

Attachment B

Coastal Vegetation
Treatment Standards

Coastal Vegetation Treatment Standards

UC Santa Cruz Wildfire Vegetation Management Project

1. All projects shall comply with and carry out the requirements of the CalVTP Program EIR, including use of approved treatment methods, treatment activities, and all applicable standard project requirements (SPRs).

Response: The UC Santa Cruz Wildfire Vegetation Management Project (proposed project) would comply with the applicable requirements of the California Vegetation Treatment Program (CalVTP) Program Environmental Impact Report (EIR). The Project-Specific Analysis (PSA) and Addendum to the Program EIR prepared for the proposed project provide details regarding the CalVTP treatment types and activities that would be implemented under the proposed project, and the applicable SPRs and mitigation measures that would be implemented. As evidenced therein, the project complies with and will carry out the applicable requirements of the CalVTP Program EIR.

2. Project-Specific Analyses (PSAs) shall be submitted to the California Coastal Commission (Coastal Commission) for review and approval pursuant to the Resource Conservation District of Santa Cruz County's (RCDSCC) *Santa Cruz County Forest Health and Fire Resilience Public Works Plan (PWP)* prior to conducting projects. Coordination between University of California (UC) Santa Cruz and Coastal Commission shall occur as early as feasible in the design process in order to avoid delays.

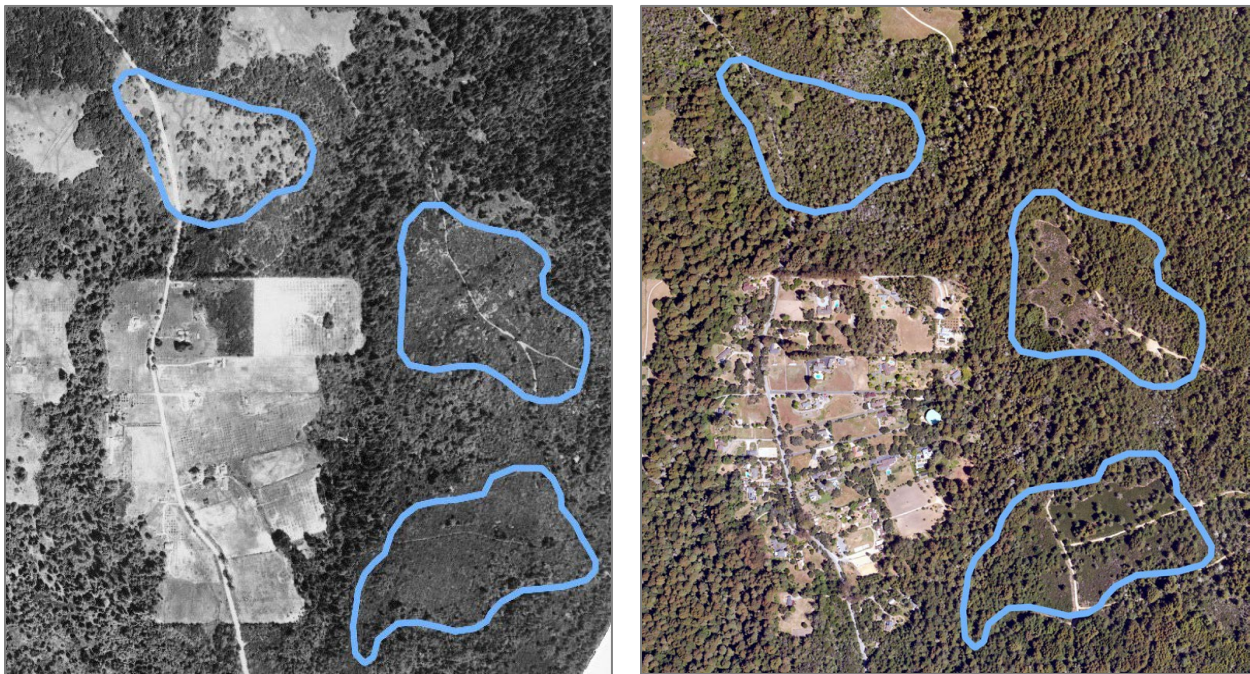
Response: A draft PSA/Addendum for the proposed project was submitted to Coastal Commission staff for review on October 1, 2025. Prior to submitting the PSA/Addendum, UC Santa Cruz, Resource Conservation District of Santa Cruz County (RCDSCC), Auten Resource Consulting (ARC), and Ascent conducted a site visit with Coastal Commission staff on October 16, 2024, to observe existing ecological conditions in the project area and discuss the proposed treatment objectives and activities. The proposed project description was sent to Coastal Commission staff for review, input, and comment on June 18, 2025. Additionally, multiple conference calls with Coastal Commission staff were held during development of the PSA/Addendum since March 2024. During these meetings, the treatment approach for the proposed project was discussed and UC Santa Cruz received ongoing feedback from Coastal Commission staff on the proposed approach to the analysis and Coastal Vegetation Treatment Standards (Coastal VTS) throughout preparation of the PSA/Addendum.

3. PSAs shall include clear problem and goal statements (i.e., overall project goals, fire prevention goals, ecological goals) associated with each project proposed pursuant to this public works plan. These statements are intended to assist UC Santa Cruz and Coastal Commission in developing mutual understanding of the potential impacts and benefits – both short and long term – for each project. It is expected that this information will be incorporated into Coastal VTS 6 (response to Coastal VTS 6) of each PSA.

Response:

Problem Statement: For thousands of years, indigenous people's use of frequent, low-intensity fire on the landscape played an integral role in ecosystem structure and likely contributed to much more open forest stands and native grasslands (i.e., coastal prairies) than are currently present in the project area. During the industrial era of the late 1800s to early 1900s, most old growth redwood was clear-cut and has since regrown into a denser, second-growth redwood forest compared to old growth forest conditions. From the mid-1900s to present day, there has been a subsequent period of lack of disturbance, including beneficial fire. The implications of this history paired with modern day lack of disturbance has led to an array of successional changes across the project area including but not limited to 1) conifer encroachment into oak woodlands, grasslands and shrublands, and 2) shrub (i.e., coyote brush) encroachment into grasslands and coastal prairies. Additional implications include very high forest densities, significant accumulations of live and dead fuels, significant changes to wildlife habitats, shifts in historic pathways of ecological succession, lowered biodiversity, and heightened wildfire risk to campus and adjacent communities.

Figure 1 below shows how conifers have encroached into historic oak woodland and shrubland areas over an 81-year period between 1941 and 2022. The blue outlines represent the woodland and shrubland borders of 1941. The most northern blue outline displays the most drastic succession from likely an open, hardwood-dominated woodland to entirely conifer-forested area within 81 years. The middle and southern outlines display shorter stature vegetation (i.e., shrubland) in the 1941 photo on the left. As depicted in 2022, these shrublands have been significantly reduced in size as taller stature vegetation, primarily composed of Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) trees, has overtaken the historic shrubland (e.g., manzanita dominated chaparral communities). Conifer encroachment of redwood or Douglas-fir into oak woodlands and shrublands can occur by seed dispersal via wind. When there is lack of disturbance, conifer seedlings sprout, become established and grow over shrubland vegetation and grow up through oak (*Quercus* spp.) canopies. Conifer encroachment leads to overall decline in the health of oak trees in as little as 20 years due to compounding interactions of endogenic (i.e., ecological succession) and exogenic (e.g., human impact) succession (Schriver et al. 2018). Specifically, the increased shade and cooler temperatures underneath Douglas-fir in encroached shrublands and hardwood stands restrict native species with a narrow range of shade tolerance, which significantly diminishes native flora (Livingston et al. 2016). Within the project area, conifer encroachment due to lack of disturbance in shrublands and oak woodlands has decreased species richness and increased fuel connectivity, thereby lowering biodiversity and increasing wildfire risk.



Source: Provided by Auten Resource Consulting in 2025.

Figure 1 Forest Expansion into Woodlands and Shrublands along Empire Grade, 1941 (left) and 2022 (right)

With competition from co-dominant Douglas-fir trees, oak, and madrone (*Arbutus menziesii*) trees in the woodlands in the project area are more prone to various fungal diseases such as Sudden Oak Death (*Phytophthora ramorum*) as shown in Figure 2, below. Tree mortality from Sudden Oak Death leads to higher amounts of dead and downed woody debris in the understory, creating higher fuel connectivity. These disturbance-excluded ecosystems were once adapted to a more frequent, low-intensity fire regime but are now associated with greater susceptibility to stand replacing fire (i.e., a fire that kills most of the trees within a given area) due to higher fuel connectivity.



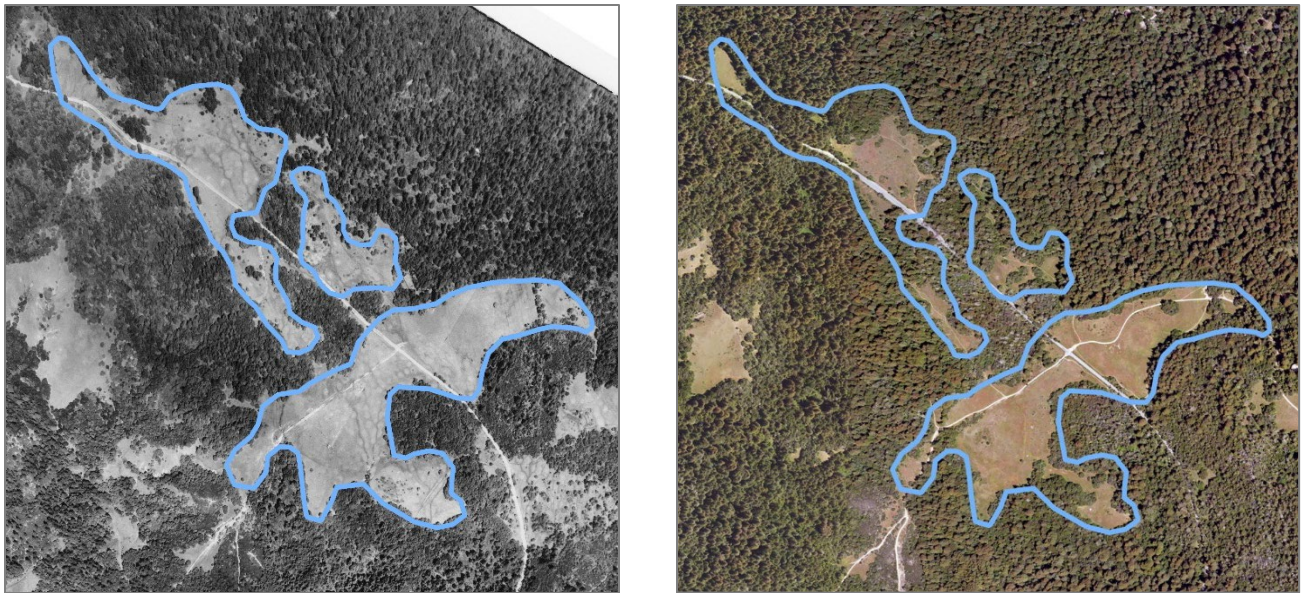
Source: Provided by Auten Resource Consulting in 2025.

Figure 2 Manzanita skeletons overtopped by Douglas-fir (left) and madrone tree mortality due to disease (right)

In addition, Douglas-fir, knobcone pine (*Pinus attenuata*), and ponderosa pine (*Pinus ponderosa*) across the project area may be prone to other infections including Douglas-fir root rot (*Heterobasidion annosum*) and pitch canker (*Fusarium circinatum*). Madrone trees across campus may also be prone to root rot from various fungal species from *Phytophthora cinnamomi*, which is likely the cause of extensive madrone tree mortality along UCSC's portion of Felton Empire Grade (Figure 2).

Coastal prairies (grassland), specifically those on the Central Coast of California, contain the highest biodiversity of North America's grasslands (Stromberg et al. 2001). Historically, approximately 35 percent of the project area was covered by coastal prairies (Luong 2020). However, across the project area, coastal prairies are threatened by invasive species and vegetation type change to shrublands and Douglas-fir forests. Figure 3 below shows the massive forest expansion that has occurred in the Marshall Field complex of grasslands along Empire Grade between 1941 and 2022. The blue outlines represent the borders of grassland vegetation in 1941 in both photos to display the significant vegetation changes. The northern grassland displays the most significant vegetation change over the 81-year period; the almost contiguous grassland of 1941 has been reduced to three small pocket meadows. These grassland ecosystems developed with regular disturbance over time from large, ungulate grazers and indigenous burning. However, modern-day lack of disturbance has led to conifer and shrub (i.e. coyote brush) encroachment into grasslands and buildup of residual dry matter (i.e., dead herbaceous plant material left standing or on the ground at the beginning of a new growing season), which can decrease native plant species biodiversity and result in habitat loss for wildlife like the Ohlone tiger beetle (*Cicindela ohlone*) (Luong 2020).

Vegetation type changes have resulted in higher density forests, significant accumulation of fuels, substantial changes to wildlife habitats, and shifts in historic pathways of ecological succession. UC Santa Cruz lands are an essential linkage in the ecosystem for many sensitive species and is a critical landscape to consider for wildfire risk in the Santa Cruz Mountains.



Source: Provided by Auten Resource Consulting in 2025.

Figure 3 Forest Expansion into Marshall Field Grassland Complex 1941 (left) and in 2022 (right)

Goal Statement: The objectives of the proposed project are to steward natural resources in a manner that aligns with campus values of biodiversity, resiliency, sustainability, traditional ecological knowledge, unique campus integrity, and the overall academic mission. UC Santa Cruz's approach to stewardship is guided by campus principles set forth in existing documents and informed by state laws and policies such as the Public Resource Code (PRC) and California Government Code. UC Santa Cruz's natural resource responsibility is to recognize and connect to the local and regional context, guide campus evolution and integrity, support the academic mission, and establish a framework of resilience and long-term sustainability (UC Santa Cruz 2021). The specific goals of the proposed project are to:

- ▶ Establish ecosystem and campus community resilience while promoting biodiversity.
 - ▶ Restore degraded habitats and protect sensitive resources including valuable coastal ecosystems.
4. In the Coastal Zone, vegetation treatment projects fall into two categories: (1) Forest Health projects and (2) Fire Prevention projects. The purpose of forest health projects is to restore and enhance ecosystems, including to prevent fire behavior to which the ecosystem is not adapted. The ecosystems that can be treated under this category include forested ecosystems as well as other ecosystems, such as woodland and scrub-dominated systems. The purpose of fire prevention projects is to protect existing structures and infrastructure, including access roads. Fire prevention projects shall be limited to the applicable defensible space requirement (which is typically 100 feet but can range to as much as 300 feet under specific circumstances), unless accompanied by a clear rationale, provided by a qualified professional, as to why additional defensible space is required to protect existing structures and infrastructure.

Response: The proposed ecological restoration treatment type falls under the Forest Health category and often has added benefits of fire prevention. The wildland-urban interface (WUI) treatment type and maintenance of shaded and non-shaded fuel break treatment types fall under the Fire Prevention category of the PWP.

Ecological restoration would return the landscape closer to native conditions where natural fire processes can be reestablished and habitat quality is improved, including habitat remediation where invasive plants have spread and excess fire fuel buildup has occurred. Treatments would restore or mimic historic disturbance processes such as fire to promote ecological resilience (e.g., improve the ecosystem's ability to withstand wildfire, drought, and pathogens) and improve habitat quality. This would improve native habitats, re-create healthy forest and woodland conditions, and create a natural landscape more resilient to fire and other disturbances by creating a

mosaic of appropriate native plants by age, size, and class that would support the overall habitat. A healthy, functioning natural landscape would help reduce the impacts of climate change by sequestering carbon, protecting aquatic resources, and providing important habitat for native wildlife. A healthy natural landscape can also reduce the risk of wildfire to surrounding human communities and protect the rich cultural landscape. In forested areas, the goal would be to improve forest health by reducing vegetation density, which would decrease competition for available resources such as sunlight, water, and nutrients. In turn, this would result in a greater allocation of resources for the residual stand, ultimately promoting growth of larger diameter trees over time, while increasing resilience and biological diversity, and reducing the severity of future fire. Treatments would consist of retaining a mosaic of trees of all diameters and understory shrubs of all age classes and removing select shrubs, dead, dying diseased trees and some live trees in the understory. In meadows and woodlands, the focus would be on promoting ecological health by removing encroaching species including select Douglas-fir trees and reducing density of nonnative grasses.

WUI fuel reduction treatments would seek to establish defensible space near infrastructure and strategically remove vegetation in the project area. WUI fuel reduction treatments would occur in only 1 acre of the project area within the Coastal Zone, which is less 0.4 percent of the project area within the Coastal Zone. WUI fuel reduction treatments in the Coastal Zone would occur within 100 feet of one of UC Santa Cruz's water tanks, which is considered critical infrastructure. Treatments would both protect assets at risk from potential damage from non-wind driven wildfires originating in the adjacent wildlands, as well as the wildlands from fires starting in or near development. WUI fuel reduction treatment areas can also serve as emergency access points and staging areas for firefighters and equipment and reduce flammable vegetation along emergency evacuation routes for the community. Also, where existing habitat within the WUI is degraded, such as by the infestation of invasive plant species, or in need of fuel reduction, WUI fuel reduction treatments would also improve habitat quality.

Maintenance of non-shaded fuel breaks would occur in grasslands or shrublands with no existing tree cover whereas existing shaded fuel breaks in forested areas of campus would be maintained as shaded fuel breaks. Fuel break maintenance would occur along existing roadways in the project area. The focus of fuel break treatments is to strategically remove vegetation and fuel in a linear manner to directly protect communities and assets at risk from potential damage from non-wind driven wildfires originating in the adjacent wildlands and function as fire breaks for prescribed burning in forested or grassland areas. Fuel breaks also serve as emergency access points and staging areas for firefighters and equipment, reduce flammable vegetation along emergency evacuation routes for the community, and provide safe access for firefighters. Retaining vegetation to provide shade would reduce growth rates of the understory by blocking sunlight and keeping the microclimate cool and relative humidity high for extended periods of time. Retained trees would also block rain and reduce rain-drop-caused soil displacement. The overall goal for both non-shaded and shaded fuel break treatment would be to strategically remove vegetation as needed while maintaining the overall campus character (i.e., not all trees would be removed where fuel breaks would be maintained).

5. In the coastal zone, environmentally sensitive habitat area (ESHA) is defined as any area in which plant or animal life, or their habitats, are either rare or especially valuable because of their special nature or role in an ecosystem, and that could be easily disturbed or degraded by human activities and developments (see Coastal Act Section 30107.5). Rarity determinations for habitats and species are made by the California Department of Fish and Wildlife (CDFW), US Fish and Wildlife Service (USFWS), and California Native Plant Society (CNPS), and are used to support a Coastal Commission ESHA determination¹. In addition, an ESHA determination may be made on the basis of an area constituting "especially valuable habitat" where it is of a special nature and/or serves a special role in the ecosystem, such as providing a pristine example of a habitat type or supporting important ecological linkages. The Coastal Act requires that ESHAs be protected against any significant disruption of habitat values and only allows uses dependent on the ESHA's resources within those areas (see Coastal Act Section 30240). It is

¹ CDFW defines natural communities, animals, and plants with a global or state ranking of 1, 2, or 3 as rare and the Coastal Commission typically finds these to be ESHAs. Coastal Commission also typically considers plant and animal species listed by the federal and state endangered species acts (ESA and CESA, respectively) and/or identified under other special status categories (e.g., California Species of Special Concern) and/or identified by the CNPS as '1B' and '2' plant species as constituting ESHAs.

anticipated that many of the Forest Health and Fire Prevention activities pursued within the Coastal Zones of this district will take place within natural communities that qualify as ESHAs (e.g., redwood forest, Vancouverian lowland marsh, wet meadow & shrubland, coast live oak woodland and forest).

Response: The 274 acres of the project area located in the Coastal Zone (which is part of the approximately 2,017-acre total project area) likely qualifies as ESHA, either due to rarity of the communities present, its function as especially valuable habitat, or its support of species that are rare or especially valuable, except for the developed portion of the Coastal Zone, which constitutes less than 1 acre. Therefore, treatments would occur within vegetation communities that meet the definition of ESHA, including redwood forest. Other sensitive natural communities and sensitive habitats, including coast live oak woodland and forest, arroyo willow thickets, and Vancouverian lowland marsh, wet meadow and shrubland are present in the project area within the Coastal Zone. In addition, habitats that could support rare or especially valuable species also include habitats such as eucalyptus (blue gum, red gum) and California annual and perennial grassland. The project was designed to provide for a mosaic of appropriate native plants by age, size, and class that would support the overall habitat as detailed in response to Coastal VTS 6 below. Specifically, SPR BIO-8 would be implemented and includes the following requirements to protect ESHAs by maintaining the habitat functions that define ESHAs within the treatment areas.

- ▶ Treatments must be designed in compliance with the PWP (which is consistent with the Santa Cruz County Local Coastal Program) to protect the habitat function of the affected ESHA, protect habitat values, and prevent loss or type conversion of habitat and vegetation communities that define the ESHA, or loss of special-status species that inhabit the ESHA.
- ▶ Treatment actions are limited to eradication or control of invasive plants, removal of uncharacteristic fuel loads (e.g., removing dead, diseased, or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the vegetation types present in the ESHA.
- ▶ A qualified biologist or registered professional forester (RPF) familiar with the ecology of the treatment area would monitor all treatment activities in ESHA.

Refer to Impact BIO-3 in the PSA/Addendum as well as the response to Coastal VTS 6 below for more details on ESHA, habitat and vegetation types within the treatment area, and additional measures that will be implemented to protect the ecosystem. For example, in addition to SPR BIO-8 described above, surveys pursuant to SPR BIO-3 would be implemented to classify vegetation to the alliance-level (where it has not been identified by mapping already), and to determine the presence of sensitive natural communities and ESHAs prior to treatment.

6. In addition to the requirements of the CalVTP Program EIR, the following standards shall also be met in the Coastal Zone:

Protect Ecosystems. Forest Health projects shall:

- a) proactively restore and enhance ecosystems, protect watersheds, and promote long-term storage of carbon, including through the minimization of carbon loss from large and intense wildfires;
- b) restore and maintain vegetation cover to a threshold that reflects appropriate fire frequencies (i.e., fire-return intervals) on the landscape, considering estimated pre-European settlement conditions as well as future climate change, and the maintenance or improvement of ecosystem health;
- c) maintain vegetation cover and composition to comply with the standards (membership rules) set forth in the online edition of the Manual of California Vegetation (MCV) to avoid unintended habitat conversion²; and,
- d) provide for an appropriate mosaic of native plants by age, size, and class that support overall habitat function.

² Membership rules are quantitative definitions used to assign field samples to vegetation types based on data analysis and can include species constancy, cover values, and the presence of indicator species.

Fire Prevention projects shall meet all the above requirements to the maximum extent feasible, while achieving overall project goals and necessary fire prevention goals, and any deviations shall be clearly explained and identified in the PSA/Addendum.

Response:

Treatments would utilize mechanical and manual treatments for understory tree removals to increase healthy growth of larger trees while also reducing ladder fuels and associated wildfire hazard. Wildlife habitat would be enhanced by retention of snags, legacy trees, openings, downed woody debris, and understory mosaics of alliance-level species. Prescribed herbivory and prescribed fire would be considered to promote nutrient cycling and enhance understory biodiversity (Livingston et al. 2016).

Protections include Mitigation Measure BIO-3a, which requires that treatments in sensitive natural communities are designed to maintain characteristics of dominant canopy and species composition. In addition, SPR BIO-9 requires that treatments will prevent the spread of invasive plants and noxious weeds, which ensures that treatment does not provide avenues for invasive plant species to be introduced to treated areas. Finally, SPR AD-7 requires that the project proponent provide a post-project implementation report to the Board of Forestry once a project is completed.

Hardwood forest in the project area include coast live oak woodland and forest alliance, California bay Mapping Unit, madrone forest alliance, and interior live oak – Shreve oak woodland and forest alliance. Previous treatments in hardwood forest have been completed as part of the shaded fuel break along Empire Grade (CAL FIRE 2017). These completed treatments focused on removals of small diameter understory trees to reduce fuel loading by utilizing mechanized equipment, handwork and pile burning, where feasible. Future treatments occurring in hardwood forests would utilize manual and mechanical methods to thin understory trees and shrubs to create patchy, mosaic habitat structure for ecosystem resilience to wildfire, insects, and disease. Additionally, small to mid-range diameter Douglas-fir and ponderosa pines that have encroached into hardwood forests may be removed. Wildlife habitat would be enhanced by retention of snags, legacy trees, openings, downed woody debris, and understory mosaics of alliance-level species. Prescribed herbivory and prescribed fire would also be considered to promote nutrient cycling and enhance understory biodiversity (Livingston et al. 2016).

Mixed-conifer forest in the project area include knobcone pine forest and woodland alliance and ponderosa pine – (coastal live oak – madrone) provisional association. Previous treatments in mixed conifer have occurred as part of the shaded fuel break along Empire Grade (CAL FIRE 2017). These completed treatments focused on removals of small diameter understory trees to reduce fuel loading by utilizing mechanized equipment, handwork and pile burning, where feasible. Future treatments occurring in mixed-conifer habitat would involve removal of select trees and vegetation to re-establish disturbance regimes and reduce wildfire risk. Treatments would consist of removing select pines and shrubs to create a mosaic structure with retained vegetation. Adjacent to roads, fuel breaks have already been established and regularly maintained; vegetation may not be retained in these locations. Away from fuel break locations, special considerations would be given to retain chaparral species that are obligate seeders (i.e., species that rely on seedbanks for regeneration and do not re-sprout from the burl). Prescribed herbivory and prescribed fire would be considered to promote nutrient cycling and enhance understory biodiversity (Livingston et al. 2016).

Chaparral and coastal sage scrub There is no chaparral in the Coastal Zone and there is no coastal sage scrub in the Coastal Zone or overall project area.

Coastal prairie in the project area consists of Californian annual and perennial grassland. Previous treatments in coastal prairie across the project area have utilized broadcast burning to re-establish disturbance regimes, promote biodiversity and enhance wildlife habitat for species like the Ohlone tiger beetle under the 2017 and 2021 CAL FIRE VMP. Future treatments in coastal prairie would involve manually or mechanically removing encroaching conifers and woody shrubs, dependent on site-specific management objectives. Thatch would be reduced, and native grassland diversity and wildlife habitat would be enhanced through mowing, grazing, and use of prescribed fire. Timing and weather patterns would be considered for native seed bed preservation and invasive annual grass management.

The PSA/Addendum for the proposed project analyzes the potential impacts of the project on vegetation, wildfire, and maintenance of sensitive natural communities within the membership rules of the MCV. As shown and discussed above, treatments in hardwoods, mixed-conifer forests, chaparral and coastal scrub, and coastal prairie habitats would avoid type conversion, maintain habitat function, and result in a healthier forest that is able to resist vegetation pattern transformations under a changing climate while reducing the continuity of hazardous ladder fuels to the canopy.

General treatment prescriptions supporting the protection of ecosystem under the Coastal VTS for the project provide for a mosaic of appropriate native trees and plants by age, size, and class that support the overall habitat within the treatment area by following the specific treatment prescriptions for Ecological Restoration and WUI Fuel Reduction.

Ecological restoration treatments would follow the general treatment prescription while also adhering to the following specifications:

- ▶ Retain healthy trees greater than 12 inches in diameter with the goal of achieving a 10–20-foot spacing;
 - Stands made up of only trees less than 12 inches in diameter would be thinned to a spacing of approximately 10–20 feet apart to disconnect horizontal and vertical fuel continuity while maintaining vegetation communities.
- ▶ Prune lower branches of trees 6–15 feet above the ground but not more than 33 percent of the trees' crown where feasible;
- ▶ Where snags do not present a safety hazard, retain approximately 4–6 foraging snags (less than 12 inches in diameter) and 1–2 cavity nesting snags (greater than 12 inches in diameter) per acre;
- ▶ Retain downed woody debris in strategic locations to maintain forest floor complexity, with a preference for larger, complex logs, generally greater than 12 inches in diameter and totaling approximately 10 tons per acre, while reducing fuel continuity.
 - Target retention for downed woody debris may also be considered as four larger logs (large end greater than 16 inches in diameter, approximately 15 feet long);
- ▶ Retain micro-stands of oak trees (i.e., young oak stands that do not have an established, dominant overstory) with a cluster radius of approximately 15 to 25 feet (30- to 50-foot diameter) and spaced approximately 75 to 100 feet apart, where feasible, with consideration given to steepness or whether this retention could exacerbate fire behavior, or fire behavior proximal to key infrastructure and assets;
- ▶ Retain micro-stands of understory vegetation cover and composition that are characteristic of the vegetation alliance as described in the California Manual of Vegetation (Sawyer et al. 2009 or current version, including updated natural communities' data: <http://vegetation.cnps.org/>). Leave root systems intact for resprouting to achieve a horizontal crown separation of approximately 25 to 75 feet between clusters depending on site-specific characteristics relative to the vegetation alliance being treated, important habitat values, and potential fire behavior. Overall retention would be a minimum of 10 to 25 percent relative cover per acre, depending on if exacerbated fire behavior is expected or proximity to key infrastructure and assets. Patches or clumps of vegetation would be retained across the treatment area to create a mosaic pattern to provide heterogeneity and maintain habitat quality (Strong and Beavis 2016).
- ▶ chipped biomass would generally average 3 inches in depth and not exceed approximately 6 inches in depth;
- ▶ chipped residual material would be minimized in forest gaps or openings where increased biodiversity of herbaceous understory regeneration is more likely;
- ▶ may remove any dead, dying, and diseased trees pursuant to the vegetation hierarchy identified in the Coastal VTS; and
- ▶ prepare burn units for prescribed burning.

WUI fuel reduction treatments would establish defensible space near infrastructure and strategically remove vegetation in the project area. Treatment would both protect assets at risk from potential damage from non-wind driven wildfires originating in the adjacent wildlands, as well as the wildlands from fires starting in or near development. These objectives would be met by implementing WUI fuel reduction treatments that adhere to the general prescription and the following prescription parameters:

- ▶ Selective removal of trees less than or equal to 12 inches in diameter.
- ▶ Retain healthy trees and vegetation less than 12 inches in diameter with the goal of achieving a 10-20 foot spacing.
- ▶ Prune tree canopies [above 6 feet] that make direct contact with infrastructure, neighboring tree canopies, or other flammable material.
- ▶ Remove or, in some cases, redistribute understory vegetation and downed woody debris to break up surface fuels and continuity to tree and shrub canopies;
 - Remove surface biomass (approximately 0-3 feet from on the forest floor) within 100 feet of buildings or infrastructure to ensure adequate defensible space;
 - When chipping material within 100 feet of buildings or infrastructure, spread chips away from structures and the boles of retained vegetation to the extent feasible; and
 - Remove vegetation or downed woody debris of any size within approximately 25 feet of the edge of seasonal roads and up to 50 feet of the edge of permanent roads that may impede ingress or egress in the event of an emergency.

Adjacent to roads, **fuel breaks** have already been established previously and regularly maintained, so vegetation may not be retained in these locations. Although, since all fuel breaks (both shaded and non-shaded) in the project area were previously treated, there would be less vegetation for removal compared to untreated portions of the project area. These objectives would be met by adhering to the general prescription and the following prescription parameters:

- ▶ May remove dead, dying, diseased, and hazard trees of any size.
- ▶ May remove live trees up to 12 inches in diameter and conifers up to 24 inches in diameter.
- ▶ Prune lower branches of trees.
- ▶ May remove shrubs.
- ▶ Remove all downed woody debris of any size within approximately 25 feet of the edge of roadways that may impede ingress or egress in the event of an emergency.

SPRs and Mitigation Measures are identified in the PSA/Addendum that would protect the ecosystem. Measures include the following:

- ▶ No mechanized or prescribed herbivory treatments will occur if (1) it is raining, (2) soils are saturated, and/or (3) soils are wet enough to be compacted by mechanical treatment or prescribed herbivory activities.
- ▶ No herbicide treatments will occur if the National Weather Service forecast is a "chance" (30 percent or more) of rain within the next operational day's 12-hour period between 6:00 a.m. and 6:00 p.m.
- ▶ Mechanized operations will only occur on slopes less than 50 percent; however, if mechanical treatment is required on slopes greater than 50 percent, equipment that can reach from an existing road or trail would be used.
- ▶ Areas with substantial soil disturbance following treatment will be stabilized using vegetative debris, such as masticated vegetation or chips.

- ▶ Erosion control measures will be implemented and inspected, and monitoring for erosion will occur after the first large storm of the season following mechanical treatment.
- ▶ No heavy equipment operations within a Watercourse and Lake Protection Zone will occur unless equipment can operate from an existing road, or within 30 feet of a Class III watercourse (other than to travel over an existing crossing).
- ▶ Invasive species, such as French broom, will be controlled using the least invasive techniques possible, prioritizing handwork, and using herbicides when needed. Herbicides would only be applied through targeted, hand-held devices and no aerial spraying would occur. All herbicide use would be subject to the California red-legged frog injunction, and would follow the requirements of SPRs HAZ-5, 6, 7, 8, 9, as well as SPR HYD-5. Together, these SPRs would avoid and minimize adverse effects to sensitive ecological resources by requiring buffers around special-status plants and water features, prohibiting application when weather parameters exceed label specifications or when sustained wind at the site of application exceeds 7 miles per hour, prohibiting application during or immediately prior to precipitation events, complying with all herbicide application regulations, and preparing and implementing a Spill Prevention and Response Plan.
- ▶ Specific measures will be implemented to reduce the spread of forest pathogens such as sudden oak death, including cleaning vehicles and hand tools prior to use.
- ▶ Pre-operational training with the contractors will be conducted to advise them of key resource issues, SPRs, and mitigation measures.
- ▶ For all treatment types in chaparral and coastal sage scrub, the project proponent, in consultation with a qualified RPF or qualified biologist will develop a treatment design that avoids type conversion of chaparral and coastal sage scrub vegetation alliances that naturally regenerate in the treatment area and maintains a minimum percent shrub cover to maintain habitat function of these types (as outlined above). Maintenance treatments will be designed adaptively, in response to conditions on the ground and following implementation of initial treatments to facilitate a trajectory toward the desired condition.
- ▶ Additional requirements in chaparral and coastal sage scrub would be implemented, per the project specific refinements to SPR BIO-5.

Please see the PSA/Addendum for additional details on applicable SPRs and mitigation measures. In addition, refer to Impact BIO-3 in the PSA/Addendum for more details on ESHA and other habitat types within the treatment area, as well as additional measures that would be implemented to protect ecosystems.

Maintenance treatments in the areas initially treated by the proposed project would be conducted to periodically manage vegetative regrowth and control invasive species. Maintenance treatments would occur as needed and would generally treat smaller acreages and use less equipment than the initial treatments. The interval between initial treatments and subsequent maintenance would be based on site monitoring for the effectiveness of the initial treatment, available funding, and other factors. Maintenance cycles would be dependent on regrowth conditions and vegetation type and would differ by location.

Use Vegetation Removal Hierarchy. Except for prescribed fire project components, a vegetation removal hierarchy shall be identified and implemented for each project to obtain the vegetation cover threshold identified by a qualified RPF or qualified professional, as necessary, while ensuring that unintended habitat conversion does not occur, and that vegetation cover is sufficient to support the project's ecological goals. In order of priority and application, the hierarchy shall be as follows:

- 1) thinning and removal of dead, dying, and diseased trees and shrubs (except that some snags will be retained to provide wildlife shelter, dens, etc.);
- 2) removal of invasive species; and,
- 3) removal of native species that are not listed as endangered, threatened, rare, or otherwise especially valuable, with the end goal of having appropriate species composition in the plant community with a mix of vegetation age, height, and density.

In all cases, indicator species and diagnostic species appropriate to the vegetation type will be maintained in accordance with the standards (membership rules) set forth by the online edition of the Manual of California Vegetation (MCV), with the intention of maintaining cover and composition consistent with meeting project ecological goals. For Fire Prevention projects, additional vegetation removal may be allowed if maintaining such vegetation consistent with project ecological goals would result in an unacceptable fire risk to existing structures and infrastructure, and the removal is the minimum necessary to protect existing structures and infrastructure. Any such additional removal shall be clearly explained and identified in the PSA/Addendum. Lastly, if vegetation cover threshold goals, as articulated in the MCV, cannot be met, then removal of endangered, threatened, rare, or otherwise especially valuable species and habitats shall be prohibited unless: such removal is critical to reduce the area's fire risk; removal is accompanied by restoration or enhancement such that the overall project provides net benefits to the habitat; and no other alternative exists that meets the project goals.

Response: The project would follow the vegetation removal hierarchy described in the PWP's Coastal VTS for treatments in the Coastal Zone. Treatments will first target the removal of dead, dying, and diseased vegetation while retaining large overstory trees and mosaics of healthy understory shrubs tree seedlings/saplings within each treatment, allowing for regeneration and maintaining the vegetation types consistent with the MCV membership rules. Treatments in shrubland habitat types would retain a diverse mosaic of species and age/size classes, while also maintaining the vegetation types consistent with the MCV. Treatments in grassland habitats would be focused on enhancing habitat function by removing invasive species and removing encroaching trees and shrubs, and thus maintaining and improving the vegetation types consistent with the standards set forth in the MCV.

Limit Equipment Types. All projects shall be carried out using the least invasive type of equipment feasible. Projects shall avoid the use of large masticators, track vehicles, and other heavy equipment, where feasible. When such heavy equipment is used, it shall remain on existing roads to the extent feasible. In riparian habitat, the use of heavy equipment shall be prohibited, except when authorized through a valid Lake and Streambed Alteration Agreement and/or, if applicable, Clean Water Act Section 401 Water Quality Certification, and when reviewed and approved by the Coastal Commission. Projects shall adhere to CalVTP SPR GEO-2 limiting heavy equipment use and SPR HYD-4 prohibiting heavy equipment use in WLPZ except on existing roads.

Response: The volume and characteristics of vegetation within the treatment area that would need to be removed to meet ecological restoration and fire prevention goals make avoiding the use of all heavy equipment infeasible. The extent of the treatment area beyond roads makes limiting its use to existing roads during treatment infeasible. The project would use manual and mechanical treatment activities, as well as herbicide application, prescribed herbivory, and prescribed burning. Mechanical treatments would primarily be used for understory thinning and may use a variety of equipment, including tracked tree cutters, tracked masticators, wheeled skidders, wheeled masticating machines, feller-bunchers, skid steers, excavators, bulldozers, and tracked or wheeled mounted chippers. Mechanical treatments may be used during burn unit prep to reduce fuels around the perimeter and in certain areas within the burn unit to help achieve burn plan objectives. A burn perimeter would be established before implementing prescribed burns. The project would implement SPR GEO-2 and HYD-4, as well as several other SPRs and mitigation measures, to avoid and minimize impacts from heavy equipment use (e.g., limiting heavy equipment use on steep slopes to minimize erosion). SPR HYD-4 prohibits mechanical treatment within Watercourse and Lake Protection Zones (WLPZs), and SPR GEO-2 limits use of high ground pressure vehicles on wet and saturated soils. Mechanical treatments (other than reaching an excavator arm into WLPZs, creating no ground disturbance) would not occur in riparian woodlands, and prescribed herbivory would occur at least 30 to 100 feet away from all drainages, wetlands (including any ESHA wetlands), and other hydrologic features.

Limit Herbicide Use. Herbicides shall be avoided to the maximum extent feasible and may be used only if such treatment activities are the least environmentally damaging feasible alternative and will not result in significant adverse impacts to sensitive ecological resources (e.g., when used to control invasive species). Projects shall adhere to CalVTP SPRs HAZ-5, 6, 7, 8, and 9.

Response: Herbicides would be selectively used during initial and maintenance treatments to control invasive plant species. Up to 1 acre could occur in the Coastal Zone, which is less than 0.4 percent of the project area in the Coastal Zone. Herbicide application would be avoided to the maximum extent feasible; it would be used only

if it is the least environmentally damaging feasible option that would achieve treatment objectives. Overall herbicide use would be limited (occurring on up to 1 acre in the Coastal Zone), targeted, and utilized strategically to treat invasive plant species as defined by the California Invasive Plant Council (Cal-IPC). Herbicides would not be applied within 30 to 100 feet of drainages and other hydrologic features or within wetlands. Only ground-level application would occur; no aerial spraying of herbicides would occur. All herbicide use would be subject to the California red-legged frog injunction, and would follow the requirements of SPRs HAZ-5, 6, 7, 8, 9, as well as SPR HYD-5. Together, these SPRs and Mitigation Measure BIO-1a and BIO-1b would avoid and minimize adverse effects to sensitive ecological resources by requiring 50 foot buffers around special-status plants (limited modifications to this buffer are documented in the PSA/Addendum and detailed under Mitigation Measure BIO-1a and BIO-1b), and within WLPZs, prohibiting application when weather parameters exceed label specifications or when sustained wind at the site of application exceeds 7 miles per hour, prohibiting application during or immediately prior to precipitation events, complying with all herbicide application regulations, and preparing and implementing a Spill Prevention and Response Plan.

Prescribed Herbivory Use. Prescribed herbivory may be allowed if it is found to be the least environmentally damaging feasible alternative to achieving project goals. Prescribed herbivory shall be conducted pursuant to an approved plan that ensures protection of habitat and other coastal resources, as documented in the PSA/Addendum.

Response: The project proposes use of prescribed herbivory to remove, rearrange, or convert vegetation in wildlands to reduce wildfire risk and to enhance the condition of forests, grasslands, and watersheds, as well as to help increase soil organic matter, control invasive species, and improve plant and wildlife habitat. Prescribed herbivory could be utilized on up to 217 acres in the Coastal Zone, which is 79 percent of the project area in the Coastal Zone. Prescribed herbivory would be utilized if it is found to be the least environmentally damaging feasible alternative to achieving project goals. Prescribed herbivory treatments would include the use of herbivores (e.g., goats or sheep) to graze or browse target vegetation. A grazing management plan will be submitted to the Coastal Commission for approval prior to the start of prescribed herbivory treatments and would include a description of current conditions, the potential impacts of grazing on resources of concern, grazing management goals, objectives and performance standards, and a summary of requirements. The potential impacts of prescribed herbivory are addressed in the Project PSA/Addendum.

Control Invasive Species. Treatment activities and treatment types shall limit the spread of invasive species and prevent the spread of plant pathogens in all habitats, including those habitats that are not determined to be sensitive natural communities, riparian habitats, or oak woodlands subject to CalVTP SPRs BIO-4 and 9.

Response: The proposed project includes removal of invasive plant species including acacia (*Acacia* spp.), Cape ivy (*Delairea odorata*), cotoneasters (*Cotoneaster* spp.), eucalyptus (*E. globulus*, *E. camaldulensis*), which is in the eucalyptus (blue gum, red gum) provisional semi-natural association, purple false brome (*Brachypodium distachyon*), forget-me-not (*Myosotis latifolia*), French broom (*Genista monspessulana*), and jubata grass (*Cortaderia jubata*). The project would implement SPR BIO-6 and BIO-9 for all treatment activities in all vegetation types to limit the spread of invasive species and plant pathogens, including Sudden Oak Death.

SPR BIO-6 requires implementation of best management practices to prevent the spread of plant pathogens and SPR BIO-9 requires implementation of measures to prevent spread of invasive plants and noxious weeds, including inspection and cleaning of equipment. Invasive plant and noxious weed biomass would be treated on-site or would be disposed of off-site at an appropriate waste collection facility to prevent reestablishment or spread of invasive plants and noxious weeds. Related to riparian areas, some of the riparian areas in the project area have invasive species including Cape ivy, eucalyptus, and forget-me-not, the removal of which may warrant utilizing targeted herbicide application to satisfy project objectives and restore ecological function. As noted in Section 2.7.2, "Invasive Species," cape ivy can contribute to substantial stream bank erosion, eucalyptus displaces native plant communities and creates highly flammable fuel complexes, and forget-me-not outcompetes understory plants. As noted in SPR HYD-5, the feasibility of avoiding herbicide application within WLPZ of Class II watercourses will be determined by the project proponent and may be based on whether doing so will preclude achieving CalVTP program objectives, including, but not limited to, protection of vulnerable communities.

Limit Fencing. The use of wildlife-friendly fencing for prescribed herbivory activities subject to CalVTP SPR BIO-11 shall require adequate ground clearance for smaller species to avoid entrapment and/or entanglement.

Response: The project proposes use of prescribed herbivory to meet ecosystem restoration and fire prevention goals. The proposed project would be required to implement SPR BIO-11 and a qualified RPF or biologist would review the design of any fencing prior to installation to ensure adequate ground clearance to allow smaller species to avoid entrapment and entanglement.

Limit Accelerants. Accelerants shall only be allowed for use in prescribed fire applications. The use of accelerants that could significantly disrupt or degrade ESHAs is prohibited.

Response: The project proposes use of prescribed burning to meet ecosystem restoration goals. The use of accelerants would follow the limitations on use pursuant to SPR HYD-4, which prohibits use of accelerants within WLPZs. Mitigation Measures BIO-1a and BIO-1b prohibit use of accelerants within special-status plant buffers, which are a minimum of 50 feet for plants listed under ESA or CESA, and generally 50 feet for special-status plants not listed under ESA or CESA. Furthermore, Mitigation Measure BIO-4 prohibits use of accelerants within wetlands and wetland buffers around Coastal Act defined wetlands. Implementation of these SPRs and mitigation measures would avoid impacts from the project that would disrupt or degrade ESHA.

Limit the Need for Soil Stabilization. The use of riprap and/or chemical soil stabilizers that could significantly disrupt or degrade ESHAs is prohibited.

Response: No riprap or chemical soil stabilizers are proposed for use as part of the proposed project.

Protect Coastal Public Access and Recreation. Forest Health projects and Fire Prevention projects shall ensure that coastal public access and recreational opportunities are preserved during project operations to the maximum extent feasible, including by, but not limited to, minimizing trail closures, limiting the use of public parking spaces for staging operations, posting accessway signage and using flaggers, and designing construction access corridors in a manner that has the least impact on coastal public access. Following the completion of Forest Health projects and Fire Prevention projects, all impacted coastal public access and recreational amenities shall be restored to existing conditions, in a manner that maximizes coastal public access and recreation.

Response: The project area is within the UC Santa Cruz Main Residential Campus, which has trails that connect to areas providing coastal access. Treatment activities have the potential to occur year-round and could disrupt recreational activities such as hiking, biking, and picnicking within the project area through temporary trail closures during active treatments. Active treatment activities may require temporary closures for safety. Recreational users would be notified of temporary closures in advance of treatment activities per SPR REC-1. Where feasible, notice of a closure would be posted 2 weeks prior to commencement of treatment activities consistent with SPR REC-1, which would reduce the risk of disruption of recreational activities within the treatment area. During prescribed broadcast burn operations, environmental prescriptions for operations may not allow a 2-week notice of trail closure; however, the project would provide as much advanced notice as is feasible. All public access and recreational amenities that are temporarily closed due to treatment activities would be restored to pre-treatment conditions following treatment activities.

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