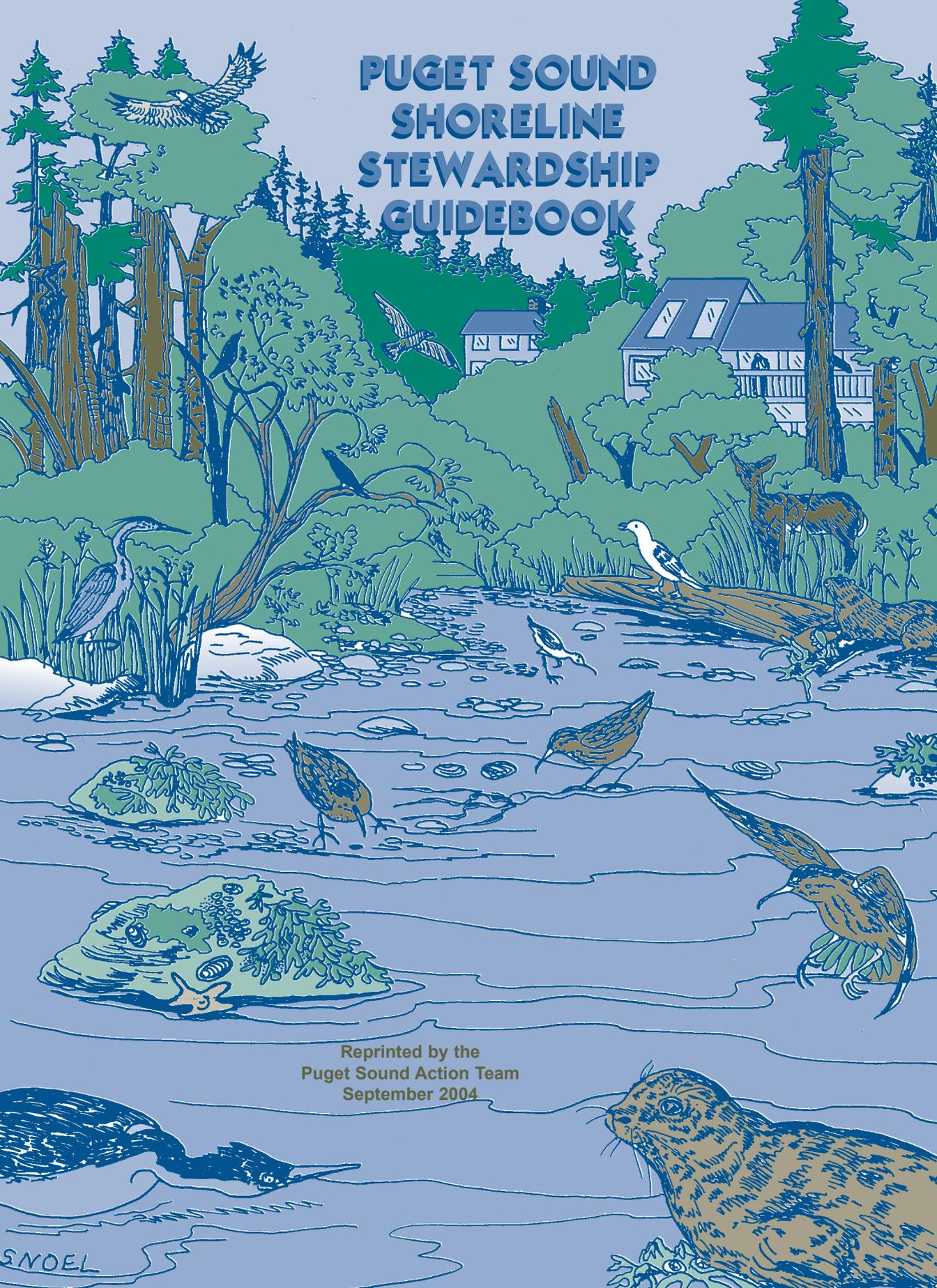


# PUGET SOUND SHORELINE STEWARDSHIP GUIDEBOOK



Reprinted by the  
Puget Sound Action Team  
September 2004

# A sample of fish and animals that rely on the Puget Sound shoreline as part of their habitat



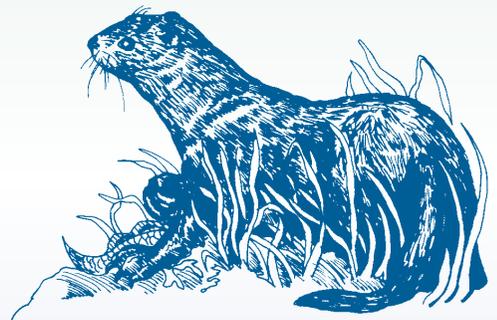
**Great blue herons** wade and hunt in shallow shoreline waters and nest in trees above the beach. Shoreline development can destroy these habitats and displace these shy birds.



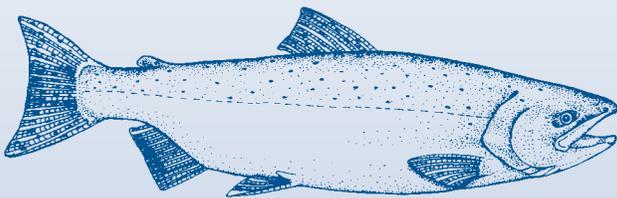
**Bald eagles** nest in large trees at the shore's edge where they also perch to look for prey.



**Surf smelt** are small forage fish that are an important food source for many species of birds and larger fish. Surf smelt lay eggs high on the beach, an area easily affected by construction activities.



**River otters** have the best of both worlds, using riverbanks and marine shorelines for shelter and food. They may leave pups on shore while hunting for food.



Young **chinook salmon** spend up to a year in shoreline habitats such as eelgrass beds, feeding on small fish before migrating out to sea. Resident blackmouth chinook depend on Puget Sound and its shorelines their entire lives.

These fish and wildlife, along with thousands of other species, are intricately connected and help make Puget Sound rich in life. Their survival depends, in part, on our stewardship of their habitat.

# Puget Sound Shoreline Stewardship Guidebook

<b>A Regional Treasure in Your Care</b> .....	<b>.2</b>
<b>Life on the Edge</b> .....	<b>.3</b>
<b>Erosion is a Natural Process</b> .....	<b>.4-5</b>
<b>Reducing Runoff</b> .....	<b>.6</b>
<b>Working with Neighbors</b> .....	<b>.7</b>
<b>Go Wild!</b> .....	<b>.8</b>
<b>Prudent Pruning</b> .....	<b>.9</b>
<b>Debunking Bulkheads</b> .....	<b>.10</b>
<b>Making Peace with Gravity</b> .....	<b>.11</b>
<b>Beach Access</b> .....	<b>.12</b>
<b>Enjoying the Beach</b> .....	<b>.13</b>
<b>Water Quality</b> .....	<b>.14-15</b>
<b>On-Site Septic Savvy</b> .....	<b>.16-17</b>
<b>Marine Plants</b> .....	<b>.18</b>
<b>Alien Invaders!</b> .....	<b>.19</b>
<b>Shoreline Stewardship</b> .....	<b>.20</b>
<b>Play by the Rules</b> .....	<b>.21</b>



# A Regional Treasure in Your Care

**L**iving near the water, you're in a prime position to enjoy the beauty of Puget Sound and to witness the forces of nature that continually shape and reshape its beaches.

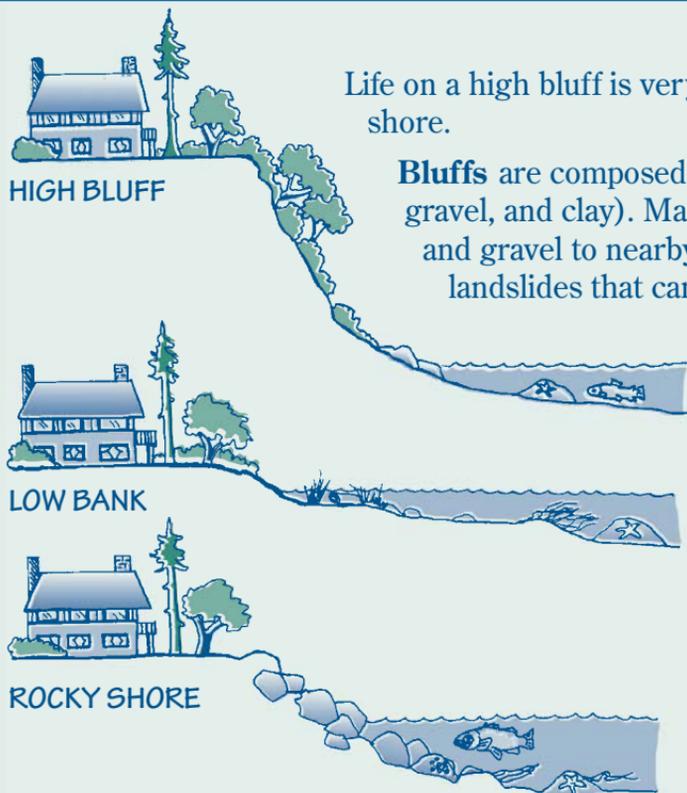
By being close to the water, your home and property can feel the effects of those forces, which at times may even threaten your property.



This book is full of Sound advice and useful resources for your family, neighbors, and friends.

It provides information about the natural environment along the shoreline and tips for living in harmony with the Sound.

# Life on the Edge



Life on a high bluff is very different from life on a low bank or rocky shore.

**Bluffs** are composed of many layers of glacial material (sand, gravel, and clay). Many bluffs erode slowly, providing essential sand and gravel to nearby beaches. They may at times experience landslides that can be dangerous to waterfront dwellers.

**Low bank** properties may experience wind and water damage, flooding, and landslides from above. Mud beaches usually occur in a more sheltered area where wind and waves are not a problem, but flooding may still occur.

**Rocky shores** are made of bedrock and boulders too large to be moved by waves. These shores contain some of the richest marine habitats in Puget Sound. This environment generally has few erosion problems.

# Erosion is a Natural Process

**P**uget Sound beaches are constantly changing. Storms erode bluffs, and currents redistribute sand, gravel, and driftwood along the shoreline. This cycle keeps beaches supplied with sediment so they don't wash away. It also provides essential beach materials as habitat for animals and plants.

Steep slopes are naturally unstable. When water builds up in the soil faster than it can drain, the slope instability increases. In fact, excess runoff and poor drainage are the leading causes of landslides, rather than wave action.

Undeveloped land with trees and other vegetation readily absorbs rainfall. When we remove vegetation, build houses, and pave driveways, we reduce the ability of the land and vegetation to absorb water, creating drainage problems. Uncontrolled runoff can trigger landslides and saturate unstable soils.



Get to know and understand your property and the nature of erosion on the bank before you make changes to your landscape. Often this means getting a geologist to evaluate the situation.

If you haven't built on the land yet, site your home as far back from the water as possible to help prevent erosion concerns.

### **Questions to ask:**

- 2 If there is erosion, is it primarily due to wave action or is it more related to drainage and soil conditions upslope? How serious is the erosion problem?
- 2 If erosion is related to drainage, what is causing the problem?
- 2 What range of options do I have for addressing this problem?

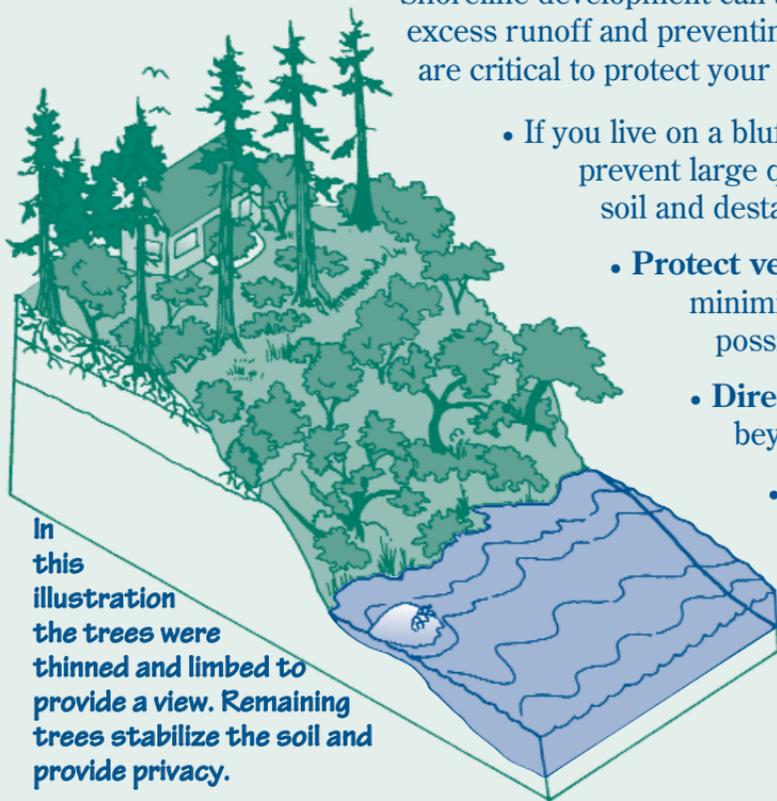
### **Solutions described in the pages that follow may include:**

- 2 Reducing uncontrolled runoff from lawns, roofs, and driveways.
- 2 Working with your neighbors for everyone's benefit.
- 2 Planting shrubs and/or trees to stabilize soils and absorb water.
- 2 Engineered structures such as bulkheads and retaining walls.
- 2 Other more natural approaches such as beach nourishment and vegetation.

# Reducing Runoff

Shoreline development can aggravate erosion. Therefore, managing excess runoff and preventing water from accumulating in the soil are critical to protect your property from erosion.

- If you live on a bluff, **manage drainage** carefully to prevent large quantities of water from saturating the soil and destabilizing the slope.
- **Protect vegetation.** During construction, minimize clearing and replant as soon as possible.
- **Direct the drainage from downspouts** beyond the base of the bank.
- **Inspect and maintain** your drainage system annually.
- **Don't over water.** Most lawns need only 1½ inches per week total, including both rain and watering.
- **Landscape with plants** that require little watering once established. Native plants are best.



## Working with Neighbors

If you've lived on the shoreline for a while, you know that your property's well-being is tied to that of your neighbors. Nature pays no attention to property lines!

A beach often depends on a continuous supply of sand and gravel from a slowly eroding bluff farther up the shoreline. If a boat ramp, dock or bulkhead blocks the movement of that material along the shore, then neighboring beaches farther down the shoreline may begin to disappear.

If poorly managed drainage on one property causes a landslide, it can affect properties on either side. Actions taken by neighbors above affect those below.

Neighbors in many parts of Puget Sound protect habitat and their properties by sharing docks, access trails, and stairways. On some beaches, groups of landowners replace a number of worn-out bulkheads with a re-built, more natural beach with good results.

Work together with your neighbors to enjoy your property, protect its habitats, and preserve its economic value. The best solutions happen when neighbors get together to manage the shoreline they share.



Plants are valuable assets on waterfront property. They help stabilize slopes, offer habitat to wildlife, and keep soil from being oversaturated with water.

Consider letting some of your land grow wild and using native plants in your landscaping as an attractive, low-maintenance and low-risk approach:

-  You'll have less to mow.
-  Thickets make great habitat for songbirds and other wildlife.
-  Vegetation overhanging the beach is important to provide shade for forage fish and insects for migrating salmon.
-  Once established, many native plants need little watering.
-  Native plants rarely require chemical applications.

## ----- Best Erosion Control Plants -----

### Native shrubs:

Oceanspray  
Snowberry  
Salal  
Serviceberry  
Evergreen huckleberry  
Red-osier dogwood  
Sword fern

### Native trees:

Pacific madrone  
Shore pine  
Douglas fir  
Western red cedar  
Sitka spruce  
Vine maple  
Willow (native)



Pacific  
Madrone



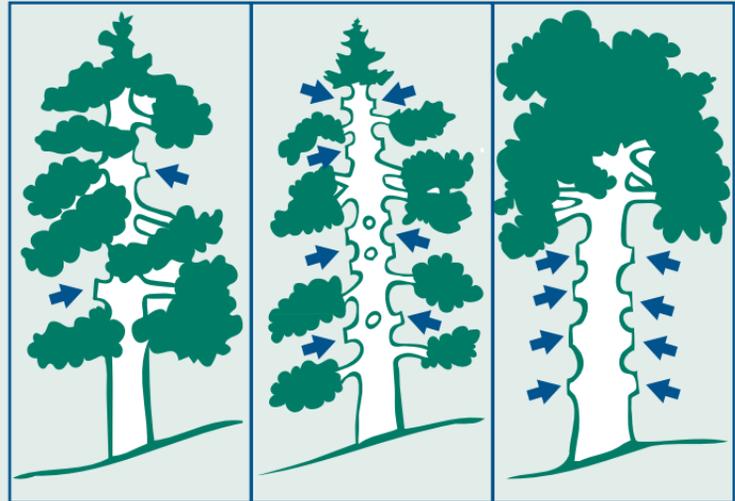
Douglas  
Fir

# Prudent Pruning

Trees play a valuable role in erosion control on Puget Sound bluffs. Once a tree is removed, its functions can never be replaced.

What if a tree is blocking your view?  
Before reaching for the chain saw:

- ✿ Consider limbing or pruning, as shown below—but NOT topping! Topping makes trees vulnerable to disease.
- ✿ Instead of removing an entire stand of trees, remove one or two and fill in with native shrubs.
- ✿ If a tree must come down, leave its roots in place for bank structure, and leave some trunk for wildlife habitat.
- ✿ Plant shrubs or young trees around the base of a tree stump.



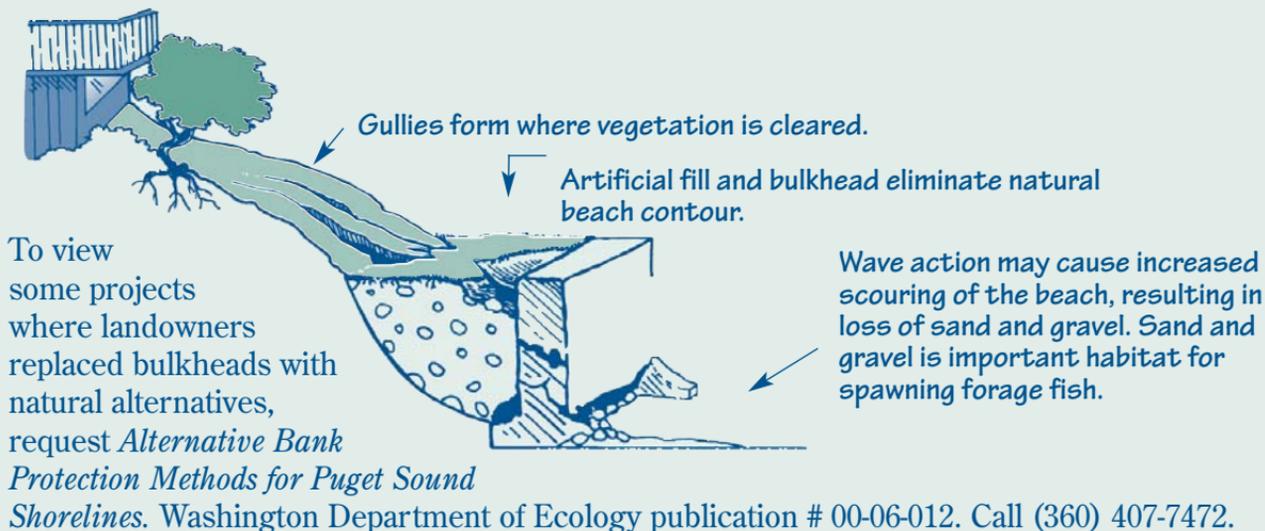
Windowing

Interlimbing

Skirting up

# Debunking Bulkheads

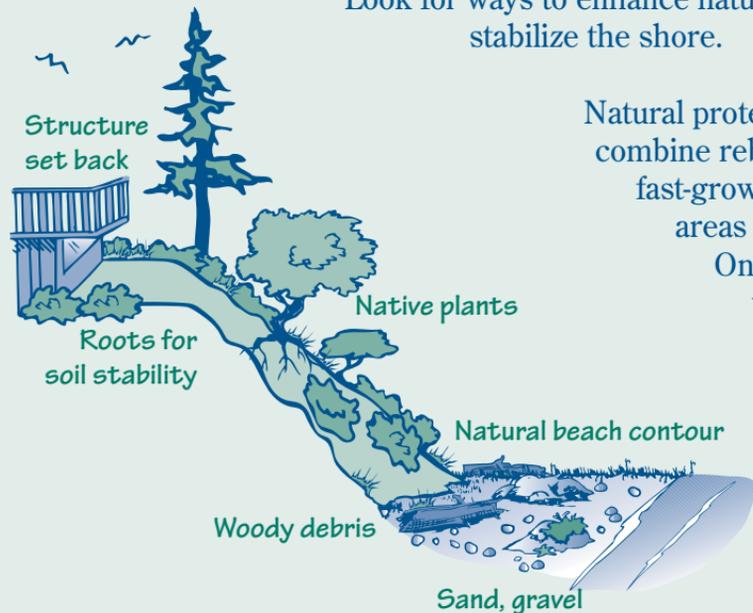
Since most erosion results from upland drainage problems rather than wave action, a bulkhead or rock seawall may not be the best solution. In fact, bulkheads can cause increased erosion of the beach when waves reflect off the hard structure. This can undermine and topple a bulkhead and actually endanger your property and result in long-term financial and environmental costs.



# Making Peace with Gravity

Our improved understanding of shorelines has led to more effective long-term approaches to stabilize the shore. Natural beaches are a great model.

Look for ways to enhance nature's ability to absorb energy and stabilize the shore.



Natural protection alternatives exist. They often combine rebuilding a natural beach and planting fast-growing plants that help stabilize eroding areas while maintaining important habitat.

On some sites, re-nourishing the beach with gravel can actually reduce wave action.

Whichever option you choose, ask questions and check with your local planning department about the approach. Solutions are specific to each site.

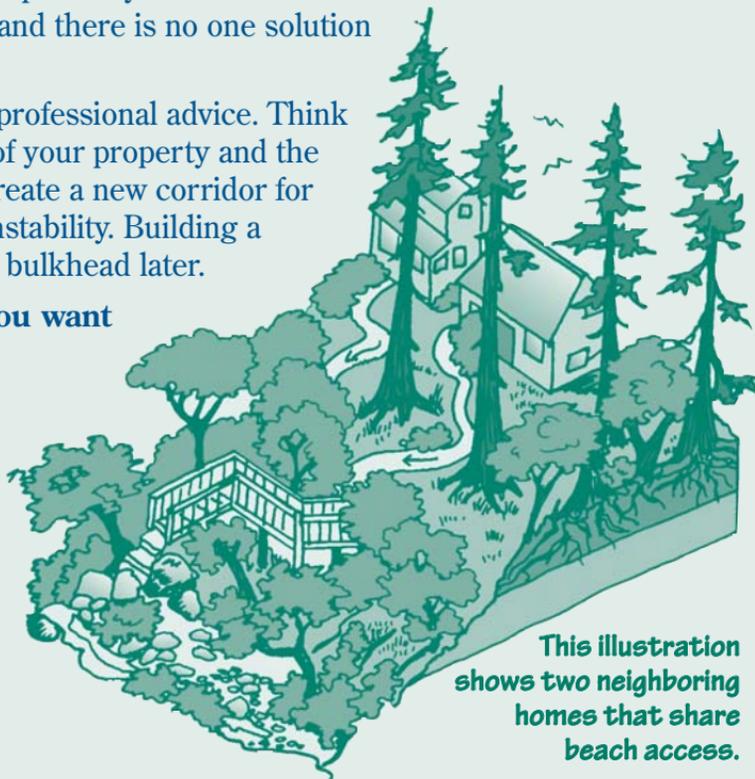
# Beach Access

Similar to many shoreline residents, you probably want access to the beach. Every property is different and there is no one solution for creating access.

Before you build trails or stairways, get professional advice. Think carefully about the effects on the stability of your property and the health of the beach. Clearing a path may create a new corridor for water to drain, creating gullies and slope instability. Building a stairway may require the construction of a bulkhead later.

## Important questions to consider if you want to create beach access:

- Where is the best site for access?
- Are there options for shared access in the neighborhood?
- How much clearing will be involved?
- Will it cause negative impacts to the beach?
- Will it be safe?
- What permits will I need?



**This illustration shows two neighboring homes that share beach access.**

# Enjoying the Beach

Exploring the beach is just one of many of the benefits of being a shoreline property owner, but please be thoughtful and follow these guidelines:

- 🌀 If you pick up a rock, please put it back the way you found it so the creatures living on its underside aren't exposed to the sun and air.
- 🌀 Fill in any holes that you dig.
- 🌀 Don't scare away wildlife.

Call your local health department to check on the safety of harvesting shellfish on your beach or any beach, and be sure to get a permit. If you are interested in cultivating shellfish on your beach, Washington Sea Grant has a guide on how to grow clams and oysters.



# Water Quality

As it flows across the land, rainwater can pick up oil or grease from roads and driveways, chemicals and pet waste from gardens and lawns. Contaminated runoff can harm marine plants and animals, make waters unsafe for swimming, and make shellfish unsafe to eat. Nutrients from fertilizer, pet waste, and on-site septic systems can create an unbalanced growth of algae and bacteria in parts of Puget Sound that can strip oxygen from the water and result in fish kills.

## To protect water resources:

- Keep your car tuned. Regular tune-ups help prevent leaks.
- Dispose of pet waste in your trash.
- Visit a professional car wash, where soapy water is recycled. OR wash your car or boat on the lawn (not on pavement) using a mild, phosphate-free soap.
- Maintain a healthy buffer strip of native woody plants along the shoreline to help filter out pollutants.
- Do not use toxic household or lawn chemicals.



# What Do You Add to Puget Sound?



# On-site Septic Savvy

If your home has a drainfield, then drainage and water conservation are critical. Septic systems require routine maintenance, inspection, and pumping to operate properly. Inspect your system at least every three years and have the tank pumped as needed by a certified professional. If building a new home or replacing an old septic system in areas with nutrient pollution, talk to the designer about installing a system that treats nitrogen as well as bacteria, and locate the drainfield as far from the water as possible.

- 9 Put only waste and toilet paper into the system.
- 9 Don't use septic tank additives. They can kill the "good bugs" that make your septic system work effectively.
- 9 Conserve water to reduce volumes of sewage.
- 9 Sequence washing machine and dishwasher loads to prevent surges of water.
- 9 If you have a garbage disposal, do not use it.
- 9 Do not flush unused drugs into the system, but instead take them to a hazardous waste collection site.
- 9 If you have a large family, you may need to pump more often.

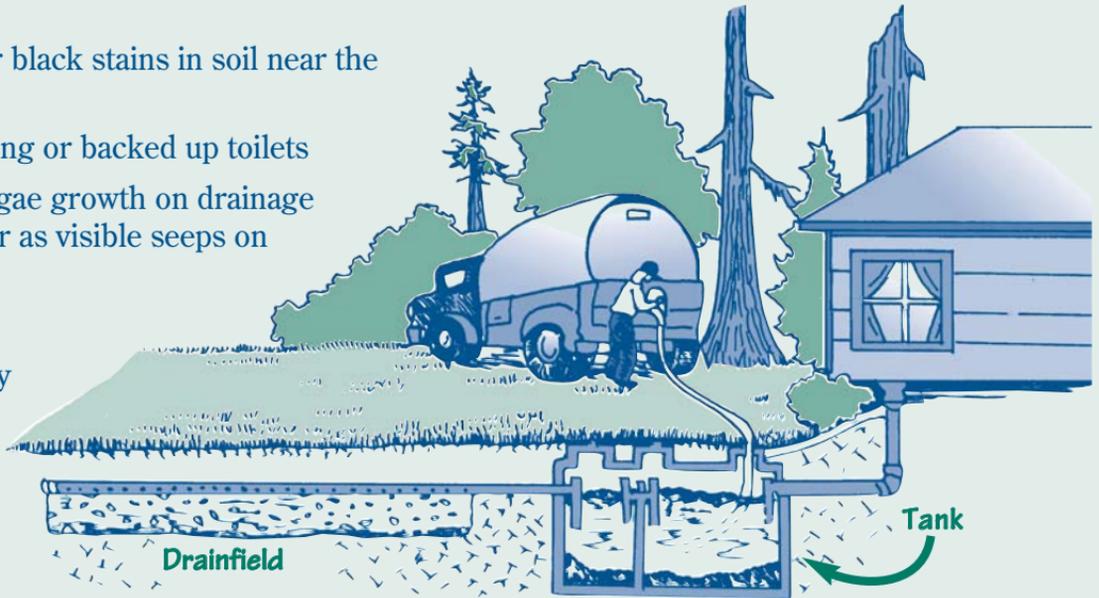


**Water conservation makes good economic sense: low flow toilets and water-saving washers reduce water use and usually pay for themselves in less than a year!**

Runoff from failing septic systems can contaminate wells and beaches, make shellfish unsafe to eat, and pollute swimming waters. Here are some signs of underground problems:

- 9 Water pooling in your yard or elsewhere
- 9 Foul odors
- 9 Dark gray or black stains in soil near the drainfield
- 9 Poorly flushing or backed up toilets
- 9 Excessive algae growth on drainage pipe outlet or as visible seeps on the beach.

If you notice any of these signs, call your local health department or a septic professional for advice.



**Conventional On-site Septic System**

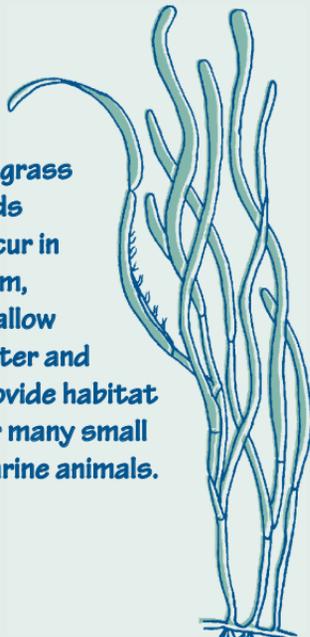
# Marine Plants

Marine plants are a vital part of the food web. Do not disturb or remove plants from the beach.



**Sea lettuce, an edible algae, is common to Puget Sound beaches. Harvest is regulated by the Washington Department of Fish and Wildlife.**

**Eelgrass beds occur in calm, shallow water and provide habitat for many small marine animals.**



**Bull kelp grows in shallow and deep water and can be found in large colonies.**



# Alien Invaders!

Some plants and animals don't really belong on our shores but have managed to sneak in and make themselves at home, crowding out useful native species. Report exotic plants to your local weed control board for help with removal and re-plant with native vegetation.

**Spartina** is an invasive cordgrass that is taking over tidflats in Puget Sound and coastal Washington, altering natural fish and shellfish habitats and excluding native vegetation. If you see circular clumps of grass growing in a mudflat, it may be spartina. Contact the **State Spartina Program** at (360) 902-1923.

**Himalayan blackberry, Scotch broom, English ivy, and Japanese knotweed** will aggressively outcompete most other vegetation. Giant hogweed grows in moist areas and can cause severe lesions on unprotected skin.

For assistance identifying and getting rid of exotic and invasive plants, contact your county noxious weed program or the Washington Department of Agriculture at:

**Washington State Noxious Weed Control Board:**(206) 872-2972

<http://www.nwcb.wa.gov>



# Shoreline Stewardship

Most people love their waterfront property and feel a responsibility to keep it in the same wonderful condition for future generations. Shoreline property owners have several options to preserve and protect their land. Some of these options can provide significant tax breaks:

- **Conservation easements** are binding agreements between property owners and a land trust or other party. This option is appropriate for a person who wants to remain in possession of the land while restricting its future development or use.
- **Open space current use taxation programs** allow local governments to reduce property taxes on private lands that are classified as open space. Qualifying properties include land that would promote conservation of soils, wetlands, beaches, or tidal marshes, as designated by a city or county's comprehensive plan.
- **Outright donation** ensures that the land will be managed and maintained by a conservation organization or land protection agency.

Call your local planning department, conservation district, or land trust for more information and resources on these options.



## Playing by the Rules

**T**o protect your property, your safety and our region's natural resources, federal, state, and local guidelines establish rules for work performed in or near the Sound. These rules may apply to clearing vegetation, grading land, doing drainage and construction projects, and using some chemicals.

Every city and county has a shoreline master program that regulates shoreline activities. The Washington Department of Fish and Wildlife is responsible for protecting the Sound's marine resources. Depending on the type of project, a site visit or special permit may be required.

To determine if your project requires special permits, call your local government planning department. They will advise you of local, state, and federal guidelines.

- ☞ When you call, provide the address, parcel number and/or legal description of the land.
- ☞ Give yourself plenty of lead time! Some **minimum** timelines range from **45 to 120 days**.

You can be the eyes and ears for protecting the shoreline in your area. If you see potential or growing problems or have questions, call your local planning department for answers.



# Shoreline Stewardship Guidebook acknowledgments

Original text written by **Ginny Broadhurst** (Puget Sound Action Team, 1999)

Editing assistance from **David G. Gordon**

Revised for King County by **Stephanie Innis** (2001)

Revised from previous editions by **Harriet Beale** (Puget Sound Action Team, 2004)

Illustrations by **Sandra Noel** (Puget Sound Action Team, 1999) and **Megann Devine** (King County, 2002)

Design by **Zoe Rasmussen** (Puget Sound Action Team, 1999), **Megann Devine** (King County, 2002), and **Toni Weyman Droscher** (Puget Sound Action Team, 2004)

Special thanks to **Brian Lynn, Tim Gates, Hugh Shipman, Jacques White, Jim Johannessen, Bev Isenson, Susan Melrose, Barbara Cothorn, Polly Freeman, Kathy Taylor, Katy Vanderpool, Mary Knackstedt, Doug Myers, and Mary Getchell** for thoughtful review and comments.

Thanks to **Tampa Bay National Estuary Program** for the concept.

Produced by the **Puget Sound Action Team** in cooperation with **King County Department of Natural Resources and Parks**, September 2004.



## ADDITIONAL RESOURCES

For more technical information about Puget Sound's shoreline processes, geology, biological life, and natural history, check your library or bookstore for these references:

- Downing, John. 1983. *The Coast of Puget Sound - Its Processes and Development*. Puget Sound Books, University of Washington Press.
- Kozloff, Eugene N. 1983. *Seashore Life of the Northern Pacific Coast*. University of Washington Press.
- Kruckeberg, Arthur R. 1991. *The Natural History of Puget Sound*. University of Washington Press. ISBN 0-295-97019-7.
- Terich, Thomas A. 1987. *Living with the Shore of Puget Sound and the Georgia Strait*. Duke University Press, Durham. Sponsored by the Audubon Society. ISBN 0-8223-0745-6.
- Yates, Steve. 1988. *Marine Wildlife of Puget Sound, the San Juans, and the Strait of Georgia*. The Globe Pequot Press, Chester, Connecticut.

For additional technical information about shoreline bluffs and erosion issues:

- Menashe, Elliott. 1993. *Vegetation Management: A Guide for Puget Sound Bluff Property Owners*. Washington Department of Ecology Publication #93-31.  
Online: <http://www.ecy.wa.gov/programs/sea/pubs/93-31/intro.html>
- Myers Biodynamics Inc. and Lorilla Engineering, Inc. 1995. *Surface Water and Groundwater on Coastal Bluffs: A Guide for Puget Sound Property Owners*. Washington Department of Ecology Publication #95-107.  
Online: <http://www.ecy.wa.gov/programs/sea/pubs/95-107/intro.html>
- Myers Biodynamics Inc. 1993. *Slope Stabilization and Erosion Control Using Vegetation: A Manual of Practice for Coastal Property Owners*. Washington Department of Ecology Publication #93-30.  
Online: <http://www.ecy.wa.gov/programs/sea/pubs/93-30/intro.html>

### Web sites

- **Puget Sound Action Team:** <http://www.psat.wa.gov>
- **Marine Biotoxin Bulletin:** <http://www4.doh.wa.gov/gis/mogifs/biotoxin.htm>
- **Washington Department of Ecology: Puget Sound Shorelines**  
<http://www.ecy.wa.gov/programs/sea/pugetsound/index.html>
- **Washington Department of Ecology: Shoreline Aerial Photos**  
<http://apps.ecy.wa.gov/shorephotos/>
- **Washington Department of Ecology: Puget Sound Landslides**  
<http://www.ecy.wa.gov/programs/sea/landslides/index.html>
- **Washington Sea Grant:** <http://www.wsg.washington.edu>
- **People for Puget Sound:** <http://www.pugetsound.org>
- **Northwest Straits Initiative:** <http://www.nwstraits.org>
- **King County Nearshore home page:**  
<http://dnr.metrokc.gov/topics/marine/MARtopic.htm>

## Permit and health department information by county:

Clallam County Planning Division: (360) 417-2321

Clallam County Environmental Health Department: (360) 417-2258

Island County Department of Community Development: (360) 679-7339

Island County Health Department: (360) 679-7350

Jefferson County Community Development: (360) 379-4450

Jefferson County Environmental Health Department: (360) 385-9444

King County Development and Environmental Services: (206) 296-6600

King County-Seattle Department of Public Health: (206) 296-4931

Kitsap County Department of Community Development: (360) 337-7181

Kitsap County Health District: (360) 337-5235

Mason County Department of Community Development: (360) 427-9670

Mason County Health Department: (360) 427-9670

Pierce County Planning and Land Services: (253) 798-7210

Pierce-Tacoma Health Department: (253) 798-6500

San Juan County Permit Center: (360) 378-2116

San Juan County Health Department: (360) 378-4474

Skagit County Planning and Permit Center: (360) 336-9410

Skagit County Health Department: (360) 336-9380

Snohomish County Department of Planning and Development Services: (425) 388-3311

Snohomish Health District: (425) 339-5250

Thurston County Department of Development Services: (360) 786-5490

Thurston County Septic Helpline: (360) 357-2490

Thurston County Health Department: (360) 786-5455

Whatcom County Planning and Development Services: (360) 676-6907

Whatcom Health Department: (360) 676-6724

---

Washington Department of Health Marine Biototoxin Hotline:  
(800) 562-5632

Puget Sound Action Team: (800) 54-SOUND

Washington Department of Fish and Wildlife: (360) 902-2200

Washington Department of Ecology: (360) 407-6000

People for Puget Sound: (206) 382-7007

Call **800-OILS-911** at the Washington State  
Emergency Management Department if you see  
a change in fish behavior, algae bloom, an oil spill,  
or dead fish in or near Puget Sound.

To obtain this publication in an alternative format, contact the Action Team's  
ADA Coordinator at (360) 725-5444. The TDD number is (800) 833-6388.

May 1999

Reprinted September 2004

Publication #PSAT 04-11

Produced by:

**Puget Sound Action Team**

in partnership with:

**King County Natural Resources  
and Parks**

*Sustainably printed on 100%  
post-consumer fiber using  
100% vegetable oil-based inks.*

