WILDFIRE PLANNING FOR PRODUCERS

Preparation is panic intervention (An Peishel, UCANR)

Contents

FIRE SAFE PLAN

Introduction

Agricultural infrastructure such as sheds, barns and wood fencing are vulnerable to wildfire. Buildings and infrastructure can be hardened and maintained to reduce their vulnerability to fire and fire-related damage. And having an evacuation plan in place to ensure the health and safety of livestock is essential for animal health and for more quickly resuming operations post-wildfire.

Create a plan to make your farm property more fire resilient and include an action plan in the event of a wildfire.

Create a 5-foot safety margin / defensible space around your home and other major structures. AB 3074, signed in 2020, established “Zone Zero” requirement for a five-foot ember resistant zone. This law restricts the presence of combustible material within five feet around all structures located in “High” and “Very High” Fire Hazard Severity Zones (FHSZ). Find your fire hazard severity rating and maps here from CalFire.

Keep important documents in a fireproof container and copies in your emergency supplies kit.

Plan for if you are not home during a disaster situation. Do your family members and employees have your emergency phone numbers?

Get to know your neighbors and have their phone numbers. If anyone in your house or your neighborhood needs assistance during an evacuation, consider working together in advance to make an evacuation plan.

Create a list of important phone numbers - updated annually before fire season and posted near a phone - to include:

- the local fire company
- the Forest Service
- your neighbors
- friends and neighbors with available livestock transportation
- a radio operator that keeps in contact with spotters flying a fire site
- number(s) at the location of your temporary ‘fire safe’ livestock facility.

Practice evacuating at least two times a year.

During wildfire season, keep car and other evacuation vehicle fuel tanks filled. Do not depend on electricity to remain available during a fire.

FARM MAP and RISK ASSESSMENT

Create a basic farm map clearly indicating locations of structures, animals and any hazards to be aware of. Defensible space is the buffer between your structure and the surrounding area and is the first line of defense for your home against wildfire.

Adequate defensible space acts as a barrier to slow or halt the progress of fire that would otherwise engulf your property. It also helps ensure the safety of firefighters defending your home.

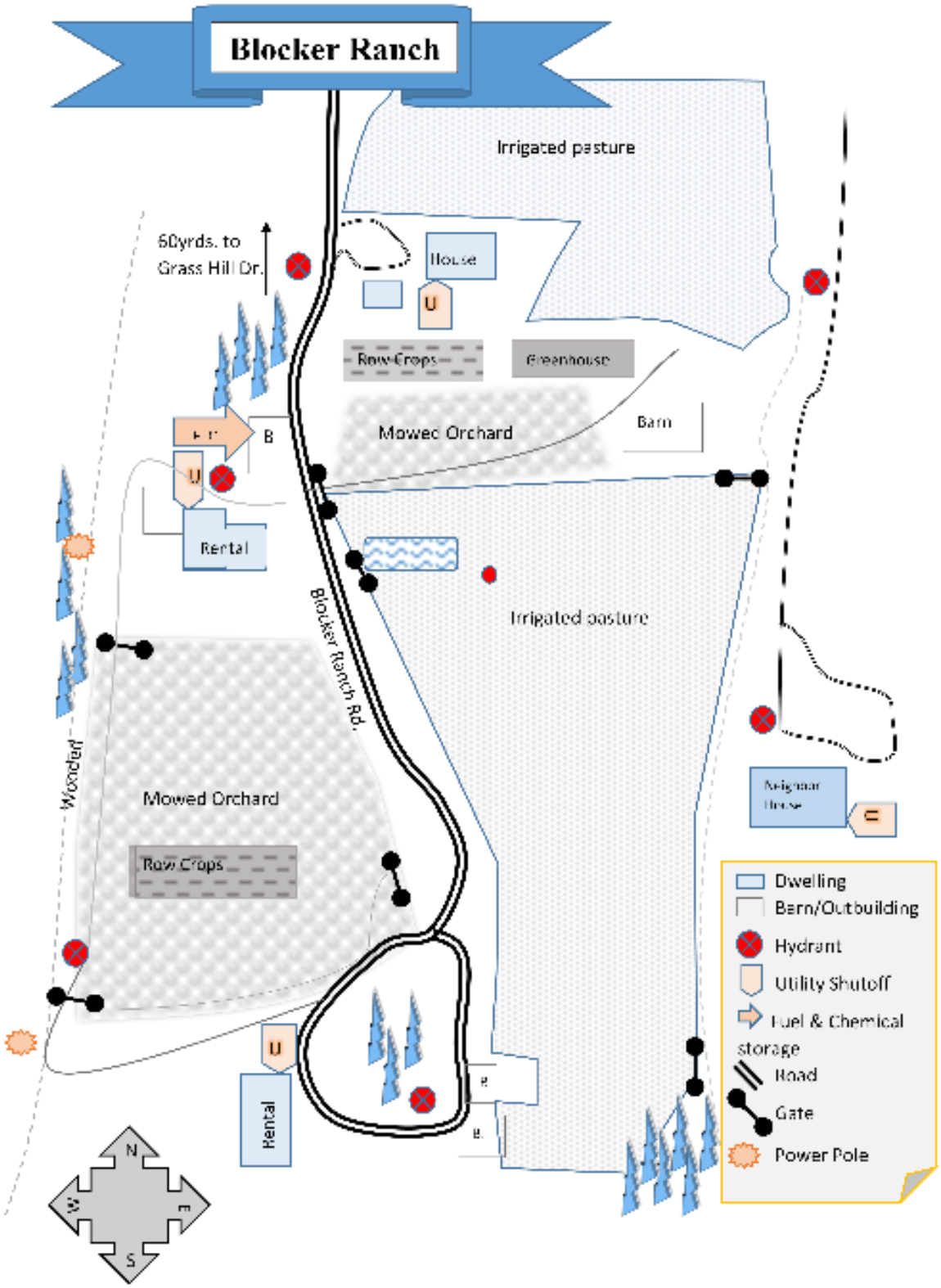
The intensity of wildfire fuel management should be considered within the 100-foot perimeter of the home. Start at the house and work your way out to 100 feet or to your property line, whichever is closer.

Your property should be accessible to the fire dept. The main entrance should be easily identified by address number, ranch name or family name and with sufficient access for a fire truck and water tanker to enter. The entrance road should be in good repair with a large enough turnaround to accommodate the fire trucks and other firefighting equipment.

Visit your local fire station and let them know who you are, that you are a producer, where you live and if you have large animals. Provide them with the map of your farm and a list of the water resources in the area available for water tankers and helicopters. Invite the inspector to your farm to do an “Interagency Fire Hazard Inspection” which will give you a professional opinion of your fire safety preparedness.

Note on your map and assess the following – location, condition, access:

- Structures and outbuildings
- Fences
- Gates and locks
- **Water access** including ditches, streams, ponds
- **Propane Shut-Off**
- **Natural Gas Shut-Off**
- **Power/Generator Shut-Off**
- Defensible space
- Brush clearance
- Fuel breaks
- Topography (hills, canyons, outcrops and large rocks, etc, - fire climbs hills quickly)
- Fuel and chemical storage
- Power and utility lines
- Utility shutoffs
- Evacuation routes – plan for two routes out of the area
- Road access including allowance for emergency vehicles
- Bridges and any weight limitations including allowance for emergency vehicles.



Source: UC Farm Advisor Staff

FUEL REDUCTION and FIRE AVOIDANCE

Remove debris, including dried leaves, firewood stacks, or trash from around the home and other structures, including leaves on roofs and in gutters.

- Remove or prune dead and dried out bushes or plants.
- Clear tree and shrub clippings
- Be careful with any smoking materials to avoid accidentally starting a fire
- Never pull your vehicle into grass as it can ignite a grass fire
- Make sure your vehicle is well maintained as faulty catalytic converters have been a major cause of accidental fires in San Diego County
- If you have a trailer on your vehicle, make sure the chains don't drag on the ground while driving and spark a fire.

Resources

Sustainable Defensive Space: Eco-appropriate Homescaping for Wildfire Resilience:
https://defensiblespace.org/

Reducing the vulnerability of Buildings to Wildfire: Vegetation and
Landscaping Guidance
https://anrcatalog.ucanr.edu/Details.aspx?itemNo=8695

Home inspections, and defensible space:
https://www.fire.ca.gov/dspace/

Home Survival in Wildfire-Prone Areas: Building Materials and Design
Considerations: https://anrcatalog.ucanr.edu/pdf/8393.pdf

Fire – Preparation is Panic Intervention
https://ucanr.edu/sites/placernevadasmallfarms/files/197743.pdf

IN THE EVENT OF A WILDFIRE

Do not rely solely on emergency services
Damaged infrastructure can stop alert messages from getting to you. If you feel unsafe, evacuate.

Stay updated on evacuation orders
Check the CalFire Incident Information Page, your local Office of Emergency Services or sheriff's department websites, and local news stations for the most up to date information. Many local offices have verified Facebook and Twitter accounts.

Sign up for mobile alerts
Install CodeRED, and NIXLE on your mobile device to have emergency evacuation notices sent directly to your phone.

Save your receipts
Save receipts for motels and other evacuation-related expenses to help with the insurance process during recovery.

Evacuation Warning and Orders

There are two phases of evacuations issued by law enforcement during an emergency: Evacuation Warnings and Evacuation Orders. If you feel unsafe, evacuate early. You do not need to wait for an evacuation warning or order to leave!

If you get an **Evacuation Warning**, prepare yourself and all the members of your household, including pets and/or service animals, to evacuate. An evacuation warning is voluntary, but should be taken seriously, as it could quickly turn into an evacuation order. If you have medical needs or limited mobility, you should prepare to leave when an evacuation warning is issued. People with large animals, like horses and livestock, should also begin to evacuate.

If you get an **Evacuation Order**, leave your home or business immediately. **An evacuation order is mandatory** – it moves you away from danger and should be taken seriously. Failure to follow an evacuation order can endanger your life and the lives of others. Once you have left the area, you will not be able to return until the evacuation order is lifted by law enforcement.

If anyone in your house or a neighbor needs assistance evacuating, consider working together in advance to make an evacuation plan.

Pre-Evacuation Order Checklist

Household Pre-Evacuation Order Checklist

Follow all verified local emergency instructions for evacuation.

	Evacuation Order Status	Task
PEOPLE & PETS	**Mandatory Evacuation Order**	❑ **Evacuate immediately. Early evacuation is the safest.** ❑ **Load medications, important documents, supplies,** and **pets** into vehicle.
HOME	**Voluntary Evacuation Order**	❑ **Move your car** from the garage. Park car in driveway facing out with keys in the ignition for a quick exit. Disconnect automatic garage door opener for quick access if the power goes out. ❑ **Close windows, skylights, and pet doors**. Seal up gaps around doors with metal tape. ❑ **Shut off gas** at the meter. Turn off propane tanks and move 30 feet away from the structure or place inside the garage. ❑ **Close fireplace screens** and/or doors. ❑ **Place combustible patio furniture, doormats, or other flammable items inside** or at least 30 feet away from structures. ❑ **Turn on a light in each room** to increase the visibility of your home in heavy smoke. ❑ **Alert out-of-area family members or friends** that you are preparing to evacuate and share your plans.
PROPERTY	**Near evacuation zones, but not in any evacuation status**	❑ **Evacuate or prepare backyard livestock**. ❑ **Review anticipated evacuation routes.** ❑ **Record your belongings** to help with the insurance and recovery process. ❑ **Seal attic and ground vents** with pre-cut plywood, heavy aluminum foil, or metal tape. ❑ **Fill garbage cans and buckets with water** and place in front of house. ❑ **Erect ladders against house** and place fire-fighting tools (metal rake/shovel) in front of the house. ❑ For secondary water sources (pool/pond/water tank), **set up a portable gasoline-powered pump**.

If You Are Trapped

- Call 911
- Close doors and try to block vents and cracks around doors with a towel or tape to keep smoke out
- Signal for help out of the window with a cloth or a flashlight
- Leave the lights on to help first responders see your home
- Listen to the radio or monitor your television and phone for official information and alerts
- Use a certified N95 mask to protect your lungs from harmful smoke particles in the air
- Teach children to not hide from firefighters.

Shelter in Place

In situations involving chemical releases and incidents involving gasoline, oil or other hazardous materials with potentially poisonous fumes or smoke, emergency officials may ask you to stay indoors. If you are told to shelter-in-place, consider the following:

▶ Bring your family and pets inside immediately

▶ Lock doors and close windows, air vents and fireplace dampers

▶ Turn off air conditioning, forced-air heating systems, exhaust fans, ceiling fans and clothes dryers

▶ If you are instructed to seal the room, use duct tape and plastic to seal off doorways, vents, outlets and windows. Cover the space under the door with a wet towel

▶ If your children are at school, do not pick them up unless instructed to do so.

Evacuation Plan

The 6 Ps of Evacuation

- People and pets
- Papers, phone numbers and important documents
- Prescriptions, vitamins and eyeglasses
- Pictures and irreplaceable memorabilia
- Personal computer, hard drive and disks
- “Plastic” (credit cards, ATM cards) and cash

Inside the home

Everyone should know where the utilities are located and how and when to shut them off.

- Close all windows and doors but leave unlocked

- Take down flammable window treatments like shades and curtains, and close metal shutters
- Move anything that burns easily to the middle of rooms, away from windows and doors
- Turn off the gas at the meter and pilot lights
- Leave lights on for firefighters to see your house in smoke
- Switch off the air conditioning.

Outside the home

- Bring in flammable items from outside, like patio furniture, toys, doormats, and trash bins. Alternatively, place them in your pool
- Shut off propane tanks
- Move grills and other propane BBQ appliances away from the house
- Attach garden hoses to outside taps for firefighter use and fill buckets with water to scatter around
- Don't leave sprinklers or water running as it can lower critical water pressure
- Keep exterior lights on to make your home visible in smoky or dark conditions
- Put your emergency kit in your car
- Park your car in the driveway, facing outwards, loaded and ready, with all doors and windows shut
- Have a ladder handy for firefighter roof access
- Seal attic and ground vents with plywood or commercial seals
- Keep an eye on the fire situation and don't wait for an evacuation order if you feel at risk
- Check with neighbors to ensure they're also prepared.

Sources:

http://www.readyforwildfire.org/Ready-Set-Go-Campaign/

Go-Bag and Emergency Kit

Everyone in your household should have a basic supplies kit that you can easily take with you in an emergency or disaster. Your emergency kit should have enough supplies to sustain you, your family members, pets and/or service animals for at least 3–5 days following a disaster. It should be in a sturdy container, like a plastic bin, backpack or small suitcase on wheels.

Always have a flashlight and sturdy shoes handy

- A 3-day supply of non-perishable food and 3 gallons of water per person

- A map with at least 2 evacuation routes
- Necessary prescriptions or medications
- A change of clothes and extra eyeglasses/contact lenses
- Extra car keys, credit cards, cash, or traveler's checks
- A first aid kit and sanitation supplies
- A flashlight and battery-powered radio with extra batteries
- Copies of important documents (birth certificates, passports, etc.)
- Locate your pets and keep them nearby
- Prepare farm animals for transport and think about leaving them at a safe location early
- Pet food and water, leash, carrier, toys
- Turn off propane tanks - move BBQ appliances away from structures
- Gather up flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, trash cans, etc. (or place them in your pool)
- Remove flammable window shades and covers. Close metal shutters.
- Connect garden hoses to outside water valves or spigots for use by firefighters
- Fill water buckets and plant them around the house
- Don't leave sprinklers on or water running – this can affect critical water pressure
- Shut off gas at the meter
- Turn off pilot lights and air conditioning
- Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night
- Put your Emergency Supply Kits in your vehicle
- Back your car into the driveway with vehicle loaded and all doors and windows closed - carry car keys with you
- Have a ladder available and place it at the corner of the house for firefighters to quickly access your roof
- Seal attic and ground vents with pre-cut plywood or commercial seals
- Monitor your property and the fire situation - Don't wait for an evacuation order if you feel threatened and need to leave
- Check on neighbors and make sure they are preparing to leave
- Shut all windows and doors, leaving them unlocked

- In the house move flammable furniture to the center of the rooms, away from windows and doors and leave lights on so firefighters can see your house under smoky conditions.

Animals

Create a plan for farm animals and pets including a 'fire safe' area for animals during fire season at home base, a neighbors or another location miles away from home.

- Ensure all animals have some form of identification
- Evacuate animals early, whenever possible and map out primary and secondary routes in advance
- Make available vehicles and trailers needed for transporting and supporting each type of animal as well as experienced animal handlers and drivers
- Ensure destinations have food, water, veterinary care and handling equipment
- If evacuation is not possible, animal owners must decide whether to move large animals to a barn or turn them loose outside.

Ag Pass

Note that Ag Pass and animal rescue are 2 different processes.

Ag Pass https://www.sandiegocounty.gov/content/sdc/sdcfa/crr-main-menu/ag-pass1.html

If you operate a commercial farm or ranch and need to evacuate in a wildfire or other emergency, an Ag Pass can potentially let you back into the restricted area to care for crops and animals. Law enforcement or fire officials will decide if it is safe for you to enter. An Ag Pass does not guarantee you can go into a restricted area.

Who Can Apply: The Ag Pass is for a commercial agriculture or livestock operation in San Diego County unincorporated areas. You need documents to prove a commercial operation.

To receive an Ag Pass, you must complete a training session each year. Once an Ag Pass application is accepted, you will be contacted for the training session, which covers fire safety and operations, how to evacuate, and how to avoid getting trapped. After the first year, you must take a one-hour refresher training to renew your pass each year.

Contact:

Ag Pass email**:** **Ag.Pass@sdcounty.ca.gov**

County Fire: **(858) 974-5999**

Depart of Agriculture, Weights and Measures: (**858) 694-2739**

Animal rescue organizations

Disaster Animal Response Team (DART)
LA https://spcala.com/programs-services/dart/

San Diego Humane Society Emergency Response Team
https://www.sdhumane.org/support-us/volunteer/emergency-response-team.html

Volunteers are signed up and screened in advance so that owners know their animals won't get stolen. Owners need sufficient lead time to know they are being evacuated (at least 1 hour).

Communication Plan

Create a family communication strategy that names someone outside the area to be the main contact point for all family members if you get separated or have trouble with phone networks.

Communicating with Young Children – Sesame Street Planning Together

If you have school-age children or attend college, know the school's emergency plan and determine who will pick up your children if you cannot during a disaster – and how. Make sure that the school knows your current contact information and the people you have authorized to pick up your child.

Emergency Contacts

Provide emergency numbers to family members, neighbors and friends to include name, phone number and location.

Meeting point

Establish predetermined meeting locations outside your home where you and members of your household can meet if you are separated during a disaster and cannot return home, and share with family and others:

- A location near your home (like a neighbor's mailbox)
- A location outside of high-risk areas (such as a family member or friend's house)

Escape routes

Identify escape routes and make known to all in your household.

Identify 2 ways out of your neighborhood/area, as roads could be blocked or damaged.

Practice these often so everyone in your family knows where to go.

Emergency notifications

Register for AlertSanDiego, the County's cell phone notification service. By doing that, you will receive emergency messages that apply to your neighborhood on your cell phone.

Download the County's SD Emergency app on your smart phone from the Google Play store or the Apple App Store. The app provides news updates, maps, shelter locations and includes disaster planning templates and interactive checklists. If a regional emergency, such as a wildfire, does occur, updates and other information will be posted at AlertSanDiego.org and sent out via the app.

Documents and Records

Evaluate current insurance coverage to ensure adequate coverage for farm assets. Consider livestock, crops, buildings, and equipment.

Keep up-to-date production, marketing, and financial records. Check the Foothill Farming website resources on risk management and business planning tools for templates. Scan or store them on a USB flash drive or external hard drive.
https://ucanr.edu/sites/placernevadasmallfarms/

Sources
Wildfire Action Plan Plan de Acción Contra Incendios Forestales

Wildfire is coming . . . Are you ready?
https://www.readyforwildfire.org/

Wildfire Resilience, Theodore Payne
https://theodorepayne.org/wildfire-in-southern-california/

POST FIRE PLANNING and RESOURCES

After the Fire

See the attachments at the end of this document

- Preparing for Winter Following Fire
- Preparing for Winter Following Fire in Vineyards, Orchards and Rangelands
- Do's and Don'ts
- Post Fire Restoration on Forestland and Woodland Areas

Fire Damage Assessment

San Diego County, Dept of Environmental Health and Quality
https://www.sandiegocounty.gov/content/dam/sdc/deh/fhd/disaster/publications_firerecovery_whattodoafterawildfire.pdf

Disaster Information, Ag Weights and Measure
https://www.sandiegocounty.gov/content/sdc/awm/disaster.html

Tax Relief
https://www.sdarcc.gov/content/arcc/home/divisions/assessor/property-tax-savings/tax-relief-calamity.html

Post Disaster Recovery Support and Funding

Natural Resources Conservation Service (NRCS, USDA) Post-Disaster Recovery
https://www.nrcs.usda.gov/getting-assistance/disaster-recovery

Cal OES Recovery
https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/

FEMA Disaster Recovery
https://www.fema.gov/press-release/20240229/disaster-recovery-centers-opening-san-diego-county

Other Resources (alphabetical)

Cal Fire
https://www.fire.ca.gov/what-we-do/natural-resource-management/wildfire-resilience

Cal Recycle Wildfire Debris Removal and Recovery
https://calrecycle.ca.gov/Disaster/Wildfires/

Fire Safe Councils
firesafesdcounty.org

North County Fire Protection District
https://www.ncfireca.gov/emergency-information

Resource Conservation Districts

- Mission RCD
  https://www.missionrcd.org/
- RCD of Greater San Diego
  https://www.rcdsandiego.org/
- Upper San Luis Rey RCD
  http://uppersanluisreyrcd.net/
- UC Extension Fire and Forest Advisors
  https://cesandiego.ucanr.edu/wildfire_resources/

USDA United States Department of Agriculture

Natural Resources Conservation Service

after the fire

Post Fire Restoration

Preparing for Winter Following Fire

By Rich Casale, Certified Professional Erosion & Sediment Control Specialist #3
USDA Natural Resources Conservation Service

The sound of falling rain this winter may take on a whole new meaning for those who either suffered property damage from wildfires or who live directly downstream of fire damage watersheds. If you are concerned about the possibility of erosion, mudslides, flooding or other related winter storm impacts following fire then the following 10 Basic Rules may help you prepare and safeguard your properties and families during future winter storm and runoff events.

10 Basic Rules

1. Keep it under cover. Protect existing plant cover and establish vegetative cover (or other protective cover such as mulch) on all bare or disturbed soil and slopes immediately around your home and other property improvements before the winter rains. Plant materials and different types of mulches can be used to protect soil and slopes from the impact of falling rain and storm water runoff. *Note: Seeding and/or mulching is not recommended in wild land areas but may have some application on soils disturbed by dozers and along side access roads and driveways if recommended by an appropriate professional, such as a native plant specialist. Grass and/or plantings should be native or non-invasive non-native plant materials.*

2. Do not disturb soil and slopes during the rainy season. Slopes and soil are more susceptible to instability and erosion when vegetation is removed or disturbed and when soil becomes saturated.

3. Drainage facilities and potential runoff impacts on private roadways, long driveways and even fire breaks, especially in fire damaged areas, need to be evaluated. Runoff control treatments including protective release points may be needed to protect down slope areas from erosion, slope failure and flood hazards. Consider the following 4-D formula when dealing with drainage and runoff issues.

a. Decrease volumes and/or velocity of runoff by providing velocity dissipation (rock or other prepared outlets) at culvert and drain outlets and breaking up large volumes of runoff coming from roof tops and landscape into smaller less erosive forms.

b. Detain runoff and meter over time or store for later use to lessen impact on saturated soil and slopes during peak storm events. Detention basins, rain gardens, and water harvesting systems are all ways to detain runoff.

c. Dissipate runoff where ever concentrated flows come in contact with bare soil and/or steep slopes by installing practices (vegetation, mulch, rock aprons, etc.) that spread runoff and help reduce both erosive capacity of soil and runoff volumes. Install velocity dissipaters at all culvert and drain outlets to prevent soil erosion. *Note: Road culverts may need to be extended to a safer discharge point if culvert outlets have been denuded by fire.*

d. Divert runoff if all else fails. Use this “D” with extreme caution. It may be helpful to re-route runoff and drainage away from unstable slopes, eroded areas, unprotected soil, etc.

Post Fire Restoration

10 Basic Rules

4. Monitor and maintain all existing and planned runoff, erosion and sediment control measures (including vegetative cover) before and throughout the rainy season. Correct deficiencies as soon as possible. In some areas, leaf litter may be a serious problem for roof, driveway and landscape drainage systems because of all the fire and heat damage done to evergreen vegetation this year. Properly designed, located, and installed trash racks, debris barriers, gutter guards and other similar devices will help to reduce maintenance and allow home and property drainage systems to function properly.

5. Use emergency/temporary practices such as sand bags, brush and slash, plastic sheeting, and hand-dug drainage ditches, etc. with extreme caution or don't use at all. Do not install without professional guidance. For example: covering slopes with plastic sheeting or dumping brush into gullies or other eroded areas is almost always the wrong thing to do. An improperly designed or placed emergency practice can be worse than no practice at all. Additionally, emergency measures may cause new hazards or problems and provide a false sense of security.

6. Prune or remove high hazard fire damaged trees capable of falling on to living structures or roads before winter storms. *Note: Don't remove healthy or slightly damaged trees unnecessarily. Tree root systems are still holding soil and slopes in place and tree cover is protecting soil from impact of falling rain as well as reducing winter runoff. Consult with Cal Fire and/or a registered professional forester (RFP) or certified arborist for assistance. Contact Forestry hotline at 800-738-TREE (8733); forestryhelp@gmail.com for a list of RPFs or certified arborists.*

7. There is an increased threat of rock fall in some areas because of damage to vegetation and shallow rocky soils and slopes in affected watersheds. Debris barriers and rock fall netting can be effective in capturing smaller rocks, but larger rocks will require more substantial measures. If there is a threat of large rocks releasing from slopes on your property or adjacent properties, then seek professional assistance. Contact the USDA Natural Resources Conservation Service or the resource conservation district.

8. Get professional help with design and installation of any temporary or permanent practices to control runoff, prevent an erosion problem, or address a slope stabilization concern.

9. Work with neighboring property owners when determining permanent solutions for drainage and runoff issues. Runoff normally extends beyond property lines. You may be liable for both controlled and uncontrolled releases of collected runoff on to down slope neighboring properties if you decide not to be concerned with potential off site impacts.

10. Be prepared and don't stay in your home when it becomes unsafe. Have a home and neighborhood evacuation plan. Have an emergency plan for your pets and livestock as well. Stockpile emergency supplies including sandbags, a supply of sand, straw, etc. Pay close attention to weather forecasts, flash flood and storm warnings, water levels in nearby creeks, etc. throughout the winter. Monitor property rainfall with a rain gauge. Evacuation plans should always include at least one alternative escape route and a list of important/emergency numbers, including numbers of neighboring property owners.

Roadway related problems, flooding, existing gullies and eroded areas, including stream bank erosion are all likely to appear or get worse this first winter following fire. Sediment levels in creeks and waterways are expected to rise, reducing channel capacities and increasing the likelihood of flooding on properties and down stream. *Note: If flooding and/or mudslides occur and impact road surfaces, do not attempt to drive over flowing water or mud.*

Some signs of impending danger from debris flows, landslides and severe erosion or imminent flooding include: an intense storm event (1-2 inches per hour), especially following previous rainfall that caused ground saturation; water flowing over the landscape where it hadn't appeared in previous winters; leaning or falling trees; tension cracks along the top edge of slopes and along driveways and roads; seeps or increased spring activity in slopes; severely disturbed and unprotected slope areas caused by firefighting efforts or from recent activities to remove fire damaged trees and other slope holding vegetation.

For more information, helpful publications, erosion control plant lists, drainage control and road maintenance guides or other natural resource information contact:

NRCS: Emma Chow, District Conervationist, 707-252-4189 x 3111 or emma.chow@ca.usda.gov or Napa RCD: Leigh Sharp, Executive Director, 707-690-3119 or leigh@naparcd.org

NRCS is a non-regulatory federal agency under the U. S. Department of Agriculture whose mission is to "Help People Help the Land." The agency was formed more than 80 years ago with the help of landowners. All services are provided free of charge through a mutual agreement with the local Resource Conservation Districts (RCDs). Additionally, all information provided or resource data collected on private properties by NRCS/RCD is kept confidential and only shared with the property owner or legal agent unless NRCS/RCD has written permission, by the property owner, to release the information to others.

For assistance with post-fire recovery contact your local NRCS/RCD office.

NRCS - Santa Cruz County
Whit Haraguchi
District Conservationist
831.227.2901
whitney.haraguchi@usda.gov

NRCS - San Mateo County
Jim Howard
District Conservationist
650.726.4660
james.howard@usda.gov

RCD of Santa Cruz County
Angie Gruys
Program Specialist
831.419.8710
agruys@rcdsantacruz.org

San Mateo RCD
Sheena Sidhu
Conservation Program Manager
650.762.5232
sheena@sanmateorcd.org

USDA United States Department of Agriculture

California 2020

Natural Resources Conservation Service

after the fire

Post Fire Restoration

Preparing for Winter Following Fire in Vineyards, Orchards, and Rangelands

The sound of falling rain this winter may take on a whole new meaning for those who either suffered property damage from wildfires or who live directly downstream of fire damaged watersheds.

If you have an existing Napa County-approved Erosion Control Plan (ECP) for your vineyard, a Sonoma County-approved Vineyard and Orchard Site Development Ordinance (VESCO) permit for your orchard or vineyard, or a Ranch Water Quality Plan (RWQP) for your grazed land in the Sonoma Creek or Napa River watershed, follow it. Further guidance may be found in Sonoma County's Best Management Practices for Agricultural Erosion and Sediment Control and the Napa County Code (Chapter 18.108, Conservation Regulations).

10 Basic Rules

If you don't have one of the above plans and/or are concerned about the possibility of erosion, mudslides, flooding, or other winter storm impacts following fire, then these 10 Basic Rules may help you prepare your property and family for future winter storm runoff.

1. **Cover disturbed areas.** Protect remaining plant cover. Spread mulch (straw, wood chips, etc.) and establish vegetation by seeding bare or disturbed soils before winter rains, especially around buildings, structures, firebreaks, and access roads and driveways. Seed mixtures should either be native or, if non-native, should be non-invasive species. Note: seeding and mulching is generally not recommended in rangeland and wildland areas.
2. **Prevent soil disturbance.** Minimize travel on, and tillage of, burned areas during the rainy season. Slopes are less stable, and soils are more erodible, when vegetation is burned, soil has been impacted by heat, and when soil becomes saturated.
3. **Evaluate roads and drainage facilities.** Look for damage on earthen and gravel roads, firebreaks, culverts, and stream crossings. Runoff control treatments, including armored outlets, may be needed to protect downslope areas from erosion, slope failure, and flood hazards. Use the "4-D formula" to:
    a. **Decrease** volumes and/or velocity of runoff by providing energy dissipation (rock or other armoring) at culvert and drain outlets and dividing large flows from roofs and landscapes into smaller, less erosive forms.
    b. **Detain** or collect runoff and either release it over time or store it for later use to lessen impact on saturated soils and slopes during large storms.
    c. **Dissipate** runoff where ever concentrated flows come in contact with bare soil and/or steep slopes by installing practices that spread runoff (grass, mulch, rock aprons, etc.) and reduce soil erosion and runoff volume. Extend culverts to a safer discharge location or install velocity dissipaters at culvert and drain outlets if they have been denuded by fire.
    d. **Divert** runoff as a last resort and do so with extreme caution. It may be helpful to re-route runoff and drainage away from unstable slopes, eroded areas, or unprotected soils.

Post Fire Restoration

10 Basic Rules

4. **Monitor and maintain existing measures.** Check existing erosion and sediment control structures and treatments (including vegetative cover) before and throughout the rainy season. Correct deficiencies as soon as possible. Leaf litter may clog roof, driveway, and surface drainage systems because of the fire and heat damage done to evergreen vegetation. Properly designed and installed trash racks, debris barriers, gutter guards, and other devices will reduce maintenance and allow home and property drainage systems to function properly.

5. **Use caution with emergency treatments.** Use caution when employing sand bags, brush and slash, plastic sheeting, and hand-dug drainage ditches, or don't use them at all without professional guidance. For example, covering slopes with plastic sheeting can speed up rainfall runoff and dumping brush into gullies may clog downstream drainage structures. An improperly designed or placed emergency practice can be worse than not doing anything at all, adding new hazards and a false sense of security.

6. **Treat high hazard, fire damaged trees.** Prune or remove trees that may fall onto people, animals, structures, or roadways before winter storms. Note: don't remove healthy or slightly damaged trees unnecessarily. Healthy tree root systems still hold soil and slopes in place and the tree canopy protects soil from the impact of falling raindrops while reducing winter runoff. Consult Cal Fire and/or a Registered Professional Forester for assistance.

7. **Consider debris barriers below rocky slopes.** There is an increased threat of falling rocks from steep slopes and shallow, rocky soils in affected watersheds. Debris barriers are effective for catching smaller rocks, but larger rocks will require more substantial measures. If there is a threat of large rocks releasing from slopes on your property or adjacent properties, then seek professional assistance. Contact the USDA Natural Resources Conservation Service (NRCS) or your local Resource Conservation District (RCD).

8. **Seek professional assistance.** For the design and installation of any temporary or permanent practices to control runoff and/or prevent erosion, services from NRCS and RCDs are here for you. www.ca.nrcs.usda.gov.

9. **Work with neighbors.** Permanent solutions for drainage and runoff issues may be better with the cooperation of neighboring landowners since runoff rarely follows property boundaries. You may be liable for both controlled and uncontrolled releases of collected runoff on to downslope properties if you do not consider potential off-site impacts.

10. **Be prepared with an evacuation plan.** Don't stay if it becomes unsafe to do so. Prepare a property and neighborhood evacuation plan and an emergency plan for pets and livestock. Stockpile emergency supplies including sandbags, straw mulch, etc. Pay close attention to weather forecasts, flash flood and storm warnings, and creek water levels throughout the winter. Evacuation plans should include at least one alternative escape route and a list of emergency phone numbers, including those of neighbors. Roadblocks, flooding, gullies and streambank erosion are often worse in the first winter following fire. Sediment levels in creeks and waterways are expected to rise, reducing channel flow capacities and increasing the likelihood of flooding on properties and downstream. Note: do not attempt to drive through flowing water or mud on roads.
Some signs of impending danger from debris flows, landslides, severe erosion, and/or imminent flooding include: an intense storm event (1" to 2" per hour) especially following recent rainfall; water flowing over the landscape where it hadn't appeared in previous winters; leaning or falling trees; tension cracks along the top edge of slopes and along driveways and roads; seeps and increased spring activity in slopes; severely disturbed and unprotected slopes caused by firefighting work or from recent removal of fire damaged trees or other stabilizing vegetation.

For more information, helpful publications, erosion control plant lists for fire-prone areas, drainage control and road maintenance guides, or other natural resource information for your property, contact your local USDA Natural Resources Conservation Service Service Center.

California 2019

USDA United States Department of Agriculture

Natural Resources Conservation Service

after the fire

Post Fire Restoration

Dos and Don'ts

DO: Consult with the Natural Resources Conservation Service (NRCS) and your local Resource Conservation District (RCD) and/or a private land restoration consultant before starting any landscape, slope or soil restoration effort on areas damaged by wild fire.

DO: Gather as much information as possible from Cal Fire, U.S. Forest Service, local fire district officials, Fire Safe Councils, NRCS, RCD, and/or local fire restoration consultants regarding reducing fire hazard and making your property fire safe when planning your property restoration.

DO: Evaluate and map out locations of existing and/or pre-fire subsurface drainage, irrigation and utility facilities on your property, including under-ground pipe drains and outlets; roof runoff/gutter drain outlets; culverts; irrigation systems; utilities, etc. Determine if still operable and/or degree of damage, if any.

Note: Many underground plastic drains and irrigation lines may have melted or otherwise been destroyed in the fire or by fire-fighting equipment.

DO: Install sediment control measures, such as straw wattles, mulching, plantings, slash, sediment traps and/or other properly designed and located sediment control measures, if necessary, and as directed by NRCS, RCD or other resource restoration specialist, such as a Certified Professional in Erosion and Sediment Control (CPESC).

Note: Sediment control measures will help to prevent eroded and displaced soil from entering streams, roadside ditches and waterways, and help protect water quality and water supplies. Consult with licensed landscape contractors or other licensed contractors with erosion and sediment control experience for design and installation assistance.

DO: Coordinate and plan restoration efforts with neighbors and/or road and neighborhood associations.

DO: Re-plant damaged landscapes with drought tolerant, fire retardant native plants with re-sprouting ability. Use planting stock and/or seed that are native to the area and is from a locally collected source. Consult with NRCS/RCD for a list of plants to consider.

DO: Obtain any necessary permits before cutting down trees, performing any major land grading activity, building any retaining wall, constructing a permanent sediment or erosion control structure, or doing any work in a riparian area, wetland, stream course or other natural area.

Note: Permits and/or consultations may be needed from your county office, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, California Regional Water Quality Control Board, U.S. Army Corp of Engineers, and NOAA/National Marine Fisheries Service.

DO: Monitor and maintain fire and fuel breaks that may have been created by fire fighters on your property. Water bars/breaks should be provided and maintained on these fire control measures so that runoff water does not concentrate and cause erosion. Consult with CalFire regarding maintenance assistance of fire and fuel breaks constructed by fire fighters on your property during the Fire.

DO: Monitor and maintain all existing and planned erosion, sediment, and drainage control measures, including vegetative treatments, before during and after all future rainfall events. Correct deficiencies as soon as possible.

Note: One of the main reasons why recommended treatment practices fail following installation is the lack of long term maintenance by the landowner or responsible party.

DO: Hire and/or consult with licensed contractors, preferably ones that are certified and/or experience in soil erosion and sediment control, for design and installation assistance of vegetative and structural measures needed to restore slopes, soils, proper drainage conditions and landscape.

Post Fire Restoration

DOS AND DON'TS

DON'T

DON'T: Be too quick to remove fire damaged vegetation, including trees that were not completely burned. Many of the damaged and scorched native plants will re-sprout and come back, including oak trees that were severely burned.

Note: Consider pruning first before removing the entire plant.

DON'T: Place loose debris, pruning's, discarded fire-damaged vegetation in gullies, drainage swales or watercourses, over stream banks, etc. in an attempt to protect bare soil without first consulting with NRCS. Piles of brush will prevent plants from reestablishing under dense brush piles and may dislodge if in contact with concentrated runoff or stream flows causing other problems.

Note: Removed brush can sometimes be used as mulch if chipped or spread thinly over the critical soil areas.

DON'T: Plant Erosion Control Seed Mixes. These mixes are likely to contain non-native mix of grasses and legumes or California natives that are indigenous to other areas of the state and/or are not intended for wild land or fire damaged soil/slope restoration. Don't plant other non-native, invasive plants or grasses, such as annual ryegrass as well.

Note: In some situations bare and disturbed soil and slopes can be re-seeded/re-planted with native grasses and plants but only if the seed and plant materials are from local known sources and indigenous to the area that needs treatment. Other native grasses and plants may discourage local natives from reestablishing on their own, and/or compete with, and/or slow down native re-establishment. If white ash is present, then resident seed from pre-existing native plants may no longer exist. White ash is an indicator that the fire burned very hot. Any resident seed bank in the soil was likely killed during the fire in these white ash areas. Re-seeding these areas to native grasses and/or re-planting with native plants of the same genotype, according to a re-vegetation plan developed by an experienced fire ecologist/native plant specialist, may be a good idea.

DON'T: Use materials such as broken asphalt or concrete, inorganic debris or other objects as an emergency or permanent erosion control measure, especially if these materials can come in contact with runoff water, natural drainages and stream courses.

Note: In some cases, rock and broken concrete can be used as velocity dissipaters and placed at the outlets of road culverts or other drains to protect the soil from erosion and washout, provided these dissipaters are designed by an appropriate professional.

DON'T: Cover fire damaged slopes with plastic sheeting in an attempt to prevent slope failure and protect bare or disturbed soil from next year's rainfall. Plastic sheeting will: increase runoff and the likelihood of erosion; retain moisture in the ground increasing the possibility of slope saturation and instability; and kills root systems of native plants trying to re-establish naturally. Plastic sheeting is almost always the wrong thing to do.

Note: Depending on site conditions, an alternative to plastic sheeting might be the use of hydro-mulch, a proper application of rice straw, or an erosion control blanket if recommended by a Certified Professional Erosion and Sediment Control (CPESC) or geo-technical consultant.

DON'T: Control and concentrate future property drainage and runoff without a proper drainage control design that considers proper drainage facility sizing, location, and dispersion method. Whenever possible keep surface runoff in natural "sheet" flow and incorporate practices such as vegetative cover to slow runoff and improve the water infiltration capacity of the soil.

Note: Consult with NRCS/RCD for general planning information on controlling drainage around your home and property before proceeding with drainage repairs and improvements following fire damage. For design and installation assistance contact a landscape contractor experienced in erosion and drainage control.

Post Fire Restoration

DOS AND DON'TS

DON'T: Use straw bales (in whole bale form) as water diversion and detention devices or for sediment control in burn areas. Contrary to popular belief and use these devices require a great deal of maintenance and are not right for most situations. Their design, location, and installation should only be done by a qualified contractor certified in erosion and sediment control. Straw wattles and loose straw that is simply spread over bare and disturbed soil is much more effective in protecting soil than keeping it in bale form.

Note: Rice or weed-free straw should only be used to prevent the possibility of nonnative grasses and weeds, contained in straw bales, from colonizing treatment areas.

DON'T: Disturb the hydrophobic soil layer that forms on some soils following fire on slopes susceptible to land sliding. Hydrophobicity is a natural phenomenon that actually gives the soil a water repellant ability that reduces infiltration and the capacity of the soil to hold water. The hydrophobic layer is normally found within 6 inches of the surface. In other areas, it may be advisable to break up this layer to aid in plant establishment and water infiltration lessening the impacts of runoff and erosion. For more information on soil hydrophobicity and/or an on-site soil evaluation and site assessment contact NRCS.

DO: Have an on-site assessment of fire damage done to your property by NRCS or another qualified fire restoration specialist that is certified in soil erosion and sediment control.

DON'T: Disturb potentially unstable slopes, especially those in fault areas and/or with signs of previous movement or known historic instability. Disturbances such as grading, cutting, removing trees root wads or other deep excavations will increase the likelihood of future slope failure.

Note: If these slope alternations are absolutely necessary, then consult with a registered geologist or geo-technical expert before slope disturbance/ restoration activity.

DON'T: Do anything. This may be the best solution on some properties. Doing nothing will allow nature and time to heal soil and vegetation damage naturally, especially in wild land and other natural areas. In fact, tampering with natural processes may very well delay natural recovery and re-establishment of pre-existing native cover.

DON'T: Do what your neighbor is doing. Every situation is unique whether or not the neighbor had expert advice or not before installing temporary or permanent land and water protection measures. Your property is different in many regards including soil type, slopes, drainage conditions, type and condition of plant cover, degree of fire damage, etc. Get expert advice and a site damage assessment, including treatment recommendations, from NRCS before proceeding with your property restoration efforts.

Note: Practices such as sandbags, plastic, straw bale basins and check dams, etc. are all temporary and require a great deal maintenance. Furthermore, they are not right for every situation and can actually make problems worse or create new ones.

DON'T: Wait until the last minute to plan, design and install erosion, sediment or drainage control practices that may be necessary to safeguard your home and property before next winter.

Note: The nature and extent of your restoration effort will depend on the degree of damage; time needed to get a site assessment; acquiring an appropriate plan and design; securing any necessary permits; lining up a contractor and doing the work.

NRCS is a non-regulatory federal agency under the U. S. Department of Agriculture whose mission is to “Help People Help the Land.” The agency was formed more than 80 years ago with the help of landowners. Additionally, all information provided or resource data collected on private properties by NRCS is kept confidential and only shared with the property owner or legal agent unless NRCS has written permission, by the property owner, to release the information to others.

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USDA United States Department of Agriculture

Natural Resources Conservation Service

after the fire

Post Fire Restoration

Post Fire Restoration on Forestland and Woodland areas

Private landowners with wooded areas or non-industrial forestland affected by wildfire are very concerned about what might happen to fire-damaged soils, slopes, and water courses when the rains come.

They are also wondering what can be done now to minimize the effects of erosion and sedimentation processes before any storm events. Still others are questioning whether or not to remove fire damaged or destroyed trees and other vegetation now, to leave alone or to wait.

The Natural Resources Conservation Service (NRCS), a federal non-regulatory agency under the U.S. Department of Agriculture, provides assessments of fire damages to natural resources and watersheds to forest land owners and managers. Some of the more important post fire actions to take include the following:

(1) Have an *on-site assessment of fire damage* done to your property by a NRCS specialist, Registered Professional Forester (RPF), Certified Professional in Soil Erosion and Sediment Control (CPESC), or other qualified fire restoration specialist.

(2) *Don't be too quick to remove fire damaged trees* and other vegetation, especially redwood and coastal live oak trees that have thick and/ or fire resistant bark. On some properties, doing nothing may be the best solution, allowing nature to restore vegetative cover naturally. In areas where trees were partially damaged by fire, smoke or heat there will be an enormous leaf drop through the fall that will provide soil protection from rain and runoff in the coming winter. Consult with a RPF or Certified Arborist for specific advice on which trees to cut or save. Contact the California Forestry Stewardship Program's Forestry Helpline at: 800-738-TREE (8733) or at forestryhelp@gmail.com for more information and a list of Registered Professional Foresters and Certified Arborists practicing in California.

(3) *Monitor and maintain any pre-existing and new fire/fuel breaks*, access roads and trails that might exist on your property to make sure that surface runoff does not concentrate and cause these facilities to erode or cause damage to slopes, soils and water courses. Proper grading and/ or correctly spaced and constructed water bars and/or drainage/rolling dips will help to prevent these bare soil and disturbed areas from being an erosion problem during the rainy season.

Note: In some cases, water bars may actually cause problems if not located, constructed or maintained properly. In other cases, they might not even be needed. Bare and disturbed soil areas can also be protected with a layer of slash or weed-free

Post Fire Restoration

Post Fire Restoration on Forestland and Woodland areas

straw mulch. Consult with NRCS and/or CalFire for assistance on preventing erosion on fire/fuel breaks and access routes constructed in the firefighting effort.

(4) *Do not plant non-native* erosion control seed mixes. These mixes are not intended for forestland. Where soil and sunlight conditions are desirable, some seeding of equipment/dozer disturbed areas (usually around home sites and not in the wildland landscape) may be beneficial but should only be done in accordance with appropriate native or short-lived, non-invasive, non-native grasses and advice provided by NRCS, fire restoration expert, or a CPESC.

Note: Seeding will delay native plant regeneration and actually compete with natural recovery of the forest landscape.

(5) *Runoff control will be imperative* in the first few winters following wildfire, especially where drainage facilities on roads and around structures were damaged, destroyed or inadequate. Efforts should be made to minimize concentrated flow especially over steep slopes. Whenever possible, runoff should not be channeled but allowed to either sheet over the soil and slopes as it naturally would or be controlled in such a way that it does not cause slope saturation or erosion. Contact NRCS for runoff control strategies and further details.

(6) *Control non-native, invasive plants* that will want to take over fire damaged soils and slopes following fire and in the years ahead. Non-native plants will slow natural regeneration and will likely create a higher fire and soil erosion hazard over time.