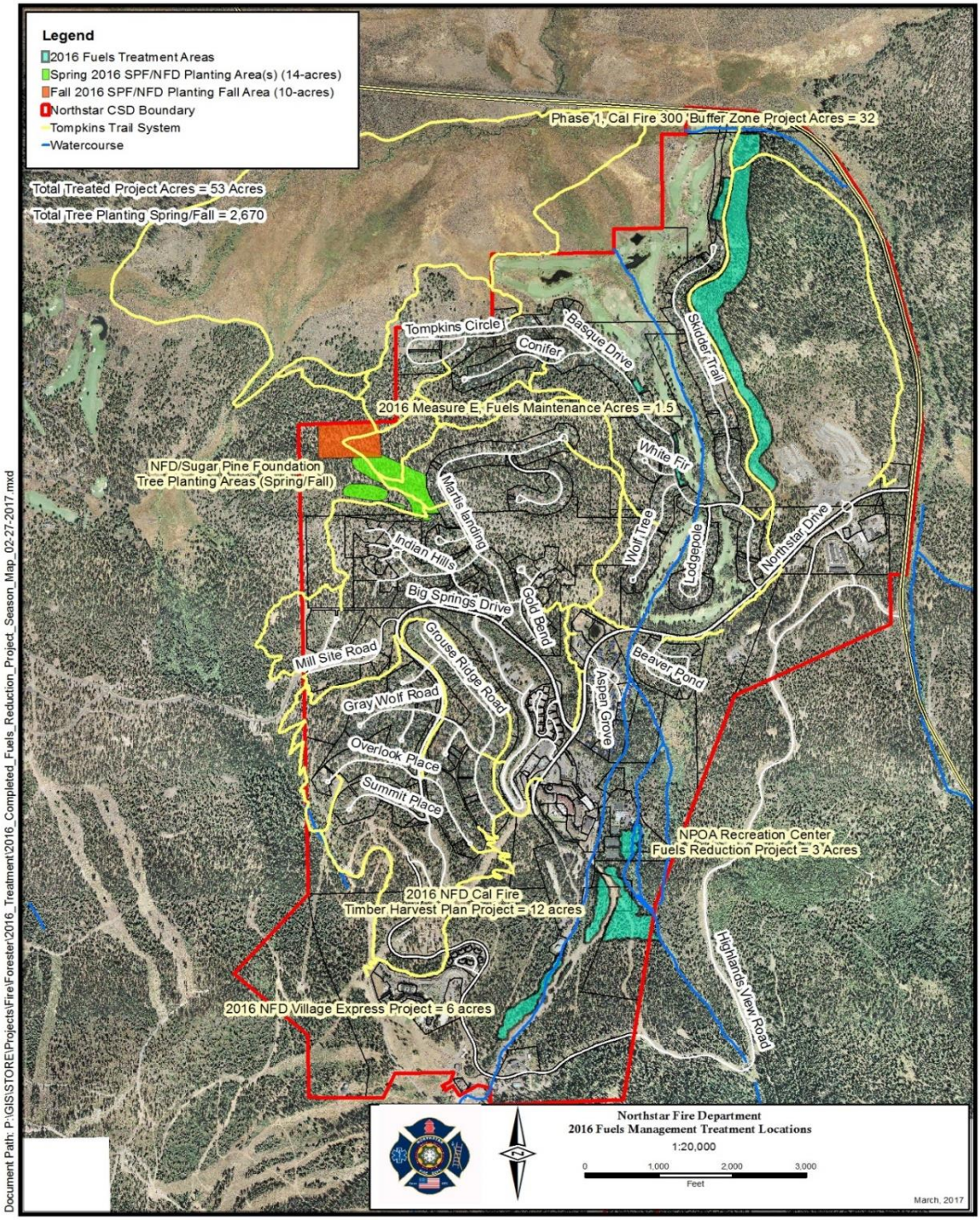
♦ Areas in blue depict fuels reduction and forest health treatments within the NCSD boundary that was completed in 2014. Project work consisted of seedling plantings, Measure E funded fuels reduction work, and California Fire Safe Council and CAL FIRE SRA funded fuels reduction projects.

2015 Northstar Fire Department Fuels Management Treatment Areas:



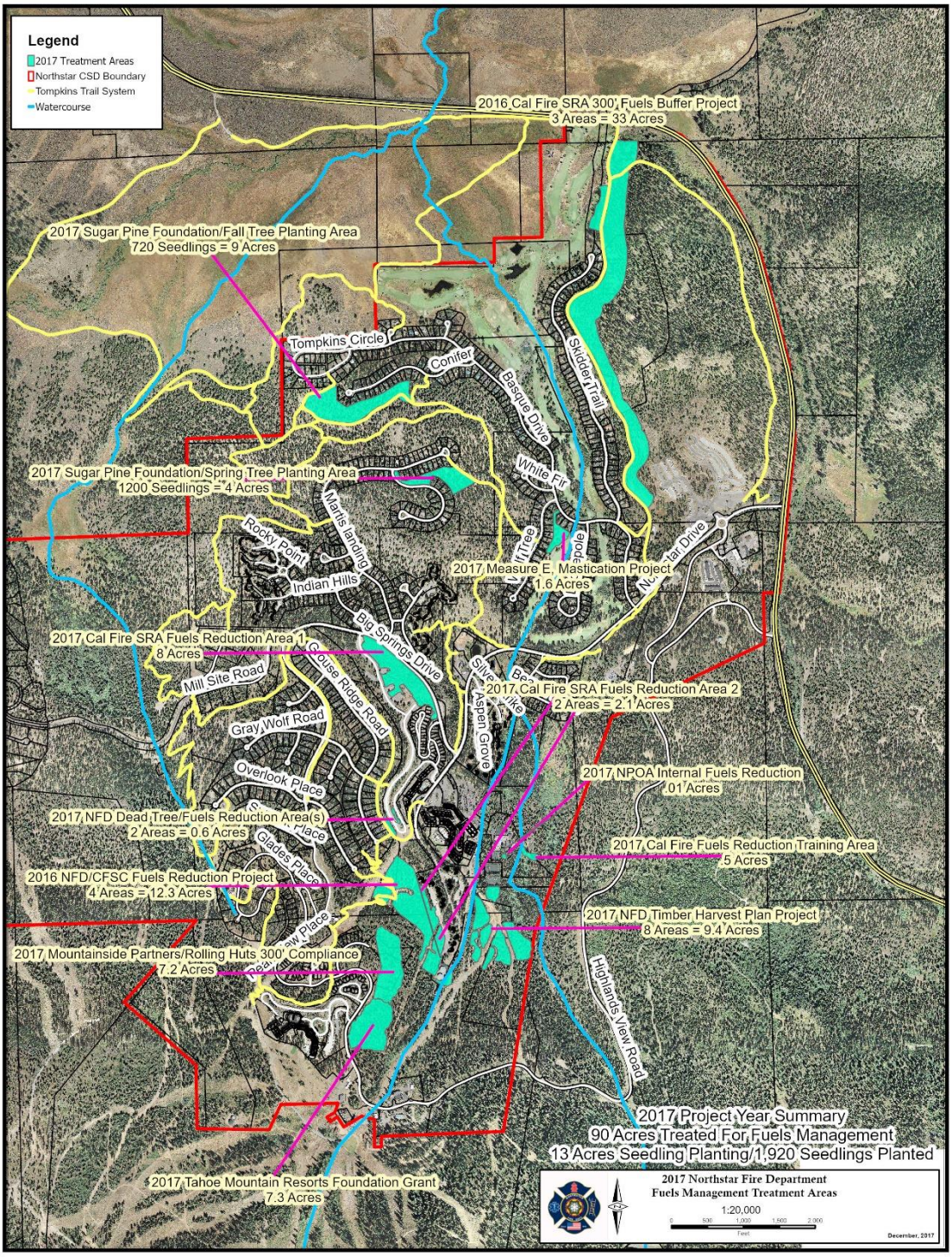
♦ Areas in green depict fuels reduction and forest health restoration treatments within the NCSD boundary that was completed in 2015. Project work in violet and purple consisted of seedling plantings. Project work consisted of Measure E, Placer County Clean Air grant funds and Northstar Property Owners Association fuels reduction funds.

2016 Northstar Fire Department Fuels Management Treatment Areas:



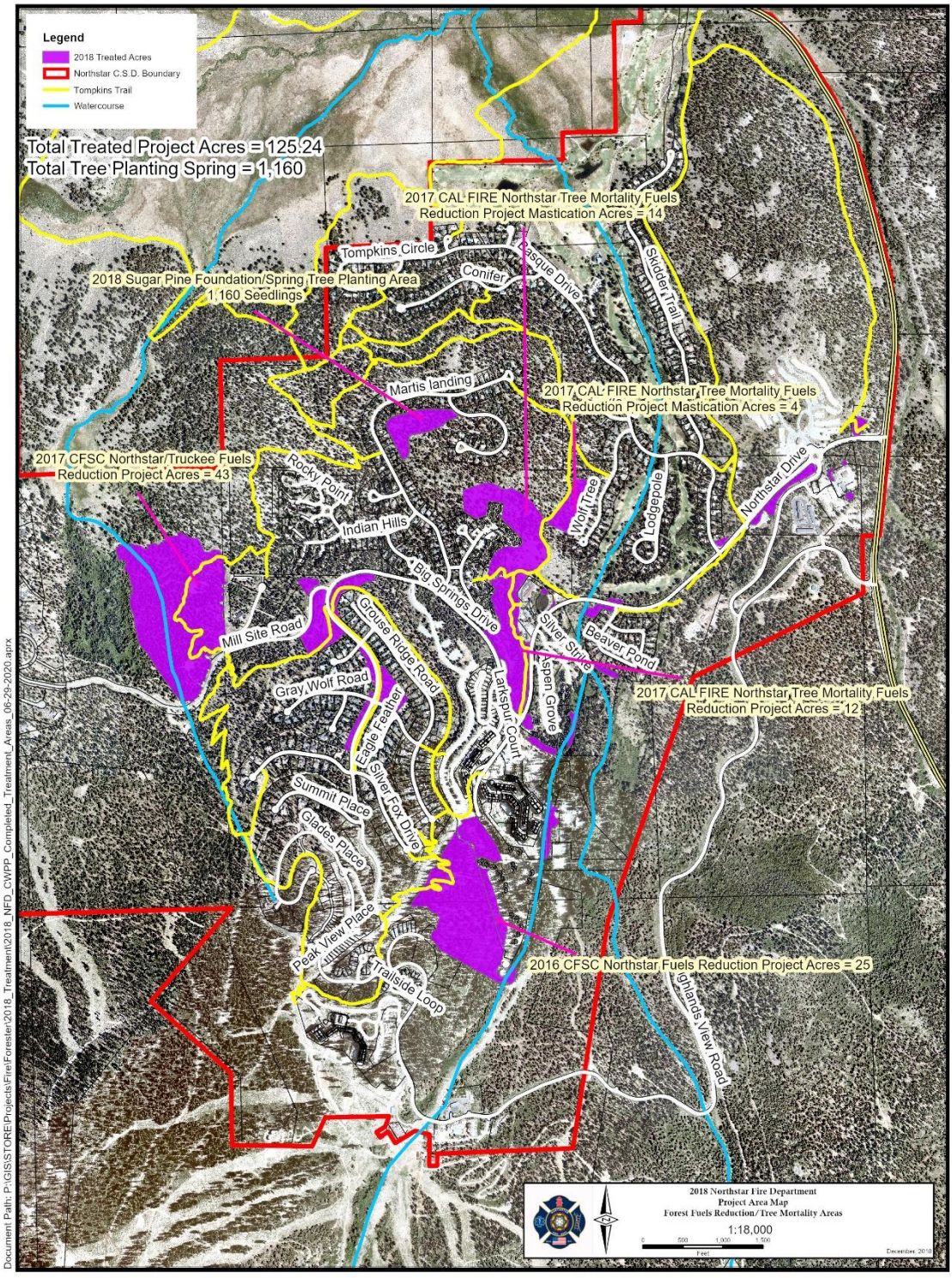
♦ Areas in tourmaline green depict fuels reduction and forest health treatments within the NCSD boundary that was completed in 2016. Project work in green and orange consisted of seedling plantings. Project work consisted of Measure E, Northstar at California, CAL FIRE grant funds and Northstar Property Owners Associated fuels reduction funds. In addition, 248 dead, diseased, dying and bark beetle infested trees were removed.

2017 Northstar Fire Department Fuels Management Treatment Areas:



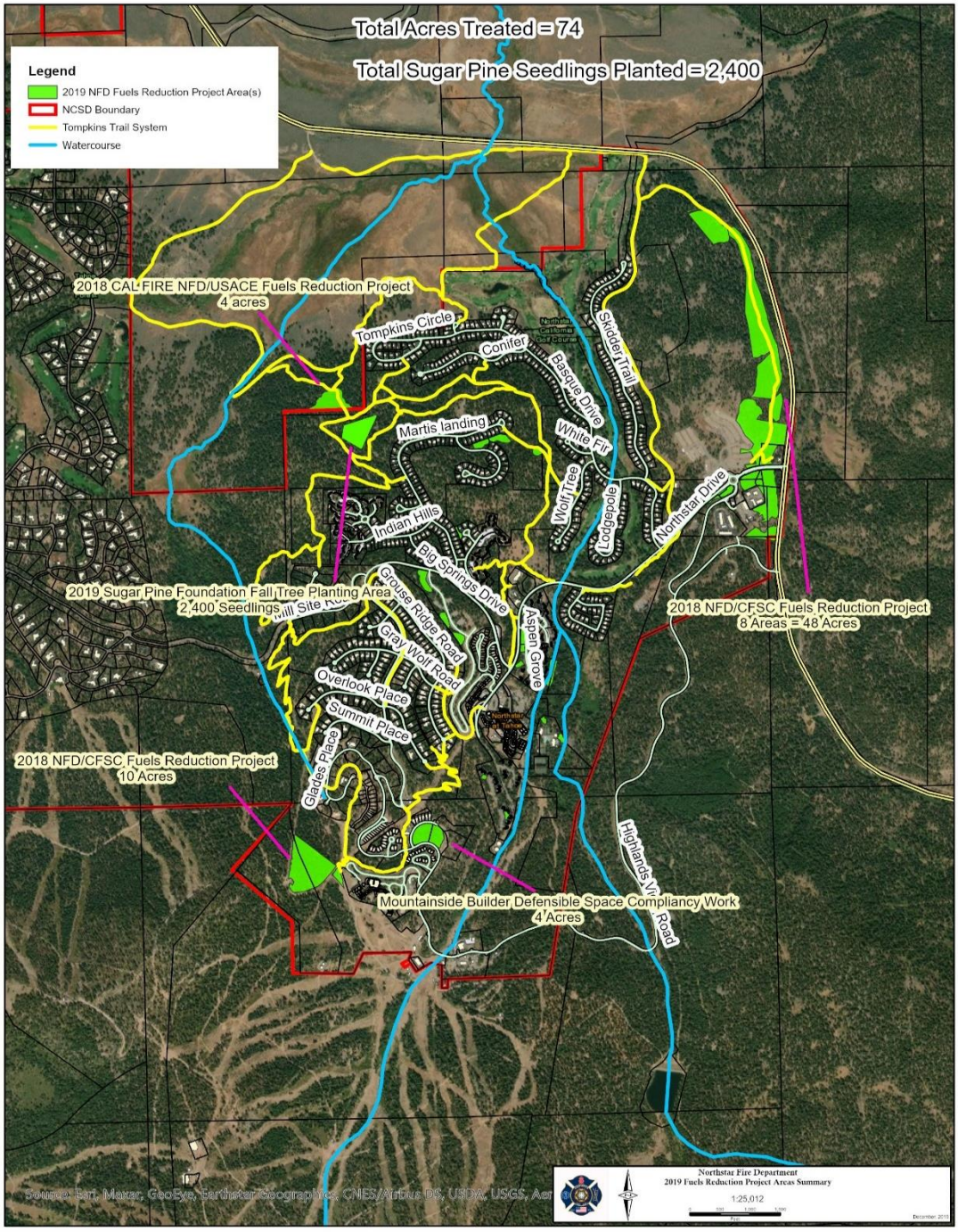
♦ Areas in aqua marine depict fuels reduction and forest health treatments within and outside the NCSD boundary completed in 2017. Project work consisted of seedling planting, compliance work, state, and federally funded work.

2018 Northstar Fire Department Fuels Management Treatment Areas:



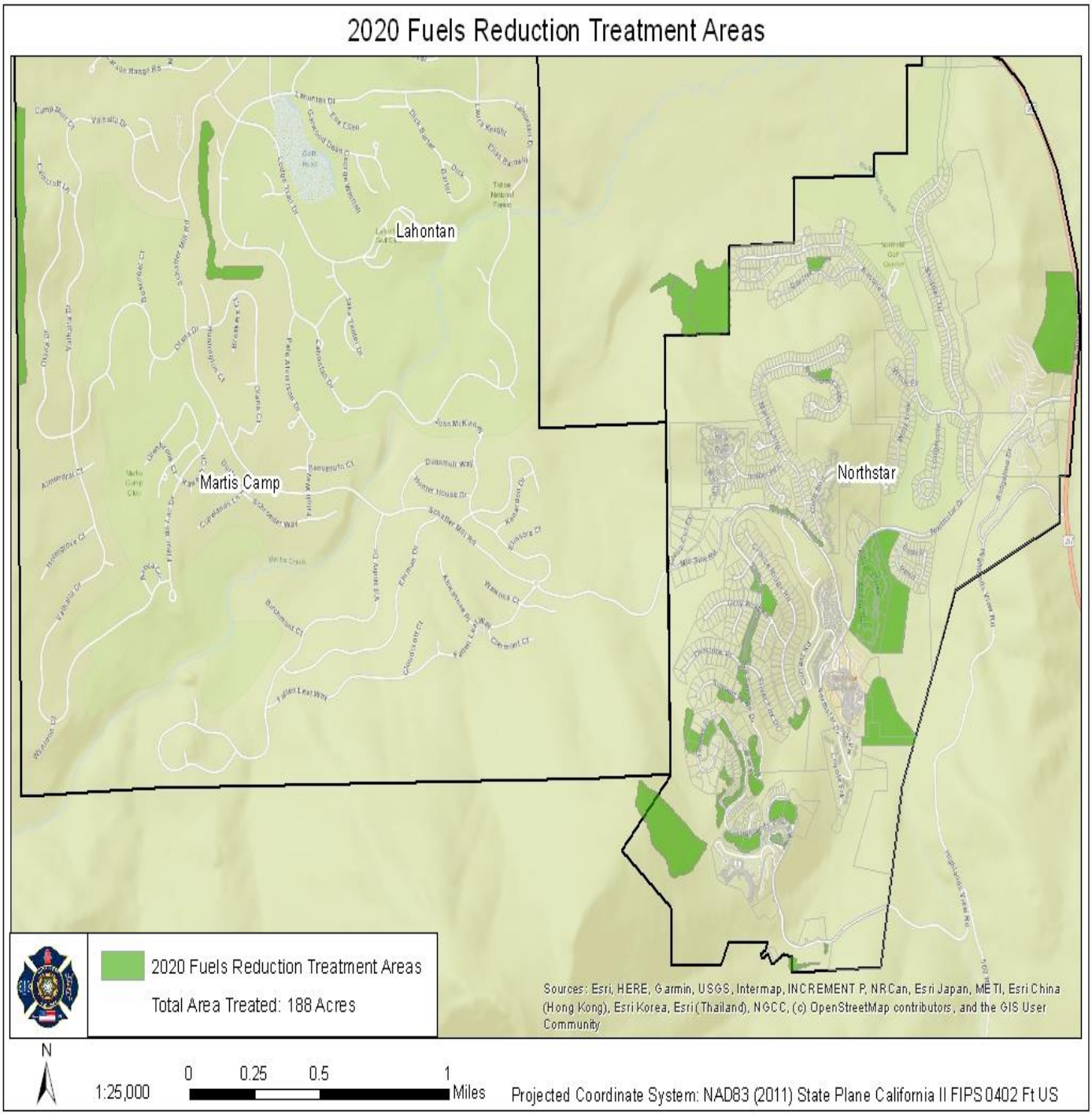
♦ Areas in purple depict fuels reduction and forest health treatments within and outside the NCSD boundary completed in 2018. Project work consisted of seedling planting, compliance work, state, and federally funded work.

2019 Northstar Fire Department Fuels Management Treatment Areas:



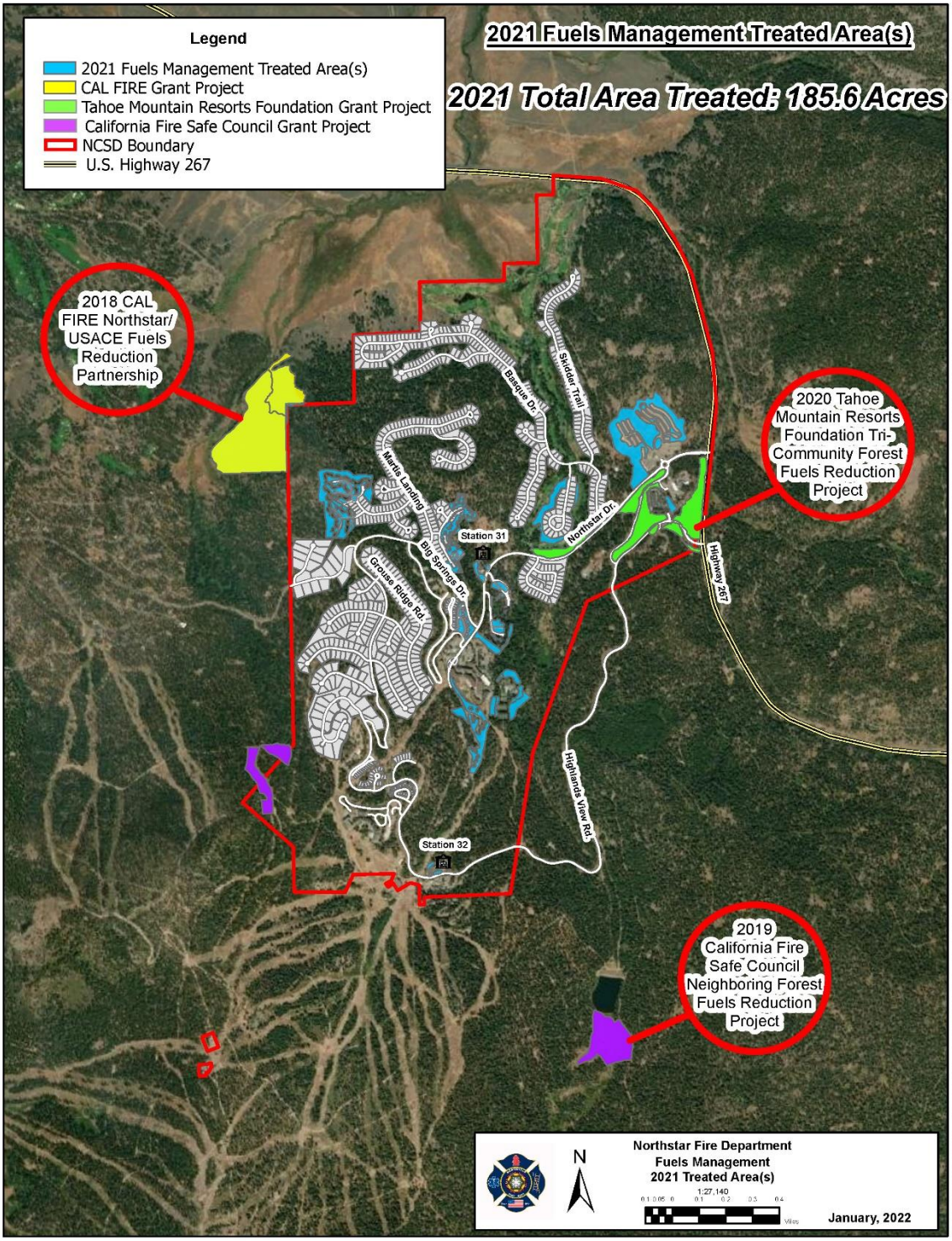
♦ Areas in green depict fuels reduction and forest health treatments within and outside the NCSD boundary completed in 2019. Project work consisted of seedling planting, compliance work, state, and federally funded work.

2020 Northstar Fire Department Fuels Management Treatment Areas:



♦ Areas in green depict completed 2020 fuels reduction and forest health treatments within and outside the NCSD boundary. Annual projects consisted of compliance work, as well as state and federally funded projects. Additionally, the NFD, Community of Martis Camp, and Northstar California had been awarded a multi-jurisdiction funded grant project to reduce hazardous fuels.

2021 Northstar Fire Department Fuels Management Treatment Areas:



♦ The multiple colors depict 2021 compliance work and grant funded fuels reduction treatments within and outside the NCSD boundary. Project work consisted of using hand crews, mastication, and mechanical logging. No seedling planting was performed due to drought conditions and tree mortality.

APPENDIX H – FUELS MANAGEMENT PHOTOGRAPHIC DOCUMENTATION (2008-2021)

2008 **Before Treatment**

2008 **Before Treatment**

♦ Both photos demonstrate the forest floor and stand density on Northstar Property Owners Association (NPOA) property prior to treatment in 2008. Prior to work being done the BEHAVE fuel model number assigned to this site (Timber Group) = 10. Following treatment, the BEHAVE fuel model was recognized as a (Timber Group) = 8. The average stand density for the entire 7.63-acre project was 270 square feet of basal area. Following treatment, the average square feet of basal area of the stand was 150. Additional work will be done in future years to get the desired square foot of basal area range between 75 and 90.

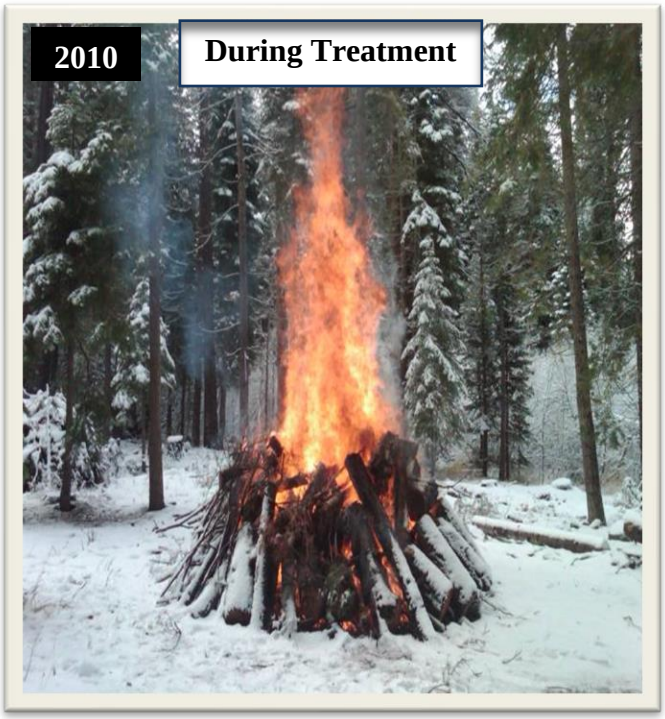
2008 **During Treatment**

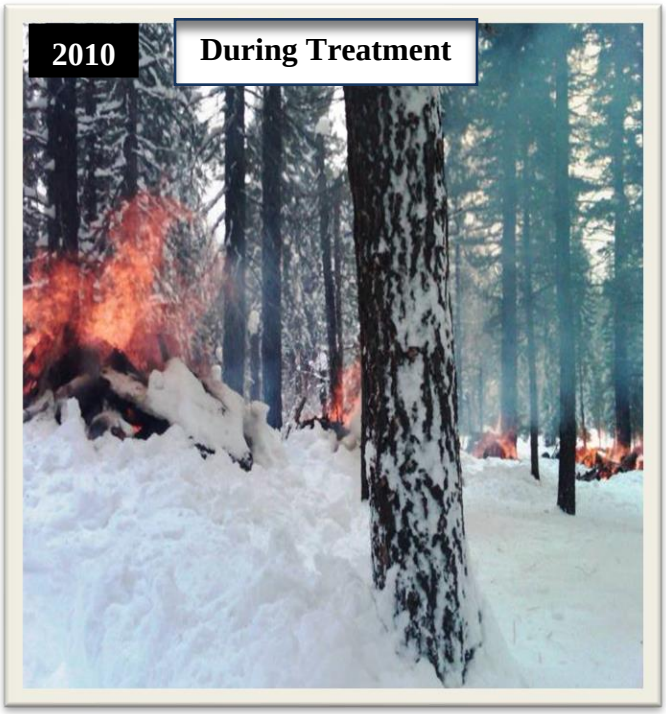
♦ The photo to the left taken during the 2008 forest fuels reduction project season shows the large downed and dead material from the previous photo that has been stacked into burn piles. The larger forest fuels material that cannot fit into the track chipper or is logistically difficult to reach will be pile burned. The re-introduction of fire to the ecosystem is a beneficial element to the Sierra Nevada Forest ecosystem.

2008 **During Treatment**

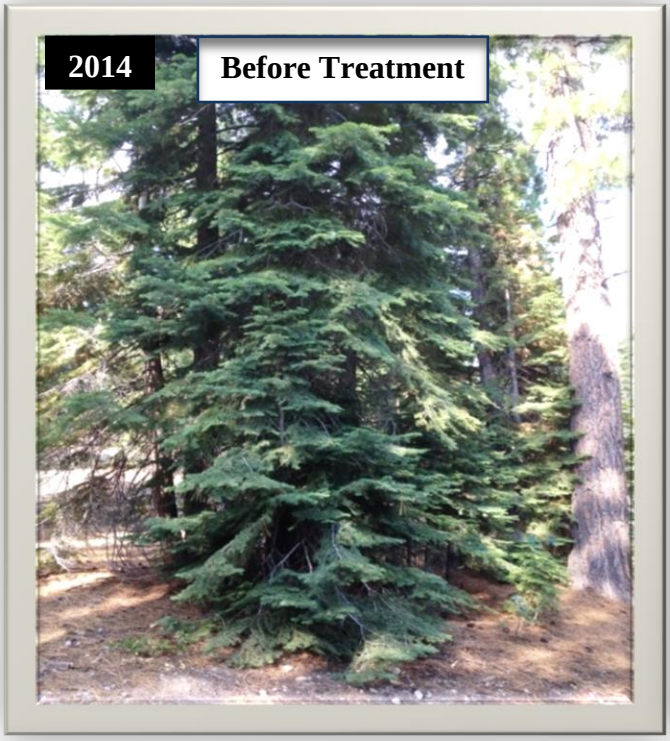
♦ In 2008, the NFD track chipper was used for forest fuels reduction within project areas where chipping was acceptable. The chipper operator managed a two-person crew that on average was able to chip 30 4'x4'x6' piles per day.

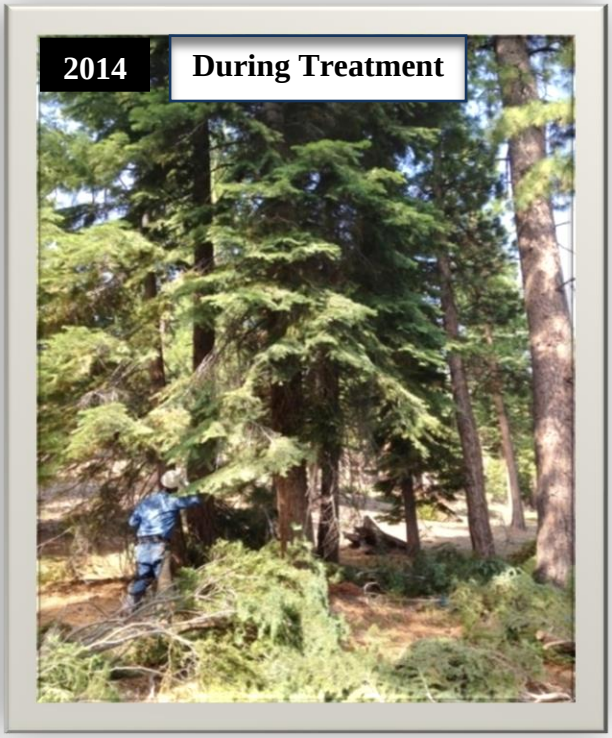
♦ Both photos were taken during the 2009 project season. The photos depict a Quaking Aspen (*Populus tremuloides*) grove that was opened and released from encroaching conifers. The Quaking Aspen habitat is a diminishing habitat in North America and a species that can act as a natural forest fuel break.

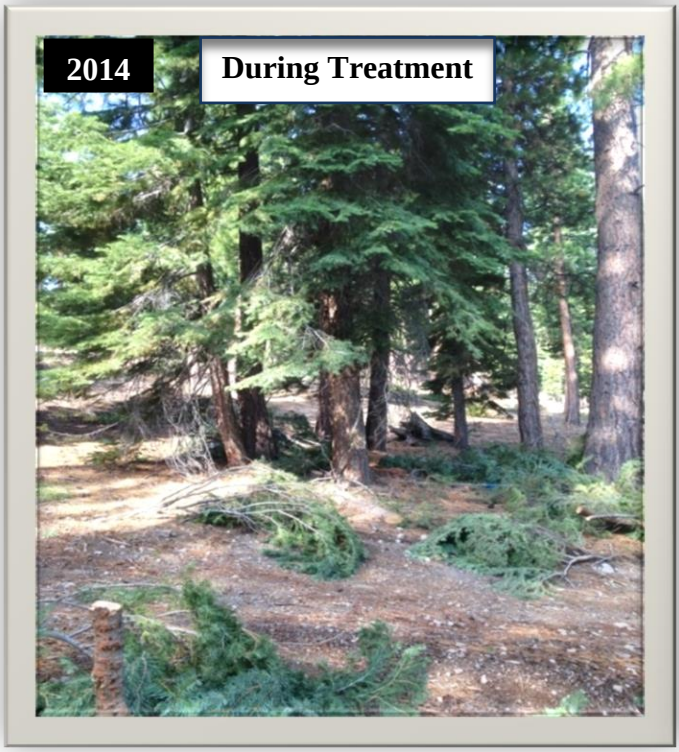


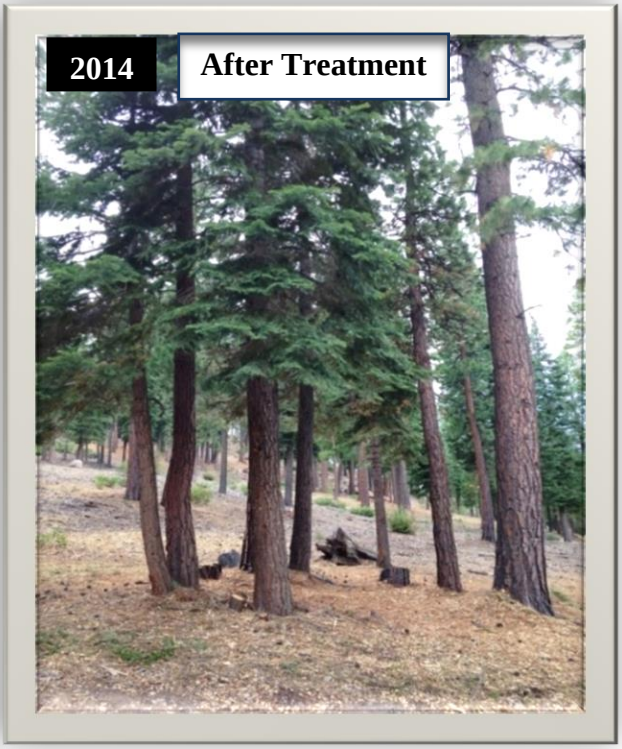


Pile burning for forest fuels reduction has been performed since 2008. Pile burning is primarily performed in late fall through early spring. Burn piles dimensions are typically 8' x 8' in size. Burn piles consist of material that was unable to be chipped or located on steep slopes where equipment could not operate. The burn piles are covered in the fall and ignited with a product called Alum-A-Gel and or a drip torch consisting of a proper proportion of diesel fuel and gasoline. Once ignited, the burn-piles are monitored, consolidated and extinguished at the proper time.



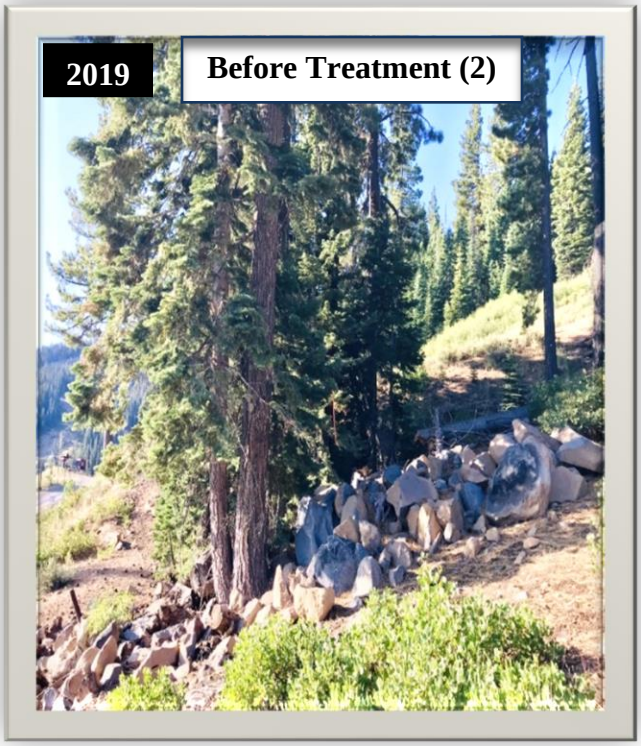


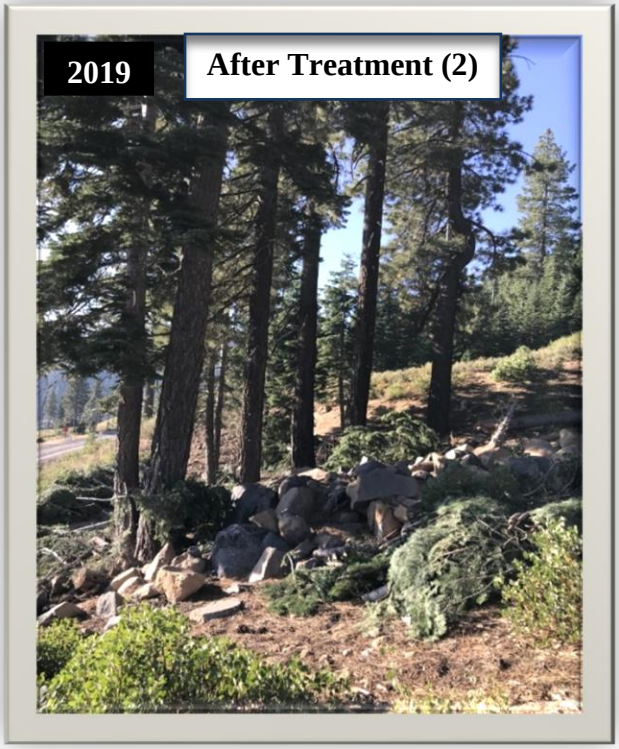




The four photos above were taken during the 2014 project season. The photos depict a forest fuels reduction worker treating a forest stand. The work involves thinning the understory of conifer trees and limbing the residual trees. The biomass material was chipped and broadcasted across the forest floor.

♦ The two aerial photos to the left were taken by a drone in 2015. The photos depict a completed forest fuels reduction project that has the desired canopy spacing. This federally funded grant project can now be categorized as complete and declared in a "Maintenance Mode". Re-entry to the forest stand may be needed in another 8-10 years depending on the overall health of the forest. It is the desire to have most forest fuels reduction projects to model the forest represented in these two photos.



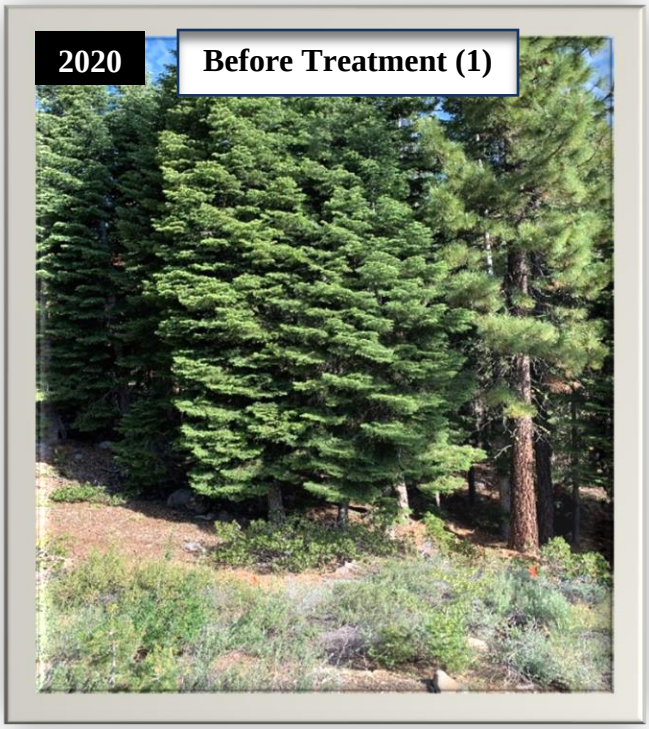


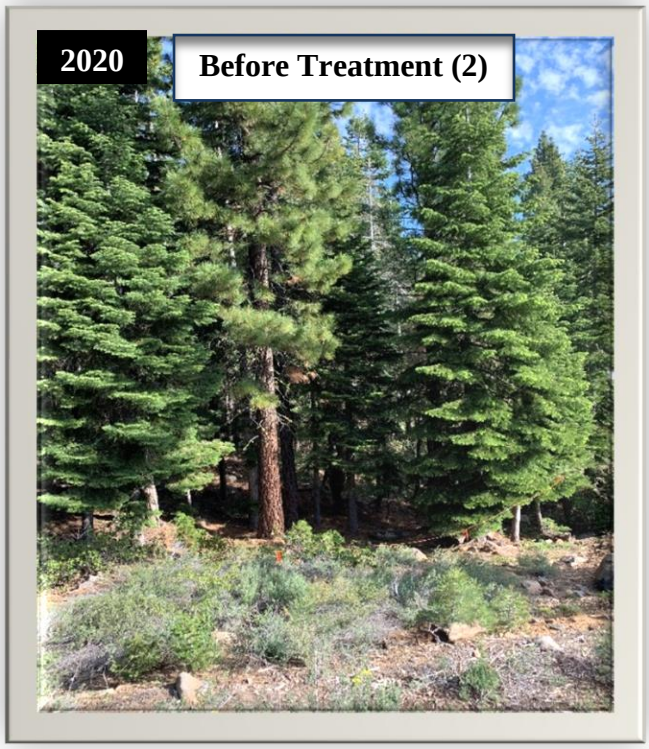
The four photos above were taken during the 2019 project season. The photos depict before and after photo points for a fuels reduction project that was designed to treat a forest stand above the Ritz-Carlton hotel. The work involved thinning the understory of conifer trees and limbing the residual trees. For this project, the biomass material was chipped and broadcasted across the forest floor.

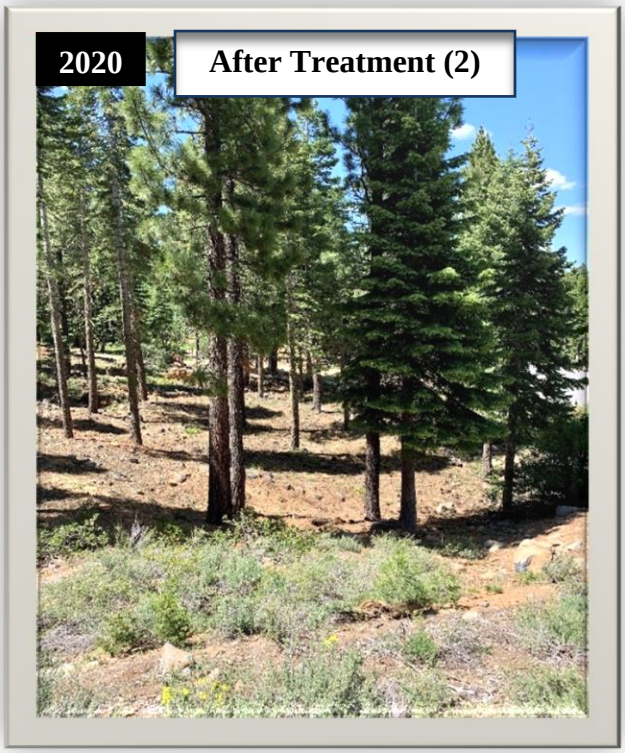
♦ The two photos were taken in 2019. They show before and after treatment photo points of a forest fuels mastication project allow Highway 267. A masticator is a machine used to remove large amounts of combustible woody, brush, and downed forest fuels material from the forest floor. This state funded grant project can now be categorized as complete and declared in a "Maintenance Mode". It is the desire to have most forest fuels reduction projects to model this finished product.

♦ The two photos to the left were taken in 2019. They show during and after treatment photo points from a forest fuels mastication project along US Highway 267. This mastication machine is skid steer based with a rotating drumhead. The machine is used to remove large amounts of combustible woody, brush, and downed forest materials from the forest floor. This state funded grant project can now be categorized as complete and declared in a "Maintenance Mode". It is the desire to have most forest fuels reduction projects to model this finished product.

♦ The "before treatment" photo was taken November 5th, 2019. The "after treatment" photo was taken May 21st, 2020. They demonstrate before and after photo points of a fuels reduction project to treat 78-acres of forested land owned by the United States Army Corps of Engineers along the Northstar Community Services Districts northwest boundary. The work involves thinning the understory of conifer trees, limbing the residual trees, and removing any dead, dying, or diseased tree. The biomass material has been chipped and broadcasted across the forest floor. This project was completed in the fall of 2021.







♦ The four photos above were taken during the 2020 project season. The photos depict before and after photo points for a NCSD/NFD district funded forest fuels reduction project that was designed to treat an over-stocked forest stand. The forest fuels reduction work restored the forest closer towards its historical stand density and species ratio.

♦ The two photos to the left were taken during the summer months of 2020. The photos show the Northstar Fire Department's (NFD) Green Waste Recycling Center (GWRC), which was established annually at the Castle Peak Parking Lot within the community of Northstar. The biomass material that was delivered to the GWRC was derived from residential/commercial properties and fuels reduction projects. Typically, the NFD arranges two grinding sessions per project season. Each grinding session involves a tub grinder and an excavator which are used to process the material. Once grinded, transport trucks are loaded capable of carrying 100 cubic yards of material to one of three nearby biomass facilities that will utilize that material to harness electricity.

2020 was the final project season for the Community Green Waste Recycling Center. The complexities, costs, and potential fire danger for operating the center were getting excessive. The new direction for biomass removal and mitigation will be to establish a biomass facility next-door to Northstar Fire Department, Station #31. This facility will mitigate community and local biomass as well as generate heat to facilities within the district boundary.

♦ The two photos to the left were taken during the summer months of 2020 during Northstar Fire Departments first of two tub grinding sessions of the season. After the material was grinded, it was loaded into semi-trucks called "Chip Vans". The hauled material was transported to the nearest biomass facility where it was turned into renewable energy. Each year the GWRC broke records with the number of cubic yards of biomass material it collected. In 2020 the Green Waste Recycling program was able to remove well over 11,450 yd^3 of hazardous material from Northstar properties, open space common areas, and neighboring forest fuels reduction projects.

Photo Point 2 – Before

Northstar Fire Department/California Fire Safe Council – Grant 19 SFA 143241
Fuels Reduction Project (Above Ritz-Carlton Hotel & 900 Road): **July 6th, 2021**

Photo Point 2 - After

Northstar Fire Department/California Fire Safe Council – Grant 19 SFA 143241
Fuels Reduction Project (Above Ritz-Carlton Hotel & 900 Road): **July 19th, 2021**

Photo Point 1 - Before

Northstar Fire Department – Tahoe Mountain Resorts Foundation
Northstar: (Highway 267 - Between Highlands View Rd. & Northstar Dr.): **August 9th, 2021**

Photo Point 1 - After

Northstar Fire Department – Tahoe Mountain Resorts Foundation
Northstar: (Highway 267 - Between Highlands View Rd. & Northstar Dr.): **August 19th, 2021**

Photo Point 3 - Before

Northstar Fire Department/California Fire Safe Council – Grant 18-TMG-111748
Fuels Reduction Project (Aspen Grove): **August 3rd, 2020**

Photo Point 3 - After

Northstar Fire Department/California Fire Safe Council – Grant 18-TMG-111748
Fuels Reduction Project (Aspen Grove): **August 15th, 2020**