

Appendix J

Description of Treatment Methods

SUMMARY

Vegetative fuel treatments are aimed at removing and/or rearranging fuels to change the fire behavior when they burn. Fire intensity is normally reduced when fuel volume is removed. Creating discontinuity both limits fire spread when it advances along the ground; for example, grass fires sometimes stop when a bare patch is reached. Creating open areas below tree canopies prevent a fire from moving into the tree canopy. Shrubby and grassy vegetation below the tree canopy acts as a ladder for fire to climb into the up into the tree crown.

Sometimes fuels need not be removed, but simply rearranged. For example, discing breaks up grass into small pieces and incorporates them into the soil. Other times, material is cut into small pieces and arranged into a more compact manner. The cut material burns with less intensity and decomposes faster. Other times, cut branches are arranged into compact piles well away from sensitive areas; this treatment produces a discontinuity of fuels and limits fire intensity in sensitive areas. Sometimes machines grind fuels into mulch, which does not remove the fuel, but changes its arrangement so that it burns with low intensity.

Prescribed burns, grazing animals, and mechanical treatments all remove fuels on a large scale. In smaller open space areas, along roads and around structures, hand labor is effective in reducing the fuel load. Mowing, discing, grading or other types of mechanical treatment redistributes fuels (rather than removing them) on a large or small scale.

In all the following treatments except hand labor, economies of scale are dramatic; the larger the project, the greater the efficiency.

HAND LABOR

Hand labor involves pruning, cutting, or removal of weeds or shrubs either by hand or with hand-held equipment. Hand labor encompasses the operations of pruning and use of a string cutter, tree removal, bark pulling, removal of dead wood within the tree/shrub canopy, litter removal and mulching, and establishing new plant material. Hand labor allows use of a wide variety of methods to reduce fuel load, including both chemical and mechanical treatments.

This technique generates considerable debris when pulling, pruning, and cutting vegetation. It is ideal to remove and properly dispose of the debris off the site. When the debris is not removed from the site, a significant hazard remains because the debris may be voluminous, dry, well aerated, and quite flammable.

Hand labor includes work done by a single homeowner to large hand crews. Hand crews are available for contract either through private enterprises or through non-profit or government agencies. Private hand crews typically are 3-6 people with a supervisor. Hand crews from non-profit organizations are larger, typically 6-12 people. Hand crews of approximately 20 men from the California Department of Corrections and Rehabilitation (CDCR) have been used with great success in implementing many CWPPs.

Treating vegetation with hand labor is slow and expensive, but most selective and has little impact beyond the removal of the target plants. A crew supervisor provides guidance regarding operations, and priorities for removal. As with all types of hand crews, whether they are from the CDCR or short-term contracts from a private vendor or governmental entity such as the Sacramento Regional Conservation Corps, some expertise is required to work with problematic species such as poison oak, to prune oaks and control shrubs, and to identify new fuel hazards as they arise.

If private contractors are used, the cost varies from \$1,500 per acre to approximately \$10,000 per acre, depending on the time of year, extent of project, and level of detail required. However, costs involved with using CDCR crews are greatly reduced. Crews cost \$250/day which includes the cost of a supervisor, truck, and the crews. Traffic control and additional supervisors are additional costs for roadside treatments; Traffic

control can cost \$1500/day and supervisors costs span the range from free (volunteers sometimes fill this role) to \$800/day.

Hand Labor - Pruning

Trees and shrubs must be hand-pruned to vertically separate fuels. Pruning lower branches of trees is usually done with a hand-held pole saw (with or without a motorized chain saw attached). Lower branches on shorter trees can be pruned with loppers.

Hand Labor - Weed-whipping

Like mowing, weed whipping reduces fire hazard by reducing the fuel height. However, it is done by hand to avoid harming rock outcrops and desired small plants (such as oak regeneration and landscape material). It is the only means of mowing grass (other than grazing) in tailings or gravelly areas. This treatment is generally limited to small material such as grass or short herbs. Weed whipping may be accomplished any time of the year, and regardless of whether the material has cured.

Weed whipping is performed with a hand-held, gas powered tool that cuts grasses and very thin woody material with a fast-spinning fishing-line type of cutter. Because this method is performed manually, it can be used to selectively remove certain vegetation. Most large woody stems are not cut by the treatment; however seedlings (such as oak seedlings) can be severely damaged. Treatments can be completed with greater care than the others (however the height to which plants are cut may be difficult to control if the operator is not experienced) and minimize soil disturbance and erosion. It is also often the only type of treatment possible on steep slopes and in wooded areas. The average weed whipping rate is 750 square feet/hour.

The schedule for a skilled laborer should be tailored to the timing of their tasks. For example, selective weed whipping of annual grasses before they set seed while leaving native bunch grasses until after these plants set seed can shift the proportion of vegetative cover over time to more bunch grasses. This shift in type of grasses can shorten the length of time the landscape is prone to ignition. Similarly, thistle reproduction can be minimized by cutting while they are growing, but before they set seed. Pruning should be done from November to April; this schedule avoids spreading destructive bark beetles and/or other pathogens.

MECHANICAL TREATMENTS

Mechanical treatments, including mowing, discing, and grading, rearrange rather than reduce the actual fuel load. Heavy machinery is usually used in flat areas where terrain and the presence of rocks or numerous trees do not prohibit travel. This type of machinery should not be used on slopes over 30% because of concerns for worker safety, erosion control, and slope stability issues.

Heavy machinery: attachments to tractors (brush hogs, flail, mowers, tiger mowers)

Roadside mowing is a prime example of the use of heavy machinery with attachments. A variety of attachments serve numerous purposes. For example, a brush hog attachment cuts and breaks brush plants off and produces a mulch of the brush debris. Mowers that cut or flail grass and small woody plants are also attached to tractors. Attachments (such as mowers) with articulated arms that reach as far as 20 feet away from the tractor reduce the area over which the tracks must travel, and offer more maneuverability. These articulated arms also cut and/or break off material. Heavy machinery is a moderately fast, and a relatively inexpensive treatment. There is little control over which plants are cut, but machines can travel around isolated areas of concern.

Heavy equipment cannot be used in areas of rocky substrate for fear of sparks caused by the metal blade hitting a rock. Heavy machinery should not be used when the ground is soft in order to prevent ruts and bared soil. This technique can be used at almost any other time of year, but is faster when done in the summer or fall when brush is brittle and grass has cured. It must not be used during times of high fire danger because the machines can start fires. The under-carriage of the machine and attachments should be washed off after use in areas of weed infestations.

Grading and Discing

Grading and discing involves stripping a swath of land bare of vegetation with a tractor and blade. It is very effective in producing fire trails 8 to 12 feet across and as a maintenance tool for access routes. Generally, grading is done mid-spring, by a contractor when there is still residual moisture in the soil, but after the threat of spring rains has diminished. Costs are reasonable, (from \$100 to \$300 per acre) and relate to the size of the project and condition of trail surface.

However, there are several disadvantages to this treatment. By removing all competing vegetation, grading creates an excellent establishment site for weedy species, which may be serious fire hazards. Untimely grading, for example, in mid-summer, can help sow seeds of weedy exotics, such as yellow star thistle, mustard and Italian thistle. In addition, annual grading causes soil disturbance and alters drainage patterns. Runoff, blocked from cross-drainage by the banks on either side of a graded fire trail, is redirected down the trail. This situation favors coyote bush and exotic grasses, leading to a shift in the grassland species composition. Grading spoils will need to be feathered into the sides or smoothed back into grading area annually.

Discing involves cultivating or turning over the upper 10" of soil, and produces an uneven surface with a discontinuous fuel distribution and is appropriate only if mowing or grazing is not applicable that year or in a specific location. Rate of production is quite high; normally the operator can disc land parcels of two acres or less within one day. Discing is normally performed annually once grass has cured (so the grass will not grow back that season). A tractor with discer attachment can typically cultivate a swath 15 feet wide in a single pass. While this is an effective barrier to surface fire spread, it is also an ideal disturbed area with prime growing conditions for weeds and distribution of their seeds. Surface erosion can be significant in areas prone to this process.

TARGETED GRAZING WITH SHEEP AND GOATS

This method includes the intentional use of sheep and goats to consume vegetation to reduce the amount or density of fuel. These types of livestock are not recommended to create a fuel break, but can be used to maintain this type of pre-suppression feature. Similarly, livestock can prevent grasslands from shrub encroachment, and keep an oak woodland free of significant understory. This option is effective where the plants are palatable to the animals selected. Control of the livestock and prevention of the impacts of overgrazing is critical to successful use of this technique. As a fuel management technique, livestock need not graze every year.

Grazing can reduce or encourage weedy pest plants depending on the timing and intensity of grazing. A range management plan and a grazing monitoring program needs to be established to identify the impacts and ensure that the animals are removed once fuel management goals are met. Perennial grasses may require modifications from management of annual grasses using grazing animals. Because presence of healthy perennial grass stands has many benefits, these modifications are generally recommended. One benefit of perennial grasses is that they cure later in the season, which limits the opportunity for ignition. Mowing typically can be scheduled over a longer time period. Rotation of grazing animals is preferred over greater grazing pressure. Typically, perennial grasses react best when grazing is applied after seed maturation - from late spring through the fall. Goats may import seeds from another weedy site. The herd can be quarantined at goat herd's ranch for three days where they will be fed alfalfa to clear out their systems. The herder can also use short-haired goats that will carry fewer seeds in their fur.

The herding instinct of sheep and goats allows professional herders to range in very mobile bands without the installation and maintenance of permanent fences. Portable electric fences are commonly used to help control the herd and the outcome of their grazing. Goats will browse materials up to 6 feet above the ground creating a desirable vertical separation between the canopy and ground cover. However, measures must be taken to prevent girdling of trees by goats browsing on bark. Herd movement has the advantage of breaking off dead material in a stand as well as punching a humus layer into the soil (if the ground is somewhat

moist) and thereby removing available fuel. Grazing treatments need to be repeated, however, following up or alternating with a different, complementary technique can extend its effectiveness.

If work is needed to be done during May-July, scheduling can present a challenge because many clients in the greater area desire the service at that time. To minimize the negative effects of grazing on a specific plant, goats should graze after seed set of that particular plant. During initial fuel reduction treatments, goats may be most cost-effective in the late fall or early spring when demand for their services, and possibly price are reduced. Multi-year contracts, and contracts for larger areas typically lower the costs per acre. Providing a place where the herd can stay during the winter also lowers costs for treatment. Providing a water source for livestock is another way to reduce costs. Water sources can be as rudimentary as a plastic wading pool or a portable trough.

A herd of 200-300 goats can generally treat one acre per day. Costs can vary from \$300 to \$1,000 per acre with an average of \$700 per acre, depending on fencing requirements as well as type and density of vegetation present. The cost includes transportation, the shepherd's salary, supplements and healthcare for the goats, fencing, and insurance.

BROADCAST PRESCRIBED BURNS

Prescribed burning reintroduces fire into the ecosystem as a “natural treatment” and can promote native flora and aid containment of fires by reducing fuel volumes.

Prescribed burns are usually performed by the local fire protection district. CalFire may be willing to participate with Metro Fire in a limited prescribed burning program with State Responsibility Areas as part of their hazard reduction efforts within the state's Vegetation Treatment Program. If burns were conducted by CalFire, the State would not only assume liability, but also share costs. Regardless, it is likely that CalFire and other nearby fire protection districts and departments would offer mutual cooperation and/or assistance.

Several precautions, such as installing firebreaks and notifying various agencies, must be taken before performing a prescribed burn. Treatment boundaries are often road and trail crossings, which reduces the number of fire breaks that need to be created by fire personnel, thereby reducing labor costs and time needed to prepare for the burn as well as minimizing the amount of surface soil disturbance and potential for soil erosion.

Prescribed burning requires the development and approval of a prescription or burn plan, which is typically developed by the local fire protection district in consideration of fuel reduction requirements, local weather conditions, and available resources for fire management. The soot and smoke generated, as well as the chance of escape, make prescribed burns a public safety concern. Planning and coordination with interested parties must be an integral part of the program.

Broadcast burning may occur throughout the year; however, it is usually conducted during late spring when the ground is still wet or during fall or winter after plants have completed their yearly growth cycle and their moisture content has declined. Spring burns are preferred by some fire staff to ensure a greater measure of public safety, however, there may be impacts to animal and plant reproduction activities. Fall burns are more closely aligned with the natural fire cycle found in California. If a prescribed burn were to be conducted in the fall, the period before leaves or new herbaceous material covers the slopes will be short (possibly a month or two).

Prescribed burning can enhance the local grasslands and promote the abundance of wildflowers. Any small oaks or shrubs to be retained will need to be protected during the burn to prevent their mortality. While the abundance of wildflowers the subsequent years is an appealing sight, the burned area will be temporarily blackened.

HERBICIDE APPLICATION TO CONTROL INVASIVE PLANTS

Herbicides are used as part of an Integrated Pest Management¹ program and in combination with other treatment measures (e.g., mowing, burning and hand removal) to control invasive plant species that exacerbate wildfire risk. Application following another treatment method in which plants are trimmed or shortened can increase the effectiveness of the chemical treatment. Herbicides can also be used to kill herbaceous plants in exposed areas, such as roadside grass and weeds, and are typically applied while the grasses and weeds are actively growing. Foliar treatments are generally not applied within seven days of significant rain because the herbicide may be washed off before it is effective, and not on windy days because of concerns for spray drift.

The use of the herbicides Garlon 4 Ultra or Roundup can be used to treat areas of shrubs where resprouting needs to be controlled. The use of a thistle-specific herbicide, Transline, is effective in controlling the spread of yellow star thistle, artichoke thistle, and bull thistle.

Herbicides do not remove any vegetation from an area's fuel load; the dead plant matter continues to exist at the site and could continue to be a fire hazard if not collected and disposed. Health, safety, and environmental concerns have limited the widespread use of chemicals over the past 20 years, and repeated use of chemicals is not preferred due to the prevalence of unwanted species building resistance to herbicides. Additionally, concerns regarding water quality and other potential environmental impacts that may occur with prolonged use of and exposure to herbicides and other chemical applications further limit their frequent or widespread use as a treatment.

Application of herbicides is typically performed by hand, and can include sponging, spraying, or dusting chemicals onto unwanted plants. Hand application provides flexibility in application and is ideally suited for small treatment areas. Roadside application of herbicides may employ a boom affixed to or towed behind a vehicle.

Herbicide application requires specific storage, training, and licensing to ensure proper and safe use. Only personnel with the appropriate licenses are allowed to use chemicals to treat vegetation. Herbicide application is also only applied per a prescription prepared by a Pesticide Advisor licensed in that county. Personal protection equipment is essential to limit personnel exposure to chemicals.

BEST MANAGEMENT PRACTICES

The protection and preservation of culturally and environmentally sensitive areas is an integral part of implementing a CWPP. The development of a comprehensive plan not only protects these features from the effects of fire, but ensures that vegetation treatment, fuel management, or fire mitigation efforts are planned and executed in a manner that prevents potential additional adverse impact. While not official requirements, the following steps are considered best management practices for the continued protection of the environment. In all areas detailed site inventory should be conducted prior to treatment to determine the location of sensitive sites.

TIMING OF TREATMENTS

Timing of initial or follow-up treatments is important to achieve the desired fuel management performance standards and resource management objectives. Given the variable nature of fuels through changes in weather and season over time, the schedule of the treatment may often be just as important as the type of treatment selected. For example, treatments in grasslands typically take place when grass cures or dries out. Cutting grass too early will be ineffective, as the grass will usually grow back, negating the treatment. Conversely, cutting grass too late will leave the grass in a hazardous condition during periods of high fire

¹ Integrated Pest Management is a strategy that uses an array of biological, mechanical, cultural, and hand labor, to control pests, with the use of herbicides as a least-preferred method of control.

danger. Fuel treatments also need to be conducted when the weather is not too dry or windy, as some treatment types - especially mechanical treatments - may inadvertently start fires.

Timing the treatment methods appropriately can reduce potential impacts to special-status species or sensitive wildlife species. It is likely that there will be some months of the year when particular practices need to be implemented (e.g., pre-treatment nesting surveys or avoidance of breeding habitat) to avoid adverse affects to special-status species.

Timing treatments to either control or avoid the spread of invasive plant species or insect pests is also critical. For example, treatments performed when plants have set or are setting seed will spread the seed whether it is a native plant or invasive weed. Treatments should therefore take advantage of differences in the timing of seeding of native plant species and avoid periods when invasive species are in seed. Pruning of pines and should be done when insect pests are not flying to minimize the associated spread and damage from these insects. Pruning should take place from November to April to minimize the susceptibility to bark beetles or red turpentine beetles. Timing the treatment to promote native species, reduce insect and fungal outbreaks, and to avoid times of native species nesting and seed distribution all comprise a best management practice. In most cases, the timing and method of treatment can be modified to accommodate local habitat needs and still reduce fire hazard to an acceptable level.

HAND LABOR

Due to the direct relationship of personnel to the environment in which they operate, hand labor can represent an approach that provides the least adverse impact to environmentally sensitive areas. However, specific fire management goals and the characteristics of any sensitive area or resource must be assessed to develop an actual work plan and associated activities. The following management practices and considerations should be implemented during site planning and project execution.

- ▲ Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with hand labor operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.
- ▲ Avoid treatment actions during conditions that may affect water or run-off including during storms or severe weather or immediately following severe weather.
- ▲ Limit foot or vehicle traffic on slopes, unimproved or non-designated trails, or outside of preexisting roads or access points.
- ▲ Inspect areas for nesting birds to determine if activity should be postponed or adjusted by the establishment of a buffer area.
- ▲ Clean all tools and equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

MECHANICAL TREATMENTS

Due to the potential for large equipment use, rapid action, and large-scale area operations, mechanical treatments can have significant adverse impacts on sensitive areas. As a result, pre-planning and site supervision are extremely important for any planned mechanical treatment actions. The following management practices and considerations should be implemented during site planning and project execution.

- ▲ Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with mechanical treatment operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.

- ▲ Avoid treatment actions during conditions that may affect water or run-off including during storms, periods of precipitation, or immediately following severe weather. In addition, avoid scheduling any treatment actions during seasons with significant predicted precipitation. Cease operations or postpone planned operations including movement of vehicles or equipment during precipitation conditions that may combine with vehicle activity to cause damage to roads, trails, or adjacent land areas.
- ▲ Plan treatment actions and equipment selection to minimize damage or alterations to existing soils. Determine locations of potentially erosive soils prior to treatment. Restrict operations that may adversely affect sensitive soil systems such as serpentine soil areas, erosion prone soils, or riparian zones. Restriction may include using road-based operations only, and avoiding riparian set-backs established by regulatory agencies.
- ▲ Maintain a buffer of 25-50 feet between operations and water bodies or designated riparian areas. Avoid crossing drainage channels, run-off areas, or dry streambeds. Install and manage run-off barriers for rainwater in all treatment and operating areas. Restrict mechanical removal of trees to areas further than 50 feet from drainage channels.
- ▲ Restrict vehicle traffic to preexisting roads or pre-planned access points based on equipment size and operations. Limit transport and support equipment to existing roads. Limit heavy equipment use to slopes less than 30%. Install erosion control measures on all vehicle roads and traffic areas.
- ▲ Maintain strict monitoring and control of fueling and maintenance operations. All maintenance actions that may produce spills should be executed in areas with secondary containment protection, away from any water bodies or drainage areas. Clean up of all spills should be done on-site, with materials ready for use. Inspection of equipment for new leaks and mechanical problems should be performed daily, prior to operations.
- ▲ Inspect areas for nesting birds to determine if activity should be postponed or adjusted by the establishment of a buffer area.
- ▲ Clean equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.
- ▲ Plan operations around expected seeding conditions of targeted species (either prior to or sufficiently afterwards) to ensure efficiency of treatment action.
- ▲ Cease actions during periods of high fire danger or during red flag conditions. Ensure that all mechanical equipment have approved spark arrestors and comply with California Public Resources Code (PRC) sections 4431, 4435, 4442, and 4437 to limit potential for ignition of incidental fires.
- ▲ Maintain on-site fire suppression resources to include shovel, water pump, fire extinguisher, and two-way radio or communications for fire reporting.

GRAZING WITH SHEEP AND GOATS

One of the primary adverse impacts of grazing is over-grazing and the resulting exposure of bare ground. Over-grazing can increase the potential for soil erosion, water run-off and drainage, elimination of native plant species, and spread of non-native plants and weeds.

- ▲ Prepare a grazing management plan by a certified range specialist that specifies goals, stocking levels, grazing periods, installation of range improvements (such as water sources) to evenly distribute utilization of feed, and monitoring and performance criteria.
- ▲ Develop a site-specific annual grazing plan that includes project-level plans for stocking, timing, and resource management goals.

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- ▲ Prior to introduction, all animals shall be quarantined and fed weed-free forage to limit spread of invasive or unwanted plant species as well as prevent spread of livestock diseases.
 - ▲ Limit grazing to non-riparian areas.

BROADCAST PRESCRIBED BURNS

Prescribed burns, including pile burning, can have significant impacts on sensitive areas both from environmental and cultural standpoint. The planning and execution of a prescribed burn must be carefully developed. A prescribed burn can adversely affect the duff layer, generate large and unpredicted amounts of smoke, and transition from a controlled event to one that is uncontrolled and dangerous.

- ▲ Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with broadcast prescribed burn operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.
- ▲ Develop a smoke management plan describing desired outcomes and specific actions for onsite personnel including a test burn, continual evaluation of smoke dispersal, monitoring of wind patterns, and monitoring of potential visibility impacts to primary roads and highways.
- ▲ Develop public safety plans to be executed throughout the prescribed burn cycle including press and information releases, signs and notifications, patrols on roads and access points, and development of a fire contingency plan.
- ▲ Maintain a buffer between the prescribed burn area and water bodies or drainage into riparian zones. Buffers should be a minimum of 25 feet for 5% slopes, 75 feet for 5-10% slopes, and 250 feet for 10% or greater slopes. No prescribed fires should be ignited near streams or in riparian zones.
- ▲ Plan the prescribed burn to minimize post-fire erosion into water bodies and drainages through natural barriers, proper construction of fire lines along contours, and proper erosion control barrier deployment. Minimize prescribed burning in areas with highly erodible soils.
- ▲ Cultural and social sites and structures shall be excluded from burn area through planning, hand-lines, or other fire protection operations. Onsite personnel will be briefed on locations and features of cultural or social sites to include incident command or response personnel. Avoid prescribed burns in areas with utility infrastructure, existing property or structures, or archeological sites.
- ▲ Manage fuel moisture through pre-fire assessment and potential fuel modification. Prior to prescribed burn, remove ladder fuels into the tree canopy to increase safety and reduce torching.
- ▲ Conduct prescribed burns only on designated burn days as authorized by Sacramento Air Quality Management District.
- ▲ Inspect areas for nesting birds to determine if activity should be postponed or adjusted.

HERBICIDE APPLICATION

The application of herbicides for vegetation treatment should focus on the goal of applying the least amount of chemical required to achieve a desired outcome. Best management practices for herbicide application are centered on limiting adverse or unintended impacts of herbicides due to run-off, wind-spread, or post-treatment exposure.

- ▲ Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with herbicide operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided. Herbicide application is only applied per a prescription prepared by a Pesticide Control Advisor licensed in that county, and applied by a licensed Pesticide Control Applicator.
- ▲ Develop public safety plans to be executed throughout the treatment cycle including press and information releases, signs and notifications, and fencing or area restrictions.
- ▲ Develop a spill contingency plan and maintain strict monitoring and control of operations. Clean up of all spills should be done on-site, with materials ready for use.
- ▲ Chemical treatments within habitat of California Red-legged Frog should be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.
- ▲ Clean equipment following actions and prior to movement into new environmental areas.
- ▲ Avoid treating areas adjacent to water bodies, riparian areas, and primary drainage access per requirements set forth by the California Department of Pesticide Regulation. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.
- ▲ Avoid treating areas used for livestock operations or intended as grazing areas.