



CARING FOR CREEKS

IN NAPA COUNTY

Management Tips
for Streamside
Property Owners

Many Thanks

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Preface

Having a creek on your property is a valuable amenity. Creeks provide water supply, fish and wildlife habitat, a conveyance for flood water, and a host of aesthetic and recreational values. As a streamside property owner you have an opportunity to help maintain or improve the health of local creeks for your enjoyment, for the benefit of the community, and for the well-being of the wildlife that depend upon them. Careful management of your streamside property can help prevent or minimize excess streambank erosion, preserve water quality, contribute to the survival of local fish and wildlife, and help avoid flood damage to property and property improvements.

This booklet is designed to encourage and support the ongoing stewardship of creeks in Napa County. It provides background on how watersheds work; recommendations for how you can contribute to maintaining a healthy creek; and a resource directory if you would like additional information or assistance. While this publication primarily focuses on recommendations for people living along freshwater creeks in Napa County, much of the information and many of the recommendations are also suitable for a broader audience.

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How Watersheds Work

What is a Watershed?

No matter where you are, you are in a watershed. A **watershed** is an area of land that catches rain and snow and drains it into a body of water, such as a river, pond, estuary, bay, lake, or ocean. A watershed can also be called a **drainage basin**.

Ridgetops of hills or mountains form the boundaries between watersheds. A drop of water falling on the top of a ridge will flow by gravity into one watershed or another depending upon the topography (i.e., lay of the land). Watershed boundaries often cross private property, county, state, and even international borders.

The upstream areas of a watershed are called the **headwaters**. As you move downhill and downstream, tiny rivulets and streams combine to form larger rivers which eventually empty into a larger body of water such as a lake, estuary, or bay.



The area of land in a watershed can be immense or it can be very small. Large watersheds often are composed of several smaller watersheds, called **sub-watersheds** or sub-drainages. For example, Sulphur Creek flows into the Napa River and has its own watershed, but it is also part of the larger Napa River watershed, which is part of the even larger San Pablo and San Francisco Bay watersheds.

Napa County has three major watersheds: the Napa River, Putah Creek, and Suisun Creek watersheds. Each of these watersheds is comprised of many smaller sub-watersheds and each is also part of the larger San Francisco Bay watershed.

It is important to recognize that activities and conditions *anywhere* within a watershed can influence the condition of creeks. What takes place in the upper watershed will influence the downstream area. Likewise, what happens downstream may also influence conditions in the upper watershed. Taking a *watershed approach* means looking at all of the watershed's components (e.g., creek and tidal areas, streambanks, groundwater, uplands, human and wildlife requirements) and considering how they work together. Caring for local creeks will benefit the entire watershed. Creek care can happen in the context of an overall watershed management plan or on individual parcels of property.

Watershed - an area of land, bounded by ridgetops of hills or mountains, that catches precipitation and drains it into a body of water such as a river or bay.

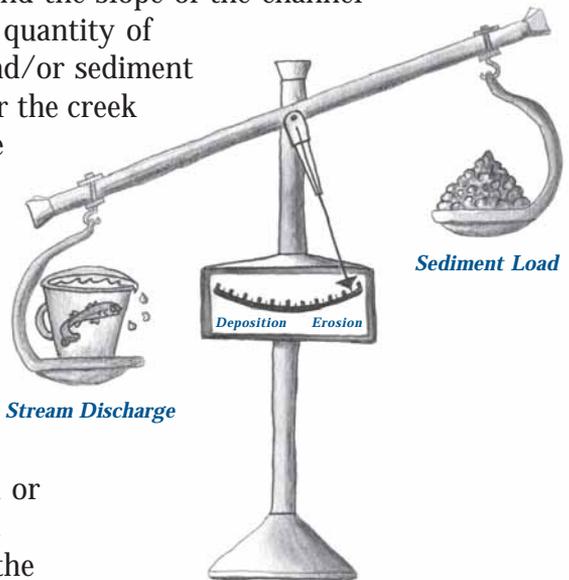
*Major Watersheds
in Napa County*



Creek & River Dynamics

Creeks and rivers are formed, maintained, and altered by the water and sediment they carry. The size of a creek channel is determined by four basic factors: quantity and size of sediment, streamflow, and slope. The relationship between these factors can be envisioned as a balance between quantity/size of sediment and streamflow/slope. If one of them changes, one or more of the others must also change. For example, if streamflow is increased and the slope of the channel stays the same, then the quantity of sediment being moved and/or sediment size must also increase for the creek to remain in balance. The

likely result of this example is that the creek will move larger (and/or more) sediment downstream. This re-balancing will result in a lowering of the creek bed or broadening of the channel as the bed or banks of the creek erode. As the creek bed erodes, the groundwater table is also lowered.



Creeks naturally work toward a balance between sediment and streamflow. They are constantly reacting to natural and human-induced disturbances in the watershed. These disturbances can significantly alter the size and shape of streams by increasing or decreasing stream flow and sediment supply.

Common natural disturbances include fires, floods and landslides. Examples of human-induced changes include creation of impervious surfaces (e.g., homes, roads, parking lots and other hard surfaces that do not allow water to soak into the soil),

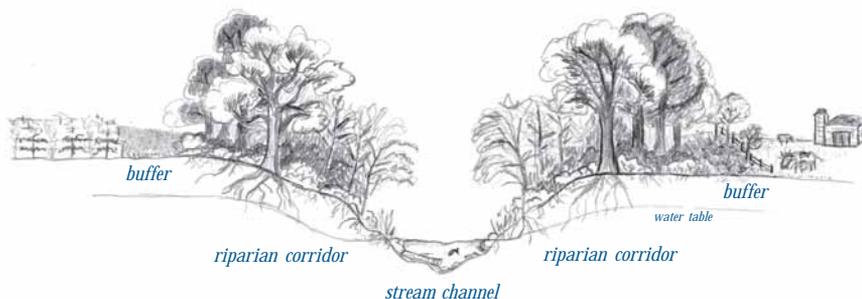
extension of the drainage network (e.g., connection of stormdrains and artificial drainage channels to streams), clearing of vegetation, and the development of on-stream reservoirs.

The creation of impervious surfaces, extension of the drainage network, and clearing of vegetation changes the timing of runoff, allowing more water to enter the stream in a shorter period of time, which leads to an increase in erosion and possibly localized flooding. The creation of reservoirs reduces the amount of sediment being carried by waters immediately downstream of the reservoir creating “hungry water” that will pick up sediment by scouring stream banks or channel bottoms.

Over time, changes in streamflow or sediment supply may result in changes to the ecosystem that conflict with the needs of the community, such as loss of creekside property, lowering of the groundwater table, loss of wildlife habitat, reduced water quality, frequent flooding, etc.

Plants Along the Creek

A corridor of diverse native plants along the creek is a key part of creek function. These **riparian corridors** and their associated vegetation and root masses help to stabilize creek banks, buffer the waterway from unwanted pollutants, slow flood waters, and recharge groundwater.



Common Native Riparian Plants in Napa County

Trees

- Arroyo willow
- Big-leaf maple
- Box elder
- California bay
- California buckeye
- California nutmeg
- California walnut
- Canyon oak
- Coast-live oak
- Fremont's cottonwood
- Oregon ash
- Red alder
- Red willow
- Sandbar willow
- Valley oak
- White alder

Understory Plants

- California blackberry
- California figwort
- California wild grape
- California wild rose
- Coyote brush
- Mugwort
- Nightshade
- Poison oak
- Seep-spring monkey flower
- Snowberry
- Spicebush
- Stinging nettle



Valley oak



Snowberry



California buckeye

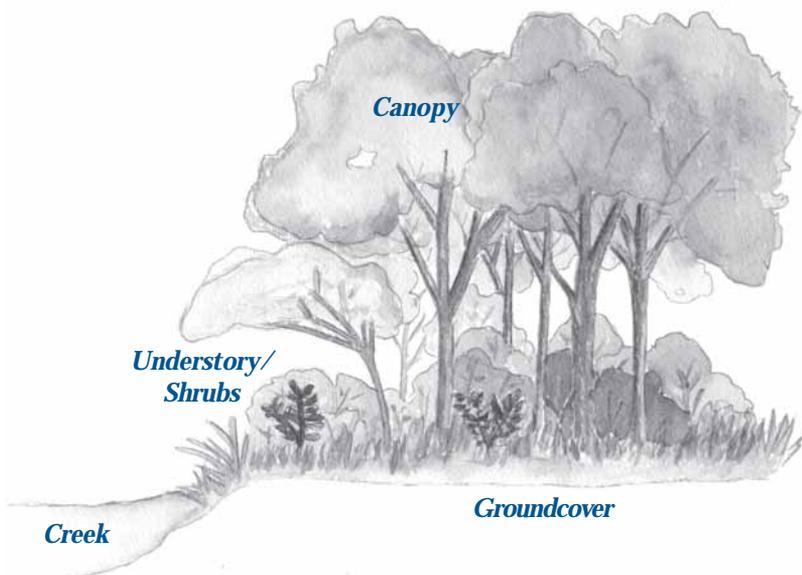


Spicebush

Creekside vegetation regulates the quantity, quality, and timing of water running into creeks and the amount of sediment entering the creek, thereby helping the creek to maintain its natural equilibrium. Riparian corridors also provide essential habitat and nutrients for land- and water-based animals, insects, and plants.

Every riparian corridor is different. The types and species of plants that grow within a riparian corridor depend on the soil type, topography, and depth to groundwater. Most streams that have a permanent supply of water support a diversity of plant sizes, shapes, and ages including a low layer of groundcover, an intermediate layer of shrubs, and one or more canopy layers.

Many of the *ephemeral streams*, which flow only when it rains, do not support a tree canopy at all. The best way to determine what kinds of plants should grow along your creek is to look at examples of undisturbed streams from the same area that have similar soil types and water flow characteristics.



Creeks, Riparian Areas & Wildlife

Well-functioning riparian areas along creeks provide important habitat for a particularly diverse mix of wildlife because of the availability and relative proximity of water, food, and shelter. These areas support land-based species that utilize the available habitat for hunting, nesting, and accessing water. They support aquatic species by protecting water quality, providing nutrients, and shading the creek to maintain cool temperatures.

Connected corridors of riparian vegetation promote healthy wildlife populations.

Aside from providing important resting and foraging habitat, corridors of riparian vegetation also serve to connect lower portions of watersheds to headwater and upland areas, thus enabling wildlife movement. These travel corridors, to the extent that they are connected to one another, promote greater genetic exchange within wildlife populations, which makes wildlife more resilient to environmental stresses and change.

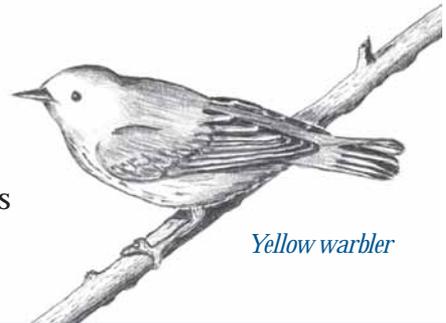
Napa County's creeks and riparian areas are home to over 200 wildlife species. With careful observation of local creeks and riparian habitats you might see some or all of the following:

Mammals

Muskrat, river otter, beaver, raccoon, ringtail, mule deer, bats, fox, rabbit, bear, lion and others.

Birds

Mergansers, belted kingfisher, osprey, eagles, herons, geese, grebes, owls, ducks, bitterns, cormorants, rails, gulls, songbirds and others.



Yellow warbler

Fish

Steelhead (rainbow trout), Chinook salmon, Sacramento sucker, prickly sculpin, Pacific lamprey, threespine stickleback, tule perch, California roach, hardhead, and others.

Amphibians and Reptiles

Pacific giant salamanders, California red-legged frogs, foothill yellow-legged frogs, western pond turtles, garter snakes, newts, and others.

Insects

Aquatic beetles, damselflies, butterflies, dragonflies, stoneflies, and thousands more.

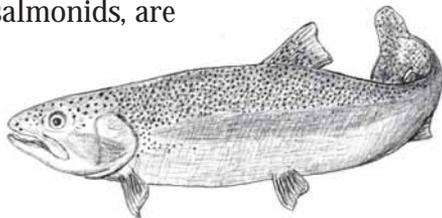
Rare or Endangered Species

California red-legged frog, foothill yellow-legged frog, steelhead, Chinook salmon, western pond turtle, Pacific giant salamander, California freshwater shrimp, and others.

Fish: An Indicator of Creek Condition

Several fish species make their home in Napa County's watersheds. Some are native to the local watersheds and others have been introduced. Fourteen native fish species can be found in our waterways, a diversity that is virtually unmatched among nearby watersheds and counties.

Fish, especially species with narrow tolerances for disturbance and habitat alteration, can be used as indicators of creek and watershed conditions. Salmon and steelhead, collectively referred to as salmonids, are used as indicators of watershed conditions because of their sensitivity to habitat conditions and because



Adult Steelhead Trout

Native Fish in Napa County

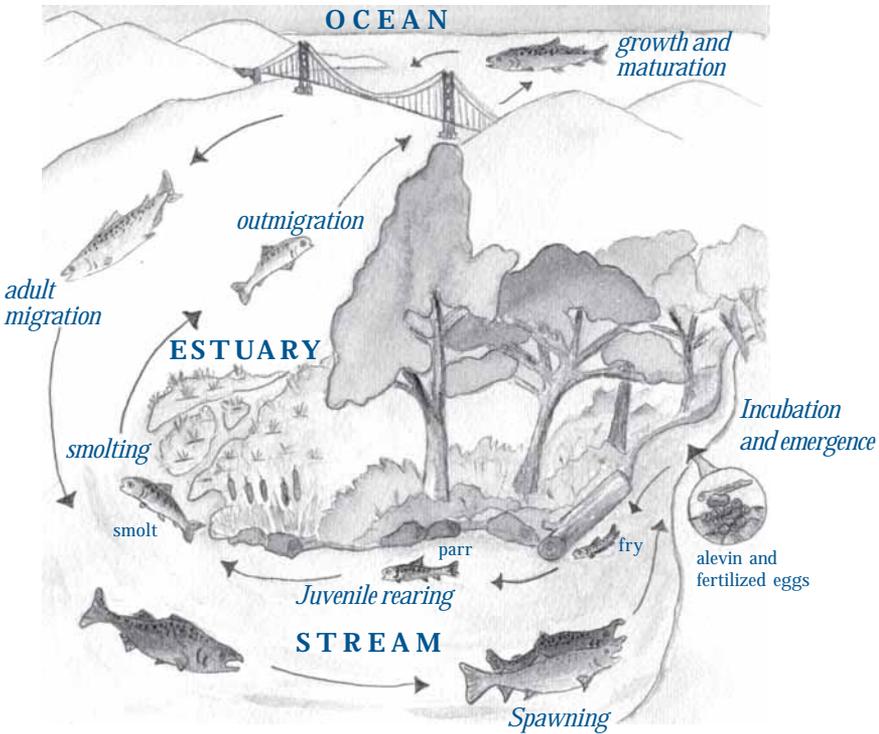
California roach
Chinook salmon
Hardhead
Pacific lamprey
Pacific staghorn sculpin
Prickly sculpin
Riffle sculpin
Sacramento pikeminnow
Sacramento splittail
Sacramento sucker
Steelhead (rainbow trout)
Threespine stickleback
Tule perch
White sturgeon

they use the entire stream system -- from the ocean or estuary to small headwater streams. Salmonids are anadromous, meaning that they are born in freshwater, mature at sea, and return to freshwater to lay eggs (spawn).

Very little information is available about historic populations of salmonid species in Napa County. Historic populations of Coho salmon and steelhead have been documented in the Napa River watershed. The historic presence of Chinook salmon is presumed based upon the characteristics of the Napa River watershed and the documented presence of Chinook salmon in neighboring watersheds that have similar characteristics. Today, steelhead are federally listed as a threatened species under the Endangered Species Act and Chinook salmon maintain a small remnant run. Coho salmon have been extinct in the Napa River watershed since the 1960's.

The habitat requirements of steelhead and Chinook salmon, while somewhat different for each, support several other fish and wildlife species found in and around our local streams. Habitat requirements include adequate water flow, diverse creek structure, clean spawning gravels, abundant food, and a well-functioning riparian zone.

Chinook Salmon Life Cycle



Signs of a Healthy Creek

All creeks are important, whether they flow year-round (perennial), part of the year (intermittent), or just during storms (ephemeral). Even small swales and drainages that

All creeks are important, whether they flow year-round, part of the year, or just during storms.

look like ditches are important because they (like other drainages) convey water, soil, and nutrients into larger creeks and water bodies.

While there is no single definition to what is meant by a “healthy creek,” generally creeks in Napa County will have the following characteristics:

Cool, clean water

Cool water is critical for many of our local fish and wildlife. For example, steelhead and Chinook salmon need water temperatures between 40° and 60° F to thrive. Temperature affects the amount of dissolved oxygen available for aquatic species -- the higher the water temperature, the less dissolved oxygen available. Waters should also be free of excessive algae, trash, and toxins.

Dense and diverse native vegetation with stable undercut banks and minimal streambank erosion

This type of habitat helps regulate water temperature through shading and provides homes for many insects and other forms of wildlife.

Adequate dissolved oxygen

Water that is flowing usually has plenty of dissolved oxygen for aquatic species; isolated pools or warm ponds may not. Suspended fine sediments, nutrients from fertilizers, sewage, and toxins (such as metals, pesticides, oil, and grease) can also reduce the amount of oxygen available, causing stress to aquatic life.

Variety of slow and fast moving water (pools and riffles)

Riffles add oxygen to water, provide diverse habitat for aquatic insects, and move aquatic insects (fish food) downstream. Pools are a resting place for fish, often have pockets of cool water during the summer, and can provide refuge from fast-moving winter storms and predators.

Consistent groundwater level

Creeks and shallow groundwater often move together. If the depth of the creek channel drops, the groundwater level (also called water table) may also drop and may cause the creek to cease flowing until groundwater is replenished by rainfall. A lowered water table may cause problems with wells and may leave creekside vegetation and aquatic organisms without access to water.

Creek Stewardship

Responsible stewardship and care for creeks is essential for creek stability, good water quality, reliable water supply, and healthy habitats. Whether or not you live along a creek, it is important to be a good watershed steward. Those who live along a creek are in the fortunate position of being able to most directly help protect and care for our creeks. The following recommendations are a starting point for keeping Napa County's creeks and watersheds healthy for humans and wildlife.

[This guide is not meant to be all inclusive -- references to additional sources of information and contact information for organizations that might be helpful are provided in an effort to make it easy to learn more about recommendations that are of importance to you.]

Protecting Creek Habitat & Banks

Creeks are constantly re-shaping their channels through natural processes -- scouring outside curves and depositing sediment inside of bends in the waterway. A stream's natural tendency to meander can be accelerated by human activities throughout the watershed. Increased rates and volumes of stormwater runoff into creeks, removal of natural vegetation, and alteration of the creek channel may lead to erosion problems on banks that were once considered stable. Unstable creekbanks can result in property loss, lead to costly bank failures, and add large volumes of fine sediment to the creek. Creeks are complex systems and repair of eroding banks requires specialized expertise and permits from various resource agencies.

Following are some recommendations that can help you avoid excessive streambank erosion on your property, protect creek habitat, and protect water quality.

Helpful Contacts

California
Department
of Fish &
Game (DFG):
707.944.5500

Napa County
Resource
Conservation
District
(RCD):
707.252.4188

Natural
Resources
Conservation
Service
(NRCS):
707.252.4188

Napa County
Flood Control
District:
707.259.8600

Napa County
Agricultural
Commissioner:
707.253.4357

Napa County
Conservation,
Development,
and Planning
Department:
707.253.4417

Army Corps of
Engineers:
415.977.8462

Keep an eye on your creekbanks

If you notice bank failures or areas where vegetation has been damaged or removed, you may need to take action to restore your streambank to a healthy condition. Serious bank erosion often begins when large trees fall into the creek. When water levels recede in the spring, inspect the bank to see if tree roots have been exposed, or if large cracks in the soil are developing parallel to the bank. The type of action necessary to repair eroding streambanks varies from site to site. The need may be to stabilize an eroding bank or to allow the stream more room to move. Streambank work is often complex and requires several types of permits to protect surrounding areas. Contact a qualified resource professional to assist you. The Natural Resources Conservation Service (NRCS) and Napa County Flood Control District can help you get started.

Avoid locating structures near creekbanks

Locating structures such as decks and storage sheds near the creek often requires removal of vegetation and can decrease streambank stability. In addition, structures built within reach of flood water may decrease the creek's ability to accommodate flood flows and are also subject to damage or complete loss. Flat spots next to creeks may seem attractive for development during most of the year, but creeks are constantly re-shaping their channels and these spots are subject to flooding. The cities, town, and unincorporated areas of the county all require locating structures away from creekbanks. Check with your local planning/building department before locating a structure close to a creek and recognize that you may want to site structures further than the minimum required.

Locate potential fish migration obstructions

Steelhead and Chinook salmon migrate up and down watercourses in Napa County during specific times of the year. Obstructions in the creek, such as culverts, fences, dams, etc., may limit the amount of creek habitat available to these fish or prohibit their movement in and out of the watershed. If you think there might be a fish migration obstruction on your property contact the California Department of Fish & Game (DFG) or the Napa County RCD to assess the obstruction.

Approaching Streambank Erosion

Given the dynamic nature of creeks and how they function, streambank restoration or stabilization is a complex endeavor. It can cause changes in streamflow and sediment delivery that are difficult to predict. Remember that actions taken to protect your streambank may have unforeseen consequences up- and downstream. You may unintentionally pass your problem to your neighbor. For these and other reasons, streambank work requires in-depth planning and permits from natural resource agencies such as the California Department of Fish & Game, Army Corps of Engineers, Regional Water Quality Control Board, and Napa County. Streambank restoration requires specialized knowledge. The soundest advice is to seek professional assistance.

When considering streambank work:

- Consider techniques that use living plant material to provide structure and habitat.
- Where possible, provide the creek with more room to move and meander.
- Do not use tires, old appliances, concrete debris, etc. (this practice can be dangerous and it is illegal).
- Be sure not to constrict or limit the channel -- flooding is a potential problem on any creek or drainage.
- Monitor, care for, and adjust your project as the creek responds to work you have done.
- Consult with a diversity of professionals (engineers, soil conservationists, hydrologists, biologists, and other resource specialists).
- Work with other local property owners to develop a coordinated response to approaching streambank issues.
- Complete your plans and submit them to permitting agencies well in advance of expected work (permits can be complex and often take many months to acquire).

Avoid removal of natural debris

Removing branches, boulders, and rocks from a creek can harm fish and other aquatic species because natural debris provides habitat and cover for fish, aquatic insects, and other wildlife. Refer to page 23 for more information on managing natural debris in the creek.

Helpful Contacts & Native Plant Suppliers

Appleton
Forestry
Nursery
Sebastopol,
CA
707.823.3776

Circuit Rider
Productions,
Inc. Native
Plants
Nursery
Windsor, CA
707.838.6641

Pacific Open
Space, Inc.
North Coast
Native
Nursery
Petaluma, CA
707.769.1213

California
Native Plant
Society:
www.cnps.org

Preserve and promote native creekside vegetation

Native riparian vegetation growing within a creek corridor helps to stabilize streambanks, provides wildlife habitat, and provides shading of the creek.

In times of flooding, a well-vegetated streambank may provide protection for your property. When seedling trees or shrubs are present, protect them with weed control cloth and tube protectors to ensure survival. Native seedlings represent future replacements for aging vegetation and also add rooting strength to the bank. If you must remove vegetation leave as many native plants as possible.



Remove invasive non-native plants and replace them with native vegetation

Invasive non-native plants often crowd native plants and do not provide the same bank stabilization and wildlife habitat benefits. Removal of non-natives often requires a permit from DFG and is allowed only during certain times of the year. Contact the NRCS, RCD, Napa County Flood Control District, or the Napa County Agricultural Commissioner for assistance. See pages 26 and 27 for a list of native and invasive non-native riparian species common to Napa County's watersheds.

A Word on Riparian Corridor Width

There is no single generic corridor width that will keep water clean, stabilize creekbanks, protect fish and wildlife habitat, and satisfy human demands on the land. The specific width and vegetative structure of a riparian corridor (measured from outside to outside edge with the creek somewhere in between) depend upon the intended purposes or goals of the corridor in question; adjacent land uses; and the specific physical, biological and hydraulic characteristics of the creek.

Corridors should be designed with specific goals in mind. When the goal is to address sediment delivery issues, appropriate corridor widths increase as land slope increases and as sediment materials get finer. On the other hand, corridors designed to protect and enhance wildlife habitat and ecological functions generally increase in width as slope decreases or as the natural floodplain width increases. In general terms, wider riparian corridors are needed for ecological purposes than for sediment control and water quality protection.

An advisable approach to establishing an appropriate corridor width is to base the width on the intended purpose of the corridor while considering site-specific features such as width of the creek, area of watershed upstream, slope of adjacent lands, slope of the channel, presence of wetlands, width of the floodplain, existing condition of the creek, wildlife species of interest, and presence of nearby buildings or development. Available research conducted in various watersheds indicates a wide variety of desirable corridor widths and also impresses upon us that corridor quality, in addition to width, is also very important. Recent research also indicates that wider corridors than those that have been suggested by resource agencies in the past may be necessary to protect ecological functions. The best advice to determine the desired width of your corridor to meet identified goals is to seek professional assistance.

Keeping Soil On-Site

Erosion is the natural process by which soil, rock, and gravel are moved by the agents of wind, ice, water, or gravity. A certain amount of erosion is healthy for ecosystems, as it brings nutrients to creeks and creates habitat for aquatic plants and animals. However, excessive erosion can cause problems in and around the creek.

The rate of erosion at any given site depends on a combination of many factors, including the amount and intensity of

When water flows over bare ground, exposed soil may move downhill and lead to excess sediment in local waterways.

precipitation, the make-up of the soil, the steepness of the terrain, and the amount of vegetative groundcover. Excess erosion most often occurs on bare areas such as creekbanks, pastures, roads, stockpiled soil, areas cleared for

construction, or other places where soil is not protected. When water flows over bare ground, exposed soil may be displaced and move downhill, where it will often flow directly into a creek.

The watersheds in Napa County naturally produce relatively high amounts of sediment owing to climate, topography, geology, degree of vegetative cover, and soil conditions. However, many studies have noted that natural sediment production has been accelerated by human activities over the past 200 years.

Some strategies to keep soil on-site include:

Protect bare soil surfaces

Use vegetation (trees, shrubs, grasses, cover crops) to hold soil in place and to allow water to soak into the ground. Use native vegetation where possible and until vegetation is well established, protect bare soil surfaces with straw mulch or other appropriate measures. Avoid non-native invasive species that may escape and spread to areas where they are undesirable. A list of plants to avoid is provided on page 26.

Helpful Contacts & Resources

Natural
Resources
Conservation
Service
(NRCS):
707.252.4188

*Handbook for
Forest and
Ranch Roads.*
\$25 from the
Mendocino
County
Resource
Conservation
District:
707.468.9223
ext. 111

*Horse Keeping:
A Guide to
Land
Management
for Clean
Water*
Download
for free at
[mcstoppp.org/
horses.htm](http://mcstoppp.org/horses.htm)

Assess your roads for erosion and address road problems

Poorly constructed roads, driveways, and vineyard avenues can be a significant source of erosion. Look for signs of erosion such as small gullies across the road surface and deepening ditches along the side of the road. In addition, assess the condition of any drains and culverts that transport concentrated water to make sure they are performing properly. Culverts need to be properly sized, located, and maintained to handle storm runoff and should include some form of soil protection at each outlet where water is dispersed. If you observe erosion from your road, contact the Natural Resources Conservation Service (NRCS) or refer to the *Handbook for Forest and Ranch Roads* published by the Mendocino County RCD.

Avoid piling soil, construction materials and wastes where they will be exposed to rain or carried into the creek

Cover exposed piles with plastic sheeting and locate piles away from creeks, stormdrains, and ditches.

Assess erosion prone areas on your property and be sensitive to them

Minimize soil and vegetation disturbance around creekbanks, gullies, seasonal drainages, unsurfaced roads, replanted areas, and landslides.

Manage erosion caused by livestock and horses

Maintain vegetated borders around horse paddocks to act as a filter; separate water and salt blocks to disperse animals more evenly in grazed areas; develop off-stream watering sources; seed pastures to minimize bare soil; and develop grazing management plans with the NRCS.

Helpful Contacts & Resources

Napa County Stormwater Management Program:
707.259.8600

Blueprint for a Clean Bay, available from the Bay Area Stormwater Management Agencies Association at www.basmaa.org

BMP Handbooks by California Stormwater Quality Association:
www.bmphandbooks.com

Erosion and Sediment Control Field Manual, San Francisco Bay Regional Water Quality Control Board

Use and installation of straw rolls:
www.strawwattles.com

NRCS or Napa County RCD:
707.252.4188

Keep culverts clear of debris

Clear leaves, fallen branches, garbage, and other debris from culvert inlets prior to the first rain in the fall and throughout the rainy season.

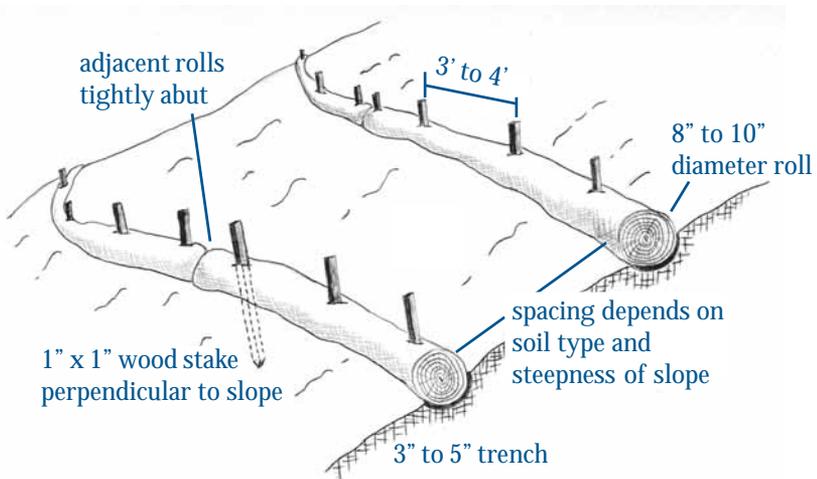
Avoid concentration of water flow

If possible, spread flows or use a detention basin to store and slowly release storm water. Where water is concentrated, protect outlets by using carefully placed rock to dissipate the erosive force of fast flowing water. Contact the NRCS for assistance.

Use erosion and sediment control practices at construction and disturbed sites

Refer to *Blueprint for a Clean Bay* or the Best Management Practices (BMP) Handbooks published by the California Stormwater Quality Association. An example of a common erosion control practice is the application of straw mulch. Straw rolls are also commonly used to protect waterways or sensitive locations from sediment.

Straw rolls capture sediment, organic matter, and native seeds behind the rolls. They are placed and secured in a 3 to 5 inch trench dug on contour. Runoff must not be allowed to run under or around the roll



Managing Natural Debris in the Creek

Natural debris in the creek -- branches, logs, and root wads, sometimes referred to as large woody debris (LWD) -- creates food and shelter for fish and wildlife. This woody debris may need to be repositioned, removed, or partially removed if it threatens life or property. Because removing woody debris can alter or even harm fish habitat, it is important to observe a situation before taking action. Removing debris from the creek requires a Streambed Alteration Agreement from the California Department of Fish & Game (DFG). If you are unsure about managing woody debris, contact DFG or the Napa County Flood Control District.

Following are some general recommendations:

Helpful Contacts

California
Department
of Fish &
Game (DFG):
707.944.5500

Napa County
Flood Control
District:
707.259.8600

Natural debris should be left in the creek

Unless natural debris causes flooding or erosion that threatens life or property (a house, utility pole, or other structure), it should be left in the creek to provide aquatic habitat.

Consider repositioning natural debris

If natural debris obstructs creek flow and causes flooding, or if it causes excessive streambank erosion by redirecting flow, reposition the debris without removing it from the creek.

If fallen trees are causing erosion, trim the portion of woody debris above water

Try to leave the main stem or root wad intact and in place.

Remember that most fish can swim through or around debris barriers

If you know that fish can not swim through or around a barrier contact DFG.

Helpful Contacts & Resources

Local Public
Works &
Water

Departments

American

Canyon:

707.647.4500

Napa:

707.257.9521

Yountville:

707.944.8851

St Helena:

707.968.2658

Calistoga:

707.942.2780

Unincorporated:

707.253.4351

Napa County

Master

Gardeners:

707.253.4421

or toll free

877.279.3065

Water-wise

Gardening in

the Napa

Valley. \$5.

Available

at local city

offices, the

RCD, and UC

Cooperative

Extension.

Napa Garbage

Service

Recycling and

Composting

Facility:

707.255.5200

Maintaining Landscapes & Yards

Landscaping can turn a basic house into a beautiful home. Unfortunately, many landscaping techniques require large amounts of water, pesticides, and fertilizers; increase the spread of invasive plants; and can create a fire hazard.

Several resources are available for landscape planning and maintenance. Gardening, composting and irrigation workshops are often available through local municipalities. The Napa County Master Gardeners Program is also a good resource. Additionally, *Water-Wise Gardening in the Napa Valley* is a locally developed CD-ROM with information regarding native plants, water use, and much more.

When planning and maintaining your yard, use the following tips to help yourself and your creek.

Compost leaves, grass clippings, and other organic waste away from the creek

Never dump these or any other items onto the creekbank or into the creek. Although leaves and other organic waste are biodegradable, adding them to the creek system depletes oxygen in the water and can stress or kill fish and other aquatic life. It also suppresses vegetation growth, which helps to stabilize banks.

Properly irrigate lawns and gardens

Use meters, timers, or other measuring devices to control water use. Over-watering adds water, excess fertilizers and pesticides, and soil to ditches and stormdrains. It is also a

Landscape irrigation accounts for approximately 60% of residential water use.

common cause of streambank erosion. Observe irrigation carefully, if water is running off its intended landscape, you are likely applying too much water in too short a time period.

Helpful Contacts & Suppliers

Appleton
Forestry
Nursery
Sebastopol,
CA
707.823.3776

Circuit Rider
Productions,
Inc. Native
Plants
Nursery
Windsor, CA
707.838.6641

Pacific Open
Space, Inc.
North Coast
Native
Nursery
Petaluma, CA
707.769.1213

California
Native Plant
Society:
www.cnps.org

*A Guide to
Estimating
Irrigation
Water Needs
of Landscape
Plantings in
California.*
[www.owue.
water.ca.gov/
docs/
wucols00.pdf](http://www.owue.
water.ca.gov/
docs/
wucols00.pdf)

Consider alternatives to impervious concrete

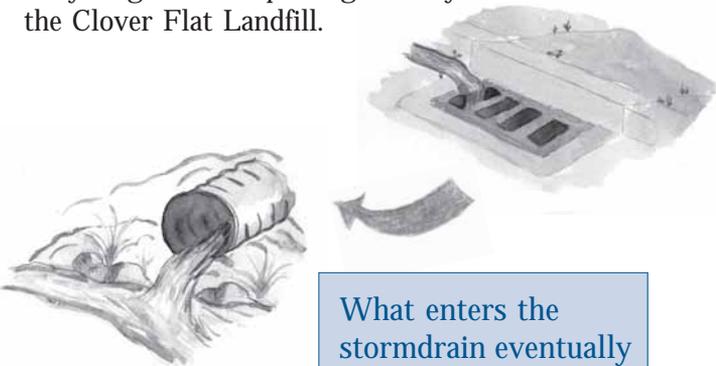
Pervious surfaces such as interlocking pavers, flat stones, and decking allow rainwater to infiltrate the soil. Consider this type of material when installing a new patio or rebuilding a walkway or driveway.

Avoid or minimize use of fertilizers and pesticides

Many home gardeners over-apply fertilizers and pesticides (including herbicides, fungicides, and insecticides) -- always follow application directions. If used excessively, fertilizer can make its way to the creek and create algal blooms that deplete oxygen supply in the water. Excessive amounts of some nutrients are toxic to aquatic life. Avoid applying fertilizers and pesticides during the rainy season or on windy days. Pesticide drift threatens riparian plants and aquatic life. Store chemicals in a protected area to avoid runoff.

Keep leaves and yard litter out of street gutters and ditches

Leaves and yard litter will clog stormdrains and/or be transported to the creek. Green waste can be disposed of via curbside pick-up or taken to the Napa Recycling and Composting Facility or the Clover Flat Landfill.



What enters the
stormdrain eventually
enters the creek.

**Helpful
Contacts &
Resources**

State Water
Resources
Control
Board,
Division
of Water
Rights:
916.657.2170

*Layperson's
Guide to
Water Rights
Law* prepared
by the Water
Education
Foundation -
Updated
2005.
916.444.6240
or [www.
water
education.
org](http://www.watereducation.org)

Department
of Fish &
Game (DFG):
707.944.5500

National
Marine
Fisheries
Service
(NMFS):
707.575.6050

Use water legally and with great care

Make sure you have a permit to take water and that you do not exceed your allocation. Allow flow to continue in the creek.

Screen intake diversion pipes

If you are pumping from a waterway you are required to operate your intake facility in a way that prevents fish and other critters from being sucked out of the stream. Each year large numbers of juvenile fish are lost to water diversions. 3/32 inch mesh screen cover is required and the screen should be placed parallel to flow. Screening also reduces the cost of maintaining and cleaning the diversion pipe and distribution system. Specific information on requirements is available through Department of Fish & Game and National Marine Fisheries Service.

Landscape with low-maintenance native plants

Native plants are more tolerant of drought conditions and are better suited to local soils and pests. See below for a list of the most highly invasive ornamental plants in Napa County and the next page for a list of recommended plants.

Plants to Avoid

<i>Common Name</i>	<i>Scientific Name</i>
Acacia	<i>Acacia sp.</i>
Black locust	<i>Robinia pseudoacacia</i>
Blue gum eucalyptus	<i>Eucalyptus globulus</i>
Cape ivy	<i>Delairea odorata</i>
Cherry plum	<i>Prunus cerasifera</i>
English ivy	<i>Hedera helix</i>
Fennel	<i>Foeniculum vulgare</i>
Giant reed	<i>Arundo donax</i>
Himalayan blackberry	<i>Rubus discolor</i>
Periwinkle	<i>Vinca major</i>
Poison hemlock	<i>Conium maculatum</i>
Scarlet wisteria	<i>Sesbania punicea</i>
Scotch broom	<i>Cytisus scoparius</i>
Tamarisk	<i>Tamarix sp.</i>
Tree of Heaven	<i>Ailantus altissima</i>
Vetch	<i>Vetch sp.</i>

Recommended Plants

Common Name

Scientific Name

Trees

Arroyo willow	<i>Salix lasiolepis</i>
Big-leaf maple	<i>Acer macrophylla</i>
California bay	<i>Umbellularia californica</i>
California buckeye	<i>Aesculus californica</i>
California walnut	<i>Juglans californica</i>
Coast-live oak	<i>Quercus agrifolia</i>
Fremont's cottonwood	<i>Populus fremontii</i>
Oregon ash	<i>Fraxinus latifolia</i>
Red willow	<i>Salix laevigata</i>
Sandbar willow	<i>Salix exigua</i>
Valley oak	<i>Quercus lobata</i>
White alder	<i>Alnus rhombifolia</i>

Shrubs

California rose	<i>Rosa californica</i>
Coyote brush	<i>Baccharis pilularis</i>
Snowberry	<i>Symphoricarpos albus var. laevigatus</i>
Spicebush	<i>Calycanthuys occidentalis</i>

Small Plants and Groundcover

Blue wild rye	<i>Elymus glaucus</i>
California figwort	<i>Scrophularia californica</i>
Mexican rush	<i>Juncus mexicanus</i>
Rough sedge	<i>Carex senta</i>
Santa Barbara sedge	<i>Carex barbarae</i>
Seep-spring monkey flower	<i>Mimulus guttatus</i>

Water Management & Use

Small streams can be heavily impacted by water diversions, even small ones. In summer, when flow is at its lowest, some streams may only have enough water to support small “pools.” These pools sustain aquatic life until winter when heavier flows resume. It is important to avoid depleting these pools of their water. The amount of life a stream can support is directly related to the amount of water in the stream. Diversions and wells located near creeks can decrease underground streamflows which, in turn, drain the pools of their much needed water.

Water diversions from creeks are only legal if you have a Riparian Right, an Appropriative Water Right Permit, or a Small Domestic Registration.

A **Riparian Right** is limited to parcels adjacent to creeks and stays with the property, unless deleted from the title. Impoundment of water beyond 30 days is not allowed.

With an **Appropriative Water Right Permit**, the land does not need to be adjacent to a stream. A permit is required, and water can be stored for over 30 days.

A **Small Domestic Registration** is for landowners who use less than 4,500 gallons per day and store less than 10 acre-feet of water.

For more information regarding water rights, contact the State Water Resources Control Board, Division of Water Rights (916.657.2170).

Home Maintenance & Waste Disposal

Maintenance of our homes is essential. With careful planning, maintenance can be done in such a way as to minimize potential impacts to local creeks. Even in small amounts, common hazardous materials such as paint, motor oil, solvents, pool chemicals, batteries, and many cleaners can contaminate a creek and harm fish and wildlife. Following are several recommendations to minimize the impacts of common household maintenance activities.

Helpful Contacts

Household
Hazardous
Waste Facility:
1.800.984.9661

Napa Garbage
Service
Recycling and
Composting
Facility:
707.255.5200

Clover Flat
Landfill:
707.963.7988

Napa County
Stormwater
Management
Program:
707.259.8600
Stormwater
Pollution
Hotlines on
page 41

Napa County
Department of
Environmental
Management:
707.253.4471

Keep waste out of the creek, off the street, and out of ditches and stormdrains

Avoid storing materials and trash where they might reach the creek. Before the rainy season each year, remove all waste from areas where winter rain and high stream flows can transport debris into the creek and downstream. Remove trash that accumulates in the creek, but do not remove natural debris. See *Managing Natural Debris* on page 23.

Minimize stormwater runoff

Direct all gutters or downspouts to areas where water can soak into the ground; minimize paved or other hard surface areas; and keep water and pipes from flowing directly to the creek or onto the creekbanks.

Take hazardous items to a Household Hazardous Waste Facility

Common household hazardous materials include paint, solvents, pesticides, batteries, etc. The largest hazardous waste facility that serves Napa County is located at 889A Devlin Road in American Canyon. Twice annual collection events are held at up-valley locations including Rutherford, Angwin, and Calistoga. Refer to the *Napa Recycling and Waste Services Recycling Guide* in the Napa Valley Yellow Pages for additional information on opportunities to “reduce, reuse and recycle.”

**Certified
Oil
Collection
Facilities**
*(call for
quantities &
materials
accepted)*

**American
Canyon:**
Public Works:
707.647.4366

Devlin Road
Recycling &
Transfer
Station:
707.252.0500

Yountville:
Yountville
Corp Yard:
707.944.2988

Calistoga:
Clover Flat
Landfill:
707.963.7988

St. Helena:
St. Helena
Center:
707.963.2741

Napa:
B&B Foreign
Car Service:
707.255.7588

Bert Williams
& Sons Auto
Parts:
707.255.7003

*Cont. on page
32*

Use water-based paint and paint removers

Water-based paints and removers are less toxic than oil-based paints, turpentine and thinners and they can be recycled.

Clean latex paint brushes and rollers in a sink

Don't let paint cleaning wastewater reach a stormdrain, ditch, or creek.

Place paint thinner or turpentine in a container to clean oil-based paintbrushes and rollers

Allow the solids to settle out and carefully transfer liquid to another container for reuse. Take the solids to a Household Hazardous Waste Facility or a collection event.

Use non-toxic cleaning products in your home

See the following page for some suggestions.

Dispose of water used to clean carpets, upholstery, or floors down sinks or toilets

If you are on a septic tank, use septic safe products.

Use mechanical methods to clean drains that are blocked by roots

Avoid copper-based root control products.

Drain waterbed mattresses in a drain that will reach the sanitary sewer system

Waterbed chemicals can be toxic to aquatic life.

Avoid hosing down or pressure washing paved surfaces like driveways

Use a broom instead and put debris in a compost bin, yardwaste container or trash can.

Non-toxic Household Products

Product	Suggested Uses
Baking Soda	Deodorize refrigerators, drains, carpets, and upholstery. Clean & polish aluminum, chrome, jewelry, plastic, porcelain, silver, stainless steel, and tin.
Cornstarch	Clean windows, polish furniture, shampoo carpets, and starch clothes.
Lemon Juice	Clean glass, remove stains from aluminum, clothes and porcelain.
Steel Wool	Remove rust and scour barbecue grills
TSP	Clean drains or remove old paint (note: TSP is toxic if swallowed).
Vinegar	Dissolve mineral deposits and grease. Remove traces of soap, mildew, or wax buildup. Clean brick or stone. Shine windows without streaking.
All purpose cleaner	Mixture of vinegar & salt or 4 tbsp. baking soda dissolved in 1 quart warm water.
Drain cleaner	Try a plunger first. To open clogs pour 1/2 cup baking soda down drain, add 1/2 cup white vinegar, and cover the drain. (NOTE: do not try this approach after trying a commercial drain opener--the vinegar can react with the drain opener to cause dangerous fumes.)
Tub & Tile cleaner	Try baking soda with a damp sponge or wipe with vinegar first and follow with baking soda.
Ant Deterrent	Sprinkle powdered red chili pepper, paprika, or dried peppermint where ants are entering.
Cockroach Poison	Mix by stirring and sifting 1 oz. TSP, 6 oz. borax, 4 oz. sugar, and 8 oz. flour. Spread on floor of infested area, repeat after 4 days and again after 2 weeks.

Classic
Automotive:
707.257.6677

Imports
Unlimited:
707.252.1177

Kragen Auto
Parts:
707.224.8606
707.255.5266

Quality
Tune-Up:
707.252.1561

Silverado
Auto Service:
707.224.4708

Other:
6450
Berryessa-
Knoxville Rd.

Napa Valley
Marina:
707.252.8011

Pacific Union
College:
707.965.7150

Rancho
Monticello:
707.965.8216

Discharge water from your washing machine away from creeks, ditches, or stormdrains

Wash vehicles at car washes

Wash your vehicles at commercial or coin-operated car washes where the water is recycled before it is discharged to a sewer system. If washing your car or other equipment at home, do so in a grassy or gravel area where soapy water can filter into the soil. Do not put soap, even biodegradable, down the stormdrain. Soap can harm fish and other aquatic life.

Properly care for pools and spas

Make sure discharges from pools and spas don't reach creeks or cause erosion. Chlorine and algacides used in pools and spas are toxic to plants and aquatic life. Use diatomaceous earth (DE) cautiously. If DE gets into the creek it can cut the gills of aquatic animals, making them more susceptible to infection and disease. The draining of pools and spas requires a permit, contact the Napa County Stormwater Management Program for additional information.

Properly care for car and boat engines

For proper disposal of used motor oil and other automotive products, refer to the *Napa Recycling and Waste Services Recycling Guide* in the Napa Valley Yellow Pages or call the Napa County Stormwater Management Program. Motor oil can coat fish gills (depriving them of oxygen) and bird feathers (interfering with their ability to keep warm and dry). Oil can also poison animals when they ingest it in their effort to clean themselves. Local certified oil collection centers around Napa County are listed under "Helpful Contacts" on pages 30 and 32.

Properly maintain and care for septic systems

Minimize the amount of liquid that goes into the system and avoid unnecessary solid waste. Have your system monitored regularly and pump as often as necessary (pumping may be required as often as every 2 years or as seldom as 12). Maintain a healthy bacteria count by keeping bleach, antibacterial soap, paints, solvents and pesticides out of the system.

Septic Systems

Most rural residences use septic systems for sewage disposal. Septic systems operate by collecting sewage in a concrete tank and allowing the liquid portion to percolate into the ground through perforated pipe (leach lines). Solids are pumped out of the collection tank and hauled off-site for disposal.

Septic systems are safe and effective, as long as they are properly designed, installed, and maintained. If not, they can be a source of groundwater and surface water contamination. Leaky septic systems can pollute domestic water systems by contaminating the groundwater from which a residential well draws. Older homes may have a primitive system composed of a redwood or metal box with no leach lines. These systems are now illegal and efforts should be made to replace them with a new system.

Human waste leaking from faulty or old septic systems is an identified source of water pollution in Napa County. Like livestock waste, human sewage contains nutrients and pathogens. Human sewage poses a more serious health risk than livestock waste because there is a greater chance that it contains human disease organisms.

For additional information on care of your septic system contact Napa County Department of Environmental Management.

**Helpful
Contacts &
Resources:**

UC
Cooperative
Extension -
Livestock &
Natural
Resources
Program:
707.435.2459

Natural
Resources
Conservation
Service
(NRCS):
707.252.8144

*Horse Keeping:
A Guide to
Land
Management
for Clean
Water*
Download
for free at
[mcstopp.org/
horses.htm](http://mcstopp.org/horses.htm)

Caring for Livestock & Animals

Livestock and other domesticated animals (including horses, dogs, cats, etc.) can impact creeks by destroying plants, trampling creekbanks, disturbing wildlife, and/or reducing water quality. Thoughtful control of livestock and other animals can minimize the disruptions they may cause to our local waterways. Consider the following:

Restrict or control animal access to creeks and riparian areas

Livestock, horses, and other animals can trample creekbanks, compact moist soils, and contribute to water quality degradation. In addition, pets may scare fish and wildlife and muddy the creek.

Avoid building livestock corrals and feeding/watering areas near creeks

Develop off-stream watering sources and separate water and salt blocks to spread animals more evenly in grazed areas.

Collect and dispose of animal waste away from the creek

Animal waste increases bacterial levels and contributes excess nutrients to the creek, which cause algal blooms and deplete oxygen from the water.

Manage erosion from livestock & horses

Consider seasonal grazing or exclusion of livestock from the creek corridor. Maintain plant and/or grass borders around horse paddocks to act as a filter and seed pastures to minimize bare soil.

Preventing Catastrophic Fire

Much of Napa County is considered a high hazard fire environment. The area possesses all of the ingredients necessary to support large, intense, and uncontrollable wildfires. Individual houses, subdivisions, and entire communities could be impacted. In addition, an intense wildfire could have catastrophic effects on natural resources due to loss of upland habitat and large increases in erosion and sediment transport.

Helpful Contacts & Resources

The following publications are available from Napa County Firewise Program and the California Department of Forestry and Fire Protection: 707.967.1426

Living with Fire in Napa County: A guide for the homeowner.

Protecting the Homes and Citizens of California: Wildland-Urban Interface Building Standards.

A Homeowners Guide to Firewise Landscaping in Napa County.

The ability to live safely and reduce the risk of fire in our environment greatly depends upon the use of “pre-fire activities.” Pre-fire activities are actions taken before a wildfire occurs that improve the survivability of people and homes and may help firefighters better control large wildland fires and protect natural resources.

Pre-fire activities will improve the survivability of homes and may help firefighters better control large wildland fires and protect natural resources.

More information regarding fire preparedness can be obtained from the Napa County Fire Department and the California Department of Forestry and Fire Protection. The following tips are provided as a place to start.

Store wood and garbage cans away from your home

Fire can spread easily through woodpiles and garbage. Store these items away from your home and also away from creeks, ditches, and stormdrains to avoid their transport to the creek.

**Helpful
Contacts:**

Napa Garbage
Service
Recycling and
Composting
Facility:
707.255.5200

Clover Flat
Landfill:
707.963.7988

Natural
Resources
Conservation
Service:
707.252.4188

Napa County
Resource
Conservation
District:
707.252.4188

Keep rain gutters and roofs free of flammable material

Dispose of these materials properly, and do not put them in or near a creek, ditch, or stormdrain. Green waste can be picked up at the curb or taken to the Napa Recycling and Composting Facility in American Canyon or the Clover Flat Landfill in Calistoga.

Dispose of dry grass, brush, and other flammable materials around your home

Compost green debris or take it to a disposal location such as the Napa Recycling and Composting Facility or the Clover Flat Landfill. Avoid disposing of debris in or near a creek, ditch, or stormdrain.

Inspect and clean your chimney every year

Trim branches that are within 10 feet of your chimney. Install a spark arrester with 1/4" or smaller mesh screen. Dispose of chimney and branch debris properly and away from creeks, ditches, and stormdrains.

Do not store flammable material within 10 feet of a propane tank

If possible, locate propane tanks at least 30 feet from any structure and out of the reach of flood waters.

Learn about and implement "defensible space"

Remove dead and dying grass, shrubs, and trees; reduce the density of vegetation and ladder fuels; replace hazardous vegetation with less flammable vegetation. Keep in mind the need to protect bare soil from erosion and to minimize use of water during the summer months when creek flows are already low. See *Maintaining Landscapes & Yards* (page 24) and *Keeping Soil On-Site* (page 20) for more information. Contact the Natural Resources Conservation Service or Napa County Resource Conservation District for additional information on erosion control.

Creek Friendly Recreation

When enjoying the watersheds of Napa County, remember that the ways we recreate can impact local creeks and disrupt wildlife habitat. Following are some simple tips to keep recreation fun and safe for the watershed.

Look for fish, don't catch them

Most creeks in Napa County are closed for trout fishing for much of the year because these fish are experiencing declines in population. Consider fishing in areas with healthier populations.

Supervise children

Children are naturally curious, but they can unintentionally kill or harm aquatic life.

Avoid or limit pet access to the creek

Pets scare fish and wildlife, trample creekbanks, and muddy the water.

Pick up after your pets

Animal waste increases bacterial levels and contributes excess nutrients to the creek, which cause algal blooms and deplete oxygen from the water.

Avoid walking on bare creekbanks

Walking on creekbanks, particularly during the rainy season, can cause erosion.

Avoid walking in streams

Avoid walking in streams during the spawning season when young fish are born (November through April). Also avoid wading in the creek during the summer; fish can be easily disturbed.

Stay on the trail

Hikers and cyclists should avoid using short cuts and illegal trails. These "trails" are not properly designed or maintained and using them contributes to erosion problems.

Resource Directory

Technical Assistance

California Department of Fish & Game

www.dfg.ca.gov

P.O. Box 47

Yountville, CA 94559

707.944.5500

The Department's mission is to protect and conserve plants, fish, wildlife, and the habitats upon which they depend. In addition to assisting with required permits, the department can provide technical advice on ways to reduce potential impacts to fish and wildlife when one desires to alter the bed, bank or channel of a stream.

Napa County Agricultural Commissioner Napa County Weed Management Area

www.co.napa.ca.us

1710 Soscol Ave, Suite. 3

Napa, CA 94559

707.253.4357

The Napa County Agricultural Commissioner is responsible for the implementation of several programs within Napa County including pesticide safety, organic registration, and pests and diseases. The department also coordinates the Napa County Weed Management Area (WMA) which was created to address concerns regarding non-native plant species in Napa County by providing a forum to make it easier to identify Napa's weed problems, share information, and qualify for grants and other funding.

Napa County Conservation, Development, and Planning Department (CDPD)

www.co.napa.ca.us

1195 3rd Street, Room 210

Napa, CA 94559

707.253.4417

CDPD administers the County's planning and land use development program and building inspection activities in the unincorporated areas of Napa County. The department is composed of three divisions - Conservation, Planning, and Building Inspection. The Conservation Division manages Napa County's Conservation Regulations and watershed programs.

Napa County Department of Environmental Management (DEM)

www.co.napa.ca.us

1195 3rd Street, Room 101

Napa, CA 94559

707.253.4471

DEM provides assistance with permits for groundwater wells and septic systems for individual homes. It also provides educational workshops and materials for businesses and the public on waste reduction, hazardous waste disposal, recycling, and other topics.

Napa County Firewise Program

www.co.napa.ca.us/firewise/index.html
1199 Big Tree Road
St. Helena, CA 94574
707.967.1426

In May 2005, the communities of Napa County launched Napa Firewise, a five-year prevention and education program. The program is grant funded and is intended to raise community awareness of the dangers of wildland fires and provide residents with the knowledge necessary to protect themselves.

Napa County Master Gardeners

<http://groups.ucanr.org/mgnapa/index.cfm>
1710 Soscol Ave.
Napa, CA 94559
707.253.4221 or toll free 877.279.3065

Master Gardeners provide information on plant health and gardening practices for vegetables, trees, soils, lawns, ornamental horticulture, insects, diseases, and use of pesticides.

Napa County Resource Conservation District (RCD)

www.naparcd.org
1303 Jefferson Steet, Suite 500B
Napa, CA 94559
707.252.4188

The RCD is a non-regulatory agency whose mission is to promote responsible watershed management through voluntary community stewardship and technical assistance. RCD staff assists landowners and community members with stewardship and conservation through education, technical assistance, and funding for on-the-ground projects.

Napa County Stormwater Management Program

707.259.8600

804 First Street

Napa, CA 94559

Stormwater Pollution Hotline:

American Canyon: 707.647.4550

Calistoga: 707.942.2828

Napa: 707.257.9600

Napa County (unincorporated area): 707.299.1799

St. Helena: 707.966.2658 (967.2850 after hours)

Yountville: 707.944.8851

The Stormwater Management Program provides educational materials on protecting local waterways for the general public and businesses. The stormwater hotlines can be used to report spills or discharges within the cities, town and unincorporated areas of Napa County.

Napa County Flood Control & Water Conservation District (NCFWCWCD)

www.co.napa.ca.us

804 First Street

Napa, CA 94559

707.259.8600

NCFWCWCD provides for the control and conservation of flood and storm waters and protection of streams and watersheds throughout Napa County. NCFWCWCD maintains a number of flood control easements. Staff can provide technical assistance with regard to erosion repair on streams and removal of woody debris. They also provide cost-share opportunities for stream channel maintenance and bank repairs, and emergency labor and technical assistance.

**UC Cooperative Extension
Livestock & Natural Resources Program**

<http://cesolano.ucdavis.edu>

501 Texas Street
Fairfield, CA 94533
707.435.2459

The program helps local ranchers maintain and improve, the viability of livestock production without compromising the valuable resources that sustain the natural and productive environment in which we live and work. The primary focus is to disseminate research-based information to help producers make informed decisions on livestock and natural resource management.

USDA Natural Resources Conservation Service (NRCS)

707.252.4188
1303 Jefferson Street, Suite 500B
Napa, CA 94559

The NRCS works with private landowners and managers to conserve and protect soil, water, air, plants, and animals. NRCS provides no-cost technical consultation to address soil erosion, water quality protection, and restoration/management of riparian areas and wetlands. Grants and educational opportunities are available to agricultural producers through various programs.

**Watershed Information Center &
Conservancy of Napa County (WICC)**

www.napawatersheds.org
1195 3rd Street, Room 210
Napa, CA 94559
707.259.5936

The WICC educates and supports the community in its efforts to maintain and improve the health of Napa County's watershed lands.

Useful Publications

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction-Related Activities. 2004. Bay Area Stormwater Management Agencies Association. *This publication offers several good ideas for minimizing impacts from construction sites. It is meant for general contractors, home builders and subcontractors, but is useful for anyone involved in a construction project.* The publication can be downloaded from the Napa County Stormwater Management Program on the Watershed Information Center and Conservancy Web Center at www.napawatersheds.org or by contacting the Napa County Stormwater Management Program at 707.259.8600.

Fish Friendly Farming Certification Program and Farm Assessment and Conservation Plan Workbook. 2004. Laurel Marcus. *The program and workbook focus on management practices for vineyards.* Contact the California Land Stewardship Institute for more information or visit www.fishfriendlyfarming.org

Fish Screening Criteria for Anadromous Salmonids. 1997. National Marine Fisheries Service. <http://swr.nmfs.noaa.gov/hcd/fishscrn.pdf>.

Handbook for Forest and Ranch Roads. 1994. William Weaver, PhD., and Danny Hagans for the Mendocino County Resource Conservation District. \$25. Call 707.468.9223 ext. 111.

Horse Keeping: A Guide to Land Management for Clean Water. 2001. The Council of Bay Area Resource Conservation Districts, Petaluma, California. *This guide provides practical management information to San Francisco Bay Area horse owners on what they can do to help protect the environment.* Order form available at Napa County Resource Conservation District. \$25 + tax & shipping or available on-line at mcstoppp.org/horses.htm

The House and Garden Audit: Protecting Your Family's Health and Improving the Environment. 2001. Laurel Marcus. Available from Laurel Marcus and Associates, call 510.832.3101.

Layperson's Guide to Water Rights Law. 2005. The Water Education Foundation. Order online at www.watereducation.org or call 916.444.6240.

Napa River Watershed Owner's Manual. 1994. Napa County Resource Conservation District. This integrated resource management plan provides several recommendations specific to maintaining the health of the Napa River watershed.

Stream Corridor Restoration: Principles, Processes, and Practices. 1998, revised 2001. The Federal Interagency Stream Restoration Working Group. This workbook is available on-line at www.nrcs.usda.gov/technical/stream_restoration.

Watershed Information Center & Conservancy (WICC) of Napa County. The WICC's Web Center, www.napawatersheds.org, hosts several useful watershed publications.

Water-Wise Gardening in the Napa Valley. 2004. City of Napa. *This CD-ROM helps you better plan and maintain a beautiful and low-maintenance landscape that is water efficient. It includes detailed information for over 1,000 plants and a virtual encyclopedia of water-wise landscape design, irrigation, and maintenance tips.* This resource is available through the Cities of American Canyon, St. Helena, Calistoga, and Napa; the Town of Yountville; UC Cooperative Extension; Master Gardeners of Napa County; and the Napa Chapter of the California Native Plant Society. The cost is \$5.

Permitting Agencies

When modifying a stream in any way you will need a permit from one or more Federal, State, and/or local resource agencies. The Bay Area Joint Aquatic Resources Permit Application (JARPA) is a simplified permit application for activities in or near Bay Area aquatic environments. It provides a way for applicants to give the same information at the same time to all of the involved permitting agencies. This one permit, then, makes it easier for applicants to begin to move through the permitting process. Call the Association of Bay Area Governments (ABAG) at 510-464-7977 or the San Francisco Estuary Project (SFEP) at 510-622-2419 for additional information regarding JARPA and how it may apply to work you want to undertake. To download the JARPA form and instructions visit <http://jarpa.abag.ca.gov>.

Following are several of the resource agencies that may require a permit for work in or around the creek. It is advisable to start the permitting process well in advance of your plans to implement a project as the process can be lengthy.

California Department of Fish & Game

707.944.5500

Pertinent to streambed alteration as it influences fish and wildlife habitat.

City of American Canyon Planning and Building Department

707.647.4336

Pertinent to projects in the City of American Canyon.

City of Calistoga Planning and Building Department

707.942.2827

Pertinent to projects in the City of Calistoga.

City of Napa Community Development Department

707.257.9530

Pertinent to projects in the City of Napa.

City of St. Helena Planning Department

707.967.2792

Pertinent to projects in the City of St. Helena.

Napa County Conservation, Development, and Planning Department

707.253.4417

Pertinent to stream work that includes earth disturbing activities.

Napa County Department of Environmental Management

707.253.4471

Pertinent to groundwater use, septic systems, and hazardous materials.

National Marine Fisheries Service (NMFS)

707.575.6050

Pertinent to stream work that could impact threatened steelhead and Chinook salmon populations.

San Francisco Bay Regional Water Quality Control Board

510.622.2300

Pertinent to stream work as it influences water quality, including potential sediment input.

**State Water Resources Control Board
Division of Water Rights**

916.341.5300

Pertinent to water diversions and use.

Town of Yountville Planning Department

707.944.8851

Pertinent to projects in the Town of Yountville.

US Army Corps of Engineers

415.977.8462

Pertinent to work done in waters under their jurisdiction.

US Fish and Wildlife Service

916.414.6600

Pertinent to stream work that could impact threatened or endangered species.

Acknowledgements

This publication is a modification of the following creek care guides:

Creek Care: A Guide for Rural Landowners and Residents of Petaluma and Sonoma Creek Watersheds. Southern Sonoma Resource Conservation District in cooperation with Prunuske Chatham, Inc.

Creek Care: A Guide for Urban Marin Residents. 1997. Marin County Stormwater Pollution Prevention Program in cooperation with Prunuske Chatham, Inc.

The Napa County Resource Conservation District greatly appreciates the work of Martha Neuman with Prunuske Chatham, Inc.; the Southern Sonoma County Resource Conservation District; and the Marin County Stormwater Pollution Prevention Program. We are thankful for their permission to modify their existing guides to better suit the needs of Napa County watersheds.

Additional Sources

Creek Care Guide for Residents and Businesses. 1994. Rivers, Trails and Conservation Assistance Program, National Park Service.

Creek Care Guide for Residents and Businesses. City of Arlington, Texas.

Common Riparian Plants in Napa County. 2005. Working document provided by Todd Adams.

A Homeowners Guide to Firewise Landscaping in Napa County. 2005. Napa County Fire Wise Program.

Living Lightly in Our Watersheds. Malibu Creek Watershed Council.

*Stream*A*Syst: A Tool to Help You Examine Stream Conditions on Your Property.* 2001. Oregon State University Extension Service and USDA Natural Resources Conservation Service.

Safe Substitutes at Home: Non-toxic Household Products. Gary Davis and Em Turner. University of Tennessee - Knoxville Waste Management Institute. Working Paper.

Stream Care Guide: Management Tips for Streamside Property Owners. 1999, revised 2002. Placer County Resource Conservation District.

Stream Corridor Restoration: Principles, Processes, and Practices. 2001. The Federal Interagency Stream Restoration Working Group.

River Dynamics & Erosion; An Introduction to Riparian Areas; Riparian Areas as Habitat; Soil Erosion & Sedimentation; and Noxious Riparian Weeds. 2005. Napa County Resource Conservation District.

Disclaimer: This publication was prepared for informational purposes only. The Napa County Resource Conservation District assumes no liability for any injury or damage resulting from the use or effect of any information contained in this publication. Any mention of a brand or company is for the reader's convenience and does not constitute endorsement by the District.



Great blue heron



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