

Chapter 8.05

FLOOD DAMAGE PREVENTION

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8.05.010 AUTHORIZATION

The Federal Emergency Management Agency (FEMA) has formulated a program for the regulation of floodplain and flood prone areas, which the State of Oregon has adopted and also administers. The State, in turn, has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

8.05.015 FINDINGS OF FACT

1. The flood hazard areas of the City of Tangent are subject to periodic inundation that results in property damage, loss of life, poses health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare.
2. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards that increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately flood proofed, elevated, or otherwise protected from flood damage also contribute to the flood loss.

8.05.020 STATEMENT OF PURPOSE

The purpose of this Chapter is to promote the public health, safety and general welfare, and to minimize public and private losses due to flooding in specific areas by provisions designed:

1. To protect human life and health;
2. To minimize expenditure of public money and costly flood control projects;
3. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
4. To minimize prolonged business interruptions;
5. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;
6. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
7. To ensure that potential buyers are notified that property is in an area of special flood hazard; and,
8. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

8.05.025 METHODS OF REDUCING FLOOD LOSSES

In order to accomplish its purposes, this Chapter includes methods and provisions for:

1. Restricting or prohibiting uses that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or in flood heights or velocities;
2. Requiring that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
3. Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, that help accommodate or channel flood waters;
4. Controlling filling, grading, dredging, and other development that may increase flood damage;
5. Preventing or regulating the construction of flood barriers that will unnaturally divert flood waters or may increase flood hazards in other areas.
6. Coordinating and supplementing the provisions of the state building code with local land use and development ordinances

8.05.030 DEFINITIONS

Unless specifically defined below, words or phrases used in this Chapter shall be interpreted so as to give them the meaning they have in common usage and to give this Chapter its most reasonable application.

1. "Appeal" means a request for a review of the interpretation of any provision of this Chapter or a request for a variance.
2. "Area of Special Flood Hazard" means the land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year. Designation on maps always includes the letters A or V.
3. "Base Flood" means the flood having a 1% 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. "Base Flood Elevation (BFE)" means the water surface elevation during the base flood in relation to a specified datum. The Base Flood Elevation is depicted on the FIRM to the nearest foot and in the FIS to the nearest 0.1 foot.
5. "Basement" means any area of the building having its floor subgrade (below ground level) on all sides.
6. "Below-Grade Crawl Space" means an enclosed area below the base flood elevation in which the interior grade is not more than two feet below the lowest adjacent exterior grade and the height, measured from the interior grade of the crawlspace to the top of the crawlspace foundation, does not exceed 4 feet at any point
7. "Breakaway Wall" means a wall that is not 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.
8. "Building Codes" means the combined specialty codes adopted under ORS 446.062, 446,185, 447.20(2), 455.020 (2), 455,496, 455,610, 455,680, 460.085, 460.360, 479.730 (1) or 480.545, but does not include regulations adopted by the State Fire Marshal pursuant to ORS chapter 476 or ORS 479.015 to 479.200 and 479.210 to 479.220.
9. "Critical Facility" means a facility for which even a slight chance of flooding might be too great. Critical facilities include, but are not limited to schools, nursing homes, hospitals, police, fire and emergency response installations, installations that produce, use or store hazardous materials or hazardous waste.

10. "Development" means any man-made 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 or storage of equipment or materials located within the area of special flood hazard.

11. "Elevated Building" means for insurance purposes, a nonbasement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

12. "Existing Manufactured Dwelling Park or Subdivision" means a Manufactured Dwelling park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the adopted floodplain management regulations.

13. "Expansion to an Existing Manufactured Dwelling Park or Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

14. "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 accumulation of runoff of surface waters from any source.

15. "Flood Insurance Rate Map (FIRM)" means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

16. "Flood Insurance Study" means the official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Boundary-Floodway Map, and the water surface elevation of the base flood.

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. "Historic Structure" means a structure that is:

- a. Listed individually in the National Register of Historic Places (a listing maintained by the U.S. Department of Interior) or

preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register.

- b. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or to a district preliminarily determined by the Secretary to qualify as a registered historic district:
- c. Individually listed on a state inventory of historic places and determined as eligible by states with historic preservation programs which have been approved by the Secretary of Interior, or;
- d. Individually listed on a local inventory of historic places and determined as eligible by communities with historic preservation programs that have been certified either:
 - (i) By an approved state program as determined by the Secretary of the interior, or;
 - (ii) Directly by the Secretary of the Interior in states without approved programs.

19. "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 Section 8.05.057(1).

20. "Manufactured Dwelling" 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 attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

21. "Manufactured Dwelling Park or Subdivision" means a parcel (or contiguous parcels) of land divided into two or more Manufactured Dwelling lots for rent or sale.

22. "New Construction" means structures for which the "start of construction" commenced on or after the effective date of this Chapter.

23. "New Manufactured Dwelling Park or Subdivision" means a Manufactured Dwelling park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of adopted floodplain management regulations.

24. "Recreational Vehicle" means a vehicle that is:

- a. Built on a single chassis;
- b. 400 square feet or less when measured at the largest horizontal projection;
- c. Designed to be self-propelled or permanently towable by a light duty truck; and
- d. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

25. "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 180 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 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 Dwelling 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 foundations 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. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

26. "State Building Code" means the combined specialty codes.

27. "Structure" means a walled and roofed building including a gas or liquid storage tank that is principally above ground.

28. "Substantial Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

29. "Substantial Improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 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 dimensions of the structure.

The term does not, however, include either:

- a. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications that have been identified by a local code enforcement official and are the minimum necessary to assure safe living conditions or
- b. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

30. "Variance" means a grant of relief from the requirements of this Chapter that allows construction in a manner that would otherwise be prohibited by this Chapter.

31. "Water Dependent" means a structure for commerce or industry that cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations.

8.05.035 GENERAL PROVISIONS

1. Lands to which this Chapter applies. This Chapter shall apply to all areas of special flood hazards within the jurisdiction of City of Tangent.
2. Basis for Establishing the Areas of Special Flood Hazard. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Linn County, Oregon and Incorporated Areas", dated September 29, 2010, with accompanying Flood Insurance Maps are hereby adopted by reference and declared to be a part of this Chapter. The Flood Insurance Study is on file at Tangent City Hall. The best available information for flood hazard area identification as outlined in Section 8.05.065(2) shall be the basis for regulation until a new FIRM is issued that incorporates the data used under Section 8.05.065(2).
3. Penalties for Noncompliance. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this Chapter and other applicable regulations. Violations of the provisions of this Chapter by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a misdemeanor. Any person who violates this Chapter or fails to comply with any of its requirements shall upon conviction thereof be fined not more than \$500 for each violation, and in addition shall pay all costs and

expenses involved in the case. Nothing herein contained shall prevent the City of Tangent from taking such other lawful action as is necessary to prevent or remedy any violation.

4. Abrogation and Greater Restrictions. This Chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Chapter and another ordinance, state building code, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

8.05.040 SEVERABILITY.

If any section clause, sentence, or phrase of the Chapter is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way effect the validity of the remaining portions of this Chapter.

8.05.045 INTERPRETATION

In the interpretation and application of this Chapter, all provisions shall be:

1. Considered as minimum requirements;
2. Liberally construed in favor of the governing body; and,
3. Deemed neither to limit or repeal any other powers granted under State statutes and rules including the state building code.

8.05.050 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 man-made or natural causes. This Chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of City of Tangent, 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.

8.05.055 ADMINISTRATION

1. Development Permit Required. A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 8.05.035(2). The permit shall be for all structures including manufactured homes, as set forth in the Definitions section of this Chapter and for all development including fill and other activities, also as set forth in the Definitions Section.

2. Application for Development Permit. Application for a development permit shall be made on forms furnished by the City of Tangent and shall include but not be limited to plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing and proposed structures, fill, storage of materials, drainage facilities and all related development. Specifically, the following information is required:
 - a. Location of the flood hazard area boundary;
 - b. Elevations of all structures in relation to mean sea level of the lowest floor (including basement) of all structures;
 - c. Elevation in relation to mean sea level of flood proofing in any structure;
 - d. Certification by a registered professional engineer or architect that the flood proofing methods for any nonresidential structure meet the flood proofing criteria in Section 8.05.075(2)(b); and
 - e. Description of the extent to which a watercourse will be altered or relocated as a result of proposed development.

8.05.060 DESIGNATION OF THE LOCAL ADMINISTRATOR

The City Planner is hereby designated as the Local Administrator for purposes of this Chapter and is authorized to administer and implement this Chapter by granting or denying development permit applications in accordance with its provisions.

8.05.065 DUTIES AND RESPONSIBILITIES OF THE LOCAL ADMINISTRATOR

Duties of the local administrator shall include, but not be limited to:

1. Permit Review
 - a. Review all development permits to determine that the permit requirements and conditions of this Chapter have been satisfied.
 - b. Review all development permits to determine that all necessary permits have been obtained from those Federal, State, or local governmental agencies from which prior approval is required.
 - c. Review all development permits to determine if the proposed development is located in the floodway. If located in the floodway, assure that the encroachment provisions of Section 8.05.075(4)(a) are met.
2. Use of Other Base Flood Data (In A and V Zones) When base flood elevation data has not been provided (A and V Zones) in accordance with Section 8.05.035(2) (Basis for Establishing the Areas of Special Flood Hazard), the local administrator 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 Sections 8.05.075(2) (Specific Standards) and 8.05.075(4) (Floodways).

3. Information to be Obtained and Maintained

- a. Where base flood elevation data is provided through the Flood Insurance Study, FIRM, or required as in Section 8.05.065(2), obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basements and below-grade crawlspaces) of all new or substantially improved structures, and whether or not the structure contains a basement.
- b. For all new or substantially improved flood proofed structures where base flood elevation data is provided through the Flood Insurance Study, FIRM, or as required in Section 8.05.065(2):
 - (i) Verify and record the actual elevation (in relation to mean seal level), and
 - (ii) Maintain the flood proofing certifications required in Section 8.05.075(2).
- c. Maintain for public inspection all records pertaining to the provisions of this Chapter.

4. Alteration of Watercourses

- a. Notify adjacent communities, the Department of Land Conservation and Development and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.
- b. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

5. Interpretation of FIRM Boundaries. Make interpretations where needed, as to exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 8.05.065(6).

6. Appeals of FIFRM Boundaries. An appeal from a decision of the administrator regarding a FIRM Boundary pursuant to Section 8.05.065(5), shall be taken to the Planning Commission. An appeal from the decision of the Planning Commission regarding a FIRM Boundary shall be taken to the City council. Appeals under this section shall be conducted according to the order of procedure set out for discretionary land use decisions. The burden of proof for such an appeal shall be on the applicant. The Local

Administrator shall report any such decision to the Federal Insurance Administration upon request.

8.05.070 VARIANCE PROCEDURE

1. Appeal Board

- a. The Tangent Planning Commission shall serve as the Appeal Board to hear and decide appeals and requests for variances from the requirements of this Chapter.
- b. The Tangent Planning Commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the City of Tangent in the enforcement or administration of this Chapter.
- c. Those aggrieved by the decision of the Tangent Planning Commission, or any taxpayer, may appeal such decision to the City Council.
- d. In deciding any such applications and appeals therefrom, the City's decision maker shall consider all technical evaluations, all relevant factors, standards specified in other sections of this Chapter, and:
 - (i) The danger that materials may be swept onto other lands to the injury of others;
 - (ii) The danger to life and property due to flooding or erosion damage;
 - (iii) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
 - (iv) The importance of the services provided by the proposed facility to the community;
 - (v) The necessity to the facility of a waterfront location, where applicable;
 - (vi) The availability of alternative locations for the proposed use that are not subject to flooding or erosion damage;
 - (vii) The compatibility of the proposed use with existing and anticipated development;
 - (viii) The relationship of the proposed use to the comprehensive plan and flood plain management program for that area;
 - (ix) The safety of access to the property in times of flood for ordinary and emergency vehicles;
 - (x) The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and,
 - (xi) The costs of providing governmental 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.

- e. Upon consideration of the factors of Section 8.05.070(1)(d) and the purposes of this Chapter, the City's decision maker may attach such conditions to the granting of any variance it deems necessary to further the purposes of this Chapter.
- f. The Local Administrator shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

2. Conditions for Variances

- a. 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 ½ acre or smaller in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i-xi) in Section 8.05.070(1)(d) have been fully considered. As the lot size increases the technical justification required for issuing the variance increases.
- b. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the Statewide Inventory of Historic Properties, without regard to the procedures set forth in this section.
- c. Variances shall not be issued for any development within a designated floodway if the development would increase flood levels during the base flood discharge.
- d. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- e. Variances may be issued only upon:
 - (i) A showing of good and sufficient cause;
 - (ii) A determination that failure to grant the variance would result in exceptional hardship to the applicant;
 - (iii) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances.
- f. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece or property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. Variances are intended primarily to address small lots in densely populated residential neighborhoods, and, accordingly, variances from the flood elevations should be quite rare.

- g. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry-flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except Section 8.05.070(2), and otherwise complies with Section 8.05.070(1) (General Standards).
- h. 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.

8.05.075 PROVISIONS FOR FLOOD HAZARD REDUCTION

- 1. General Standards. In all areas of special flood hazards, the following standards are required:
 - a. Anchoring
 - (1) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
 - (2) All manufactured homes must likewise be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA's "Manufactured Dwelling Installation in Flood Hazard Areas" guidebook for additional techniques).
 - b. AH Zone Drainage. Adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.
 - c. Construction Materials and Methods
 - (1) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
 - (2) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
 - (3) Electrical, heating, ventilation, plumbing, and air-conditioning equipment and 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.
 - d. Utilities

- (1) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;
- (2) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and,
- (3) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with the Oregon Department of Environmental Quality.

e. Subdivision Proposals

- (1) All subdivision proposals shall be consistent with the need to minimize flood damage;
- (2) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage;
- (3) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and,
- (4) Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments that contain at least 50 lots or 5 acres (whichever is less).

- f. Review of Building Permits. Where elevation data is not available either through the Flood Insurance Study, FIRM, or from another authoritative source (Section 8.05.065(2)), 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 historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate the lowest floor at least two feet above grade in these zones may result in higher insurance rates.

2. Specific Standards. In all areas of special flood hazards where base flood elevation data has been provided (Zones A1-30, AH, and AE) as set forth in Section 8.05.035(2) (Basis for Establishing the Areas of Special Flood Hazard) or Section 8.05.065(2) (Use of Other Base Flood Data in A and V Zones), the following provisions are required:

a. Residential Construction

- (1) New construction and substantial improvement of any residential structure shall have the lowest floor, including

basement, elevated to a minimum of one foot above the base flood elevation.

- (2) 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.

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

- (1) Be flood proofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water;
- (2) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;
- (3) 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 8.05.065;
- (4) Nonresidential structures that are elevated, not flood proofed, must meet the same standards for space below the lowest floor as described in Section 8.05.075(2)(a);
- (5) Applicants flood proofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the flood proofed level, e.g. a building flood proofed to the base flood level will be rated as one foot below.

c. Manufactured Homes

- (1) All manufactured homes to be placed or substantially improved on sites:
 - (i) Outside of a Manufactured Dwelling park or subdivision,
 - (ii) In a new Manufactured Dwelling park or subdivision,
 - (iii) In an expansion to an existing Manufactured Dwelling park or subdivision, or
 - (iv) In an existing Manufactured Dwelling park or subdivision on which a Manufactured Dwelling has incurred “substantial damage” as the result of a flood shall be elevated on a permanent foundation such that the finished floor of the Manufactured Dwelling is elevated to a minimum 18 inches (46 cm) ¹ above the base flood elevation and be securely anchored to an adequately designed foundation system to resist flotation, collapse and lateral movement.
- (2) Manufactured homes to be placed or substantially improved on sites in an existing Manufactured Dwelling park or subdivision within Zones A1-30, AH, and AE on the community’s FIRM that are not subject to the above Manufactured Dwelling provisions be elevated so that either:
 - (i) The finished floor of the Manufactured Dwelling is elevated to a minimum of 18 inches (46 cm) above the base flood elevation, or
 - (ii) The Manufactured Dwelling chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.

d. Recreational Vehicles. Recreational vehicles placed on sites are required to either:

- (1) Be on the site for fewer than 180 consecutive days
- (2) Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no

¹ See 2002 Oregon Manufactured Dwelling and Parks Specialty Code, Chapter 3. The code also requires that the top of the dwelling stand be at least 12 inches above BFE.

- (3) permanently attached additions; or
 - (3) Meet the requirements of Section 8.05.075(2)(c) and the elevation and anchoring requirements for manufactured homes.
- e. Below-grade crawlspaces. Below-grade crawlspaces are allowed subject to the following standards as found in FEMA Technical Bulletin 11-01 (*Crawlspace Construction for Buildings Located in Special Flood Hazard Areas*):
 - (1) The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the required openings stated in Subsection 2 below. Because of hydrodynamic loads, crawlspace construction is not allowed in areas with flood velocities greater than five feet per second unless the design is reviewed by a qualified design professional, such as a registered architect or professional engineer. Other types of foundations are recommended for these areas.
 - (2) The crawlspace is an enclosed area below the base flood elevation (BFE) and, as such, must have openings that equalize hydrostatic pressures by allowing the automatic entry and exit of floodwaters. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade.
 - (3) Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawlspace used to elevate the building, but also any joists, insulation, or other materials that extend below the BFE. The recommended construction practice is to elevate the bottom of joists and all insulation above BFE.
 - (4) Any building utility systems within the crawlspace must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, must either be placed above the BFE or sealed from floodwaters.
 - (5) The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade.
 - (6) The height of the below-grade crawlspace, measured from the interior grade of the crawlspace to the top of the

crawlspace foundation wall must not exceed four feet at any point. The height limitation is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas.

- (7) There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. The enclosed area should be drained within a reasonable time after a flood event. The type of drainage system will vary because of the site gradient and other drainage characteristics, such as soil types. Possible options include natural drainage through porous, well-drained soils and drainage systems such as perforated pipes, drainage tiles or gravel or crushed stone drainage by gravity or mechanical means.
 - (8) The velocity of floodwaters at the site should not exceed five feet per second for any crawlspace. For velocities in excess of five feet per second, other foundation types should be used.²
3. Before Regulatory Floodway. In areas where a regulatory floodway has not been designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.
 4. Floodways. Located within areas of special flood hazard established in Section 8.05.035 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters that carry debris, potential projectiles, and erosion potential, the following provisions apply:
 - a. Except as provided in Subsection c, prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

² For more detailed information refer to FEMA Technical Bulletin 11-01

- b. If Section xx is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 8.05.075 (Provisions for Flood Hazard Reduction).
- c. Projects for stream habitat restoration may be permitted in the floodway provided:
 - (1) The project qualifies for a Department of the Army, Portland District *Regional General Permit for Stream Habitat Restoration* (NWP-2007-1023); and,
 - (2) A qualified professional (a Registered Professional Engineer; or staff of NRCS; the county; or fisheries, natural resources, or water resources agencies) has provided a feasibility analysis and certification that the project was designed to keep any rise in 100-year flood levels as close to zero as practically possible given the goals of the project; and,
 - (3) No structures would be impacted by a potential rise in flood elevation; and,
 - (4) An agreement to monitor the project, correct problems, and ensure that flood carrying capacity remains unchanged is included as part of the local approval.
- d. New installation of manufactured dwellings is prohibited (2002 Oregon Manufactured Dwelling and Park Specialty Code). Manufactured dwellings may only be located in floodways according to one of the following conditions:
 - (1) If the manufactured dwelling already exists in the floodway, the placement was permitted at the time of the original installation, and the continued use is not a threat to life, health, property, or the general welfare of the public; or
 - (2) A new manufactured dwelling is replacing an existing manufactured dwelling whose original placement was permitted at the time of installation and the replacement home will not be a threat to life, health, property, or the general welfare of the public and it meets the following criteria
 - (i) As required by 44 CFR Chapter 1, Subpart 60.3(d)(3), it must be demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the manufactured dwelling and any accessory buildings, accessory structures, or any property improvements (encroachments) will not result in any increase in flood levels during the occurrence of the base flood discharge;

- (ii) The replacement manufactured dwelling and any accessory buildings or accessory structures (encroachments) shall have the finished floor elevated a minimum of 18 inches (46 cm) above the BFE as identified on the Flood Insurance Rate Map;
- (iii) The replacement manufactured dwelling is placed and secured to a foundation support system designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction;
- (iv) The replacement manufactured dwelling, its foundation supports, and any accessory buildings, accessory structures, or property improvements (encroachments) do not displace water to the degree that it causes a rise in the water level or diverts water in a manner that causes erosion or damage to other properties;
- (v) The location of a replacement manufactured dwelling is allowed by the local planning department's ordinances; and
- (vi) Any other requirements deemed necessary by the authority having jurisdiction.

5. Critical Facility. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the Special Flood Hazard Area (SFHA) (100-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet above BFE or to the height of the 500-year flood, whichever is higher. Access to and from the critical facility should also be protected to the height utilized above. Flood proofing 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 flood elevation shall be provided to all critical facilities to the extent possible.

Attest:

Approved:

City Coordinator, Georgia Edwards

Mayor, Seaton McLennan