

Creeks & Riparian Areas



Nearly 17 miles of watercourses flow through Los Altos Hills, transect four watersheds: Permanente, Adobe, Barron and Matadero watersheds, and include 12 named creeks:

Adobe Creek	Dry Creek	Permanente Creek	Magdalena Creek
Barron Creek	Hale Creek	Robleda Creek	Matadero Creek
Deer Creek	Loyola Creek	Summerhill Creek	Purissima Creek

Creeks and their associated riparian corridors are important public assets that provide unique ecological, aesthetic, and recreational values to the community. The Los Altos Hills stream system contains some of the most intact and valuable riparian habitat in the San Francisco Bay region.

—Los Altos Hills General Plan: Conservation Element, 305 (p 2)

What Are Riparian Areas?

Riparian areas are the lands along the banks of a natural course of fresh water, such as a river, stream, creek, drainage swale, spring, or seep. They are the transition zones between aquatic and terrestrial ecosystems. Different from surrounding lands because of the unique soil and vegetation characteristics associated with the presence of water, riparian areas support vegetation that is distinct from what grows in the adjacent aquatic zone on one side and the drier upland zone on the other.¹

Why Are Riparian Areas Important?

Riparian areas provide valuable ecosystem services, the processes by which the environment produces vital resources such as clean water, timber, habitat for fisheries, and pollination of native and agricultural plants. Within Los Altos Hills, riparian areas moderate downstream flooding, limit stream bank erosion, improve local water quality, recharge groundwater, and provide habitat



and important migratory corridors for wildlife. Although they comprise only a small fraction of the land area, riparian areas are among the most important, diverse, and productive ecosystems in the region. They are also among the most environmentally sensitive.

Preserve the integrity of riparian corridors as unique and environmentally sensitive resources.

—*Los Altos Hills General Plan: Conservation Element, Policy 3.1 (p 3)*

Natural creeks minimize downstream flood impacts by slowing water velocity, enabling water to soak into the ground, and providing temporary storage of over bank flood flows.² When creeks

are channelized by lining them with rock or concrete or placing them in culverts, the frequency of downstream flooding increases because the velocity of flow is increased and the time of concentration of runoff is shortened.

Vegetated riparian areas stabilize stream banks and adjacent lands. Vegetated stream banks are up to 20,000 times more resistant to erosion than bare stream banks.³ The slower flow rates in a natural channel diminish erosive forces, and the root systems of riparian vegetation hold stream bank soils in place.⁴

Small seasonal streams play an important role in insuring water quality. As runoff travels over developed surfaces, it picks up pollutants from human activities, such as pesticides, oil, grease and heavy metals from vehicles, atmospheric deposition, sediments, chemicals, salts, septic discharge, and other pollutants from runoff and flood waters. Vegetated riparian areas trap some of these pollutants and keep them from reaching larger bodies of water. Connected riparian corridors function as living filters that protect adjoining streams and downstream bodies of water.⁵

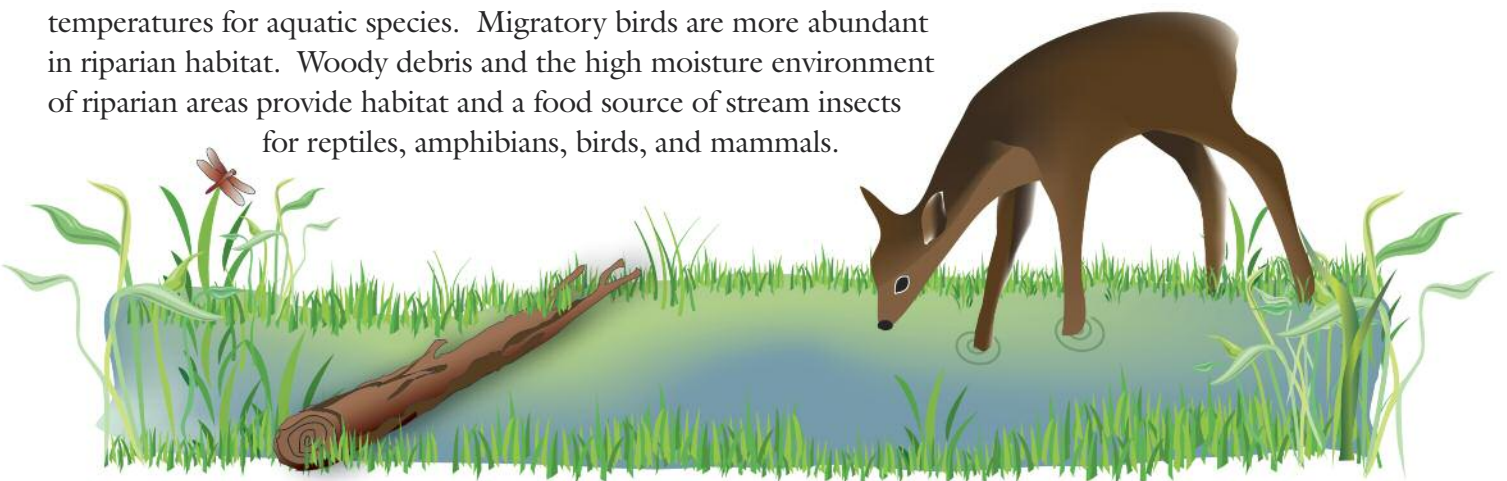
Small creeks provide a very effective environment for reducing the concentrations of biodegradable pollutants, such as oil and grease, gasoline residues and excess fertilizers. Small creeks have a much greater surface area in contact with the air than larger streams, which means that oxygen is readily available to assist in biodegradation. In addition, sunlight is able to penetrate to the bottom of the creek so that the energy in sunlight is available to assist biodegradation in the creek channel.⁶

The natural lining of a creek allows for infiltration of surface water into the ground to recharge groundwater. The recharged groundwater helps to maintain flow in creeks after the end of the rainy season. As water infiltrates into the natural substrate of the creeks, many dissolved pollutants in the water are retained in the soil.

Riparian corridors provide habitat to a wide array of wildlife, as much as 80% of western wildlife species.⁷ Access to a water source is a fundamental need of most mammals. Tree canopies provide shade, helping maintain lower summer stream temperatures for aquatic species. Migratory birds are more abundant in riparian habitat. Woody debris and the high moisture environment of riparian areas provide habitat and a food source of stream insects for reptiles, amphibians, birds, and mammals.

Creeks and riparian areas are critically important as wildlife habitat and migratory corridors.

—*Los Altos Hills General Plan: Conservation Element, 306 (p 2)*



Wildlife move throughout the Town along already existing natural passage ways, particularly in riparian areas, which provide food sources, shelter and passage for many different species. Stream corridors are the single most important wildlife corridors.⁸ By connecting all other habitats, they are at the heart of the ecosystem. Hence, these stream corridors are vitally important in preserving biological diversity. Most riparian corridors in Los Altos Hills are found in already protected Open Space Conservation Areas.

How Are Creeks Protected in Los Altos Hills?

The Santa Clara Valley Water Resources Protection Collaborative Guidelines and Standards for Land Use Near Streams, which the Town of Los Altos Hills formally adopted in 2007 (LAH Resolution 26–07), define a set of best practices critical to protecting streamside properties, as well as a stream’s ability to convey drainage water, recharge groundwater, and provide habitat for wildlife. The Guidelines and Standards address slope stability protection, establishment and protection of riparian buffers and define terms, such as, streams, channels, watercourses, top of bank, toe of bank, and streamside protection areas.

Setbacks and open space easements are the regulatory tools used to protect existing and potential buffers from encroachment. They can be effective to physically protect and separate a creek or wetland from future disturbance and encroachment. According to the scientific literature, the larger the buffer, the greater the protection of the local floral diversity.

Los Altos Hills protects creeks by requiring a minimum 25-foot setback from the top of bank. Open space easements may be required along creek corridors. The Open Space Conservation Area (OSCA) shown on the Land Use Diagram designates many of the creek corridors that should be protected along with the canyons and ravines associated with major creeks or their tributaries.

Barring certain very specific exceptions, grading or structures (including fences) are not permitted within this setback. Creek banks should be left in their natural state as much as possible. Native riparian vegetation is not allowed to be removed, and only native plants can be newly planted.

Greater setbacks may be required along major creeks (e.g., Matadero, Hale, Barron, and Adobe Creeks).

Only in exceptional circumstances would lesser setbacks be allowed, and such situations require approval of the Planning Commission.

By working together to protect streams and streamside resources, both property owners and local communities will benefit from healthier streams and riparian resources, reduced erosion, more safety for streamside residents and structures, improved flood protection and water quality, and, in many instances, increased property values if trees and streamside amenities are left intact or enhanced.

—Santa Clara Valley Water Resources Protection Collaborative

Structures must be set back at least 25 feet from the top of creek banks. To ensure adequate protection of these valuable resources, the expansion beyond 25 feet to the drip line of mature oak trees within the setback is advised.

—Los Altos Hills General Plan: Conservation Element, Program 1.1 (p 3)



How Are Riparian Areas Protected in Santa Clara County?

A small number of properties in the Los Altos Hills area lie in unincorporated portions of Santa Clara County and are subject to county riparian policies, which are stricter.

Santa Clara County policy recommends that creeks and streams that are predominantly in their natural state be protected from development by a buffer that is a minimum of 150 feet from the top of the bank⁹. Within this riparian buffer no buildings or structures are allowed except as part of flood control projects (R-RC38). The Santa Clara County General Plan also states, “Fencing should not restrict access by wildlife to the stream environment.” (R-RC 41). It emphasizes that not only must riparian habitat be conserved, but also must be accessible to the wildlife that depend on it. Fencing or other impediments that prevent access by wildlife to the stream environment may defeat the purpose of efforts to conserve the resource.

What Agencies Oversee Riparian Areas?

Protection of environmental habitats is important to comply with federal and state laws, including the Federal Clean Water Act, the Endangered Species Act, and California’s Porter Cologne Act and Endangered Species Act.

Federal standards direct states to protect water bodies with anti-degradation provisions so that these waters can continue to support their designated uses. The Basin Plan specifies a policy of no net loss of wetlands, and specifies the prevention of degradation of main stem and tributary stream channels in the San Francisco Bay Region.

California’s Porter-Cologne Act provides authority for the protection of the physical integrity of river and stream environments. The Act directs the Bay Area’s Regional Water Quality Control Board (Regional Board) to protect water quality by regulating any activity that may result in discharge to waters of the state and may result in degradation of water quality. These waters include all stream channels and their corridors, be they perennial, ephemeral, and/or intermittent stream channels or mainstream, tributary or headwater channels. The Board’s “Basin Plan” details beneficial uses that are directly related to the concern of the physical integrity of stream and river channels. A major mandate of the San Francisco Bay Regional Water Quality Control Board is to support local agency efforts to reduce erosion and sedimentation and protect riparian areas.¹⁰

Buffer zones shall be maintained or enhanced to protect stream functions. Examples of how this is achieved include stabilizing stream banks, minimizing storm runoff, and supporting vegetation which provide nutrients and shade.

— California Regional Water Quality Control Board Stream and Wetlands Systems Protection Policy

The Regional Board works cooperatively with the California Department of Fish & Game (DFG) and the federal U.S. Fish & Wildlife Service to assist in the protection of threatened and endangered species. Notification to DFG and permits are required for projects that may modify streambeds.¹¹ Proactive riparian and wetland land use policies are encouraged by all agencies to comply with the wide range of water quality and species protection regulations.

What Can Residents Do to Protect Riparian Areas?

Healthy, natural creeks and streams benefit landowners by improving water quality and providing erosion and flood control. The natural beauty of a well-cared-for stream can enhance property values. Creeks and riparian areas can be easily damaged by careless actions or poor management activities. Landowners can help preserve and enhance streams on their property in the following ways:

Dos:

1. Maintain riparian corridors as wide as possible to protect vegetation, facilitate wildlife movement, and preserve healthy stream function. A minimum of 25 feet from the top of bank is required in Los Altos Hills.
2. Preserve the natural features of the creek, including banks and vegetation. Tilling, compacting, changing the soil grade or drainage patterns should be avoided.
3. Leave existing native streamside vegetation intact. Roots of riparian vegetation are essential to hold stream bank soils in place and prevent erosion. Vegetated creek banks are up to 20,000 times more resistant to erosion than bare banks. Mowing, stripping, or clearing vegetation leads to erosion and loss of ability to filter and trap sediment and pollutants. Streamside trees, vines, shrubs, and grasses are all essential parts of the stream ecology.
4. Keep fencing out of riparian setbacks. If fences are desirable to demarcate property boundaries adjacent to open space easements, use wildlife-friendly fencing (i.e, split rail).
5. Identify sources of erosion that can carry sediment and pollutant into the creek from other parts of your property. Any spot where flowing water meets unprotected soil is a potential erosion area.
6. Keep domestic animals away from stream banks. Dogs and cats prey on riparian wildlife. Domestic livestock (i.e., horses) trample and eat riparian vegetation, leading to erosion and habitat disturbance.
7. Leave natural debris in the stream channel unless it poses an erosion or flood hazard. A moderate amount of fallen logs or other woody debris can provide natural protection for stream banks and important cover, food, and shelter for fish and other stream dwellers.
8. Remove invasive species in a timely manner to preserve the quality and function of riparian areas and avoid expensive restoration work in the future. Invasive, non-native species in riparian corridors can crowd out native vegetation and reduce hydrologic function and wildlife value. Common invasive plants found in Los Altos Hills are: Brooms, Italian thistle, Pampas grass, Arundo, Algerian and English ivy, Vinca (Periwinkle), Acacia, and ice plant. Avoid planting invasive exotic plants in landscapes. See “Don’t Plant a Pest” from Cal-IPC, <http://www.cal-ipc.org/landscaping/dpp/index.php>

Don'ts

1. Don't run drainage pipes or drain swimming pool water into a creek or stream.
2. Don't dump anything into a creek or stream. It is illegal. Do not throw grass clippings, tree prunings, liquid or solid waste, or any other debris into the creek. These can kill wildlife and vegetation and interfere with natural flows.
3. Don't channelize creeks by hardening the banks with rocks, wood, concrete or other materials. Flood control can usually be achieved through measures that preserve the natural environment and habitat of the creek. Always consult with local authorities before making any structural changes to the creek.

Further Information

1. Visit the SCVWD Website for Lists of Drought Resistant Native Plants and Invasive Plants.
2. For guidance on addressing drainage and bank erosion problems, visit the SCVWD website for design guidance, fact sheets and contact information.
3. For reporting illegal runoff or dumping in creeks or District property, contact the Santa Clara Valley Water District at CPRU@valleywater.org; or call (408) 630-2650; or visit: Access Valley Water on the District website.
4. For local and resource agency permits or regulations, visit the SCVWD website.

REGULATORY AGENCIES

Santa Clara Valley Water District (SCVWD)

Community Projects Review Unit
5750 Almaden Expressway
San Jose, CA 95118
(408) 265-2607 www.valleywater.org

CA Department of Fish and Game (DFG)

Bay Delta Region Main Office
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500 <http://www.dfg.ca.gov/delta>

Federal Emergency Management Agency (FEMA)

To determine if a property is in a floodplain, consult the FEMA Flood Insurance Rate Maps at:
<http://www.fema.gov/hazard/map/firm.shtm>

United States Army Corps of Engineers

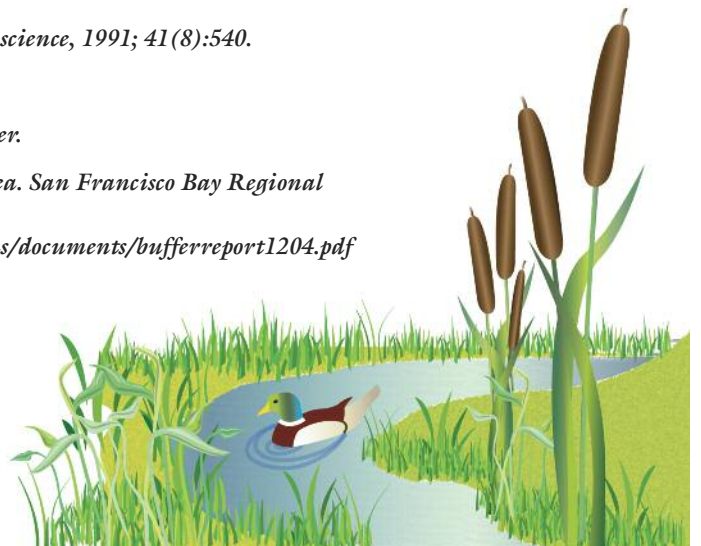
San Francisco District
333 Market Street
San Francisco, CA 94105-2197
(415) 977-8604 www.spn.usace.army.mil

CA Regional Water Quality Control Board

San Francisco Bay Region RWQCB
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2300
<http://www.waterboards.ca.gov/sanfranciscobay>

Footnotes

1. *Guidelines and Standards for Land Use Near Streams (Los Altos Hills Resolution 26-07, adopted May 24, 2007).*
<http://www.valleywater.org/Programs/WaterResourcesProtectionCollaborative.aspx>
2. Smardon R. Felleman J. *Protecting Floodplain Resources: A Guidebook for Communities, FEMA 268, 1996*
<http://www.fema.gov/library/viewRecord.do?id=1419>
3. Ohio EPA. *The Benefits of Stream and Riparian Habitat Protection in Ohio, 1994. Appendix to Ohio Water Resources Inventory, Ohio EPA, Division of Surface Water, Columbus, OH.*
4. Gregory SV, et al. *An Ecosystem Perspective of Riparian Zones. Bioscience, 1991; 41(8):540.*
5. Martin TL,, et al., *Review. Water, Air and Soil Pollution, 1999.*
6. *Regional Water Quality Control Board Section Leader Dale Bowyer.*
7. *Local Government Riparian Buffers in the San Francisco Bay Area. San Francisco Bay Regional Water Quality control Board, July 2004.*
http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/bufferreport1204.pdf
8. *Fish and Game wildlife biologist Alan Buchanan.*
9. *Santa Clara County General Plan: Book B. Rural Unincorporated Area Issues and Policies: Resource Conservation, pp 0-25 to 0-26.*
10. *A Primer of Stream and River Protection for the Regulator and Program Manager. Technical References W.D. 02#1 San Francisco Bay Region, California Regional Water Quality Control Board, April 2003.*
http://www.swrcb.ca.gov/water_issues/programs/stormwater/docs/hydromodification/meetings/072707/primerstreamriverprotection.pdf
11. *California Department of Fish and Game. Lake and Streambed Alteration Program.*
<http://www.dfg.ca.gov/habcon/1600>



Common Native Plants of Los Altos Hills Creeks and Associated Wildlife

Big Leaf Maple (*Acer macrophyllum*)

Birds eat insects in trunks and leaves. Trunks provide sap for sapsuckers. Woodpeckers nest in holes.

Buckeye (*Aesculus californica*)

The nectar and leaves feed beneficial insects as well as butterflies.

California Sycamore (*Platanus racemosa*)

A food plant for butterflies. Birds eat insects in the trunks and on foliage. Trunks provide sap for sapsuckers and nest hole sites for woodpeckers.

Live Oak (*Quercus agrifolia*) **Blue Oak** (*Quercus douglasii*) **Valley Oak** (*Quercus lobata*)

Insectivorous birds eat insects that feed on foliage. Acorns feed jays, woodpeckers, nuthatches and squirrels. Acorn woodpeckers use mature oaks for granaries to store acorns.

Arroyo Willow (*Salix lasiolepis*) **Scouler's Willow** (*Salix scouleriana*)

Willows are food plants for the larvae of several species of butterfly. Larger birds such as jays eat adult butterflies, and warblers consume insects on willow leaves. Thickets shelter streamside birds.

California Bay (*Umbellularia californica*)

Fruit-eating birds—American robin, cedar waxwings, band-tailed pigeon—favor the fruits.

Creek Dogwood (*Cornus sericea*) **Brown Dogwood** (*Cornus glabrata*)

Spring azure blue butterfly larvae eat dogwood leaves. Berries support fruit-eating birds.

California Rose (*Rosa californica*)

Fruit-eating birds eat rose hips. Thickets provide shelter for all woodland birds.

California Blackberry (*Rubus ursinus*)

The fruits are consumed by fruit-eating birds and animals, and the thickets provide shelter.

Blue Elderberry (*Sambucus Mexicana*)

The flowers attract nectar-feeding insects. An amazing variety of birds favor the fruits.

Mallow (*Malacothamnus fasciculatus*)

A food plant for the Large White Skipper butterfly and birds that eat the seeds.

Osoberry (*Oemleria cerasiformis*)

Hummingbirds and bees feed on nectar. Berries feed fruit eaters. Thickets give shelter.

Toyon (*Heteromales arbutifolia*)

Robins, varied thrush, and cedar waxwing favor the berries. Deer browse on the foliage.

Coyote brush (*Baccharis pilularis consanguinea*)

Seeds feed ground birds. Shrubs provide shelter and nest sites for chaparral-dwellers.

Snow Berry (*Symphoricarpos albus*)

Berries attract frugivorous birds.

Holly Leaf Cherry (*Prunus illicifolia*)

Foliage provides as food, nest sites and shelter for many species. Fruits feed frugivores.

Coast Silk Tassel (*Garry elliptica*)

Provides fruit for birds and nectar for insects and hummingbirds.

Ocean Spray (*Holodiscus discolor*)

Flower clusters attract insectivorous birds.

Coffee Berry (*Rhamnus californica*)

A food plant of the Pale Swallowtail. Birds eat the berries. Deer browse on the foliage.

Redberry (*Rhamnus crocea*)

Provides shelter and food for birds and mammals.

Golden Current (*Ribes aureum*)

Golden berries feed mockingbirds and other fruit-eating birds.

Canyon Gooseberry (*Ribes menziesii*)

Fruits are popular with birds.

Grasses (*Festuca californica*, *Nessella lepida*, *Melica torreyana*)

Grasses provide food and shelter for birds, mammals, caterpillars, and harvester ants.

Rush (*Juncus patens*)

Water-loving species find shelter among rushes.

Mugwort (*Artemisia douglasii*)

Bee plant (*Scrophularia californica*)

Popular nectar source for wasps, bees, butterflies and hummingbirds.

Honeysuckle (*Lonicera hispidula*)

Flowers provide nectar for hummingbirds and berries attract frugivorous birds.

Monkey Flower (*Mimulus aurantiaca*)

A larval food plant of euphydras checkerspot butterfly.

Yerba Buena (*Satureja douglasii*)

Soap Plant (*Chloragalkum pomeridianum*)

Night blooming flowers attract nocturnal insects. Deer browse on the leaves.

Pacific Sanicle (*Sanicula crassicaulis*)

Wild Strawberry (*Fragaria chiloensis*)

Birds and small mammals eat fruits. Bees pollinate blossoms.

Deerweed (*Lotus scoparius*)

Food plant of common sulfur butterfly.

Lace Parsnip (*Lomatium dasycarpum*)

Larval food plant of anise swallowtail butterfly.

Lupine (*Lupinus succulentus*)

Some butterfly larvae eat foliage, as do golden-crowned sparrows before migration.

Hound's Tongue (*Cynoglossum*)

Godetia (*Clarkia rubicund*)

Several insects collect pollen.

Ferns (*Polystichum munitum*, *Dryopteris arguta*, *Pentagramma triangularis*, *Polypodium californicum*,
Atherium felix femina)