Living Shorelines in Puget Sound/ Salish Sea Region: Reimagining/ Soft shore protection, Green Shores...

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www.coastalgeo.om
Understanding - Landscape
Understanding – Pacific Northwest

Salmon ecology and culture

Strong tribal presence

Pacific salmon species are endangered

Juvenile salmon migrate along shoreline

Mixes gravel & sand beaches dominate

New bulkheads largely banned

and *Spartina* is exotic invasive
Salish Sea food web (real simple!)

You know who

Salmon

Forage fish

Plankton
Players

City of Seattle Department of Planning and Development
San Juan County
Islands Trust Stewardship Centre
Sea Grant Washington
Coastal Geologic Services
Washington Department of Fish and Wildlife
Puget Sound Partnership
Washington State Department of Natural Resources
Washington State Department of Transportation
Department of Ecology State of Washington
Reimagine Soft Green Shores
Beaches and Bluffs of Puget Sound
Prepared in support of the Puget Sound Nearshore Partnership
Jim Johannessen and Andrea MacLennan, Coastal Geologic Services, Inc.

Natural processes-based
Natural processes-based
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Marine Shorelines Design Guidelines-2014 for WA Dept. of Fish and Wildlife

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Design Technique</th>
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<td>Restoration</td>
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<td>Hard Armor</td>
<td>Revetments</td>
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<td>Vertical bulkhead (“seawall”)</td>
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Puget Sound-wide: Social Marketing research and campaign now underway
(EPA funding):
Shoreline parcel database (CGS 2014):
  57% of Puget Sound shore is residential parcels
  48% of residential parcels are armored
  26% of shoreline parcels are in forage fish spawning areas:
    of these 58% are armored

About 6,000 parcels have armored feeder bluffs; of these:
  2,000 parcels have forage fish spawning;
  850 parcels (32 miles) have no home
What does failure look like?

Often caused by not adequately addressing coastal processes/geomorphology (Narrows Park, Tacoma WA)
Can we use these tools?

Regulations have tightened to protect habitat,

But, no projects without landowner buy-in and willingness...
all landowners – private, public, tribal

Coastal Geologic Services Inc. Puget Sound projects follow:
Engaging private landowners

Driftwood Beach 1997
Blakely Is, San Juan County
Engaging private landowners

Driftwood Beach 1998
Blakely Is, San Juan County
Engaging private landowners

Driftwood Beach 2000
Blakely Is, San Juan County
Engaging private landowners

Driftwood Beach 2013
Blakely Is, San Juan County
Engaging private landowners

Samish Island, Skagit County:
Before (1998)
Engaging private landowners

Samish Island, Skagit County:
Before (1998)
Engaging private landowners

Samish Island, Skagit County: after beach nourishment (2001)
Engaging private landowners

Samish Island, Skagit County: after beach nourishment (2013)
West Marchs Point, Anacortes, WA
Beach cleanup & nourishment (2010)
West Marchs Point, Anacortes, WA
Beach cleanup & nourishment (2010)
West Marchs Point, Anacortes, WA
Beach cleanup & nourishment (2010)
West Marchs Point, Anacortes, WA
Beach cleanup & nourishment (2010)
Private Site, Oak Bay, WA
Illegal bulkhead removal, soft shore protection (1999)
Private Site, Oak Bay, WA
Illegal bulkhead removal, soft shore protection (2007)

Single-family residential
Marine Park, Bellingham WA
Public landowners

Marine Park, Bellingham WA
Public landowners

Marine Park, Bellingham WA

American Shore & Beach Preservation Assoc
Americas Best Beaches Award
Public landowners

Marine Park, Bellingham WA
What Is Green Shores for Homes?

**Green Shores for Homes** is a voluntary, incentive-based program that helps waterfront homeowners restore natural shorelines and enjoy the many recreational, scenic, environmental, and shoreline-protection benefits they bring.

**How Do Green Shores Benefit Homeowners? They…**

- preserve and restore physical processes, the natural actions of water and sediment that maintain healthy shorelines
- **Immobilizing** bulkheads and rock embankments can disrupt these natural actions.
- ...
# Green Shores for Homes

By: City of Seattle, San Juan County, WA, the Stewardship Centre for BC, Islands Trust in British Columbia

## Draft Credits and Rating Guide – 2014, Credits for:

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*also available: Greening Shorelines to Enhance Resilience, An Evaluation of Approaches to Adapt to Sea Level Rise, 2014, for Stewardship Center for BC*
Success? Failure?
Design: Watershed Co. project, Lake Washington
Green Shores for Homes

“focuses on positive steps to reduce the impact of residential development on shoreline ecosystems, and helps waterfront homeowners restore natural shorelines and enjoy the many benefits they bring.”

Based on four guiding principles:

• Preserve or restore physical processes – the natural actions of water & sediment movement that maintain healthy shorelines.
• Maintain or enhance habitat function and diversity along the shoreline.
• Prevent or reduce pollutants entering the aquatic environment.
• Avoid or reduce cumulative impacts

Living Shorelines “From Barriers to Opportunities” (Oct. 2014)

A living shoreline is any erosion control management system that does not introduce a fixed interruption of a natural water/land continuum and that is designed to protect or restore natural shoreline ecosystem services; it includes natural elements and may incorporate manmade elements

Soft shore protection – Draft definition in Washington State codes:

At least 85% of project work area (plan view) must be natural materials and soft/flexible
Conclusions

Living shorelines in PNW means Soft shore protection/ Green shores
Regulations & habitat for salmon are driver

we have much work to do...

reimagine our aging shoreline infrastructure
bring people along
develop incentives
give up some (old fill) space
sea level rise can be an opportunity
education & outreach essential—ongoing
streamline design & permitting for restoration/enhancement
design at the intersection of owner & resource goals