

SHORELINE STABILIZATION

STATE GUIDELINES

WAC 173-26-231 General principles for shoreline modifications

(Read WAC pp. 71-77 for full guidelines – the summary below contains key points but does not include all supporting details)

- Distinguish between shoreline modifications and shoreline uses.
- Allow structural shoreline modification only where it is necessary to support or protect an allowed primary structure or legally existing shoreline use.
- Reduce adverse effects of modifications, limit their number and extent
- Allow modifications only when they are appropriate to the shoreline conditions in the proposed area
- Assure that modifications individually and cumulatively do not result in net loss of ecological functions. Give preference to shoreline modifications that have a lesser impact on ecological functions, and require mitigation for any impacts.
- Plan for enhancement of impaired ecological functions where feasible and appropriate.

WAC 173-26-231 Shoreline stabilization principles

Shorelines are by nature unstable, although in varying degrees. Erosion and accretion are natural processes that provide ecological functions and contribute to sustaining the natural resource and ecology of the shoreline. Human use of the shoreline has typically led to hardening of the shoreline for various reasons including reduction of erosion or providing useful space at the shore or providing access to docks and piers. The impacts of hardening any one property may be minimal but cumulatively the impact of this shoreline modification is significant. See WAC pp 72-73 for details on the following list of ecological impacts resulting from shoreline stabilization:

- Beach starvation
- Habitat degradation
- Sediment impoundment
- Exacerbation of erosion
- Ground water impacts
- Hydraulic impacts
- Loss of shoreline vegetation
- Loss of large woody debris
- Restriction of channel movement and creation of side channels

- Localized erosion at the footings of bulkheads

"Hard" structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads, while "soft" structural measures rely on less rigid materials, such as biotechnical vegetation measures or beach enhancement. **“Soft” measures typically have smaller ecological impacts, and are preferred over “hard” techniques.** There is a range of measures varying from soft to hard that include:

- Vegetation enhancement;
- Upland drainage control;
- Biotechnical measures;
- Beach enhancement;
- Anchor trees;
- Gravel placement;
- Rock revetments;
- Gabions;
- Concrete groins;
- Retaining walls and bluff walls;
- Bulkheads; and
- Seawalls.

Master program shoreline stabilization provisions shall also be consistent with vegetation conservation provisions in WAC 173-26-221(5), and where applicable, protection of critical freshwater and saltwater habitat pursuant to WAC 173-26-221(2).

Stabilization should be allowed where necessary to protect primary structures in single-family residential areas, and master programs should include standards stating when stabilization is permitted, and what types and designs are acceptable.

WAC 173-26-231 Shoreline stabilization standards

(A) New development should be located and designed to avoid the need for future shoreline stabilization to the extent feasible. New development that would require shoreline stabilization which causes significant impacts should not be allowed.

(B) New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

1. To protect existing primary structures:

- **New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure is in danger from shoreline erosion.** Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need.

- The erosion control structure will not result in a net loss of shoreline ecological functions.
2. In support of new non-water-dependent development, including single-family residences, when all of the conditions below apply:
- The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.
 - Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
 - **The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.** The damage must be caused by natural processes, such as tidal action, currents, and waves.
 - The erosion control structure will not result in a net loss of shoreline ecological functions.
3. In support of new water-dependent development when all of the conditions below apply:
- The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.
 - Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
 - **The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.**
 - The erosion control structure will not result in a net loss of shoreline ecological functions.
4. To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when all of the conditions below apply:
- Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
 - The erosion control structure will not result in a net loss of shoreline ecological functions.
- (C) An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.
- **The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.**

- Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.
- Where a net loss of ecological functions associated with critical saltwater habitats would occur by leaving the existing structure, remove it as part of the replacement measure.
- **Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.**
- **For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.**

(D) Geotechnical reports that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion. **Hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that a primary structure will be damaged within three years as a result of shoreline erosion, or where waiting until the need is that immediate would foreclose the opportunity to use measures that would avoid ecological impacts, i.e., ‘softer’ engineering.**

(E) When any structural shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions,

- **limit the size of stabilization measures to the minimum necessary.** Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.
- **Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access** to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions. See public access provisions; WAC 173-26-221(4). Where feasible, incorporate ecological restoration and public access improvements into the project.
- Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect beach sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to sediment conveyance systems. Where sediment conveyance systems cross jurisdictional boundaries, local governments should coordinate shoreline

management efforts. If beach erosion is threatening existing development, local governments should adopt master program provisions for a beach management district or other institutional mechanism to provide comprehensive mitigation for the adverse impacts of erosion control measures.

(F) For erosion or mass wasting due to upland conditions, refer to guidelines for geologically hazardous areas in WAC 173-26-221(2)(c)(ii).

EXISTING REGULATIONS

All development shall be located and designed to minimize the need for protective structures and shoreline stabilization. Where adverse impacts cannot be avoided, mitigation to protect species and habitat functions may be approved. All shoreline developments and uses shall be located, designed, constructed and managed to minimize interference with or adverse impacts to beneficial natural shoreline processes such as water circulation, littoral drift, sand movement, erosion and accretion (23.60.152).

Environmentally Critical Areas regulations prohibit new bulkheads, except when the bulkhead is necessary for the continued operation of a water-dependent or water-related use. Also, major repair of a bulkhead is prohibited unless it is necessary for the continued use or expansion of a water-dependent/water-related use, or if a bioengineered solution will not achieve the same level of protection as the existing structure (25.09.200). These regulations conflict with WAC guidelines and provisions in the Land Use Code, which allow bulkheads for single-family uses and repair/replacement of existing bulkheads.

The Land Use Code states that natural beach protection is encouraged and preferred over bulkheads and other structures, but no specific provisions are given. Natural beach protection shall not interrupt shoreline processes, result in groin-like structures, or extend waterward more than necessary (23.60.186).

Additional Land Use Code provisions relating to bulkheads and shoreline stabilization are summarized below.

Permitting

New bulkheads require a substantial development permit unless they are built to protect a single-family residence (23.60.020.C2). Beach nourishment or bioengineered controls may also be exempted when used to protect single-family residential properties.

Normal maintenance and repairs of existing structures are also exempted from substantial development permits. When a bulkhead deteriorates to the point that the ordinary high water line moves behind it, the replacement must be built at or above the new water line. Projects involving emergency construction or remediation of hazardous materials are also exempt.

Standards for Bulkheads

Nonresidential bulkheads (23.60.188 B):

- Shall not interrupt shoreline processes
- Shall comply with landfill standards for any dry land that is created
- Shall be adjacent to a navigable channel, necessary for WDWR uses, and needed to prevent “extraordinary erosion.”
- Can be used only when natural beach protection isn’t a viable option.

Residential bulkheads (23.60.188 C):

- Shall only be built when necessary to maintain land and protect from extraordinary erosion, when natural beach protection is not an option
- Shall not create dry land or extend waterward unless necessary to protect the toe of a cliff.
- Shall not extend waterward beyond adjacent bulkheads.

In general, riprap shall be preferred over vertical walls or slabs, except in UM, UG, and UI. Breakwaters and jetties are only allowed for protection of water-dependent uses where “design modifications can eliminate potentially detrimental effects on the movement of sand and circulation of water” (23.60.190). Where practical, floating breakwaters shall be constructed rather than solid landfill breakwaters and jetties.

PROPOSALS FOR SMP UPDATE

Proposed goals and policies

- 1) Future shoreline stabilization projects shall result in no net loss of ecological function.
- 2) Allow new or expanded bulkheads and other hard engineering only when a demonstrated need exists.
- 3) Require soft engineering wherever feasible for new shoreline stabilization projects.
- 4) Encourage replacement of bulkheads with soft engineering through a clearer permitting process for construction and maintenance.

Proposed regulatory changes

Existing regulations relating to shoreline stabilization will remain, except as described in the following proposed changes.

The first group of proposals would allow new “hard engineering” only where it is demonstrated that principal structures are threatened, and to allow replacement of

existing “hard engineering” only where it is demonstrated that principal uses or structures are threatened. To comply with WAC guidelines, a provision is also included allowing bulkheads to protect single family residential principal structures.

- Allow new or enlarged structural shoreline stabilization only where a geotechnical study shows it is necessary to protect the primary structure or use.
- Clarify and add specificity to protocol for demonstrating the need for hard engineering through geotechnical study, pursuant to WAC 173.26.231D.
- Provide a list describing the spectrum of soft to hard engineering approaches. If a project proposes elements more intensive than gravel placement, the geotechnical study must address why softer solutions are not feasible. The following list comes from the WAC, with explanations inserted by DPD:
 - Vegetation enhancement (using plant material to hold soil in place with roots and other biomass)
 - Upland drainage control (draining upland property to reduce hydraulic pressure on shoreline slope)
 - Biotechnical measures (use of cuttings to stabilize slopes and establish vegetation)
 - Beach enhancement (use of rocks and other materials to stabilize an existing beach)
 - Anchor trees (use of logs secured in place to stabilize slopes)
 - Gravel placement (deposition of gravel material to build or reinforce a stable slope)
 - Rock revetments (use of riprap)
 - Gabions (wire baskets filled with riprap)
 - Concrete groins
 - Retaining walls and bluff walls
 - Bulkheads
 - Seawalls
- Clarify that new bulkheads must be placed at or above ordinary high water.

- Allow replacement of shoreline stabilization structures with similar structures if the replacement structure is designed and constructed to assure no net loss of ecological function.
- Define bulkhead replacement as new construction if the repairs make the bulkhead taller or longer (pursuant to WAC 173-26-231).
- Revise ECA language to allow bulkheads protecting primary structures in single-family residential development.
- Only provide bulkhead exemption to protect primary structures in single-family residential development – do not exempt bulkheads to protect “appurtenant structures” as in the current code language.

The remaining proposals focus on ways to make permitting for the construction and maintenance of natural shoreline stabilization projects easier. Existing code language already states that natural shorelines are preferred and encouraged, but doesn’t provide specifics.

- Clarify that beach nourishment and bioengineering are exempt from substantial development permits, regardless of associated use (i.e., not just single family residential). The City can already grant these through the fish and wildlife exemption, but it would help applicants and permit reviewers to include this explicitly in the shoreline regulations.
- Clarify that construction of natural shorelines may extend waterward of the ordinary high water line to create stable shoreline slopes and increase shallow-water habitat. In this type of project, existing ordinary high water line shall remain in place. This is currently allowed, but not clearly stated in the code.
- Establish a checklist for “green shorelines,” and consider an expedited permitting to projects that qualify.
- Provide an ongoing shoreline exemption for beach nourishment associated with natural shoreline stabilization. This exemption would approve an appropriate maintenance schedule for natural shorelines (for example, allowing ten cubic yards of beach gravel every five years), as well as permission to return the natural shoreline to its permitted design if blown out by an act of nature.