

Streambank Erosion

Streambank erosion is a natural process whereby soil is carried into and down a waterway. Natural erosion can be beneficial to a riparian environment, but accelerated erosion rates resulting from human activities can have a negative impact on fish habitat, land value, and aesthetics. Excessive soil sediment can add too many nutrients, cloud waters, change stream temperature, limit oxygen levels, and cover spawning areas. Protecting the streambank where accelerated erosion is occurring is very important.

Streambank Stabilization

Some general methods of streambank stabilization include Revegetation, Armoring, and Deflection. Before performing any streambank stabilization though, consult your local jurisdiction to determine if any permits are required, and consider seeking professional advice about your project plans (see back).

Revegetation: The best way to prevent erosion is to keep the area vegetated. Most other stabilization methods are temporary means to allow vegetation to establish and form long-term protection. Some tips:

- Before choosing plants for revegetation, always investigate nearby native plant communities to select species adapted to the local microclimate (see back).
- For creekside construction areas, take cuttings and seeds from existing native vegetation before construction begins and cultivate. When replanting, use this material so new plants are genetically similar and acclimated to the specific area.
- Overplanting is recommended since some plants will likely die at first.
- Use mulch or erosion-control blankets to hold and form a protective barrier over the seeds, and to retain soil moisture.

Why is Stream Care Important?

A *stream* is a complex, living system where many plants and animals make their home. The stream corridor including vegetation along the bank is known as the *riparian* area. The riparian area serves as a conduit for floodwater, replenishes surface and ground water, provides fish and wildlife habitat, and contributes to a host of aesthetic and recreational benefits. A healthy riparian corridor correlates with higher land values.

Since the majority of streamside property is privately owned, property owners are responsible for properly managing their riparian areas and streams. Minimizing erosion is important to preserve these great natural resources.

- You may need to provide supplemental water to keep the soil moist until the plants are firmly established.
- Monitor revegetation for at least three years.

Armoring: Materials are applied to strengthen a streambank against further erosion and to dissipate water's erosive force against the soil. Natural materials such as logs or living trees are preferred since their shelter and decomposition help allow for revegetation.

Deflection: Rock or log structures are used upstream of an eroding area to direct the water force away from the unstable area. Deflectors can create important fish habitat and catch sediments. Logs and tree root wads are ideal materials to use in restoration work.

10 Guidelines for Streamside Enhancement:

- ✓ **Never use fertilizers or pesticides in the riparian or aquatic zone.** The runoff can kill insects, fish, birds, and other wildlife.
- ✓ **Keep domestic animals away from the streambanks.** Dogs and cats prey on riparian wildlife, while livestock trample or eat riparian plants leading to erosion and wildlife habitat disturbance.
- ✓ **Do not rake up leaf litter and fallen branches of native plants.** This material provides food and shelter for beneficial insects, a crucial part of the food chain.
- ✓ **Do not dump yard wastes or grass clippings into the creek or riparian corridor.** They smother existing plants, causing erosion and spreading invasive, non-native plants. Their decomposition also robs the water of valuable oxygen, affecting fish and other aquatic organisms.
- ✓ **Minimize soil compaction.** Control the use of trails and other recreational activities.
- ✓ **Control erosion by protecting areas where flowing water meets bare soil,** such as on dirt roads, trails, driveways, earthen drainage ditches, or patches of bare or sparsely vegetated earth.
- ✓ **Protect existing native vegetation.** Construction, compaction, tilling, changes to soil grade or drainage patterns, should not occur under the tree drip-line (from the trunk to the edge of vegetation canopy).
- ✓ **For construction in riparian areas, work by hand. Avoid machinery.**
- ✓ **Observe nearby creek habitats** to determine which native plants grow in relation to the stream.
- ✓ **Plant locally collected native plant material** (see back).

Where to Find Native Plants:

Demonstration Gardens:

Native Hill at Foothill College

Woodside Public Library Garden at 3140

Woodside Road, Woodside

Environmental Studies Area at De Anza College in
Cupertino on McClellan Road

Yerba Buena Nursery at 19500 Skyline Boulevard,
Woodside

Native Plant Sales:

The California Native Plant Society (650) 962-
9876 at Peninsula Conservation Center

**Foothill College and San Francisco Wildlife
Refuge**, Fremont (510) 792-4275

For a list of plant species native to the region, visit
local demonstration gardens (see above) or refer
to the San Francisquito Creek Watershed CRMP
Process' *Streamside Planting Guide for San Mateo
and Santa Clara County Streams*, available from
your local planning department.

For more information on permit requirements,
see:

STOPPP's "Guide to Creek & Wetland Project
Permitting" or California Permit handbook:

<<http://commerce.ca.gov/business/permits/index.html>>.



San Mateo Countywide
Stormwater Pollution Prevention
Program (STOPPP)
555 County Center
Redwood City, CA 94063
(650) 599-1406 Fax (650) 361-8227

STOPPP gratefully acknowledges the following resources used
in the development of this brochure: Ann L. Riley's *Restoring
Streams in Cities*; BASMAA Operational Permits Committee's
*Flood Control Facility Maintenance Best Management Practices
Manual*; and the San Francisquito Creek Watershed Coordinated
Resource Management and Planning Process' "Streamside
Planting Guide for San Mateo and Santa Clara County Streams."

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Federal Agencies:

U.S. Army Corps of Engineer (415) 977-8461
USDA Natural Resources (408) 636-8029
Conservation Service
U.S. Fish and Wildlife (916) 979-2710
National Marine Fisheries (707) 575- 6050

State Agencies:

California Dept. of Fish and Game (707) 944-5525
Water Resources Control Board
Water Rights Permit Division (916) 657-2170
Urban Stream Restoration Program (916) 327-1664
Regional Water Quality Control (510) 622-2800
Board
California Coastal Commission (415) 904-5267
Bay Conservation and (650) 557-3686
Development Commission

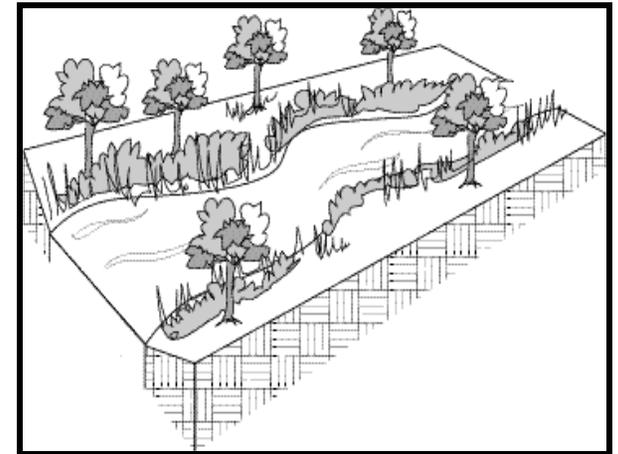
Regional Districts:

San Mateo County (650) 363-1823
Flood Control District
Santa Clara Valley Water District (408) 265-2600
ext. 2253

Local Jurisdictions (Planning Departments):

Town of Atherton (650) 688-6523
City of Belmont (650) 595-7416
City of Brisbane (415) 508-2120
City of Burlingame (650) 696-7250
Town of Colma (650) 985-2590
City of Daly City (650) 991-8034
City of East Palo Alto (650) 853-3189
City of Foster City (650) 286-3232
City of Half Moon Bay (650) 726-8250
Town of Hillsborough (650) 375-7400
City of Menlo Park (650) 858-3400
City of Millbrae (650) 259-2341
City of Pacifica (650) 738-7342
Town of Portola Valley (650) 851-1700
City of Redwood City (650) 780-7234
City of San Bruno (650) 877-8876
City of San Carlos (650) 802-4263
City of San Mateo (650) 522-7200
City of South San Francisco (650) 877-8535
Town of Woodside (650) 851-6796
County of San Mateo (650) 363-4161
County of Santa Clara (408) 299-2454

Erosion and Sediment Controls for Riparian Areas (DRAFT)



Best Management Practices for Streamside Residences



San Mateo Countywide
Stormwater Pollution
Prevention Program
(STOPPP)