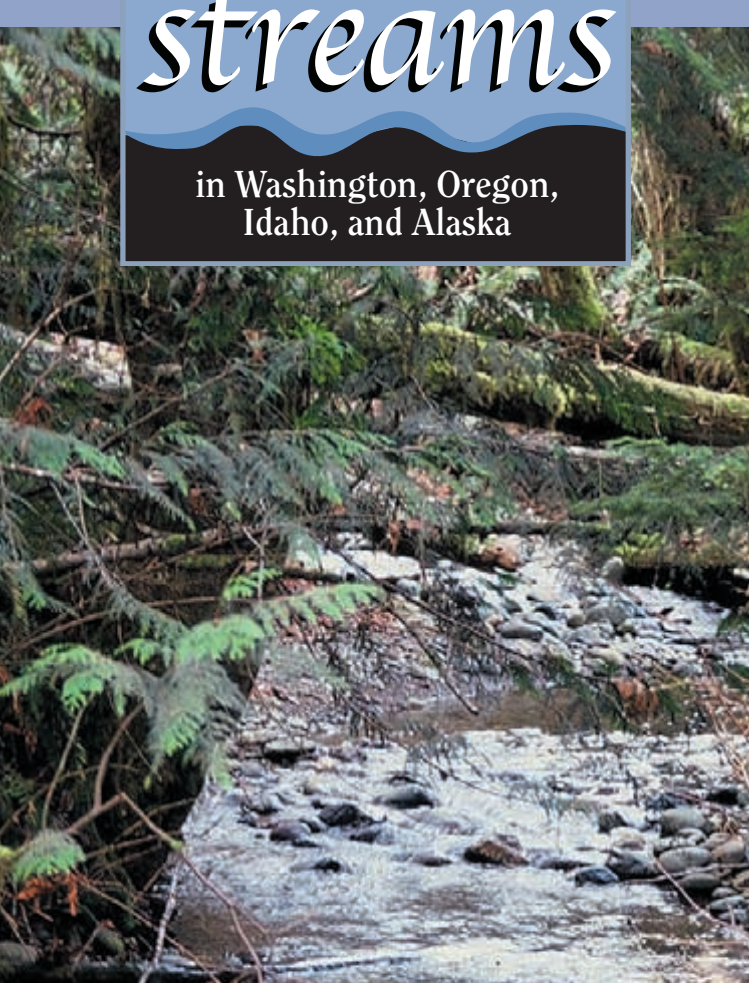


Taking Care of

streams

in Washington, Oregon,
Idaho, and Alaska



A Developer's Guide to Riparian Areas

PNW 562 • October 2002 • A Pacific Northwest Extension publication
Oregon State University • University of Idaho • Washington State University
in cooperation with the University of Alaska

As a developer in the Pacific Northwest, you have a unique opportunity to help maintain and improve the health of streams and riparian areas. This brochure describes what a riparian area is, why it is important, and what you can do to take care of the land. A healthy riparian area benefits people, wildlife, and everyone downstream.

A riparian area is the land adjacent to a stream, lake, or wetland. Most healthy, natural riparian areas have moist, fertile soils that support many types of plants. These plants provide food and shelter to numerous fish and wildlife, a benefit that is especially important in the arid areas of the West.

Healthy riparian areas:

- Reduce the chance of damaging floods
- Improve water quality
- Provide habitat and food for fish and wildlife

Why do riparian areas matter?

Plants in healthy riparian areas:

- Provide wood to streams, creating fish habitat and slowing the stream current during and after storms.
- Shade streams in summer. Cool water is healthier for many native fish species.
- Help prevent erosion by holding soil in place with roots.
- Filter sediment out of muddy runoff, keeping it from smothering fish habitat.
- Allow heavy winter rains to soak into the soil instead of running into the stream. This reduces flooding and allows water to be released slowly to the stream during the dry season.
- Filter out pollutants, such as fertilizers, pesticides, and animal wastes.
- Provide food sources, homes, shelter, and travel corridors for wildlife, fish, and other aquatic organisms.

The bottom line is:

- Less flooding during and immediately after storms
- More water in the stream during summer
- Cleaner water
- Homes, food, and shelter for fish and wildlife
- Reduced property maintenance costs
- Enhanced property values and market appeal



It's all about plants

Healthy riparian areas include a variety of types and ages of plants, including trees, shrubs, grasses, and groundcovers. Plants adapted to local rainfall, climate, insects, and soil conditions tend to be easier to care for because they need less water and pesticides.

Most native plants are well adapted to their region. In the drier regions of the inland Pacific Northwest, a few of the common native riparian plants are:

- Alders
- Black cottonwood
- Douglas-fir
- Elderberry
- Nettles
- Oceanspray
- Oregon ash
- Pacific ninebark
- Red-osier dogwood
- Salmonberry
- Scouring rushes
- Sedges
- Snowberry
- Swamp rose
- Water birch
- Western hemlock
- Western redcedar
- Willows
- Woods' rose

Runoff from rooftops and paved areas flows into a bioretention area in this Portland apartment courtyard.





Rip-rap along streams conveys more energy, and thus more erosion, downstream. Lack of shading and nutrient inputs from lawns are detrimental for fish and wildlife. Houses built so close to the stream are exposed to flood danger.

How does development change riparian areas?

Land development and construction can severely alter riparian areas. Removing plants during construction and landscaping, especially in the riparian area, can harm streams. The use of construction and grading equipment results in compacted soils. Compacted soils and loss of vegetation to impervious surfaces (such as roofs and pavement) mean less water can soak into the ground. These changes affect streams and the habitat they provide for fish and wildlife during rainy and dry seasons. During the rainy season, developed areas are associated with higher volumes and greater flows of stormwater runoff. During the dry season, water levels in streams are lower as a result of less water being stored as groundwater. Construction activities and road development also increase sediment and pollution in streams.

When streams and riparian areas are not healthy, people feel the consequences.

- We lose recreational areas.
- Fish and wildlife decline, reducing opportunities for hunting, fishing, and wildlife viewing.
- Increased flooding may cause erosion and property damage.
- The region may lose economic opportunities because people avoid unattractive and unhealthy areas.

What Can You Do?

Conserve natural areas

- Plan new construction away from streams and wetlands.
- Minimize or eliminate stream crossings.
- Always observe local ordinances and obtain proper permits.
- Landscape with native plants for environmental benefits and reduced maintenance. Native plants need less water and chemicals, which can wash into streams.
- Avoid planting lawns right up to the stream. Leave as wide a natural vegetation buffer as possible next to the stream.
- Leave wood and other natural materials in streams.
- Restore eroded streambanks with help from professionals.
- Avoid straightening channels and/or hardening streambanks with concrete or stone.
- Indicate buffers on plans and provide well-marked barriers for riparian area protection during construction.

Implement pollution prevention, proper maintenance, and public education programs

- Inform landowners and contractors about the importance of riparian areas, and use strategies to protect riparian areas during construction.
- Encourage covenants and other agreements for long-term protection and maintenance of riparian areas.
- Install permanent signs delineating the riparian buffer and explaining the importance of proper maintenance.

Oceanspray



Snowberry



Minimize impacts of development

- Develop site plans that preserve natural patterns of infiltration and runoff.
- Direct runoff toward landscaping or other filtering systems where water can seep slowly into the soil.
- Minimize paved areas. Keep roof areas, walkways, parking lots, and driveways as small as possible.
- Consider using alternatives to pavement such as pavement blocks, porous concrete, or porous asphalt. These materials let runoff flow underground, where it can be released slowly into the soil.
- Amend soils with organic materials, such as mulch, to increase the soil's ability to absorb water and filter pollutants.
- Protect native trees, shrubs, groundcovers, and soils throughout the site to help slow, store, and filter stormwater runoff on-site.

Healthy riparian areas enhance aesthetics and contribute to more livable communities.

© 2002 Oregon State University. This publication may be photocopied or reprinted in its entirety for noncommercial purposes.

Published and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914, by the Pacific Northwest Extension publishing cooperative (Oregon State University Extension Service, Washington State University Cooperative Extension, and the University of Idaho Cooperative Extension System) in cooperation with University of Alaska Cooperative Extension and the U.S. Department of Agriculture. The four participating Extension Services offer educational programs, activities, and materials—without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. The Oregon State University Extension Service, Washington State University Cooperative Extension, the University of Idaho Cooperative Extension System, and University of Alaska Cooperative Extension are Equal Opportunity Employers. Published October 2002.



Permeable and porous pavements can reduce runoff, encourage infiltration, and filter pollutants. (Photo courtesy of Puget Sound Water Quality Action Team)



A rain garden (front) serves as a bioretention area for runoff.



This residential street was redesigned by the City of Seattle under the Seattle's Street Edge Alternatives Program. Streets were narrowed and gutters removed so that runoff can be directed to swales and bioretention areas. (Photo courtesy of Seattle Public Utilities)



Drains from a parking garage or building can be directed to a vegetated area to reduce runoff and provide treatment.

Taking Care of Streams in Washington, Oregon, Idaho, and Alaska

A Developer's Guide to Riparian Areas

For more information

Best Management Practices for Erosion Control (R.L. Mahler, et al., Soil Science Division, University of Idaho, WQ-27). <http://www.uidaho.edu/wq/wqbr/wqbr27.html>

Landscaping for Wildlife in the Pacific Northwest (R. Link, 1999, Washington Department of Wildlife and University of Washington Press). <http://www.wa.gov/wdfw/wlm/landscap.htm>

Landscaping with Native Plants in the Inland Northwest (T. Fitzgerald, revised 2001, Washington State University Cooperative Extension, MISC 0267). <http://pubs.wsu.edu>

Life on the Edge: Improving Riparian Function (D. Godwin, 2000, Oregon State University Extension Service, EM 8738). <http://eesc.oregonstate.edu/agcomwebfile/edmat/EM8738.pdf>

Low-impact Development Design Strategies: An Integrated Design Approach (1999, Maryland Department of Environmental Resources Programs and Planning Division). http://www.wa.gov/puget_sound/Programs/lid_cd/pdf_docs/lid_natl.pdf

*Stream*A*Syst: A Tool to Help You Examine Stream Conditions on Your Property* (G. Andrews and L. Townsend, 2000, Oregon State University Extension Service, EM 8761). <http://eesc.oregonstate.edu/agcomwebfile/edmat/html/em/em8761/em8761.html>

Stream Corridor Restoration—Principles, Processes, and Practices (The Federal Interagency Stream Restoration Working Group, 1998, revised August 2000). http://www.usda.gov/stream_restoration

EPA Region 10

Seattle, WA

206-553-1200

800-424-4372 (toll free in AK, ID, OR, WA)

<http://www.epa.gov/r10earth/>

National Low Impact Development Center

301-982-5559

<http://www.lowimpactdevelopment.org>

Stormwater Manager's Resource Center

<http://www.stormwatercenter.net/>

Alaska

Cooperative Extension Service

Call your local office or 907-786-6300

<http://www.uaf.edu/coop-ext/>

Natural Resources Conservation Service

907-761-7700 (<http://www.ak.nrcs.usda.gov/>)

Alaska Soil and Water Conservation Districts

907-271-2424 (<http://www.alaskaswcds.org>)

Oregon

Oregon State University Extension Service

Call your local office or 541-737-4021

<http://oregonstate.edu/extension/>

Natural Resources Conservation Service

503-414-3200 (<http://www.or.nrcs.usda.gov/>)

Oregon Association of Conservation Districts
503-472-6307 (<http://www.oacd.org/>)

Washington

WSU Cooperative Extension

Call your local office or 509-335-2885

<http://wawater.wsu.edu>

Natural Resources Conservation Service

509-323-2900 (<http://www.wa.nrcs.usda.gov/>)

Washington Association of Conservation Districts

360-407-6200 (<http://wa.nacdnet.org/>)

University of Washington Center for Urban

Water Resources Management

<http://depts.washington.edu/cuwrm/>

Washington State Department of Ecology

<http://www.ecy.wa.gov/programs/wq/wqhome.html>

Idaho

University of Idaho Cooperative Extension

Call your local office or 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

Natural Resources Conservation Service

208-378-5700 (<http://www.id.nrcs.usda.gov/>)

Idaho Association of Soil Conservation Districts

208-338-5900 (<http://www.iascd.state.id.us/>)

Funded in part by USEPA Region 10 and the USDA Cooperative State Research, Education, and Extension System. Regional Water Quality Coordination Team: Marilyn Freeman, EPA liaison; Robert L. Mahler, University of Idaho; J. Ronald Miner, Oregon State University; Robert Simmons, Washington State University; Fred Sorensen, University of Alaska; and Sylvia Kantor, Washington State University (editor). Cover photo (top) courtesy of USDA NRCS.