MEMORANDUM

TO: Thurston County Planning Commission
FROM: Cynthia Wilson, Senior Planner
DATE: April 18, 2012
SUBJECT: Critical Areas Ordinance (CAO) Update – Shoreline Armoring

Comments were submitted during the public comment period on the draft CAO that recommended re-evaluating shoreline armoring so that it is prohibited or discouraged. However, if stabilization is needed there would be an emphasis on using non structural techniques or bio-engineering when. The current draft of the CAO addresses shoreline armoring in Chapter 24.15 Geologic Hazard Areas, Chapter 20.20 Frequently Flooded areas, and Chapter 24.25 Fish and Wildlife Conservation Areas. The language is similar in all three chapters.

Erosion and accretion of substrate adjacent to water, including streams and marine shorelines, is a natural process. Streams meander and marine shorelines erode and accrue in cycles. The erosion is the basis for stream beds and our beaches. They provide habitat, food sources, and water quality functions for all of the water areas.

The primary issue in reviewing a proposal for shoreline armoring or stabilization is the clarity for when and how these types of permits are allowed. Armoring of marine and freshwater shorelines is damaging to the ecological functions of these areas. Unfortunately, they are often proposed in those areas like shoreline feeder bluffs that have high value functions. In addition, residences are frequently located too close to the bluffs and where the natural erosion potentially threatens the stability of the structure. Several methods of determining whether a stabilization method will protect the structure should be employed. Much, if not most, of the shoreline erosion is a result of upland drainage issues. Poor maintenance of roof and impervious surface runoff as well as leaking or broken pipes frequently leads to erosion from the top of the slope. Bulkheads or other structural armoring will not fix these types of erosion issues. Other erosion, such as from a feeder bluff, is extremely valuable in sustaining our beach substrates for forage fish, salmon migration and human uses.

Balance is necessary in trying to protect the natural functions of the bluffs and the shoreline ecological functions alongside protection of those structures that are truly threatened by those natural functions.

Staff has attached some suggested changes to support the process of avoiding or minimizing effects of shoreline armoring, including mitigation sequencing. This includes adding a definition for “threatened structure” and additional steps to stabilize the slopes or reduce erosion. These measures include:
• Correcting upland drainage systems
• Minimizing impervious areas
• Moving homes or structures back from a threatened location
• Feeding the beach substrate to steepen and minimize erosion

Providing natural habitat substrate

The CAO updates also focus on the use of non structural techniques such as large woody debris, vegetation or smaller structures in specific areas.

Proposed changes:
• Add a definition of “Threatened Structure”, including which structures qualify for protection
• Add language that clarifies that new shoreline armoring will only be allowed for those structures that are threatened.
• Add requirement for mitigation measures

Consistency with SMP
Avoidance or minimizing the need for shoreline armoring is consistent with the current SMP as well as the goals of the new Shoreline rules.

Staff Recommendations

New Definitions
Add definitions to Chapter 24.03 Definitions for “structures to be protected” and “threatened structure.”

Structures to be protected” means structures considered for shoreline protection, including: primary parcel structures (includes commercial, industrial or residential), accessory dwelling units, septic systems, public roads, public infrastructure such as pipes or utilities, and private driveways/roads where relocation is not feasible. Structures not protected are: stairs, trails to the beach, bathhouses, detached deck/patios, fences, sheds, trees, and landscaping.

“Threatened Structure” means a structure that qualifies to be protected from streambank, slope or bluff erosion and where through a geotechnical report it has been determined that the documented erosion rates over a 30-50 year period show that a structure will be harmed within a three year timeframe. An additional hazard assessment process by the geotechnical expert may be included to ensure that the structure is not exposed to landslide hazards potentially not captured in the erosion rate methodology. If the erosion rate and additional hazard assessment suggest that harm will likely occur to the structure within a three-year timeframe then the property is deemed “threatened”.

Changes to Shoreline and Slope Stabilization Text
Amend proposed Section 24.25.300 to clarify shoreline and slope stabilization text to clarify when and how it will be allowed.

24.25.300 Fish and Wildlife Habitat Conservation Areas – Shoreline and slope stabilization.
The approval authority may authorize stabilization of stream banks and pond, and marine shorelines only if it is determined that, in consultation with a qualified engineer and biologist, it is necessary to protect legally established existing threatened structures as defined in this title and by the Shoreline Master Program for the Thurston Region (1990); threatened septic systems and wells; threatened public roads;
bridges; sole access private roads that cannot be relocated with less impact on critical areas; or to protect unusually high value natural resources/wildlife habitat (e.g., or priority species locations or a wetland associated with a stream). Stabilization of marine or stream shorelines is only allowed as provided for in the Shoreline Master Program, as amended, and consistent with this section.

A. Nonstructural shoreline protective techniques. When stabilization methods are deemed necessary by the director, nonstructural shoreline protective techniques are preferred to concrete bulkheads, riprap or other types of shoreline armoring. Nonstructural techniques include but are not limited to: beach nourishment, coarse beach fill, gravel berms, vegetation plantings and bioengineering. Refer to the Washington Department of Ecology publications “Slope Stabilization and Erosion Control Using Vegetation” (1993, Publication 93-30), and “Marine Shoreline Armoring and Puget Sound” (2010, Publication 10-06-003).

AB. Bioengineering. Stabilization of stream, lake, pond and marine shorelines, if necessary, shall be accomplished with bioengineering or similar soft stabilization techniques unless the applicant’s qualified engineer and biologist demonstrates that such techniques are not sufficient to protect structures and facilities listed in this section from erosion and slope failure. (See Washington’s Integrated Stream bank Protection Guidelines for bioengineering designs.) The stabilization shall be designed and installed to minimize adverse impacts on the habitat’s functions.

BC. Combination of bioengineering and hard armoring. If the applicant’s qualified engineer and biologist demonstrates to the approval authority’s satisfaction that bioengineering alone will not be sufficient to protect structures and facilities listed in this section, the approval authority, in consultation with a biologist and qualified engineer at the applicant’s expense, may authorize a combination of bioengineering and structural solutions that is least damaging to the habitat. The stabilization shall be designed and installed to minimize adverse impacts on the habitat’s functions.

CD. Structural Techniques (e.g., bulkhead, gabion, riprap, revetments, or wall). If the applicant’s qualified engineer and biologist demonstrates to the approval authority’s satisfaction that the techniques provided for in this section are not possible or will not be sufficient to protect structures and facilities listed in this section from erosion and slope failure, they may, in consultation with a biologist and qualified engineer at the applicant’s expense, approve a structural stabilization solution consistent with the following:

1. Hard armoring, such as rip-rap and bulkheads, may only be used when the applicant demonstrates to the approval authority’s satisfaction that a public facility, public road, utility (not individual service lines that can be relocated), sole access road, or occupied structure cannot be safely and practically maintained without such measures. The armoring shall be the minimum dimension necessary to protect the structure.

2. Hard armoring shall not be allowed along Type S or F streams, in marine habitat areas, or in salmonid spawning, migration or rearing areas unless it is necessary to protect critical public facilities, human life, or dwellings.

3. Structural techniques shall only be allowed along riparian habitat areas when:

   a. It is to protect a residence and normal residential appurtenances which had an application for a building permit on file prior to February 1, 1994; and

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b. The residence and normal appurtenances are located within the 2:1 slope measured from the toe of the bluff or within the 50-foot top of slope buffer, whichever is greater; and

c. Only if a geotechnical assessment completed per chapter 24.35 TCC finds that the residence or normal residential appurtenances will be threatened based on the long-term erosion rate (30-50 year average) within the next three years if toe protection is not provided.

DE. Designed by engineer. A professional engineer licensed in the State of Washington with demonstrated expertise regarding hydraulic actions along shorelines shall design stabilization projects along streams and marine shorelines in consultation with a qualified biologist.

EF. Avoid intrusion into the important habitat area. Any new or replaced shoreline protective structures shall be placed as close to the existing bank as possible and parallel to the natural shoreline. In areas where dry land has been created by fill behind the bulkhead, the replacement structure should be designed to remove the fill and place the new structure as close to the historical OHWM as possible.

FG. Repair, maintenance or renovation. Repair, maintenance, or renovation of lawfully established shoreline stabilization structures is permitted consistent with state and federal regulations and the Shoreline Master Program for the Thurston Region, provided that the facilities are not increased in height or length or expanded waterward. Replacement of existing shoreline stabilization structures shall be considered a new use, except as provided for by the Shoreline Master Program for the Thurston Region (see Section XVIII Shoreline Protection).

GH. Nontoxic materials. Approved stabilization shall only use materials that do not pose a risk to water quality, consistent with best available science.

HI. Slope stabilization. Slope stabilization is allowed in important habitat areas, consistent with chapter 24.15 TCC, Geologic Hazards and chapter 24.20 TCC, Frequently Flooded Areas, only where erosion or landsliding threatens a use listed in this section. Bioengineering shall be used where possible.

J. A mitigation plan for impacts to the shoreline ecological functions as a result of the armoring shall be prepared by a qualified biologist and implemented immediately following construction. Mitigation measures may include temporary or perpetual beach feeding with appropriate substrate, additional woody debris, revegetation of the adjacent upland area, or other measures designed to minimize the impacts to the nearshore environment from armoring.

K. Prior to any approval of shoreline armoring, the applicant shall demonstrate that other measures have been taken to address the erosion or other threats to the structure. This includes improving or installing a functioning drainage system, minimizing impervious areas, restoration of trees and other native vegetation on the adjacent buffer slope or bluff, or other measures that would improve stabilization and reduce the threat to the structure.