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**PLANNING DEPARTMENT**

*Creating Solutions for Our Future*

Scott Clark  
Director

**MEMORANDUM**

**TO:** Thurston County Planning Commission  
**FROM:** Andrew Deffobis, Associate Planner  
**DATE:** August 3, 2011  
**SUBJECT:** Critical Areas Ordinance (CAO) Update – Frequently Flooded Areas

The Planning Department has completed a draft chapter addressing frequently flooded areas under the CAO, which is proposed Chapter 24.20 TCC, attached. The draft chapter covers development regulations for floodways, 100-year floodplain, and high ground water, channel migration, and coastal high hazard areas. One purpose of this chapter is to augment the County's existing building code standards for flood hazard areas found in Chapter 14.38 TCC, also attached.

In the near future, supporting materials will be created for this chapter, to include:

- Jurisdictional comparison table that outlines how standards for frequently flooded areas, among other considerations, are addressed by cities within Thurston County and neighboring jurisdictions
- Comparison table that highlights differences between the current and proposed CAO provisions pertaining to frequently flooded areas
- Digital collection of documents considered as sources of best available science (BAS) in the creation of this document
- Summary report for BAS sources and information



# DRAFT IN PROGRESS

## AMENDMENTS TO THE CRITICAL AREAS REGULATIONS

TCC 24.20

08/03/2011

### FREQUENTLY FLOODED AREAS

- 24.20.005 Frequently flooded areas – Purposes.
- 24.20.010 Frequently flooded areas – Applicability.
- 24.20.015 High ground water flood hazard areas – Base flood elevation.
- 24.20.020 High groundwater flood hazard areas – No development zone.
- 24.20.025 High groundwater flood hazard areas – Restricted development zone.
- 24.20.030 High groundwater flood hazard area – Delineation.
- 24.20.035 High groundwater flood hazard – Map amendments.
- 24.20.040 River, marine, lake, and coastal flood hazard areas – Map amendments.
- 24.20.045 Channel migration hazard areas – Map.
- 24.20.050 Channel migration hazard areas – Map amendments.
- 24.20.055 Channel migration hazard areas – Delineation – Unmapped hazard areas.
- 24.20.060 Frequently flooded areas – Building setbacks – Coastal flood hazard areas.
- 24.20.065 Floodways – Development and uses.
- 24.20.070 Frequently flooded areas – Standards and allowable uses and activities.
- 24.20.080 Frequently flooded areas – General standards.
- 24.20.090 Frequently flooded areas – Clearing and grading.
- 24.20.100 Frequently flooded areas – Fill.
- 24.20.110 Frequently flooded areas – Flood hazard reduction.
- 24.20.120 Frequently flooded areas – Hazardous facilities and materials.
- 24.20.130 Frequently flooded areas – New on-site sewage disposal systems.
- 24.20.140 Frequently flooded areas – Roads, bridges and culverts.
- 24.20.150 Frequently flooded areas – Stormwater retention, treatment, and conveyance facilities.
- 24.20.160 Frequently flooded areas – Timber harvest.
- 24.20.180 Frequently flooded areas – Wells.
- 24.20.170 Frequently flooded areas – Vegetation removal.

**24.20.005 Frequently flooded areas – Purposes.**

The purposes of this section are to:

- A. Augment development standards in chapter 14.38 TCC regarding development in flood hazard areas.
- B. Identify areas affected by natural flooding and stream channel migration and minimize the amount of development at risk in such areas in order to protect human life and safety; minimize damage to homes and places of business; minimize business interruptions; avoid or minimize damage to public facilities and utilities including, but not limited to, water and

gas mains, electric, telephone and sewer lines, roads and bridges; and to minimize the expenditure of public funds for flood control projects, rescue and relief efforts and repair of flood damage.

- B. Preserve natural flood control by retaining the capacity of floodways to pass floodwaters and associated debris and by retaining the capacity of floodplains to store flood waters.
- C. Restrict structures, facilities, flood loss reduction measures (including, but not limited to, hard armoring and stream channelization), grading, dredging, filling and other development in areas subject to flooding that could displace flood carrying capacity or increase flood heights or velocities.
- D. Protect the quality and quantity of water sustaining humans, fish, shellfish and wildlife by avoiding or minimizing siltation and pollution associated with flooding. This includes, but is not limited to, prohibiting or restricting uses in flood prone areas that pose significant risks to water quality when they are inundated.
- E. Minimize disruption of stream channel migration that forms fish and wildlife habitat by minimizing streambank stabilization and construction of new structures that would be affected by stream channel migration.
- F. Maintain the linkages of the stream to the nutrient reserves in its floodplains.
- G. Regulate frequently flooded areas as a critical area, pursuant to RCW 36.70A.030.

**24.20.010 Frequently flooded areas – Applicability.**

- A. Frequently flooded areas as defined in chapter 24.03 TCC;
- B. High ground water flood hazard areas;
- C. All areas within unincorporated Thurston County identified on Flood Insurance Rate Maps prepared by the Federal Insurance Administration, as supplemented by "The Flood Insurance Study for Thurston County," dated November 17, 1980, as amended. (These maps and the referenced report shall be on file with the department at the Thurston County Permit Assistance Center).
- D. Agriculture. Agricultural uses are not subject to these regulations. Agriculture uses, as defined in RCW 36.70A, are subject to chapter 17.15 TCC.
- E. One-hundred year channel migration hazard areas.

**24.20.015 High ground water flood hazard areas – Base flood elevation.**

The base flood elevation (BFE) for high ground water flood hazard areas corresponds to the elevation of the outer edge of the high ground water flood hazard area. The map entitled "High Ground Water Flood Hazard Areas," depicts the approximate location of the high groundwater flood hazard area. The actual location of the outer edge of the flood hazard area shall be determined consistent with sections 24.20.030 and 24.20.035 TCC, as applicable.

**24.20.020 High groundwater flood hazard areas – No development zone.**

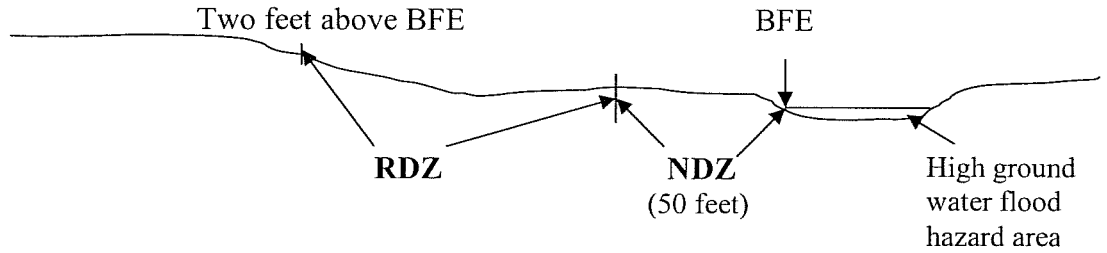
The no development zone (NDZ) is an area extending fifty feet, measured on a horizontal plane, from the outer edge of the high ground water hazard area or extending to a ground elevation two feet (vertically) above the base flood elevation, whichever is less. No development is allowed in the no development zone.

**24.20.025 High groundwater flood hazard areas – Restricted development zone.**

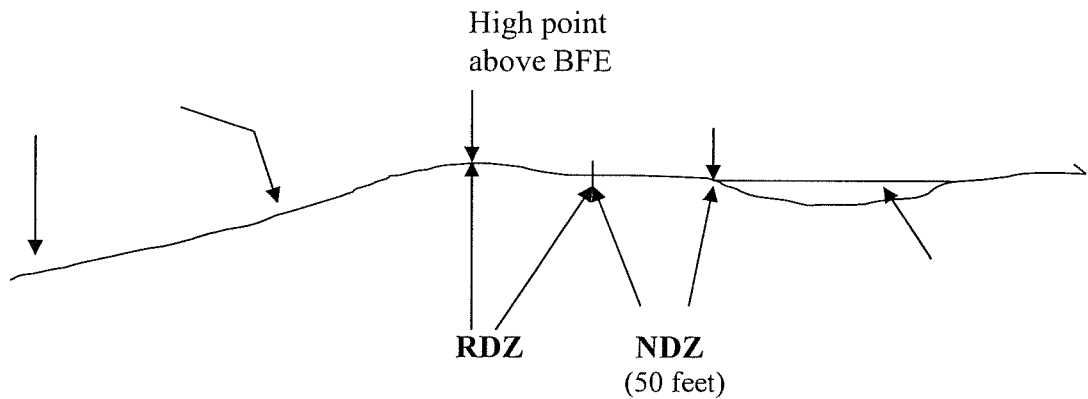
In situations where the no development zone is based on elevation, there may be no restricted development zone (see Figure 24.20-1). The restricted development zone (RDZ) extends from the outer edge of the no development zone to a ground elevation two feet (vertically) above the base flood elevation, except:

- A. The approval authority may exclude areas less than two feet in elevation above the base flood elevation from the restricted development zone if the applicant's registered professional civil engineer licensed in the State of Washington demonstrates that due to drainage patterns (including the location and size of any existing culverts and ditches), topography, physical barriers, geologic conditions, hydrology, distance from the high groundwater flood hazard area or other relevant factors that the area proposed to be removed from the restricted development zone and adjacent properties will not flood. The approval authority may consult with an engineering geologist, hydrogeologist, professional engineer, or other qualified professional as necessary, at the applicant's expense, to evaluate the flooding potential of the area proposed to be removed from the restricted development zone. The County shall provide the applicant with a cost estimate and obtain their approval prior to consulting with the experts. The application shall be closed if the applicant chooses not to bear the cost of the evaluation; or
- B. On sloping parcels where the topography does not reach two feet in elevation above the BFE before it falls in elevation below the base flood elevation, the approval authority shall set the outer boundary of the restricted development zone at the highest point above the base flood elevation (see Figure 24.20-2), if the applicant's registered professional engineer licensed in the State of Washington demonstrates that the area beyond has no or negligible risk of flooding. The approval authority may consult with an engineering geologist, hydrogeologist, professional engineer, or other qualified professional as necessary, at the applicant's expense, to evaluate the flooding potential of the area proposed to be removed from the restricted development zone; or

**Figure 24.20-1**



**Figure 24.20-2**



LEGEND FOR FIGURES 24.20-1 & 24.20-2	
BFE =	Base Flood Elevation
RDZ =	Restricted Development Zone
NDZ =	No Development Zone

- C. All new construction proposed in the restricted development zone shall comply with the provisions of this section and TCC Subsection 14.38.050.

**24.20.030 High groundwater flood hazard area – Delineation.**

- A. High groundwater flood hazard areas shall be delineated through a critical area review permit.

B. Applicants for development of an existing lot shall submit the base flood elevation, prepared by a licensed land surveyor, for review and approval of the director, consistent with section 14.38.040 TCC, as follows:

1. The applicant's surveyor, in consultation with the director, shall stake and flag the recommended high ground water edge in the field based on the High Ground Water Flood Hazard Areas Map, topography, aerial photographs of flood events and other relevant factors.
2. After the director accepts the staked and flagged high ground water edge, the surveyor shall depict the BFE, NDZ, and RDZ on the site plan submitted to the director for review and approval.

**24.20.035 High groundwater flood hazard – Map amendments.**

- A. The High Groundwater Flood Hazard Area map shall be amended consistent with the review process and requirements specified in chapters 24.05 and 24.91 TCC.
- B. All required hydrological studies shall be prepared by an engineering geologist or professional engineer licensed in the State of Washington with demonstrated experience, as appropriate, in hydrologic, hydrogeologic and hydraulic analysis.

**24.20.040 River, marine, lake, and coastal flood hazard areas – Map amendments.**

Map amendments for maps for frequently flooded areas that are identified on the Flood Insurance Rate Maps prepared by the Federal Insurance Administration, as supplemented by "The Flood Insurance Study for Thurston County," dated November 17, 1980 follow the amendment procedure in section 14.38.090 TCC, Map correction procedures.

**24.20.045 Channel migration hazard areas – Map.**

The 100-year channel migration hazard area is generally depicted on the map entitled "Channel Migration Hazard Areas" on file with the department in the Permit Assistance Center.

**24.20.050 Channel migration hazard areas – Map amendments.**

- A. Maps of channel migration hazards areas shall be amended consistent with the review process and requirements specified in chapter 24.05 and 24.91.
- B. The department shall periodically update the map as the County delineates or accepts delineations of 100-year channel migration hazard areas pursuant to this chapter.
  1. The required data must be prepared by a qualified professional proficient in fluvial geomorphology (i.e., a person who possesses a graduate degree in Geology or Physical Geography with specialization in fluvial geomorphology and has at least two years of relevant professional experience).

2. Any third party review shall be performed by a qualified professional proficient in fluvial geomorphology. Based on this evaluation, the approval authority will modify the Channel Migration Hazard Areas Map if warranted.

**24.20.055 Channel migration hazards areas – Delineation – Unmapped hazard areas.**

If the approval authority determines that a proposed use along a Type S or F stream is within a historic channel migration zone, based on LIDAR imagery or aerial photography, and the 100-year channel migration hazard area has not been mapped, the approval authority shall require the applicant to determine if a 100-year channel migration hazard area is present on the site and, if so, delineate its location and extent.

- A. The determination as to whether the 100-year channel migration hazard area affects the subject property shall be based on the findings of a qualified professional proficient in fluvial geomorphology using a reliable methodology to determine channel migration accepted by the department (e.g., as described in the Washington Department of Natural Resources' Forest Practices Board Manual, Standard Methods for identifying Channel Migration Zones and Bankfull Channel Features, dated 8/2001, as amended; or in "A Framework for Delineating Channel Migration Zones," Washington Department of Ecology, 2003, as amended). Maps delineating the 100-year channel migration hazard area shall be of a scale and format specified by the department.
- B. The following areas shall be considered outside of the 100-year channel migration hazard area:
  1. Areas separated from the stream channel by a legally established structure that the approval authority, in consultation with a qualified professional, determines will block channel migration. This may include, but is not limited to, dikes, levees and public roads that extend above the 100-year flood elevation that are constructed to remain intact through a 100-year flood. Constraints to channel migration that do not extend above the 100-year flood elevation shall not be considered to limit channel migration unless demonstrated otherwise based on technical information; and
  2. Areas separated from the stream channel by a geologic feature, such as a rock outcrop, that the approval authority determines, in consultation with a qualified professional, will stop channel migration.

**24.20.060 Frequently flooded areas – Building setbacks – Coastal flood hazard areas.**

- A. Coastal flood hazard areas. Uses in coastal flood hazard areas are allowed landward of the reach of mean high tide, subject to the provisions of Chapter 14.38 TCC. New construction, additions affixed to the side of an existing structure, and substantial improvement of any structure with a crawl space may only be located landward of a line three feet above the

regulatory tidal base flood elevation, consistent with chapter 24.25 TCC and the Shoreline Master Program for Thurston Region.

- B. Refer to Chapter 14.38 TCC regarding crawl spaces.

**24.20.065 Floodways – Development and uses.**

Encroachments, including new construction, substantial improvements, fill and other development, are prohibited within designated floodways.

- A. In addition to the requirements of chapter 24.45 TCC, a reasonable use exception for development in a floodway shall be required to demonstrate the following:
  - 1. Hydrologic and hydraulic analyses performed by a registered professional engineer licensed in the State of Washington, that demonstrate in accordance with standard engineering practices, that the proposed project will not result in an increase in flood levels during discharge of the base flood.
  - 2. New construction and substantial improvements, as defined in section 14.38.020 TCC shall comply with all applicable flood hazard reduction provisions in chapter 14.38 TCC.
- B. Recreational vehicles.
  - 1. Recreational vehicles parked in the floodway shall not be left unattended for more than twenty-four consecutive hours during the flood season, between November 1 and March 15; and
  - 2. Travel trailers parked in the floodway shall have the wheels and tongue attached for ease and rapidity of evacuation. Only quick disconnect utilities may be used. Permanent additions to travel trailers parked in the floodway are prohibited.
- C. Temporary structures and hazardous materials shall be removed from the floodway during flood season (i.e., November 1 to March 15). If the approval authority determines that flooding is imminent and the owner is not present, they may, at the owner's expense, move the structure(s), its contents, and any vehicles to higher ground.
- D. For any approved development in the floodway, a notice shall be recorded on the property title indicating that its use is subject to title 24 TCC and chapter 14.38 TCC.
- E. Projects specifically designed to protect, create or restore anadromous/native fish habitat may be allowed in or along Type S and F streams without the hydrologic and hydraulic engineering analysis, if the approval authority determines that the project will not significantly obstruct flood flows or increase flood elevations. If the effect of the proposed

project on flooding is in doubt, the approval authority may require that a qualified professional in the field of hydraulics review the proposed project consistent with Subsection C above, at the applicant's expense, in order to determine if it will exacerbate flooding.

**24.20.070 Frequently flooded areas – Standards and allowable uses and activities.**

Table 24.20-1 identifies the land uses and activities that are allowable in frequently flooded areas (i.e., 100-year floodplains, 100 year flood zone (1% flood zone), floodways, high ground water hazard areas/restricted development zones, channel migration hazard areas, and coastal flood hazard areas) and 100-year channel migration hazard areas. All land uses and activities not allowed by or not mentioned in Table 24.20-1, except water dependent uses allowed under the Shoreline Master Program for Thurston Region, are prohibited within the flood and channel migration hazard areas regulated by this section, except as otherwise provided in chapter 24.01 TCC.<sup>2</sup> In addition to this chapter these allowable uses and activities may be subject to the following:

- A. Other applicable provisions of this title and requirements of the applicable zoning district;
- B. The provisions of chapter 14.38 TCC, Development in Flood Hazard Areas;
- C. The Shoreline Master Program for the Thurston Region;
- D. The Drainage Design and Erosion Control Manual for Thurston County, as amended (chapter 15.05 TCC); and
- E. All other applicable county, state, and federal regulations.

**Table 24.20-1**  
**Allowable Uses and Activities in Flood and Channel Migration Hazard Areas**  
**Legend on Page 7-13**

Uses and Activities	Floodways	100-year Floodplains	Channel Migration Hazard Areas	High Ground water Hazard Areas/RDZ	Coastal Flood Hazard Areas
Accessory structures – Construction	X	S	S	S	S
Agriculture uses are subject to Chapter 17.15 TCC					
Antenna support structures regulated by chapter 20.33 TCC	X	S	S	S	X
Asphalt plants	X	X	X	X	X
Boat ramp and associated vehicle access	S	S	S	S	S
Boat site, hand launch – Construction	S	S	S	N/A	S
Bridges and culverts – Maintenance or repair	S	S	S	P	P
Bridges and culverts – Replacement or expansion	S	S	S	P	S
Bridges and culverts – New construction	S	S	S	S	S
Cemeteries	X	X	X	X	X
Clearing and grading/timber harvest in conjunction with a development project	S	S	S	S	S
Critical facilities	X	X	X	X	X
Drainage ditch maintenance	P	P	P	P	P
Drilling and testing for required report or engineering study	P	P	P	P	P
Emergency response	See chapter 24.90 TCC.				
Existing lots approved prior to [the effective date of this ordinance] – Construction of primary structures and associated, decks, garages, and appurtenant structures	X	S	S	S	S
Fences	X	P	P	P	P
Fill	X	S	S	S	X
Fish hatchery construction and maintenance	S	S	S	S	S
Floats (e.g., a floating dock, mooring buoy, navigational aid, and swimming float) – Installation	S	X	X	N/A	P

Uses and Activities	Floodways	100-year Floodplains	Channel Migration Hazard Areas	High Ground water Hazard Areas/RDZ	Coastal Flood Hazard Areas
Flood protection facilities – New construction	S	S	S	S	X
Flow control facilities/dams – New construction	S	S	S	S	X
Forestry - Non conversion Class IV forest practice	S	S	S	S	S
Gardens for personal consumption – New and expanded	P	P	P	P	P
Golf courses	X	S	S	S	S
Habitat restoration/enhancement	S	S	S	S	S
Hazardous substances	S	S	S	S	S
Instream structures – Maintenance or repair	P	P	N/A	P	P
Instream structures not addressed above – New construction	S	N/A	N/A	S	N/A
Lawfully established existing uses	P	P	P	P	P
Lawns, landscaping, golf courses, and cemeteries – Maintenance	P	P	P	P	P
Marine railway	X	S	S	N/A	S
Mineral extraction	X	X	X	S	X
Mitigation required by the County	S	S	S	S	S
Nonconforming structure/use – Maintenance, repair, alteration, expansion, intensification, or replacement	See chapter 24.50 TCC.				
On-site sewage disposal system – New	X	X	S	X	X
On-site sewage disposal system, drainfield, or well/pump – Maintenance or repair	S	S	P	P	P
Open space (e.g., critical area tract)	P	P	P	P	P
Piers – Construction	S	S	X	N/A	P
Ponds – New creation <1 acre (see chapter 17.15 TCC for agricultural ponds)	X	S	S	P	P
Public facility except schools	X	X	X	X	X

Uses and Activities	Floodways	100-year Floodplains	Channel Migration Hazard Areas	High Ground water Hazard Areas/RDZ	Coastal Flood Hazard Areas
Public park facilities, trails and developed recreation areas – Maintenance	P	P	P	P	P
Public project of significant importance	X	X	X	X	X
Recreation (outdoors) – Passive and low impact activities (e.g., bird watching, boating, bicycling, canoeing, fishing, hiking, horseback riding, hunting, jogging, photography, swimming, and similar activities).	P	P	P	P	P
(Active) Recreation facilities (e.g., swimming access, public and private parks, day camps and camping sites not including cabins)	X	S	S	S	S
Research (e.g., education, scientific, and site investigation)	P	P	P	P	P
Roads/railroads - Repair and maintenance	P	P	P	P	P
Roads/railroads - Replacement of lawfully established roads/railroads within maintained, improved (paved or railroad tracks) road rights-of-way or easements, or railroad prism	S	S	S	P	P
Roads – expansion	S	S	S	S	S
Roads – New construction, including private access	S	S	S	S	S
Scientific sampling	P	P	P	P	P
Shoreline protective structures/armoring (e.g., bulkhead, gabion, riprap, or wall)	S	S	S	S	S
Signs (e.g., interpretation, critical area tract, and survey markers,)	P	P	P	P	P
Single family home, new	X	X	S	S	X
Ski lake – creation	X	S	S	P	P
Slope stabilization or retaining wall (not a bulkhead)	S	S	S	S	S
Stabilization techniques (nonstructural)/bioengineering	S	S	S	S	S
Stair tower, stairway or mechanical lift	X	S	X	S	S

Uses and Activities	Floodways	100-year Floodplains	Channel Migration Hazard Areas	High Ground water Hazard Areas/RDZ	Coastal Flood Hazard Areas
Stormwater conveyance system or detention/treatment facility – Maintenance or repair	S	P	P	P	P
Stormwater retention/treatment facility – Construction	X	S	S	S	X
Stormwater – Sediment control ponds (temporary) – Construction	X	S	S	S	S
Stormwater – Surface water conveyance system – Construction	S	S	S	S	S
Stream flow and elevation gages – Installation	P	P	P	P	P
Stream relocation	S	S	S	S	S
Subdivisions	S	S	S	S	S
Trails/paths, elevated walkways, and associated facilities – New construction (interpretative site and viewing platform)	S	S	S	S	S
Utility facilities and lines – Maintenance or repair	P	P	P	P	P
Utilities – Replacement	S	S	S	S	S
Utility transmission lines – New construction outside of existing improved roads and utility corridors and new utility corridors	S	S	S	S	S
Utility lines in improved roads and utility corridors and easements – New installation or replacement	S	P	S	P	P
Utility service lines – Installation	P	P	P	P	P
Utility facility – New	X	S	X	S	S
Vegetation removal – Enhancement projects	S	P	S	P	P
Vegetation removal – Noxious weeds	P	P	P	P	P
Vegetation removal – Invasive vegetation	S	S	P	P	P
Vegetation removal – Hazard trees	S	S	S	S	S
Vegetation removal – Aquatic weeds	S	N/A	N/A	N/A	N/A
Wells – New construction	X	S	S	S	X
Wildlife blind or nesting structure	P	P	P	P	P

Uses and Activities	Floodways	100-year Floodplains	Channel Migration Hazard Areas	High Ground water Hazard Areas/RDZ	Coastal Flood Hazard Areas
Uses allowed in the applicable zoning district/shoreline master program not listed elsewhere in this table	X	X	X	S	P

LEGEND	
P =	Permitted without a Critical Area Permit (CAP), subject to requirements of this title
S =	Permitted subject to a CAP
X =	Prohibited

**24.20.080 Frequently flooded areas – General standards.**

The following requirements apply, as applicable, to all uses and activities listed in Table 24.20-1.

- A. Applications to undertake a use or activity within frequently flooded areas or a 100-year channel migration hazard area shall contain all information necessary to evaluate the proposed activity, its impacts, its compliance with the applicable provisions of this chapter and chapter 14.38 TCC, Development in Flood Hazard Areas.
- B. All development in frequently flooded areas and 100-year channel migration hazard areas shall be designed to avoid habitat degradation, consistent with chapter 24.25 TCC, Fish and Wildlife Habitat Conservation Areas.<sup>4</sup>
- C. Development in frequently flooded areas shall be designed so it does not increase flood hazards, except as provided for in this section and Chapter 14.38 TCC.
- D. The approval authority shall deny proposed developments and uses if it is determined that they would require structural flood hazard reduction measures including, but not limited to, channeling the floodway or create a new impact upstream or downstream at the time of construction/implementation or anytime thereafter, except as provided for in chapter 24.25 TCC.
- E. Excavation and development shall be prohibited in the 100-year floodplain of Type S and F streams if the approval authority determines that it would cause significant dewatering of the hyporheic zone (the saturated zone located beneath and adjacent to streams with subsurface flow between surface water and the water table), block ground water flow or significantly inhibit recharge of the hyporheic zone. The approval authority may require the applicant to submit data as necessary to determine if excavation, soil compaction, or impervious surfaces associated with the project would cause significant, detrimental disruption to the ground water system.
- F. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside of frequently flooded areas or usages permitted within such areas will not be subject to flooding or flood damage. This chapter shall not create liability on the part of Thurston County, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

**24.20.090 Frequently flooded areas – Clearing and grading.**

Clearing and grading within frequently flooded areas, channel migration hazard areas, and in the restricted development zone associated with high groundwater flood hazard areas is only allowed in conjunction with a use permitted pursuant to this chapter if it complies with all of the following:

- A. Clearing and grading are the minimum necessary to accommodate the permitted use, as determined by the approval authority.
- B. The soil duff layer shall remain undisturbed to the maximum extent practicable. In areas that are disturbed during construction but will not be covered by impervious surfaces, the moisture-holding capacity of the topsoil layer shall be maintained by minimizing soil compaction, by amending the soil with compost (consistent with section 24.20.100 TCC) or by stripping, stockpiling and reapplying the topsoil. Where feasible and appropriate, as determined by the approval authority, graded soil shall be redistributed to disturbed areas on the project site, provided it does not increase the flood elevation and complies with other applicable provisions of this chapter and Chapter 14.38 TCC.
- C. The clearing limits shall be marked with a temporary fence authorized by the County.
- D. Clearing and grading shall only occur between May 1 and September 30. The County may temporarily suspend grading during this period if excessive rainfall could cause erosion and sedimentation that would affect a wetland or water body. The County may allow clearing and grading outside of this period if all drainage will flow away from all potentially affected wetlands and water bodies, remain on site and the site is stabilized per chapter 15.05 TCC.
- E. Clearing in channel migration hazard areas. See chapter 24.25 TCC regarding clearing restrictions in riparian management zones.

*(Also see chapter 14.20 TCC regarding grading requirements and the Stormwater and Drainage Design Standards for Thurston County, chapter 15.05 TCC, chapter 24.25 TCC and chapter 14.38 TCC)*

**24.20.100 Frequently flooded areas - Fill.**

- A. High ground water flood hazard areas.
  - 1. No fill may be placed within a designated high groundwater flood hazard area or no development zone, except to the minimum extent necessary, as determined by the approval authority, to elevate existing access roads serving existing, developed lots to the base flood elevation. Any such fill material shall be stabilized consistent with subsection 14.38.050(A)(5) TCC.
  - 2. Fill may be used in the restricted development zone as follows:
    - a. The approval authority may approve balanced cut and fill to the minimum extent necessary for construction of an approved use listed in Table 24.20-1, if a professional civil engineer licensed in the State of Washington demonstrates that the fill or grading will not block natural drainage or increase flood hazards on or offsite.

- b. Fill may be used to the minimum extent necessary, as determined by the approval authority, to construct a road to access essential public facilities or primary structures if no less damaging or hazardous alternative location exists for the access road outside of the restricted development zone. The access road's surface shall be constructed to an elevation equal to the base flood elevation.
  - c. The approval authority may allow the road to be elevated up to two feet above the base flood elevation provided arched, bottomless culverts will be installed to allow passage of water and the applicant's professional civil engineer licensed in the State of Washington demonstrates that flooding will not be increased offsite or inundate structures.
  - d. Fill material authorized pursuant to this section and any subsequent stabilization shall be such that the fill is stable during flooding, consistent with subsection 14.38.050(A)(5) TCC.
- B. Floodplain. The approval authority may approve balanced cut and fill with compensatory flood storage within the 100-year floodplain, landward of the floodway, to the minimum extent necessary for construction of an approved use listed in Table 24.20-1 or to provide access to essential public facilities, if a qualified professional engineer licensed in the State of Washington and a qualified wildlife habitat biologist demonstrate that there is no other alternative method for constructing the proposed use and that such grading and filling will not block stream side channels, increase flood hazards, inhibit channel migration or degrade important habitats (see chapter 24.25 TCC).
- C. Coastal flood hazard areas. Fill for structural support of buildings is prohibited in coastal high hazard areas.

**24.20.110 Frequently flooded areas – Flood hazard reduction.**

Flood hazard reduction shall be consistent with chapter 24.25 TCC.

**24.20.120 Frequently flooded areas – Hazardous facilities and materials.**

- A. Storage of hazardous materials, sewage sludge, fertilizers, pesticides, herbicides, or chemical or biological substances defined as a hazardous/dangerous waste in Chapter 173-303 WAC, or any other substances, solids or liquids in quantities regulated by Table 24.10-2 in chapter 24.10 TCC, shall be stored out of floodways and above the 100-year flood elevation consistent with Chapter 14.38 TCC where they are at least risk of being inundated with floodwater, consistent with chapters 173-303 WAC and 173-360 WAC, chapter 14.32 TCC, International Fire Code, and Article VI of the Rules and Regulations of the Thurston County Board of Health Governing Nonpoint Source Pollution.

- B. The director may require removal of temporary staging areas or stockpiles of equipment, materials or substances in the floodway and/or floodplain between November 1 and March 15 if it is determined that such use or activity is hazardous to the public health, safety or welfare.

**24.20.130 Frequently flooded areas – New on-site sewage disposal systems.**

- A. New on-site sewage disposal systems shall be located outside the 100-year floodplain, floodway, coastal high hazard areas, and high ground water flood hazard areas, including the no development and restricted development zones. This may require systems that provide a higher level of sewage treatment. The sewage disposal system shall be located as far from the frequently flooded area as possible. Also see Article IV, The Rules and Regulations of The Thurston County Board of Health Governing Disposal of Sewage, and WAC 173-160-171.
- B. New on-site sewage disposal systems shall be located outside the 100-year channel migration hazard area, except as provided in chapter 24.50 TCC. This may require systems that provide a higher level of sewage treatment. The sewage disposal system shall be located as far from the frequently flooded area as possible. Also see Article IV, The Rules and Regulations of The Thurston County Board of Health Governing Disposal of Sewage, and WAC 173-160-171.
- C. Failing onsite sewage disposal systems shall be immediately remedied consistent with The Rules and Regulations of The Thurston County Board of Health Governing Disposal of Sewage, chapter 14.38 TCC, and, if applicable, chapter 24.25 TCC. The approval authority may require the applicant to demonstrate that due to physical constraints (e.g., topography, soil conditions or the configuration of the site), another site configuration would not allow the development to occur without intrusion or with less intrusion into the hazard area than the proposal.

**24.20.140 Frequently flooded areas – Roads, bridges and culverts.**

- A. New roads, bridges, and culverts shall be designed to minimize interruption of the downstream movement of wood and gravel, minimize fill, and allow passage of 100-year flood flows and associated debris. Bridge piers and abutments shall not be placed in either the floodway or between the stream's ordinary high water marks unless there is no alternative placement and the placement results in zero increase in the backwater elevation or increase downstream hazards during the 100-year flood and minimizes habitat degradation. (See chapter 24.25 TCC regarding road alignments in riparian habitat areas.)
- B. Clearing of culverts does not require a permit. Clearing of culverts shall be limited to removal of sediment and debris from the culvert and its inlet, invert, and outlet.

**24.20.150 Frequently flooded areas – Stormwater retention, treatment, and conveyance facilities.**

- A. Maintenance and repair of existing stormwater retention, detention, treatment, and conveyance systems is permitted.
- B. New stormwater facilities and swales proposed to store, treat and/or convey stormwater may be constructed consistent with the Drainage Design and Erosion Control Manual for Thurston County, as amended (chapter 15.05 TCC), and chapter 24.25 TCC.
- C. Temporary sediment ponds are allowed in the RDZ associated with high ground water hazard areas between March 16 and October 31. Temporary ponds may be located in other flood and channel migration hazard areas during this same time period if they comply with chapter 24.25 TCC.

**24.20.160 Frequently flooded areas – Timber harvest.**

The approval authority may authorize the cutting of hazard trees in floodways, 100-year floodplain, coastal high hazard areas, and 100-year channel migration hazard areas consistent with chapters 24.25 and 14.38 TCC.

**24.20.165 Frequently flooded areas – Utilities.**

**SECTION UNDER DEVELOPMENT.**

**24.20.170 Frequently flooded areas – Vegetation removal.**

Harvesting of plants and plant materials is permitted in flood hazard and channel migration hazard areas consistent with chapters 24.25 and 24.30 TCC. <sup>6,7</sup>

**24.20.180 Frequently flooded areas – Wells.**

New wells shall be located outside the 100-year floodplain, floodway, coastal high hazard areas, high ground water flood hazard areas, and the high ground water flood hazard area no development zone. Within 100-year channel migration hazard areas, new wells are permitted, subject to chapter 24.50 TCC. Wellheads shall be located a minimum of two feet above base flood elevation. The well and all approved appurtenances shall be located as far from the frequently flooded area as possible. Also see WAC 173-160-171.

## **Chapter 14.38 - DEVELOPMENT IN FLOOD HAZARD AREAS**

### **Sections:**

#### **14.38.010 - Intent and purpose.**

It is the purpose of this chapter to promote the public health, safety and general welfare, and to minimize losses due to flood conditions by establishment of minimum standards for sites within flood areas or sites that will affect identified flood hazard areas as follows:

1. Require that uses vulnerable to floods, including public facilities which serve such uses, be provided with flood protection at the time of initial construction;
2. Restrict or prohibit uses which are dangerous to human health, safety or property in times of flood, or cause increased flood heights or velocities;
3. Control filling, grading, dredging and other development which may increase flood damage;
4. Control the alteration of natural floodplains, stream channels and natural protective barriers which help accommodate or channel floodwaters;
5. Alert individuals to lands which are in areas of special flood hazard.

*(Ord. No 14388, § 1(Attach 1), 8-3-2010)*

#### **14.38.020 - Definitions.**

1. "Appeal" means a request for a review of the building official's interpretation of any provision of this chapter or a request for a variance.
2. "Area of shallow flooding" means a designated AO or AH Zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and, velocity flow may be evident. AO is characterized by sheet flow and AH indicates ponding.
3. "Base flood" means the flood having a one percent chance of being equaled or exceeded in any given year. Also referred to as the "100-year flood." Designation on maps always includes the letters A or V.
4. "Basement" means any area of the building having its floor subgrade below ground level on all sides.
5. "BFE" means the base flood elevation as indicated on any of the following:
  - a) Thurston County Flood Insurance Rate Map prepared by the Federal Emergency Management Agency (FEMA), supplemented by the current The flood insurance study for Thurston County including any amendments which may hereafter be made by the FEMA, the state of Washington, or Thurston County; or
  - b) The Thurston County High Ground Water Flood Hazard Area Resource Map on file with the resource stewardship department or recognized by a detailed Thurston County groundwater study; or
  - c) The highest known recorded flood elevation.If there are more than one base elevation listed, the county shall utilize whichever elevation is greater.
6. "Breakaway wall" means a wall that is not a part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.
7. "Coastal high hazard area" means the area subject to high velocity waters, including but not limited to, storm surge or tsunamis. The area is designated on the FIRM as Zone V1-V30, VE or V.
8. "Critical facility" means a facility for which even a slight chance of flooding would be too great. Critical facilities include but are not limited to schools, hospitals, police, fire and emergency response installations, nursing homes, installations which produce, use, or store hazardous materials or hazardous waste.
9. "Designated floodway" means the regulatory floodway which has been delineated on the Flood Insurance Rate Map (FIRM) or the flood boundary-floodway map (FBFM) of a community's Flood Insurance Study and is included in the community's

flood damage prevention ordinance.

10.

"Development" means any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of special flood hazard.

11.

"Finished floor" means the top of the next higher floor above the lowest floor. For the purposes of the National Flood Insurance Program Elevation Certificate, the finished floor shall equal the top of the next higher floor as depicted on the Flood Elevation Certificate.

12.

"Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

a.

The overflow of inland or tidal waters; and/or

b.

The unusual and rapid accumulating of runoff of surface waters from any source.

13.

"Flood susceptible materials" include, but are not limited to, electrical, heating, ventilation, plumbing, insulation, air-conditioning or other system that may be subjected to flood water.

14.

"Flood Insurance Rate Map (FIRM) or (DFIRM)" means the official map or digital map on which the FEMA has delineated both the areas of special hazards and the risk premium zones applicable to the community.

15.

"Flood Insurance Study" means the official report provided by the FEMA that includes flood profiles, the flood boundary-floodway map, and the water surface elevation of the base flood.

16.

"Flood protection elevation" means two foot above the base flood elevation.

17.

"Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

18.

"High Ground Water Hazard (HGW)" means those areas that are subject to flood inundation from subsurface waters that result from a fluctuation of the groundwater table. HGW areas are defined by Thurston County on the Thurston County High Ground Water Flood Hazard Area Resource Map or are delineated on a detailed Thurston County groundwater study.

19.

"Historic Structure" means any structure that is:

a)

Listed individually in the National Register of Historic Places, or

b)

Certified or preliminarily determined by the Secretary of the Interior as a historic structure, or

c)

Individually listed on a state inventory of historic places, or

d)

Individually listed on a local inventory of historic places in communities with historic preservation programs.

20.

"LOMA" means FEMA Letter of Map Amendment.

21.

"LOMR" means FEMA Letter of Map Revision.

22.

"Lowest floor" means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this chapter found at Section 14.38.050(B)(1)(a) of the Thurston County Code.

23.

"Manufactured home" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty consecutive days. For insurance purposes the term "manufactured home" does not include park trailers, travel trailers, and other similar vehicles.

24.

"Manufactured home park or subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

25. "New construction" means structures for which the "start of construction" commenced on or after the effective date of the ordinance codified in this chapter.
26. "Non-residential" means buildings or structures not covered under the International Residential Code as a dwelling unit.
27. "Person" means an individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or any agency of the state or local governmental unit however designated.
28. "Post-construction elevation certificate" means an elevation certificate identifying the elevation of the constructed lowest floor level.
29. Repetitive Loss. A structure having suffered two insured or uninsured flood damaged losses within the latest ten year period where the cost of repairing the flood damage, on the average, equals or exceeded twenty-five percent of the structure market value at the time of each flood.
30. "Special flood hazard area" means an area subject to a base of one-hundred year flood; areas of special flood hazard are shown on a flood hazard boundary map or Flood Insurance Rate Map as Zone A, AO, A1-30, AE, A99, AH, VO, V1-30, VE, V or High Ground Water Flood Hazard Areas Resource Map on file with the Resource Stewardship Department or the highest known recorded flood elevation.
31. "SFHA" means Special Flood Hazard Area.
32. "Start of construction" includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within one hundred eighty days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of a slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundation or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.
33. "Structure" means a walled and roofed building including a gas or liquid storage tank that is principally above ground and manufactured structures.
34. "Substantial improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty percent of the market value of the structure either:
- (a) Before the improvement or repair is started; or
- (b) If the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimension of the structure.
- The term does not, however, include either:
1. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
  2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of National Historic Places.
35. "Variance" means a grant of relief from the requirements of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter.
36. "Water dependent" means a water dependent structure for commerce or industry which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations.

*(Ord. No. 14388, § 1(Attach. 1), 8-3-2010)*

#### **14.38.030 - General provisions.**

##### **A.**

Applicability. This chapter shall apply to all areas of special flood hazard within Thurston County as identified on Flood

Insurance Rate Maps prepared by the FEMA, supplemented by a scientific and engineering report entitled "The Flood Insurance Study for Thurston County," dated November 17, 1980, and any amendments which may hereafter be made by the FEMA, and including the Thurston County High Ground Water Flood Hazard Areas Resource Map. The maps and report are on file at the Thurston County Resource Stewardship Department.

B.

Interpretation. In the interpretation and application of this chapter, the provisions shall be considered as minimum requirements. Its provisions shall be applied in addition to and as a supplement to provisions of the subdivision and zoning ordinances, the Shoreline Master Program and, excepting R106.1.3, as a direct replacement for the flood protection provisions of the International Residential Code. This chapter is not intended to repeal, abrogate or impair any existing easements, covenants, or deed restrictions, however, where this ordinance and another ordinance, easement, covenant or deed restrictions conflict or overlap, whichever imposes the more stringent requirements shall prevail.

C.

Compliance. Existing structures which have experienced repetitive loss and new structure(s) hereafter constructed, located, extended, converted, or altered shall comply with the terms of this chapter and other applicable regulations.

D.

Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside the area of special flood hazards or usages permitted within such areas will not be subject to flooding or flood damage. This chapter shall not create liability on the part of Thurston County, any officer or employee thereof, or the FEMA, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

*(Ord. No 14388, § 1, Attach 1) 8-3-2010*

#### **14.38.040. - Administration.**

A.

Administrative Official. It shall be the duty of the building official to administer and implement this chapter.

B.

Approval Process.

1.

A permit shall be obtained from the building official before construction or development begins within any area of special flood hazard as established in Section 14.38.030(A). The permit shall be for all structures including manufactured homes, as set forth in Section 14.38.020, and for all development including fill and other activities, also as set forth in Section 14.38.020.

2.

When application for permit under Title 14 Building and Construction or other county ordinance is made to the county for construction or development in flood hazard areas, the building official shall require supplementary information which may be needed to review the proposal under the provisions of this chapter. This supplementary information shall be furnished on forms provided by the county, and shall include any supplementary information which the building official may require to review the proposed construction or development.

3.

If the proposed construction or development requires no other permit, an application must be made for permit approval under the provisions of this chapter. Permit approval must be granted by the building official before any work can be performed in the flood hazard area.

4.

The approval period for any permit granted under provisions of this chapter runs concurrent with other permit approvals which are applicable for the project. If permit approval is granted only under the provisions of this chapter, the approval shall expire one year from the date of issuance. Upon showing of good cause, such approval may be extended by the building official for one six-month period. Approved plans shall not be amended without authorization of the building official. The permit may be suspended or revoked by the building official because of incorrect information supplied or any violation of the provisions of this chapter.

C.

Application Information.

1.

Application shall be made on forms furnished by the county and may include, but not be limited to: site plans in duplicate drawn to scale specified by the county showing the nature, location, dimensions and elevations of the area in question; existing or proposed structures, fill, storage of materials and drainage facilities.

2.

A professional engineer or registered surveyor may be required to document site elevations or other information.

3.

The following information is required on all applications:

a.

Elevation in relation to mean sea level of the lowest floor (including basement) of all structures;

b.

Elevation in relation to mean sea level to which any structure has been floodproofed;

c.

Certification by a registered professional engineer or architect that the floodproofing criteria in Section 14.38.050(B) has been met;

d.

Description of the extent to which any water course will be altered or relocated as a result of proposed development.

4.

The building official may require that certain tests and other analytical studies be made prior to approval of construction or development proposals. The developer shall pay for or reimburse the county for the costs incurred in the conduct of such tests or studies and for the costs incurred by the county to engage technical consultants for review and interpretation of data and findings submitted by or on behalf of the developer.

D.

Duties and Responsibilities of the Building Official.

1.

Permit Review.

a.

Review all permit applications, conferring with the county engineer, environmental review officer, and other county personnel as may be appropriate, to determine that the requirements of this chapter have been satisfied;

b.

Review all permits to determine that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.

2.

Use of Other Base Flood Data. When base flood elevation data has not been provided by the FEMA as noted in Section 14.38.030(A), the building official shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state or other source in order to administer Section 14.38.050.

3.

Interpretation of Flood Insurance Rate Map Boundaries. Where elevation data is not available, applications for floodplain management/flood control zone permits shall be reviewed to assure that the proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, etc., where available. Other authoritative data on elevations may be used if available as criteria for floodproofing or elevating. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 14.38.060.

4.

Alteration of Watercourses—Notification.

a.

Notify adjacent communities and the State Department of Ecology prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the FEMA;

b.

Require that maintenance is provided within the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished.

5.

Information to be Obtained and Maintained—Other Reports.

a.

Where base flood elevation data is provided through the Flood Insurance Study or required as in Section 14.38.040(D)(2), obtain and record the actual elevation (in relation to mean sea level) of the lowest habitable floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement.

b.

For all new substantially improved floodproofed structures: (i) verify and record the actual elevation (in relation to mean sea level); and (ii) maintain the floodproofing certifications required in the project applications.

c.

Maintain for public inspection all records pertaining to the provisions of this chapter.

*(Ord. No. 14388, § 1(Attech. 1), 8-3-2010)*

## **14.38.050 - Standards.**

A.

In all areas of special flood hazard, the following standards are required:

1.

Anchoring. All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.

2.

Construction Materials and Methods.

a.

All new construction and substantial improvements shall be constructed with materials and utility equipment

resistant to flood damage.

- b.** All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
- c.** Electrical, heating, ventilation, plumbing, and air-conditioning equipment or other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

**3.**

Utilities.

- a.** All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- b.** New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.
- c.** On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

**4.**

Subdivision Proposals.

- a.** All subdivision proposals shall be consistent with the need to minimize flood damage.
- b.** All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
- c.** All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.
- d.** Base flood elevation data shall be provided for all subdivision proposals.

**5.**

Fill.

- a.** Any fill or materials proposed to be deposited must be shown to have a beneficial purpose and the amount thereof not greater than is necessary to achieve that purpose, as demonstrated by a plan submitted by the owner showing the uses to which the filled land will be put and the final dimensions of the proposed fill or other materials.
- b.** Such fill or other materials shall be protected against erosions by rip rap, vegetative cover or bulkheading.
- c.** Structure may be allowed to be constructed on fill meeting the requirements of Appendix J of the International Building Code. The fill shall be at a point no lower than one foot above the base flood elevation at least fifteen feet beyond the limits of any structure or building erected thereon.
- d.** No fill may be allowed which acting alone or in concert with other conditions may increase flood hazards to other property.

**6.**

Review of Building Permits. Where elevation data is not available either through the Flood Insurance Study or from another authoritative source, applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of historic data, high-water marks, photographs of past flooding, etc., where available. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

**B.**

In all areas of special flood hazards where base flood elevation data has been provided as set forth in Section 14.38.030(A) or Section 14.38.040(D)(2) the following provisions are required:

**1.**

Residential Construction.

- a.** New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated two feet above the base flood elevation, or the highest known recorded flood elevation, whichever is greater.
- b.** Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to

automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

- i. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.
- ii. The bottom of all openings shall be no higher than one foot above grade.
- iii. Openings may be equipped with screens, louvers, or other coverings or devices; provided that, they permit the automatic entry and exit of floodwaters.

**2.**

**Nonresidential Construction.** New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to the level of two feet above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

- a. Be floodproofed so that below one foot above the base flood level the structure is watertight with walls substantially impermeable to the passage of water;
- b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;
- c. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in Section 14.38.040(C)(2).
- d. Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in Section 14.38.050(B)(1).
- e. Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building constructed to the base flood level will be rated as one foot below that level).
- f. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the base floodplain. Construction of new critical facilities shall be permissible within the base floodplain if no feasible alternative site is available. Critical facilities constructed within the base floodplain shall have the lowest floor elevated to three feet or more above the level of the base flood elevation at the site. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base floodplain shall be provided to all critical facilities to the extent possible.

**3.**

**Manufactured Homes.** All manufactured homes to be placed or substantially improved within zones A1-30, AH, AE and high ground water flood hazard areas shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is two feet above the base flood elevation and be securely anchored to an adequately anchored foundation system in accordance with the following provisions:

- a. Over-the-top ties be provided at each of the four corners of the mobile home, with two additional ties per side at intermediate locations, with mobile homes less than fifty feet long requiring one additional tie per side;
- b. Frame ties be provided at each corner of the home with five additional ties per side at intermediate points, with mobile homes less than fifty feet long requiring four additional ties per side;
- c. All components of the anchoring system be capable of carrying a force of four thousand eight hundred pounds; and
- d. Any additions to the mobile home be similarly anchored.

**C.**

**Encroachments.** The cumulative effect of any proposed development, when combined with all other existing and anticipated developments, shall not increase the water surface elevation of the base flood more than one foot at any point.

**D.**

**Standards for Shallow Flooding Areas (AO zones).** Shallow flooding areas appear on FIRM's as AO zones with depth designation. The base flood depths in these zones range from one to three feet where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. In these areas, the following provisions apply:

1. New construction and substantial improvements of residential structures within AO zones shall have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, to one foot above the depth number specified on the FIRM (at least two feet if no depth number is specified).
2. New construction and substantial improvements of nonresidential structures within AO zones shall either:
  - a. Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, to one foot above the depth number specified on the FIRM (at least two feet if no depth number is specified); or
  - b. Together with attendant utility and sanitary facilities, be completely floodproofed to one foot above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components that have the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyance. If this method is used, compliance shall be certified by a registered professional engineer or architect as in Section 14.38.050.
3. Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

**E.**

Coastal High Hazard Areas. Located within areas of special flood hazard established in Section 14.38.030 are coastal high hazard areas, designed as Zones V1-V30, VE and/or V. Coastal high hazard areas have special flood hazards associated with high velocity waters from tidal surges and, therefore, in addition to meeting all provisions in this chapter, the following provisions shall also apply:

1. All new construction and substantial improvements in Zones V1-30 and VE (V is base flood elevation data is available) shall be elevated on pilings and columns so that:
  - a. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level; and
  - b. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one percent chance of being equaled or exceeded in any given year (one-hundred-year means recurrence interval).

A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of subsections (E)(1)(a) and (E)(1)(b) of this section.
2. Obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluded pilings and columns) of all new and substantially improved structures in Zones V1-30 and VE, and whether or not such structures contain a basement. The local administrator shall maintain a record of all such information.
3. All new construction shall be located landward of the reach of mean high tide or the primary dune if an active dune system is associated with the V Zone.
4. Provide that all new construction and substantial improvements have the space below the lowest floor either free of obstruction or constructed with nonsupporting breakaway walls, open wood latticework, or insect screening intended to collapse under wind and water load without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than ten and not more than twenty pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of twenty pounds per square foot may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:
  - a. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and
  - b. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each have a one percent chance of being equaled or exceeded in any given year (one-hundred-year mean recurrence interval).
5. If breakaway walls are utilized, such enclosed space shall be usable solely for parking of vehicles, building access, or storage. Such space shall not be used for human habitation;

6. Prohibit the use of fill for structural support of buildings;
7. Prohibit any manmade alteration of sand dunes in a designed V Zone which would increase potential flood damage.

F.

Floodways. In areas designated as floodways, the following additional standards are required:

1. The construction or reconstruction of residential structures is prohibited, except for:
  - a. Repairs, reconstruction or improvements to a structure which do not increase the ground floor area; and
  - b. Repairs, reconstruction or improvements to a structure the cost of which does not exceed fifty percent of the market value of the structure either:
    - i. Before the repair, reconstruction or repair is started, or
    - ii. If the structure has been damaged, and is being restored, before the damage occurred;Work done on structures to comply with existing health, sanitary or safety codes or to structures identified as historic places shall not be included in the fifty percent determination.
2. Prohibit encroachments, including fill, new construction, substantial improvements and other development unless a study by a licensed engineer demonstrates that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
3. New construction, and substantial improvements, shall comply with all applicable flood hazard reduction provisions in subsection A of this section.
4. Because of the hazardous location, developments in floodways shall be limited to recreation vehicles that can be moved by means of automobile, pickup truck or self-propulsion and must meet the following:
  - a. Recreational vehicles parked in the floodway shall not be left unattended for periods in excess of twenty-four hours during the normal flood season (November 15th through March 15th each year);
  - b. Travel trailers parked in the campsite shall be limited to thirty-five feet or less in length, and the wheels and tongue shall remain attached in place for ease and rapidity of evacuation.

G.

Special Flood Hazard Areas Without Designated Floodways. When a regulatory floodway for a stream has not been designated, applicants for new construction and substantial improvements shall reasonably utilize the best available information from a federal, state, or other sources to consider the cumulative effect of existing, proposed, and anticipated future development and shall demonstrate that the increase in the water surface elevation of the base flood will not be more than one foot at any point.

*(Ord. No. 14388, § 1(Attach 1), 8-3-2010)*

**14.38.060 - Appeals and variances.**

A.

Appeal Board.

1. Any person or persons aggrieved by any action of the building official may, within ten working days of such action, file notice of appeal or request variances as follows (except variances cannot be granted in floodways):
  - a. Appeals relating to technical structural requirements in connection with floodproofing structures shall be filed with the building code appeals board;
  - b. All other appeals or variances shall be filed with the hearing examiner.
2. Those aggrieved by the decision of the building code appeals board may appeal such decision to superior court or other court of competent jurisdiction. Those aggrieved by the decision of the hearings examiner may appeal such decision to the board of Thurston County commissioners pursuant to Chapter 2.06.
3. In passing upon such applications, the building code appeals board or hearings examiner shall consider all technical evaluations, all relevant factors, standards specified in other sections of this chapter, and:
  - a. The danger that materials may be swept onto other lands to the injury of others;

- b. The danger to life and property due to flooding or erosion damage;
- c. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
- d. The importance of the services provided by the proposed facility to the community;
- e. The necessity of the facility of a waterfront location, where applicable;
- f. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
- g. The compatibility of the proposed use to the comprehensive plan and floodplain management program of that area;
- h. The relationship of the proposed use to the comprehensive plan and floodplain management program of that area;
- i. The safety of access to the property in times of flood for ordinary and emergency vehicles;
- j. The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and
- k. The costs of providing public services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges.

4. Upon consideration of the factors of subsection (A)(3) of this section and the purposes of this chapter, the building code appeals board or hearings examiner may attach such conditions to the granting of appeals or variances as it deems necessary to further the purposes of this chapter.

5. The building official shall maintain the records of all appeal actions, including technical information and report any variances to the FEMA upon request.

**B.**

Conditions for Variances.

- 1. Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (a) through (k) in subsection (A)(3) of this section have been fully considered. As the lot size increases, the technical justification required for issuing the variance increases.
- 2. Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places without regard to procedures set forth in the remainder of this section.
- 3. Variances shall not be issued within a designated floodway.
- 4. Variances shall only be issued upon:
  - a. A showing of good and sufficient cause;
  - b. A determination that failure to grant the variance would result in exceptional hardship to the applicant;
  - c. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create fraud on or victimization of the public or conflict with existing local laws or ordinances.
  - d. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- 5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its

inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from the flood elevation should be quite rare.

6.

Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except Section 14.38.060(B)(1), and otherwise complies with Sections 14.38.050(A)(1) and (2).

7.

Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

*(Ord. No. 14388, § 1(Attach. 1), 8-3-2010)*

#### **14.38.070 - Violations.**

1.

Violation of the provisions of this chapter or failure to comply with any of the requirements shall constitute a misdemeanor and shall be punishable by a fine of not more than one thousand dollars or by imprisonment for not more than ninety days, or by both such fine and imprisonment. Each day such violation continues shall be considered a separate, distinct offense.

2.

Any person who commits, participates in, assists, or maintains such violation may be found guilty of a separate offense and suffer the penalties set forth in subsection 1 of this section.

3.

In addition to the penalties set forth in subsections 1 and 2 of this section, any violation of the provisions of this chapter is declared to be a public nuisance and may be abated through proceedings for injunctive or other relief in superior court or other court of competent jurisdiction.

*(Ord. No. 14388, § 1(Attach. 1), 8-3-2010)*

#### **14.38.080 - Performance bonds.**

The building official may require bonds in such form and amounts as may be deemed necessary to assure that the work shall be completed in accordance with approvals under the ordinance codified in this chapter. Bonds, if required, shall be furnished by the property owner, or other person or agent in control of the property.

In lieu of a surety bond, the applicant may file a cash bond or instrument of credit with the building official in an amount equal to that which would be required in the surety bond. The amount of such bond shall not exceed the estimated cost of the work planned.

*(Ord. No. 14388, § 1(Attach. 1), 8-3-2010)*

#### **14.38.090 - Map correction procedures.**

The procedures for map correction as provided in federal regulations Section 70 CFR, of the National Flood Insurance Program are hereby adopted by reference.

*(Ord. No. 14388, § 1(Attach. 1), 8-3-2010)*

#### **14.38.100 - Severability.**

If any section, paragraph, sub-section, clause or phrase of the ordinance codified in this chapter is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of the ordinance codified in this chapter.

