

LVNP Fire Management Plan 5 Year Review Update & Amendment: Supplemental Mechanical Fuels Treatment Strategy

I. Proposed Action

Who:

The USDI National Park Service, Lassen Volcanic National Park (LVNP).

What:

LVNP Fire Management and Resources Divisions propose to amend the current Wildland Fire Management Plan (FMP) and supporting NEPA compliance document to include expanded potential mechanical vegetation treatment areas within specifically identified zones totaling approximately 6982 acres. (see section V Proposed Mechanical Fuel Treatment Zones Maps). The current FMP identifies areas designated as administrative sites (Wildland Urban Interface - WUI) and within 100' of existing road corridors as permissible for these types of treatments. The primary goal of the expanded treatment strategy would be to help restore and perpetuate key historic and ecological park elements and legacies outside of designated wilderness areas currently identified to be at risk of loss and/or significant alteration. One treatment zone has been identified in proposed wilderness and will require approval of a Minimum Requirement Analysis prior to project implementation.

Based on contemporary forest structure and disturbance regimes exhibited within the identified treatment zones, an expanded mechanical treatment strategy has been determined to be necessary to effectively help restore and perpetuate key historic and ecological elements and legacies (e.g. old-growth, carbon storage, soils, etc.). Scientific literature and empirical experience within areas of the park with similar forest structure (Flume, Roadside & Flatiron Prescribed Burn Units) suggest that the current management strategies and tools are inadequate in scope and applicability with regard to meeting desired goals and objectives. Due to the current and accruing conditions within these zones, the utilization of existing management strategies and tools provide relatively little reduction of risk to loss or degradation of desired elements and legacies.

Proposed treatment activities would require a onetime entry and utilize industrial forest management equipment, including excavators, rubber-tire skidders and feller bunchers, to alter the arrangement of existing vegetation and fuel profiles within this area. These activities would specifically focus on the reduction of excessive understory tree densities and compositions and/or the reduction of significant heavy surface fuel loads within sites previously unsuccessfully managed with prescribed fire. Once the forest structures and/or surface fuel profiles has been restored, managed wildland fire applications (natural and prescribed) would be utilized to further restore, enhance and maintain the system without further use of mechanical equipment.

The Proposed Action is designed to implement and be consistent with the Lassen Volcanic National Park General Management Plan (GMP) (NPS 2003), LVNP Resource Management Plan (RMP) (NPS 1999), and LVNP Wildland Fire Management Plan April 2009 (NPS 2005).

Mechanical treatments would be accomplished by utilization of generally accepted standardized prescriptions designed to produce hazard fuel reduction and timber stand treatment objectives that would generally reduce project area stocking levels to 50-75% of maximum carrying capacity.

These objectives would be accomplished by use of service or stewardship contracted industrial thinning from below operations. Operational treatment units would be developed as applicable within each of the identified treatment zones. Treatment units would generally range from approximately 25 –550 acres in size depending site specific conditions, treatment objectives and operational feasibility. Not all available acreage within identified treatment zones will require or be proposed for treatment. Most of the materials proposed for removal would constitute trees less than 19 inches diameter at breast height (dbh) with fewer larger-diameter trees generally associated with group selections, drip line cuts, and other silvicultural prescriptions tiered to desired ecosystem goals and objectives, such as aspen restoration.

Required equipment to accomplish these activities outside of landing areas would generally consist of feller bunchers to accomplish the cutting of selected trees. The feller buncher would utilize an articulating saw attachment (hot saw) to cut selected trees close to the ground (3-8 in.). Felled trees would be dragged (skidded) whole by rubber tire skidders and/or picked up and transported via forwarder singularly or in groups (doodles) based on cumulative material size, to an approved landing for chipping or saw log processing. These methods of cutting and transporting of materials within the treatment area produce minimal site disturbance and activity fuels (slash) compared to hand felling and line skidding operations.

Landings or open sites within and/or in close proximity to thinning units where the cut materials are processed and loaded for transportation to finish processing facilities generally constitute a flat area approximately 1-2 acres in size. Required equipment on these sites would generally include an industrial chipper and/or delimiting equipment, loader and chain saws. In addition, highway approved tractor trailer transportation equipment (chip vans and/or skeleton saw log trailers) would be staged and loaded at most landing sites. Most materials removed from the project area would be processed and transported from the landings as chipped biomass with lesser amounts of saw log material based on the identified programmatic goals and objectives of these treatment activities and their associated prescriptive parameters. Accumulated slash not suitable for processing and utilization at the landing sites would either be piled and burned or broadcast back onto the treatment areas utilizing the rake or blade and grapple attachment on the rubber tire skidders. In some instances combinations of these two strategies may be utilized to meet site specific resource goals, objectives and/or mitigations.

For those treatment zones or units identified for the reduction of significant heavy surface fuel accumulations, prescriptions favoring the chipping and removal of dead and down woody material and some dead standing materials (snags) for biomass utilization would be the preferred treatment strategy. Lesser amounts of chipping and broadcasting back onto the project area and machine piling activities may also be utilized to accomplish specific area or unit goals and objectives. General project treatment objectives would include:

1. Reduce woody debris to BMP target levels identified in appendix R of the fire management plan.

The primary treatment zone that would employ these types of mechanical treatments is Zone 4 (approx. 156 ac.). In addition, the segment of Zone 1 south of the Craggs/Lost Creek Campground along the Main Park Road corridor would also be a candidate for these types of treatment in conjunction with mechanical thinning operations.

Equipment generally required for these types of treatments would include either tracked excavators with grapple attachment and/or rubber tire skidders for manipulation and transportation of materials. Materials would be forwarded from the interior of the unit by use of this equipment to a landing or roadside based chipper for processing and loading into tractor trailer chip vans for transport.

Supplemental prescribed fire activities within the identified treatment zones will generally consist of the utilization of firefighting personnel with limited mechanical support equipment to introduce fire onto the landscape under favorable environmental conditions to meet specific project goals and objectives. This treatment strategy would employ the use of existing natural terrain and developed features, such as a creeks and existing roads, to establish project control lines while minimizing soil disturbance. Handlines would likely be required for implementation of this project. However, only the minimum width and depth needed to contain the expected fire activity would be utilized and once the project has been completed all handlines would be rehabilitated within 6 months of project completion or as soon as there is no risk of fire escaping the treatment area. Fire would be strategically ignited to enhance meeting specified goals and objectives while producing variation in fire effects throughout the project area. Specifically, fire would be utilized to reduce surface fuel loadings (both natural and activity) to help reduce the risk of high intensity and severity fire within the project area and create greater variability and diversity of ecosystem attributes. This strategy would involve some intrusions into proposed wilderness with varying combinations of hand tools, chainsaws and gas powered portable pumps to facilitate the accomplishment of project operations in a reasonable and safe manner for assigned personnel and the public. During planning and implementation of the project, "Minimum Impact Suppression Tactics" would be employed to reduce impacts. The overall intent of these tactics would be to suppress or contain and control wildland fire with the least impact to the land possible. Examples of these tactics include allowing fire to burn to natural barriers, employing minimum depth and width fireline and using cold trailing tactics (hand feel) opposed to utilization of continuous handlines. Several separate prescribed fire entries may be required to complete the entire project area. Each entry would require approximately 1-2 days to complete ignitions and another 2-4 of containment and control activities after ignitions are completed. Therefore, intrusive activities would generally be limited to 3-6 days per entry into the project area. Individual project entries may be separated by months or years depending on project specific constraints, such as air quality, weather and fire management resource availability. Planned project re-entry burning would generally be considered after an approximate 5-10 year period to produce or maintain desired project area goals and objectives.

Various planned mitigation strategies would be employed to minimize impacts and disturbances associated with the industrial thinning treatment activities. Specifically, the treatment units or areas would be specifically delineated by flagging, which would be removed once associated thinning activities have been completed. In addition, timber to be cut and removed would be "take tree" marked to eliminate residual painted trees being left on site.

Finally, existing landings and road systems on USFS lands immediately adjacent to the proposed project area would be utilized as much as possible. If use of roads and landings are required on NPS lands, they would include the existing Main Park Road, secondary roads and existing landings or wide areas during limited operating periods to minimize disturbance to employee and visitor use. Planned operations would exclude the need for temporary roads and landings within proposed wilderness areas. All roads and landings would be rehabilitated once the mechanical project related activities requiring use of these features have been completed or prior to regular use by staff and visitors.

Where:

The areas proposed for the supplemental mechanical treatment strategies have been identified within 7 treatment zones totaling approximately 6982 acres (see section V Proposed Mechanical Treatment Area Maps). The treatment zones lie within four primary geographic areas which include:

- 1) Northwest Corner of the Park - Main Park Road corridor and park boundary area from Manzanita Lake to Raker Peak.
- 2) Hat Creek Inholder Road corridor.
- 3) Northeast Corner of the Park - Butte Lake Road corridor and associated park boundary area.
- 4) Warner Valley (Drakesbad) Road corridor.

When:

The proposed project would be primarily planned for implementation during the late fall through spring months beginning during the fall of FY 11.

II. Integrated Design Features

Integrated Design Features, also known as Best Management Practices (BMP's) (refer to FMP Appendix R), are elements of the project design that would be applied within treatment zones to reduce or avoid unintended environmental effects to resources associated with the proposed mechanical treatment activities.

1. Botanical Protection Measures:

Threatened, Endangered and California Sensitive Plants

New occurrences of Threatened, Endangered, or Sensitive (TES) plant species discovered before or during ground-disturbing activities would be protected through exclusion from unit layout and/or flagging and avoidance strategies.

Noxious Weeds

- a. All proposed and planned project activities and treatment unit layout would be designed in consultation with the Park Plant Ecologist to minimize the introduction of new and/or vectoring of existing noxious weed sources.
- b. Infestations containing isolated patches with small numbers would be hand pulled or dug prior to ground-disturbing activities. Infestations that cannot be hand-treated would be isolated and avoided by project equipment to prevent spreading weeds within the project area.
- c. Infestations containing large areas or a single large contiguous patch or numerous patches within a generalized location precluding hand treatments would be either excluded from unit layout and/or flagged and avoided.
- d. All off-improved road equipment would be power-washed off-site, then inspected and determined to be weed-free prior to entering the park. Staging of equipment would be required in areas free of noxious weeds. If new occurrences of noxious weeds are identified during treatment and implementation, equipment used would be washed after leaving an infested area and before entering an un-infested area.
- e. If noxious weeds are found in the project area, post-project monitoring for implementation and effectiveness of weed treatments would be conducted as soon as possible and for at least two years after completion of project activities.

2. Cultural Resources

- a. All proposed/planned project activities and treatment unit layout would be designed in consultation with the Park Cultural Resources Specialist to minimize disturbance and/or degradation of historic and cultural resources. All cultural and historical sites would be protected from project activities by flagging and exclusion or unit layout exclusion.
- b. If additional cultural resources are discovered during the course of project implementation, all work would be halted within the affected area until an archaeologist could adequately identify, inventory and assess the site.

3. Watershed/ Soils/ Fisheries

- a. Riparian habitat conservation areas (RHCA) would be identified within 300 feet of perennial streams and wet meadows/ lakes/ ponds greater than 1 acre in surface area; and within 100 feet of the seasonally flowing streams and wet meadows/ lakes/ ponds less than 1 acre in surface area within the project boundaries.
- b. There would be no mechanical ground disturbance within RHCA inner zones, which are the areas within 150 feet of perennial streams and wet meadows/ lakes/ ponds greater than 1 acre in surface area; and 50 feet of the seasonally flowing streams and wet meadows/ lakes/ ponds less than 1 acre in surface area. No mechanical entry would be

permitted within RHCAs when side slopes are greater than 35% or are determined to be of high erosion hazard. Boundaries of the RHCA inner zones and exclusion areas would be flagged prior to operations.

- c. Thinning by hand and low to moderate intensity prescribed fire would be allowed within the RHCA inner zones to meet project fuel reduction objectives, while minimizing project related impacts to riparian areas. No hand piles would be located within 50 feet of the edge of channels, lakes or meadows. If cut material is piled for burning piles will be constructed outside hardwood stands less than ½ acre in size.
- d. Prescribed fire ignitions would be excluded within RHCAs to reduce the potential for higher intensity head fire runs. Fire would be allowed to burn into RHCAs from ignitions initiated outside of RHCAs. Ignitions outside of RHCAs would be planned and designed to produce lower intensity backing and/or flanking fire migration into RHCAs to reduce impacts associated with higher fire intensities. Within the inner RHCA areas every attempt will be made to minimize burning over wetlands or riparian areas.
- e. Fire control lines would be designed to minimize impacts within RHCAs by avoiding them where feasible and prudent. If line construction is required in RHCAs, line width specifications within these areas would be reduced to minimum standards and intersections would be developed to cross at right angles where feasible.
- f. To minimize the potential for soil compaction, equipment would not operate until soil conditions are sufficiently dry or frozen (snow covered) to minimize compaction concerns and/or mechanized equipment exerts no more than 6 lbs./sq. inch of pressure within the vehicle footprint. Limited Operating Periods (LOP) may apply within specific project areas to ensure soil conservation and erosion control objectives.
- g. To prevent soil loss from exceeding the average rate of soil formation, sufficient soil cover to prevent accelerated soil erosion from exceeding the rate of soil formation would be maintained. Where they exist five well-distributed logs per acre representing the range of decomposition classes would be left at the location they naturally occur. Litter and duff would be retained on at least 50 percent of the project area.
- h. Fire control lines and utilized road systems would be rehabilitated where necessary to prevent excessive erosion and sedimentation issues. Rehab may include water-bar construction by hand and scattering brush over the open line where required.

4. Wildlife Resources

- a. A minimum of four of the largest snags per acre would be retained where they exist. Where snags larger than 15 inches DBH and 15 feet in height are not present, four of the next largest snags per acre would be retained. Snag retention would be based on the following priorities and criteria:

1. Retain snags with existing use first regardless of stage, size, or species. These include large stick nests, large cavities greater than three inches, small cavities, and woodpecker excavations.
 2. Where they exist, retain trees greater than 24 inches diameter breast height (DBH), trees with snapped-off tops at least 20 feet tall and greater than 20 inches DBH, large dead trees greater than 24 inches DBH, and spike top trees (greater than 15 inches DBH for high priority species and 20 inches DBH for low priority species as identified in b below).
 3. Prescribed fire treatments would be designed to favor retention of these habitat features. This would be accomplished by application of low intensity backing fire from the base of identified snags/trees or hand lining identified snags/trees and use of low intensity backing fire ignitions from handlines were reasonably feasible. Another preferred method would require raking litter away from the base of desirable snags and logs.
- b. Where they exist, select snag species in the following priority: Jeffrey pine, aspen, white fir and red fir.
 - c. Where it exists, 10 to 15 tons of large woody debris would be retained per acre. The minimum size of this material would be 12 inches in diameter and 8 feet in length. This would be accomplished by application of low intensity backing fire ignitions from the base of identified large woody debris or hand lining identified large woody debris and use of low intensity backing fire ignitions from handlines were reasonably feasible.
 - d. Limited Operating Periods (LOP) may apply within specific project areas to mitigate significant disturbances to specified wildlife activities.
 - e. Consultation of proposed thinning and burning activities would be conducted with the Park Wildlife Biologist prior to implementation.

5. Silviculture

- a. Trees would be thinned from below by removing ladder fuels. All conifers larger than the upper limit DBH for each stand would be retained.
- b. Shade intolerant species (Jeffrey pine and aspen) would be retained over shade tolerant species (primarily fir). Components of all conifer species occurring within the thinning units would be retained.
- c. All hardwoods, specifically aspen and riparian species, would be retained.
- d. Mechanical thinning units would be marked with flagging, not paint. Trees to be removed would be identified with "Take Tree" opposed to "Leave Tree" markings to mitigate the occurrence of residual paint markings within treatment areas.

- e. In areas of high visibility such as along the Nobles Emigrant trail or within proximity of the park highway stumps will be cut flush to the ground by hand crews.
- f. All conifer stumps greater than 12” diameter will promptly be treated with a borate compound (sodium tetraborate decahydrate) to prevent inoculation by *Heterobasidion annosum* root pathogens.
- g. All skid trails will be identified and marked in advance by the COR. Upon completion of operations, tire tracks and skid trails and other surface irregularities will be obliterated and restored to pre-disturbance surface conditions.
- h. In the event residual trees are unnecessarily or negligently damaged by thinning operations, the contractor will be subject to penalty clauses (i.e. pay liquidated damages as established by the International Society of Arboriculture for landscape trees).
- i. Pine slash will not remain on site for longer than 30 days to prevent buildup of *Ips* bark beetles.

6. Recreation/Maintenance

- a. Project implementation and operations would be developed in consultation with the park Fee Supervisor to avoid activities that would adversely impact visitor use of campgrounds during high use recreational periods.
- b. Project implementation and operations would be developed in consultation with the park Chief of Maintenance to avoid activities that would adversely impact use of park roads and facilities.
- c. All existing roads and landings utilized for mechanical treatment operations would be rehabilitated as necessary once project activities requiring use of these features have been completed or prior to regular use by staff and visitors.

III. Purpose and Need

The areas identified for these treatments represent contiguous tracts of highly altered forest structures and fuels profiles within the park. These environmental conditions are currently incompatible with the desired environmental conditions and ecological goals for these areas. A single high severity and intensity fire event could result in loss of structural and functional old-growth components, wildlife habitat, erosion, mass carbon flux, and potential long-term type conversion incompatible with resource objectives. Improving ecosystem resilience to contemporary and future disturbance, particularly in light of climate projections, is a very high priority. In addition, most of these areas are immediately adjacent to developed areas and/or Park/Forest Service boundaries exposing them to greater potential human fire ignition sources and highly complex social and political management issues, including the protection of life, developed areas, and potentially conflicting management goals and objectives.

Due to a century of fire exclusion coupled with current and forecasted climate projections, the zones identified for the proposed treatment strategies exhibit greater ecological risk characteristics related to high intensity wildland fire events. Vegetation communities within these areas are highly altered due to past management policies and strategies limiting the natural role of fire in the parks ecosystems over protracted periods of time. All of the identified zones currently exhibit some of the most significantly overstocked tree stands and/or excessive surface fuel loads within the park. This directly corresponds to a high risk of vegetation type conversion, long-term soil damage, and loss of historic old-growth components. Past prescribed burn treatments in similar forest and fuel profiles within the park have resulted in excessive loss of desired old-growth components and net increases in fuel loading.

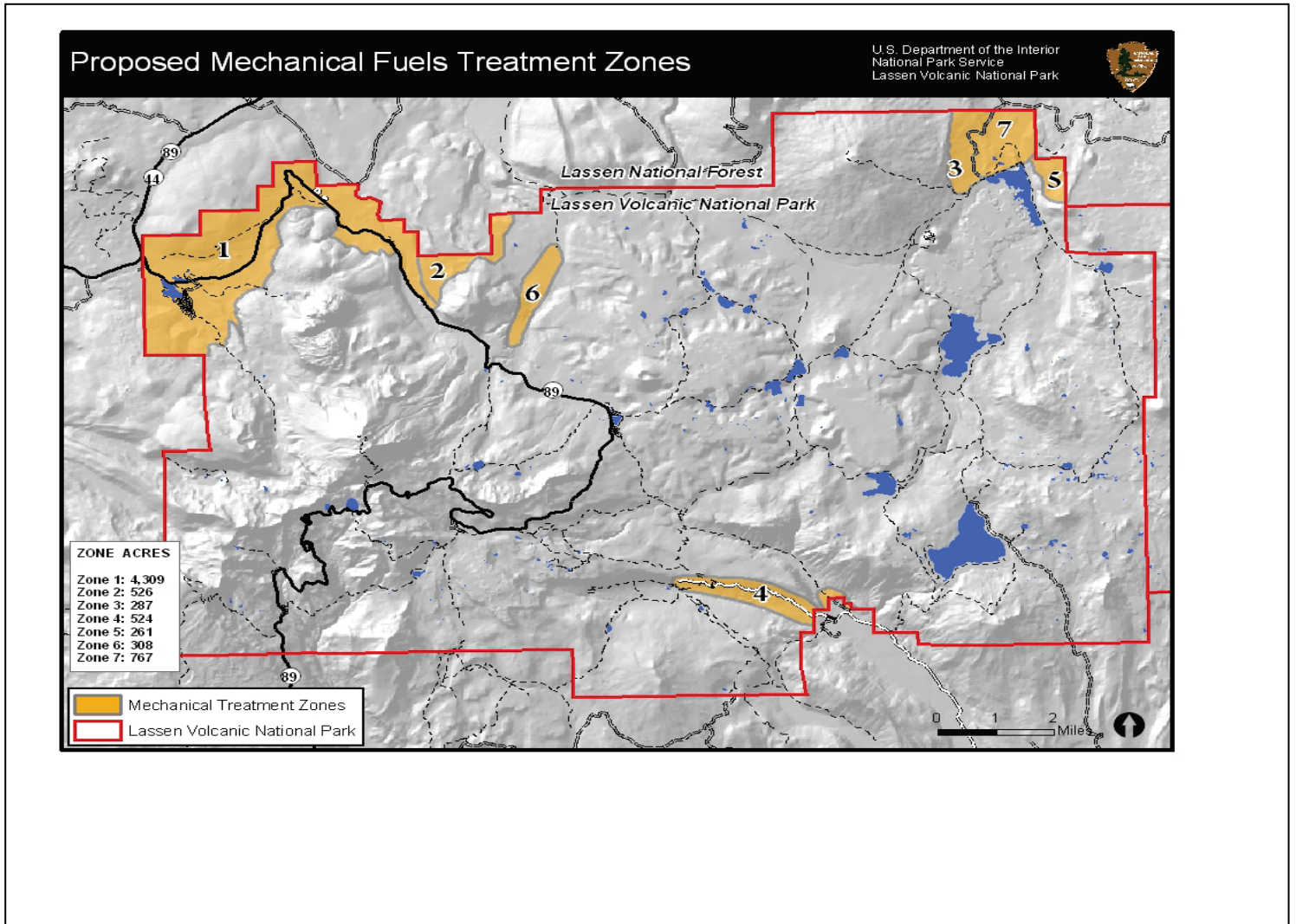
The lower elevation Jeffrey pine-white fir ecosystem, which constitutes the historic eco-type within most of the proposed treatment zones, has experienced the greatest ecological change due to fire exclusion. The proposed treatment zones are significant because they contain viable elements of these increasingly limited and historic ecosystem elements within the park. Due to the high productivity growth attributes of most of these sites, they also exhibit some of the highest understory tree densities and fuel loadings in the park. This has effectively converted the historically variable old-growth Jeffrey pine dominated system to one increasingly represented by stands of same age and size class fir in a co-dominate understory. Therefore, the risk of type-conversion to an alternative shrub state and loss of historic ecosystem processes and attributes, including old-growth Jeffrey pine, are high given a wildfire event in this area.

Utilization of prescribed fire and supplemental manual mechanical treatment strategies has been unsuccessful in similar forest types within the park (e.g. Flume, Roadside and Flatiron Projects). Based on experience and results specific to these projects, prescribed fire activities have produced excessive mortality and surface fuel loads within this forest type. It is believed that stand level mechanical thinning and/or surface fuel reduction prior to burning offers the best approach for reducing live and dead fuel loads, old-growth mortality, helping control fire behavior (safety), and restoring a more historic and heterogeneous multi-tiered stand structure. This treatment strategy would adaptively apply current scientific information and park fire and resources management experience to protect, restore and promote historic/cultural landscapes and ecological communities within the context of contemporary conditions and influences.

IV. Decision To Be Made

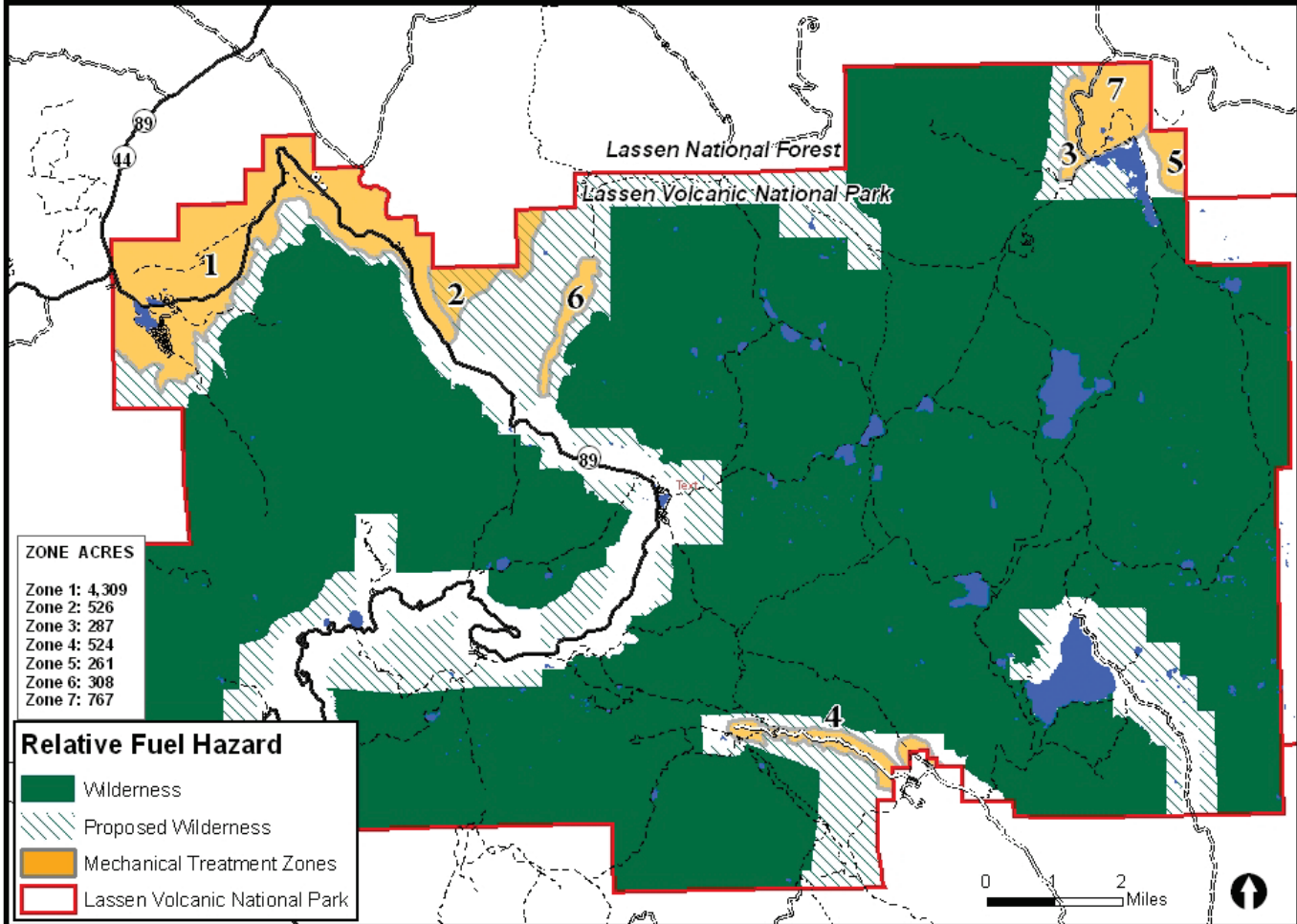
1) Implement the proposed action, 2) meet the purpose and need for action through another combination of activities, or 3) take no action at this time.

V. Maps



Proposed Mechanical Fuels Treatment Zones

U.S. Department of the Interior
National Park Service
Lassen Volcanic National Park



Relative Fuel Model Hazard

U.S. Department of the Interior
National Park Service
Lassen Volcanic National Park

