



Conduct A Burn

Getting Ready

Getting ready is 80% or more of the work involved in getting a burn done. When you are well prepared you are ensuring that your burn will go well, be easier, show due diligence and limit your liability.

A month or more (even a year) before

Doing the burn takes the least amount of time. There are steps that need to be taken care of well ahead of time, at least weeks if not months.

1) Prepare the Site. Clearing heavy fuels so that the fire burns at low intensity with low flames by removing ladder fuels, hazards and constructing control lines. See our *Prepare to Burn* fact sheet for comprehensive guidance on this topic.



2) Make a Plan. At some point, either now or before you even start preparing the site, it's good to have a plan. CAL FIRE has a great, simple template to fill in and there are basic examples to copy from. You can get a copy of the burn plan template from the Nevada County RCD website.

A simple map of the burn area is one of the most important parts of a burn plan. Often it is all a burn plan has. A good map includes roads, water sources, and homes or other things you want to protect. It can be hand drawn too. As long as it has those key components and the address, it will work.

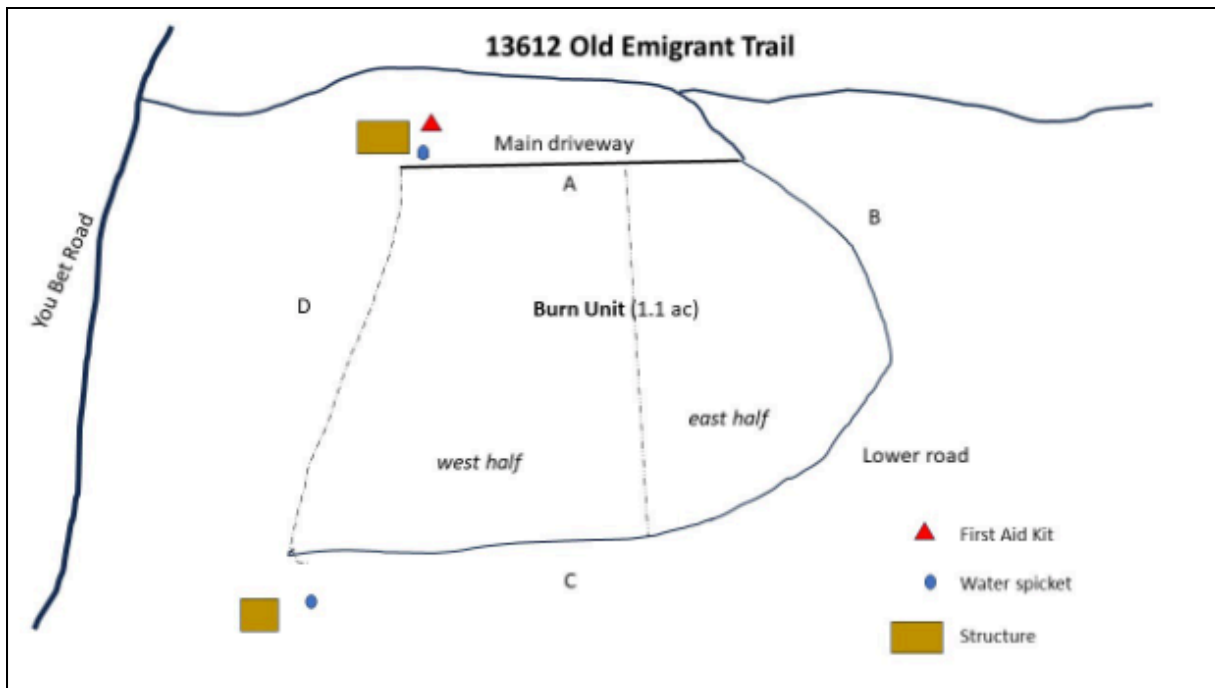
California Standardized Prescribed Fire Plan

Project Title: _____
Prescribed Fire Burn Boss (CARX): _____
Author of Plan: _____
Agency Having Jurisdiction (AHJ): _____
Property Owner: _____
Date Created: _____ Date Re-Evaluated* (if applicable): _____

**Burn plans should be re-evaluated as needed to account for changes in fuel/site conditions or project objectives.*

1. Project Area Description

You can find simple burn plan templates like this one at NCRCD.org/rx fire resources



3) Permits. It may be the time to start getting your permits lined up. If you are burning an acre or more, then you will need to get an air quality permit. If it is during the time of year where CAL FIRE is allowing burning but requiring permits (usually fall and spring), then you need to start working on a permit. This can be done online (see QR code to right). For a broadcast prescribed burn, it is a LE 7 permit. CAL FIRE almost always makes a site visit for an LE 7 permit. They will want to see that your site is completely ready to burn. Not a needle on the control line!



CAL FIRE Burn Permit Info

A month to several weeks ahead of time

At least several weeks before the burn, you have to:

- organize people to help,
- get water lined up and ready,
- assemble tools and start watching the weather.

The weather is critical because you have to burn when it is safe and at the same time not so wet that the burn doesn't go well or do what you want. The best place to look at weather forecasts and on the day of the burn is to go to the *National Weather Service* website (weather.gov). Put in the zip code or name of the city where you are or nearest one.



The week of and days before the burn

It's getting closer to the day of the burn, and you need to make sure everything is in place.

- Lay out the water hoses and check for leaks or broken ends, and leaky or clogged nozzles.
- Notify neighbors know you are getting ready to burn.
- Check the weather forecast to see if it will be within your prescription, the "burn window".
- Send a reminder to everyone who will be helping and make sure they are still available.
- Check your tools to be sure they are in good condition.

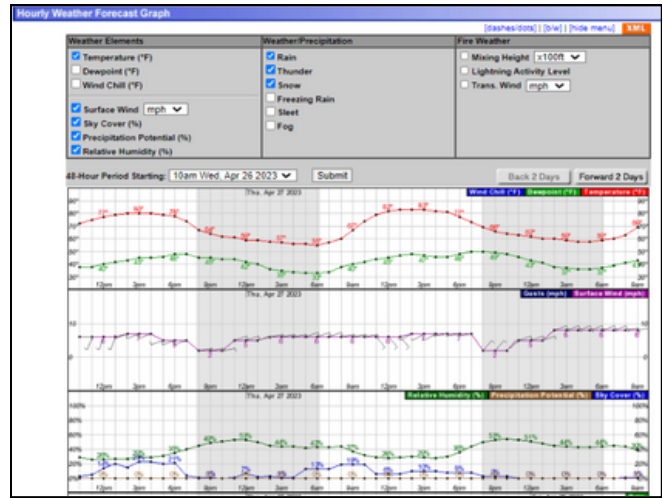
Keep looking at the weather again and again! This time, pick the hourly forecast to get the detailed trends for temperature, winds, and relative humidity throughout the day and night before the burn.

CONDUCT A BURN

Day of the burn

Now you are ready to burn after all of your careful preparations! You are finally there. You have:

- looked at the weather forecast again and see that weather conditions are still good to burn, within your prescription.
- checked to see if it's a permissible burn day (the night before and the day of).
- BUT the hardest part of conducting a prescribed burn, is being totally willing to call it off, even at the last moment, if something is just not right.



You can see what the weather will be during and after your burn on Weather.gov. Simply input the zip code where your burn is planned and it will direct you to weather forecasts for that area. The graph above is for the Nevada City area and is the hourly weather (found on the lower right of Weather.gov).

Go/No-Go Checklist

The Go/No-Go checklist is the final step before the actual burn. It is done in the minutes before you are ready to get going. It makes sure that everything is in order for a safe and legal burn. CAL FIRE often requires it for burn plans. See the next page for a Go/No-Go Checklist template.



Prescribed Fire Go/No-Go Checklist

Preliminary Questions	YES	NO
A. Have conditions in or adjacent to the ignition unit changed, (for example: drought conditions or fuel loadings), which were not considered in the prescription development? <ul style="list-style-type: none"> • If YES go to Item B. • If NO proceed with the Go/NO-GO Checklist below, 		
B. Has the prescribed fire plan been reviewed and an amendment approved; or has it been determined that no amendment is necessary? <ul style="list-style-type: none"> • If YES, proceed with the checklist below. • If NO, STOP: Implementation is not allowed. An amendment is needed. 		
Checklist	YES	NO
Have ALL permits and clearances been obtained?		
Have ALL the required notifications been made?		
Have ALL the pre-burn considerations and preparation work identified in the prescribed fire plan been completed or addressed and checked?		
Have ALL required current and near-term fire weather forecasts been obtained and are they favorable?		
Are ALL prescription parameters met?		
Are ALL smoke management specifications met?		
Are ALL planned personnel and equipment on-site, available and operational?		
Has the availability of planned contingency resources been checked and are they available?		
Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?		

If all questions were answered “YES” proceed with a test fire. Document the current conditions, location and results. If any questions were answered “NO”, DO NOT proceed with the test fire: Implementation is not allowed.

After evaluating the test fire, in your judgment can the prescribed fire be carried out according to the prescribed fire plan and will it meet the planned objective? Circle: YES or NO

Burn Boss Signature _____ Date _____

Day of the Burn

Before

1. **Briefing** – let everyone know what will happen; each person’s role; medical emergency helper; hazards to watch out for.
2. **Go/No-Go Checklist** – use standard list. Make sure all steps and pre-cautions have been done. Permits? Control lines checked that morning? Water ready and tested? Etc.
3. **Test burn** – Light a small, representative area, surrounded by a fireline, and see how it burns. If it burns like you want (low flames), then proceed.
4. **Call GVECC** – call Grass Valley Emergency Command Center (530) 477-0641 and let them know who you are, address and that you are going to start conducting a prescribed burn.

During

1. **Get everyone in place around the fire.** Spread most people around the outside, on the control line, spaced every 50 feet or so.
2. **Start lighting.** Starting slowly at the top of the burn area, or unit. Light a strip along the edge to get an initial “black line”. Let the fire back slowly down the hill, against the wind. Use strips or dots in a line across the slope, before the first one if the fire has low flames and is slow.
3. **Hold the fire, keep in control.** Use water or tools to slow down the fire or put out things you don’t want to burn, like pitch up a tree or large logs.
4. **Manage the smoke.** If the fire gets too smokey, then stop for a little or slow down. Put out burning logs or other things that are smoldering and putting out too much smoke for too long.
5. **Make sure your helpers have water and food!**



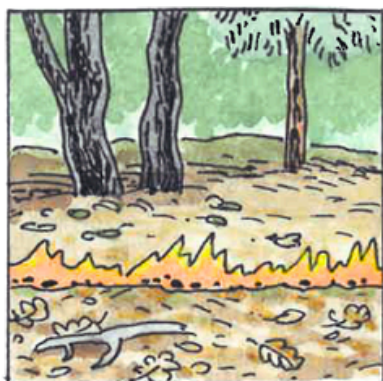
After

1. **Mop up.** Put out the fire. Use water and tools to spray and stir and spray and areas still burning. Repeat until there is no smoke left.
2. **Call GVECC.** Call and let them know you are done burning.
3. **Monitor and Patrol.** Walk around the burn area often the day of and night after the burn to make sure it is all out. Mop up anything that is not. Keep patrolling for 1-2 weeks after.



Controlling the Fire with Firing Patterns

How you light the fire and spread it is the primary way to control the fire. Lighting and spreading the fire too fast can make the flames taller, the spread faster and harder to control. There are three main patterns for burning, strip, dot and ring firing.



Strip



Dot



Ring

Strips are lines of fire that are started at one end of the top of the burn unit and carried across the slope to the other end. The line is parallel to the top, meaning it doesn't dip up or down but is straight across. It is started on the side where the wind is blowing towards it. That way, it gets "black", or the fuels burned first in the area where the wind would push it toward. This is important, because wind can make fire burn hotter and faster. The easiest and safest way to burn, especially when you are new to burning, is to just light one strip and let it slowly burn back down the slope or against the direction of the wind. That is a "backing" fire. Backing fires have the lowest flames and slowest spread.

Dot firing is similar to strip firing but instead of a continuous line, dots of fire are lit every few feet or so. Dots are good to use where the fire may be burning hotter than you want. Sunny spots, or flashy fuels like pine needles are often burned with a dot pattern if these areas are burning hotter than you want. If the burn area has both shady areas with slower burning fuels, like oak leaves, and sunny areas or areas with flashier fuels, then strips can be used in the shade and switched to dots in the sun.

Ring firing is a useful technique to use around trees or other things in the fire that you want to keep the heat of the fire away from. Most trees in our area are resistant to fire damage. Many have thick bark, that insulates the living tissues that grows below the bark, the cambium. But even small flames or smoldering can kill these tissues and "girdle" the tree, potentially killing it, if the heat stays for a long time. This is called "residence time". Lighting a ring around the tree from the top of the trunk and around, usually carries the fire away from the trunk of the tree.

Heat Management and Fire Effects

How completely fuels are burned and how plants are affected are determined by how much heat the fire produces and how long that heat lasts.

When fuels are drier, weather is hotter, drier or windier, the fire will burn hotter and generate more heat. More heat from the fire will result in more fuels burning up, or “consumed”. This includes both the dead fuels, the needles, leaves, sticks and logs, and the live fuels, grass, flowering plants, shrubs, small trees and vines. You can control the heat by how you fire. Backing fire can generate less heat but can burn surface fuels more completely if it burns slowly and stays in one place longer, longer “residence time”.

More intense heat or taller flames do not necessarily cause more damage to plants. Most plants in the Sierra Nevada and much of the fire prone western US have features, or adaptations, that allow them to resist heat or easily survive fire. You can read more about this in the Fire Effects Fact sheet.

How long the heat stays near a plant is more important to damage to plants than the intensity of the heat. Smoldering next to trees for a long time can kill the smaller roots near the surface, the “feeder” roots that help the tree absorb nutrients and water. For other plants, that sprout, or grow back if the top is killed, heat for along time is more likely to kill the parts that sprout, like bulbs or burls. The longer the heat lasts, the deeper that heat goes down into the soil and reach roots, bulbs and other plant parts.

Firing patterns and water or tools can be used to manage heat and residence time. Using ring firing around trees is one way to draw the heat away. But if the duff or a log is smoldering or burning at the base of a tree for a long time, then you can spray water or use a tool to put it out.