



Treatment Protocols for Fuel Modification Zones Subject to Coastal Development Permitting

The intent of this protocol is to define City procedures for achieving compliance with regulation of the California Coastal Commission, California Environmental Quality Act (CEQA), California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service, (et. al.) regarding fuel modification in zones requiring a Coastal Development Permit.

Fuel Modification Zones (FMZ's) are managed by the City of Laguna Beach under two different approaches;

- a. Public Nuisance Abatement sites – Those legacy sites which have a history of long-term grazing disturbance. These sites and their associated management by goat grazing predates the adoption of the Coastal Act and has been judged by the State Attorney General as exempt from the act as a pre-existing condition. This generally refers to sites grazed by goats in FMZ's 1-10.
- b. Coastal Development Permit sites- Those sites subject to the Coastal Act for which a Coastal Development Permit must be obtained for fuel modification. This treatment protocol guides fuel modification for these sites, which includes all zones currently maintained under Coastal Development Permits (FMZ's 10-15), and all program expansion sites planned for future development.

Reduction of Fire Behavior Potential

The objective of any fuel modification treatment shall be to achieve at least an average 75% reduction in potential wildfire fire line intensity (energy release), as measured by lame length and rate of spread. In general, a 50% reduction of fuel loading, accomplished by the parameters of this protocol will achieve such a reduction. (*Fuel Modification Impacts to Potential Fire Behavior- A Case Study for the City of Laguna Beach, Rohde, 2017, and Catastrophic Wildfire Assessment- City of Laguna Beach, Franklin, 2013*).

Treatment Area Determination:

Fuel Modification treatments will generally be limited to those areas that are within 100 feet of developed properties or structures. Treatments outside of these areas will be limited to removal of targeted invasives, general non-natives weeds control, or tree thinning and dead branch removal. Fuel modification outside of the 100 foot zone shall be conducted with intent to minimize impacts to adjacent intact habitats, serve as partial on-site mitigation for fuel modification impacts when required, or for prevention of fire branding over the fuel break.

The primary methods for vegetation management shall consist of grazing or hand crew modification. Other methods including mechanical mastication, prescribed burning, mass herbicide use, crushing, chaining, or other means of mechanical conversion have been generally eliminated from consideration for environmental, risk, or social/political concerns.



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Geotechnical Findings:

Proposed FMZ's shall be evaluated by a qualified geologist for geologic stability and flood/debris movement potential. Treatment within areas determined to be geologically unstable in the geotechnical report may be modified or eliminated. Unstable sites may include historic landslide or debris flow areas, unstable soil or rock structure, or similar sites.

Archeological/Paleontological Findings:

Proposed FMZ's shall be evaluated for archeological and paleontological resources in accordance with CEQA requirements. Such evaluation requires solicitation of tribal interests, survey of data sources for known resources, and site survey. Areas determined to have a presence of identified archaeological and/or paleontological resources may require fuels treatment to be modified or eliminated.

Sensitive Species Protection:

For all Coastal Development Permit FMZ's, a qualified biologist shall inspect proposed fuel modification sites for the presence of sensitive species prior to the initiation of work. If the presence of sensitive species are identified, a trained biological monitor shall be present at all times while work is conducted in the immediate vicinity of identified habitat to ensure no accidental takings occur, and sensitive species are protected. Crews conducting fuel modification work shall receive instruction and training in sensitive species management and avoidance prior to initiation of work.

Sensitive species include those identified in the California Endangered Species Act (CESA), the Native Plant Protection Act (NPPA), the California Environmental Quality Act (CEQA), the Natural Community Conservation Planning Act (NCCPA), California Penal Code Section 384a, or by Federal designation in the Endangered Species Act (F-ESA). Sensitive species shall not be disturbed by fuel modification activities.

Sensitive plant species of principal concern in Laguna Beach include:

1. Big-leaved Crownbeard (*Verbesina dissita*)
2. Intermediate Mariposa Lilly (*Calochortus weedii* var. *intermedius*)
3. Many-Stemmed Dudleya (*Dudleya multicaulis*)
4. Fish's Milkwort (*Polygala cornuta* var. *fishae*)
5. Cliff Spurge (*Euphorbia misera*)
6. Catalina Mariposa Lily (*Calochortus catalinae*)
7. Coulter's Matillija Poppy (*Romneya coulteri*)
8. Western Dichondra (*Dichondra occidentalis*)
9. Laguna Beach Life-forever (*Dudleya stolonifera*)
10. Many-stemmed Dudleya (*Dudleya multicaulus*)



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Whenever sensitive plant species are identified, they will be protected by establishing a flagged, 15-foot buffer around all specimens of the sensitive species, inside of which no material shall be initially removed. Such presence and limits shall be effectively communicated to project contractors. Based upon the species identified, its ecology and phenology, hand removal of non-native vegetation within the 15 foot buffer may be initiated at the direction of the biological monitor, if it is determined to be ecologically beneficial for the identified species. For Big-Leaved Crownbeard (*Verbesina dissita*), the potential shading/nurse plant benefit of non-native shrubs would be considered before removing non-native shrubs with such a determination to be made by the biological monitor.

To avoid impacts to nesting and migratory birds, including the Coastal California Gnatcatcher (*Poliophtila californica*), removal of vegetation should occur outside of nesting season (February 1 to August 31 in upland habitats) as much as is practicable. If work is conducted during nesting season, a qualified biologist will conduct a Nesting Bird Survey in the work area within 48 hours of the commencement of work. If any are found, a buffer zone will be flagged around the nesting site(s) in compliance with the biologist's recommendations before work commences. Contractor personnel will be directed to check all vegetation for nests before cutting and to cease work in the area immediately if one is found, until a qualified biologist can assess it. If work ceases for more than two days, another nesting bird survey will be required before work can re-commence.

Grazing Treatment Protocols:

Goats will be used to implement grazed fuel modification treatment in areas of Low to Moderate Habitat Value as defined in the *Laguna Beach Biological Resources Inventory*, (Marsh et. al 1983, see Appendix). To determine habitat value for this purpose, Laguna Beach City GIS maps based on the above-referenced document will be initially referenced, and modified as necessary based on site visits by a qualified biologist to reflect current conditions.

- a. The fur and hooves of all goats will be cleaned of seeds and debris before arriving at the treatment area and when being moved between enclosures to prevent the spread of invasive plant species.
- b. No more than 75 goats will be permitted per acre.
- c. Goats shall remain in secure enclosures at all times.
- d. Sensitive plant species shall be protected from trampling or consumption by establishing the secure enclosures a minimum distance of at least 15 feet between sensitive plants and the limits of grazing.
- e. Grazing animals shall be moved periodically to ensure enough vegetative cover remains to promote erosion control, inhibit dust, and preserve view aesthetics.
- f. Goat grazing shall be preferred for removal of nonnatives, or native herbaceous species. Up to 80% of the native and 100% of the non-native species in this cover type may be removed in such areas.



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- g. Goat grazing in woody (Coastal Marine Chaparral) or woody-herbaceous (Coastal Sage Scrub) chaparral species shall be limited to removal of 50% of the vegetative cover, and, and provide for a shaded fuel break outcome.
- h. Goat grazed fuel breaks should generally be limited to 100 foot width. Pinned areas may be extended to a maximum 150 feet when physical obstructions such as rock outcrops, cliffs, water courses etc. prevent reasonable establishment of pens at 100 foot width.
- i. Goats shall be used for brush reduction only and shall be immediately removed when the brush clearance has been accomplished.
- j. A targeted invasive control plan will be implemented in all future goat-grazed areas to prevent invasive species from propagating and impacting adjacent intact habitat.
- k. Where practicable and environmentally appropriate, goat grazing may be used as the maintenance method for areas which required initial clearance by hand crews.

Hand Crew Treatment Protocols:

Hand crews will be used to implement fuel modification in areas of High or Very High Habitat Value as defined in the *Laguna Beach Biological Resources Inventory, (Marsh et. al 1983, see Appendix)*. To determine habitat value for this purpose, Laguna Beach City GIS maps based on the above-referenced document will be initially referenced, and modified as necessary based on site visits by a qualified biologist to reflect current conditions.

The initial phase of vegetation removal shall include the following steps:

- a. Fuel Modification will be conducted by hand crews with chainsaws, brush-cutters and other hand tools.
- b. Hand crew fuel modification conducted in high or very high value habitat shall generally be limited to a width of 100 feet.
- c. Crews will cut down all non-native vegetation (including unmaintained ornamental vegetation) and dead/dying native vegetation and carefully remove dead branches from trees and large shrubs. As noted above, an exception may be made where non-native shrubs are providing shading/nurse plant benefits for Big-Leaved Crownbeard, as determined by the biological monitor.
- d. Special care will be exercised to distinguish dormant native vegetation from dead/dying native vegetation.
- e. Tree-form shrubs (e.g. Laurel Sumac (*Malosma laurina*), Toyon (*Heteromeles arbutifolia*), Lemonade Berry (*Rhus integrifolia*)) that are over 6 feet tall will be carefully pruned of their lower branches to increase the Crown Base Height to 50% of the plant height. For example, a 10-foot-tall plant would have its lower branches removed to a height of 5 feet. Branches will be pruned to within 1 inch or less of the branch crown. Southern Maritime Chaparral shrub species shall be left fully intact except as noted below, and not pruned initially.
- f. For large tree species within FMZ's, non-native trees (*Pinus*, *Eucalyptus*, *Washingtonia*, et. al.) shall be considered for removal on a case-by-case basis, taking into consideration their potential ignitability, potential to spread fire from or across the FMZ, and property/tree ownership. Native



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- g. large trees (*Quercus*, *Platanus*, et. al.) shall be pruned of dead components, and lower small branches removed to a height of 8 feet or one half their height, whichever is less, so as to disrupt “fuel ladder” potential. Dead and down tree components on the ground below large trees shall be removed.

Where there is still over 50% vegetative cover after the above material has been removed, the contractor will remove healthy live vegetation in accordance with the hierarchical list below, beginning with the first species listed, then in descending order through the list until 50% vegetative cover has been attained:

1. Coastal Goldenbush (*Isocoma menziesii*)
2. California Buckwheat (*Erigeron fasciculatum*),
3. Black Sage (*Salvia mellifera*)
4. California Sagebrush (*Artemisia californica*)
5. Monkeyflower (*Mimulus aurantiacus*)
6. Laurel Sumac (*Malosma laurinus*)
7. Toyon (*Heteromeles arbutifolia*)
8. Lemonade Berry (*Rhus integrifolia*)

Stumps will be cut to within 4” or less of the ground. Thinning of healthy, live vegetation will be done in a dispersed manner to avoid creating new large openings. All healthy specimens of Southern Maritime

Chaparral species including Bush Rue (*Cneoridium dumosum*), Spiny Redberry (*Rhamnus crocea*) and Bigpod Lilac (*Ceanothus megacarpus*) will be retained.

Treatment of Water Courses

Pampas Grass and other invasive plant removal and herbicide treatment will be the primary vegetation management within a 25-foot buffer on either side of any “blue-line” ephemeral drainages or stream courses (as listed by USGCS map or City Website) that cross the treatment areas. For long drainages which may form a corridor through which fire may be ushered into residences at the head of drainages, additional site-specific steps may be implemented to establish breaks in fuel continuity within these corridors on a site-specific basis consistent with best environmental practice.

Herbicide Use

Herbicides may be used for spot treatment of invasive species when identified as appropriate by the site biologist. Herbicides shall be specific to the intended use and be used in such a manner as to not pose excessive risk to nearby sensitive species or water courses. Herbicides shall not be used on a landscape scale to defoliate large expanses of fuels.



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Erosion Control

The preponderance of roots of perennial plants will be left in place to minimize erosion. Mulch and other erosion control measures (such as straw wattles and/or jute netting) will be installed as necessary for additional protection without being obtrusive, as recommended in site geotechnical reports. Haul paths will be minimized and rehabilitated with mulch or other methods as deemed appropriate by the project biologist. Areas of relatively low slope (i.e., below 33% or 1:3 grade) will be mulched to an adequate depth to minimize weed propagation and ongoing maintenance needs.

Disposal of Cut Materials

All dead and cut material will be disposed of properly. All non-native material will be removed from the site, placed in a truck or dumpster and hauled to a green waste recycler. City contractors will generally be conditioned within their contracts to pay all dump fees related to disposal. Native material will be chipped and used as mulch on-site in areas of moderate slope to reduce erosion and weed propagation. Native material unable to be reused on site will be hauled to a green waste recycler, though efforts will be made to reuse as much native material on site as possible.

Native vegetation under 3 inches in diameter, live or dead, may be processed with hand tools on site and spread in place as mulch as an alternative to hauling and chipping, if it is cut into pieces not exceeding 12 inches, lays flat on the ground, does not cover remaining native plant species and total mulch depth does not exceed 12 inches. All coarse non-native material (e.g., woody debris, Pampas Grass leaves), live or dead, must be removed from the site, including any material dumped in the Project

Area by residents or others. Fine material treated with herbicide (e.g., non-native grasses and annual weeds) may be left on site.

Additional Mitigations

Additional site mitigations may be considered when recommended or required by environmental permitting agencies on a case-by-case basis.

Trash and Litter Found On-site

Trash and litter found throughout the Project Area will be removed from the site and hauled to a landfill.

Site Monitoring and Documentation

An annual monitoring report shall be prepared by the City detailing the following:

1. Dates and locations of vegetation treatment or modification
2. Treatment methods utilized by site
3. Number of acres managed
4. Photos of treatment sites, pre- and post- treatment



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5. Description of any violations or failure to meet conditions of the Coastal Development Permit

HABITAT CLASSIFICATION

The following definitions are utilized in the classification of habitat types within the City of Laguna Beach: (Excerpt from: *Laguna Beach Biological Resources Inventory, Marsh et. al 1983 pp. 35-36*)

Biological Value Mapping is based on the parameters of habitat integrity and extent, faunal use, and presence of endangered, rare, or locally unique biota. From these, a ranking system was developed of low, medium, high, and very high value habitat. These habitats are classified as follows:

LOW VALUE HABITAT:

Disturbed, impacted sites, often dominated by ruderals, annual plants, and escaped horticulturals. Such areas are usually highly fragmented by, or are contiguous to urban development. These sites are biologically simplified and are of low faunal carrying capacity. Low value habitats do not possess biological constraints to urban development, but may, if developed, be areas where spillover impact adversely affects contiguous higher value settings

MODERATE VALUE HABITAT:

These sites may contain either native vegetation of a specific community type, or ornamental species in a setting providing horizontal and vertical structural diversity. The sites are usually, however, limited in area extent, being contiguous to urban development. Thus their faunal carrying capacity, and often, the native floral species diversity, is lower than "high value" habitats described below.

HIGH VALUE HABITAT:

These are extensive areas dominated by indigenous plant communities which possess good species diversity. They are often, but not always, linked to extensive open space areas, within or outside of the city, by wild-fauna transversable open space corridors. Their faunal carrying capacity is good to excellent, many areas are utilized as bedding and foraging sites by mule deer or possess large resident populations of avifauna or native small animals.

VERY-HIGH VALUE HABITAT:

These include the habitats of endangered, rare, or locally unique native plant species (including disjunct and outpost populations). Also included are areas of southern oak Woodland and natural (not irrigation augmented) springs and seeps. Among the very-high value habitats inventoried are areas of significant rock outcrop exposures, because of the assemblages of sensitive plant species which often occupy such settings.

082018