



Community Development Department

Planning Division Building Safety Division Environmental Soils Division

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TO: Deschutes County Planning Commission
FROM: Peter Russell, Senior Transportation Planner *PR*
DATE: April 7, 2015
RE: Review of County policies and regulations pertaining to fires and floods

Background

Deschutes County updated the Natural Hazards element of the Comprehensive Plan in 2011. Section 3.5 of the Comprehensive Plan sets County policies regarding natural hazards and references the Deschutes County Natural Hazards Mitigation Plan (NHMP). Specifically, Policy 3.5.1 requires regular review of the Natural Hazards component of the Comprehensive Plan.

The Planning Division has contracted with the University of Oregon (UO) Community Planning Workshop (CPW) to assist in this task. The CPW team has reviewed the Comprehensive Plan and the development code as they pertain to natural hazards. The CPW team, based on staff direction, has limited its assessment to the relevant chapters in Titles 18 and 19 for how they address wildfires and flooding.

Summary

The CPW team, which is working under the supervision of myself and Matthew Martin, has spent several months in this effort. The CPW team has also researched, at both the regional and national level, model ordinances on the topic of jurisdictions using their policies and development codes to proactively minimize the potential harm from wildfires and floods.

The CPW team has worked closely with Will Groves, the County's certified floodplain manager (CFM), and Ed Keith, County Forester, and Alison Green, Project Wildfire. The CPW team will discuss flooding at the April 7 work session while wildfire will be the topic of the April 23 work session.

The CPW's work and recommendations will be presented to the Board of County Commissioners by late spring. The Board will then provide direction to staff on next steps.

Enclosures: March 27, 2015, memo from CPW to Planning Commission
Oregon Model Flood Damage Prevention Ordinance with draft checklist

March 27, 2015

To Deschutes County Planning Commission
From Drew Pfefferle, Mike Howard, Bob Parker, and the CPW Team
SUBJECT Deschutes County Code Review: Flood Program

INTRODUCTION

The Community Planning Workshop (CPW) is working with the Deschutes County Community Development Department (CDD) to review sections of the Deschutes County Development Code consistent with direction provided in Comprehensive Plan Section 3.5 (Rural Growth/Natural Hazards). The review will focus on improving development regulations that address wildfire, flood, and other natural hazards.

Task 4 of our work program requires CPW to facilitate work sessions with the Planning Commission and the Board of County Commissioners (BOCC) to present policy and programmatic options for further analysis and review. CPW will hold work sessions with the Planning Commission on April 9 (flood) and April 23 (wildfire). Following these work sessions CPW will hold a work session with the BOCC on May 18. This memorandum provides an overview of the project and presents research findings to the Planning Commission in regards to floodplain management for the April 9th work session. This work session has three objectives: 1) Identify the current flood risks in Deschutes County, 2) Review the county's existing flood program, and 3) Present for discussion potential policy options in regards to floodplain management.

BACKGROUND

Deschutes County updated the Natural Hazards element of its Comprehensive Plan in 2011. Section 3.5 of the Deschutes County Comprehensive Plan establishes County policy with respect to natural hazards. The comprehensive plan cross-references the Natural Hazards Mitigation Plan (NHMP) as well as Deschutes County Community Wildfire Protection Plans (CWPPs). Policy 3.5.1 specifically addresses maintenance of the Goal 7 Comprehensive Plan Element as well as the NHMP and CWPP:

Adopt by reference the most recent Deschutes County Natural Hazards Mitigation Plan into this Plan.

- a) Review and evaluate this Section of the Comprehensive Plan every five years.
- b) Adopt by reference Community Wildfire Protection Plans and revisions into this Plan.

In summary, Policy 3.5.1 clearly articulates the County's commitment to address natural hazards and establishes mechanisms for coordinating the Comprehensive Plan with the NHMP and CWPPs. Furthermore, this project assists Deschutes County with a review and analysis of Comprehensive Plan Section 3.5 to ensure consistency with the NHMP Update and the following policies:

Policy 3.5.4 Provide Incentives and if needed regulations, to manage development in areas prone to natural hazards.

Policy 3.5.11 Review and revise County Code as needed to:

- a. Ensure that land use activities do not aggravate, accelerate or increase the level of risk from natural hazards.*
- b. Address wildfire concerns to and from development, through consideration of site location, building construction and design, landscaping, defensible space, fuel management, access and water availability.*
- c. Require development proposals to include an impact evaluation that reviews the ability of the affected fire agency to maintain an appropriate level of service to existing development and the proposed development.*
- d. Minimize erosion from development and ensure disturbed or exposed areas are promptly restored to a stable, natural and/or vegetated condition using natural materials or native plants.*
- e. Endure drainage from development or alterations to historic drainage patterns do not increase erosion on-site or on adjacent properties.*
- f. Make the Floodplain Zone a combining zone and explore ways to minimize and mitigate floodplain impacts.*
- g. Require new subdivisions and destination resorts to achieve FireWise standards from the beginning of the projects and maintain those standards in perpetuity.*

Specifically, this project is a review of the Deschutes County Development Code consistent with guidance provided in policies 3.5.4 and 3.5.11 of the Deschutes County Comprehensive Plan. The focus of this project is to identify policy and programmatic options for consideration by the Board of County Commissioners (BOCC), Planning Commission, staff, stakeholders, and partner organizations. The options will be structured in a manner that staff can include them in future annual CDD work programs. CDD staff will work with county decision makers to identify policy and code language for potential adoption into the comprehensive plan or development code.

FLOOD RISK IN DESCHUTES COUNTY

The geological makeup of Deschutes County makes it less susceptible to flooding than surrounding counties. Due to underlying porous volcanic rocks that have a large capacity for water storage flooding has not been a serious problem in Deschutes County. However, historically a few significant flooding events have affected the county. The flood of record on the Deschutes River occurred in November 1909 downstream of the Little Deschutes River at the gauge near Benham Falls, with a discharge of 5,000 cubic feet per second (cfs). In December 1964, at the same location, there was a discharge of 3,470 cfs, which was approximately a 175-year flood.

The principal sources of flooding occur from the Deschutes River, Little Deschutes River, Whychus Creek, Paulina Creek, and Spring River. These locations can potentially threaten the communities of Bend, La Pine, Sisters, and Tumalo. The annual flood season for these regions occurs approximately between October through July.

Flooding mainly occurs from prolonged warm rain on snow (winter), snowmelt flooding (spring), or frazil ice and ice jams near Mirror Pond (Bend). There is a potential flood hazard due to a moraine dam at Carver Lake near the Three Sisters and Broken Top that could fail due to seismic activity, avalanches of rock and ice, or the unstable nature of the dam material.

Deschutes County has assessed the probability of a flood event to be high (at least one flood event within the next 10 to 35 years) and the vulnerability to the population and property to be low (less than 1% of population and property expected to be affected by any one event).

DEVELOPMENT LOCATION AND RATE OF DEVELOPMENT

Between 2000 and 2013 population in Deschutes County increased 40.9%. According to Deschutes County's population forecast between 2013 and 2025, the county's population is anticipated to grow by 48.2% (78,286 people). The City of Bend is expected to account for 40% of the population growth, while the rural (non-incorporated) areas of the county are expected to account for 33% of the population growth.

Since 2005, the County approved approximately 50 land use permits for some type of development in the 100-year floodplain, approximately 20 of which were conditional use permits that allowed for development of new residential structures in the floodplain. Most approved conditional use permits were located between La Pine and Sunriver, along the Deschutes River (at least two CUPs were for development on the Whychus near Sisters).

MODEL ORDINANCES

CPW used the following federal and state model ordinances in the process of reviewing the county's development code:

FEMA Model Washington National Floodplain Insurance Program-Endangered Species Act Ordinance (2013, Model Washington NFIP-ESA Ordinance): Provides

guidance on ways to improve floodplain management practices while assisting communities to meet the requirements of the Endangered Species Act within FEMA Region 10.

Oregon Model Flood Damage Prevention Ordinance (2014, modified March 2015, Oregon Model Floodplain Ordinance): The model ordinance includes required, and recommended, standards and provisions that ensure sound floodplain management practices to comply with the National Flood Insurance Program (NFIP) in the state of Oregon.

EXISTING COUNTY FLOOD MANAGEMENT PROGRAMS

Deschutes County currently participates in the National Flood Insurance Program (NFIP). The NFIP offers affordable flood insurance to property owners in communities that adopt and enforce floodplain management regulations set by FEMA. Homeowners with federally backed mortgages located in the floodplain zone are required to purchase flood insurance. Flood Insurance Rate Maps (FIRM) are the official maps on which both the special flood hazard area (the area where the NFIP floodplain management regulations must be enforced and where mandatory purchase of flood insurance applies) and the risk premium zones for a community have been delineated. Deschutes County's current FIRMs were digitally updated in 2007. In 2012, based upon data from the U.S. Census, the Federal Insurance and Mitigation Administration (FIMA), a division of FEMA, reported that approximately 15% of Deschutes households eligible for the NFIP had policies in force. Deschutes County maintains its participation in the NFIP with ongoing compliance of the program's minimum flood mitigation standards by adopting and enforcing the following NFIP regulations (FEMA, NFIP Guidebook, p. 21):

- *Require development permits for all proposed construction and other developments within the community's designated 100-year floodplain.*
- *Ensure all other permits required by local, State and Federal laws are obtained.*
- *Maintain records of all development permits.*
- *Review the permit to ensure that sites are reasonably safe from flooding.*
- *Review subdivision proposals to determine whether the project is safe from flooding and provides for adequate drainage.*
- *Require residential structures to have the lowest floor (including basement) elevated at least to or above the Base Flood Elevation (BFE).*
- *Require non-residential structures to have the first floor elevated or floodproofed one foot above the BFE.*
- *Require manufactured homes be elevated and anchored.*
- *Require water supply systems be designed to eliminate infiltration of floodwaters.*

- *Require new and replacement sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters.*
- *Ensure flood carrying capacity of altered or relocated watercourses is maintained.*
- *Verify/document lowest floor elevations of new or substantially improved structures.*
- *Determine whether structures in the Special Flood Hazard Area have been substantially damaged. If a substantial damage determination is made, the repairs must include bringing the structure up to current flood hazard area building standards.*

REVIEW OF COUNTY COMPREHENSIVE PLAN POLICIES

This section presents a review of the Deschutes County Comprehensive Plan in regards to land use and flood hazard mitigation policies and programs. The existing comprehensive plan policy language is shown in *italics* followed by our comments. Model development code language is shown in *italics and underlined*.

Comprehensive Plan Policy 3.5.10:

Regulate development in designated floodplains identified on the Deschutes County Zoning Map based on Federal Emergency Management Act regulations.

a. Participate in and implement the Community Rating System as part of the National Flood Insurance Program.

Comment: Community Rating System (CRS) standards go beyond the minimum requirements of the NFIP. Adoption of CRS strengthens and supports the insurance aspects of the NFIP and encourages a comprehensive approach to floodplain management. According to CDD staff, “based on coordination with Department of Land Conservation (DLCD), staff believes that the above-and-beyond programs of the Community Rating System (CRS) would present a low return on investment of staff time and resources. This could change if there were significantly increased participation by county residents in flood insurance (increasing the value of reduced insurance rates) or if basic CRS activities were pre-packaged for easy deployment by DLCD (reducing their cost).” Although participation in the CRS is not deemed feasible at this time, the following higher standards of the CRS are worth consideration.

The following CRS higher standards are worth considering to enhance public safety, reduce damages to property and public infrastructure, avoid economic disruption and losses, reduce human suffering, and protect the environment:

- 432.e Lower Substantial Improvements Threshold: The NFIP (and the Deschutes Code) allows improvements valued at up to 50% of the building’s pre-improvement value to be permitted without meeting the flood protection requirements for buildings located in

the special flood hazard area. Following are ways to lower the substantial improvements threshold:

- Instead of basing the substantial improvement determination on the value of the building and the cost of the project, a higher standard is to limit expansions of the building to no more than 25% of the square footage of the lowest floor.
- Another higher standard is to apply the threshold to either improvements or to repairs to damaged buildings, but not both.
- 432.d Cumulative Substantial Improvements: The NFIP (and the Deschutes Code) allows improvements valued at up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements for buildings located in the special flood hazard area. Over the years, a community may issue a succession of permits for different repairs or improvements to the same structure. This can greatly increase the overall flood damage potential to that building as well as the insurance liability to FEMA. Cumulative substantial improvement ensures that the total value of all improvements or repairs permitted over time does not exceed 50% of the value of the structure. When the total value does exceed 50%, the original building must be protected according to the ordinance requirements for new construction.
- 431.a Prohibiting Fill: Prohibiting fill and other ground-altering measures within the special flood hazard area can protect existing development and habitat, improve water quality, and maintain the flood attenuating benefits of natural areas.
- 431.a Protecting Critical Facilities: Protecting critical facilities to higher levels reduces damage to those facilities and improves the community's ability to respond to the needs of citizens during a disaster. Critical facilities are facilities for which even a slight chance of flooding might be too great (including, but not limited to, schools, nursing homes, hospitals, police, fire, and emergency response installations, and installations which produce, use, or store hazardous materials or waste). The highest standard is to prohibit development of these facilities within the special flood hazard area. In special cases, it may not be feasible to locate critical facilities outside the special flood hazard area, in these cases regulations that allow new facilities in the special flood hazard area, but set higher protection standards for them could be considered. The standards may apply to some facilities, or some parts of facilities, for example, regulations may address only one type of critical facility, such as hazardous materials sites or critical facilities owned and managed by the community.
- 432.a.(3) Development Limitations: Prohibition of outdoor storage of materials (currently the Deschutes Code allows storage of some materials with a CUP per 18.96.040(B):

(a) Prohibition outdoor storage of all materials in the SFHA.

(b) Prohibition of hazardous materials (indoors or outdoors) in the SFHA.

(c) Storage of hazardous materials allowed to be stored indoors in the special flood hazard area, but elevated above the base flood elevation.

Comprehensive Plan Policy 3.5.11(f):

Review and revise County Code as needed to:

f. Make the Floodplain Zone a combining zone and explore ways to minimize and mitigate floodplain impacts.

Comment: The Floodplain Zone (18.96) is currently a base zone, meaning that it has its own list of allowed uses, restrictions, and special provisions, like the Rural Residential Zone (RR-10) or Exclusive Farm Use Zone (EFU). Having the Floodplain Zone as a base zone presents a number of difficulties:

- Many properties have some Floodplain Zoning near the river with the majority of the property in a different zone. This “split-zoning” presents a number of code interpretation challenges.
- FEMA and the County Code (under DCC 18.96.130) allow a landowner to provide a topographical survey to show that a property or portion of a property is above the area of special flood hazard.

One option for consideration is conversion of the Floodplain Zone to a combining zone. Like the Wildlife Area (WA) Combining Zone, a Floodplain Combining Zone would first assign every property a base zone appropriate to the neighborhood (e.g. RR-10, EFU, etc.) and, second, restrict and condition development that is actually subject to flood hazard in accordance with FEMA regulations.

In addition, Deschutes County Code has three sections that include floodplain regulations (two of which are combining districts): Chapter 18.96 County Zoning, Flood Plain Zone, Chapter 18.108 County Zoning, Urban Unincorporated Community Zone – Sunriver (in particular 18.108.190 Flood Plain Combining District), and Chapter 19.72 Bend Urban Growth Boundary Zoning Ordinance, Flood Plain Combining Zone. An option for consideration by the Planning Commission is to repeal the existing floodplain zones (18.96 and 18.108.190) and create one Floodplain Combining Zone for Title 18 County Zoning and one for Title 19 Bend Urban Growth Boundary.

REVIEW OF COUNTY DEVELOPMENT CODE

This section presents a review of the County’s current development code in regards to land use and flood mitigation policies and programs and identifies potential actions to strengthen current codes. In the following section the existing development code language is shown in *italics* followed by our comments. Model development code is shown in *italics and underlined*.

Title 18: County Zoning

This section reviews Title 18 in regards to land use and flood mitigation policies programs and identifies options for the county to strengthen current language.

Chapter 18.04 Definitions

There are several definitions provided in the Oregon Model Floodplain Ordinance that the Planning Commission may choose to consider adding to the Code, including:

“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.

Note: See comment under 18.96.080(D)(4) for more information regarding below-grade crawl spaces.

“Conditional Letter of Map Revision (CLOMR)” means a letter from FEMA commenting on whether a proposed project, if built as proposed, would meet the minimum NFIP standards or proposed hydrology changes.

“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 which produce, use or store hazardous materials or hazardous waste.

“Elevated Building” means for insurance purposes, a nonbasement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.

“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 percent of the market value of the structure before the damage occurred.

Chapter 18.96 Flood Plain Zone

18.96.010: Purposes

The purposes of the Flood Plain Zone are: To implement the Comprehensive Plan Flooding Section; to protect the public from the hazards associated with flood plains; to conserve important riparian areas along rivers and streams for the maintenance of the fish and wildlife resources; and to preserve significant scenic and natural resources while balancing the public interests with those of individual property owners in the designated areas.

Comment: The Deschutes County Code does a good job of addressing environmental impacts, but only has a broad scope of addressing human health. There is also no focus on the financial

impact of flooding, from money for flood control projects to economic impacts on business interruptions. One option is to expand the purpose statement of the floodplain ordinance with the possibility of outlining a list that details each purpose. The following is an example of code language from the Oregon Model Floodplain Ordinance:

Section 1.3 Statement of Purpose:

- (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.

18.96.020 Designated Areas.

The designation of the local floodplain administrator and their duties and responsibilities are covered in 18.96.020 and 18.96.070. The duties, however, could be more explicit and ensure that the elevation certificate, base flood elevation, and substantial damage requirements of the NFIP are explicitly referenced. The Oregon Model Floodplain Ordinance provides an example of more comprehensive duties and responsibilities language:

4.3 Duties and Responsibilities of the Local Administrator

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

4.3-1 Provide Base Flood Elevation and Freeboard

When base flood elevation has been provided in accordance with Section 3.2, Basis for Establishing the Areas of Special Flood Hazard, and the local administrator shall provide it to the Building Official along with any freeboard requirements established in Section 5.2 Specific Standards.

When base flood elevation data has not been provided (A and V Zones) in accordance with Section 3.2, Basis for Establishing the Areas of Special Flood Hazard, the local administrator shall obtain, review, and provide any base flood elevation and floodway data available from a Federal, State or other source, in order to administer Sections 5.2, Specific Standards, and 5.3 Floodways and the Building Codes

18.96.040 Conditional Uses Permitted.

This section concerns what uses are conditionally permitted in the special flood hazard area.

18.96.040(B), *Material or equipment stored shall include only items which will not create a hazard to the health or safety of persons, property, animals or plant life should the storage area be inundated.*

Comment: The Deschutes County Code does not explicitly prohibit storage of hazardous materials in the floodplain. Stored materials can become debris during a flood event. The Model Washington NFIP-ESA Ordinance provides an example of more explicit language:

Section 5.3 Hazardous Materials:

A. No new development shall create a threat to public health, public safety, or water quality. Chemicals, explosives, gasoline, propane, buoyant materials, animal wastes, fertilizers, flammable liquids, pollutants, or other materials that are hazardous, toxic, or a threat to water quality are prohibited from the Special Flood Hazard Area. This prohibition does not apply to small quantities of these materials kept for normal household use. This prohibition does not apply to the continued operations of existing facilities and structures, reuse of existing facilities and structures, or functionally dependent facilities or structures.

B. If the proposed project will cannot meet section 5.3(A) of this ordinance then a habitat assessment must be conducted in accordance with Habitat Impact Assessment and Habitat Mitigation Plan.

18.96.040(I). *All new construction, expansion or substantial improvement of an existing dwelling, an agricultural related structure, a commercial, industrial or other non-residential structure, or an accessory building.*

Comment: The minimum requirement of the NFIP treats any structure that will incur improvements totaling more than 50% of the market value of the structure, as a new structure – meaning the structure will need to be elevated above base flood elevation (BFE) and meet other flood protection measures. According to FEMA’s Higher Floodplain Management Regulatory Standards, some communities have reduced this 50% threshold and have begun to track these improvements over time (i.e., the structure must be elevated if they received flood damage two times over the past 10 years, of which the cost to repair after each flood equals 25% of the market value on average). In addition, applying the standard to cumulative

substantial improvement would apply the NFIP regulation for improvements over the lifetime of the structure.

18.96.050 Prohibited Uses

The list of prohibited uses is limited to marinas, boat slips, and boat houses on private property.

Comment: Critical facilities are vital to flood response activities or critical to the health and safety of the public before, during, and after a flood, such as a hospital, emergency operations center, electric substation, police station, fire station, nursing home, school, vehicle and equipment storage facility, or shelter. Facilities that, if flooded, would make the flood problem and its impacts much worse, such as a hazardous materials facility, power generation facility, water utility, or wastewater treatment plant. Given this, it is prudent to require these facilities to be sited outside of the floodplain unless no viable alternative exists. The Deschutes County Code does not define critical facilities or prohibit development in the special flood hazard area. The Model Washington NFIP-ESA Ordinance, Section 5.4, provides language specific to critical facilities:

Critical facility:

A structure or other improvement that, because of its function, size, service area, or uniqueness, has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. Critical facilities include health and safety facilities, utilities, government facilities, and hazardous materials facilities. For the purposes of a local regulation, a community may also use the International Codes' definition for Category III and IV buildings.

5.4. Critical Facilities

A. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the Special Flood Hazard Area.

B. Construction of new critical facilities in the Special Flood Hazard Area shall be permissible if no feasible alternative site is available, provided

1. Critical facilities shall have the lowest floor elevated three feet above the base flood elevation or to the height of the 500-year flood, whichever is higher. If there is no available data on the 500-year flood, the permit applicants shall develop the needed data in accordance with FEMA mapping guidelines.

2. Access to and from the critical facility shall be protected to the elevation of the 500-year flood.

Additional provisions provided by the Oregon Model Floodplain Ordinance include the following:

- Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

18.96.070. Application for Conditional Use.

This section concerns what materials are to be provided by the applicant and reviewed by staff.

18.96.070(E) *The elevation of the lowest habitable floor and of any basement floor for any dwelling unit or structure.*

Comment (1): The Oregon Model Floodplain Ordinance section 4.3.3(1) explicitly lists “below-grade crawl spaces” in addition to the requirements of 18.96.070(E). We recommend that the Planning Commission consider specifically listing “below-grade crawl spaces” in relation to elevation of the lowest habitable floor. A definition for below-grade crawl space has been offered in the section on Definitions (18.04) above.

Comment (2): Enclosed areas below the lowest floor are not intended for human habitation. A conversion of these areas to habitable space increases the risk to public health and safety. The Oregon Model Floodplain Ordinance section 4.3.6 provides sample language to consider:

4-3-6 Non-Conversion of Enclosed Areas below the Lowest Floor

To ensure that enclosed areas below the lowest floor continue to be used solely for parking vehicles, limited storage, or access to the building and not be finished for use as human habitation/recreation/bathrooms, etc., the Floodplain Administrator shall:

(1) Determine which applicants for new construction and/or substantial improvements have fully enclosed areas below the lowest floor that are 5 feet or higher;

(2) Require such applicants to enter into a “Non-conversion deed declaration for construction within flood hazard areas” or equivalent. The deed declaration shall be recorded with {city, county, tribe}, and shall be in a form acceptable to the Floodplain Administrator.

18.96.080. Criteria to Evaluate Conditional Uses

This section includes the criteria staff will use to review an application.

18.96.080(B) *Approval to alter or relocate a water course shall require notification to adjacent communities, the Department of Land Conservation and Development and Department of State Lands, prior to any such alteration or relocation and submit evidence to the Federal Insurance Administration. Maintenance shall be provided within the altered and relocated portion of said watercourse so that the flood carrying capacity is not diminished.*

Comment: The DCC does not currently explicitly require an applicant to obtain a Conditional Letter of Map Revision from FEMA before encroachments are permitted. The Oregon Model Floodplain Ordinance section 4.3.4(4) provides language to consider:

(4) Applicants shall obtain a Conditional Letter of Map Revision (CLOMR) from FEMA before any encroachment, including fill, new construction, substantial improvement, or other development, in the regulatory floodway is permitted. The applicant shall be responsible for preparing technical data to support the CLOMR application and paying any processing or application fees to FEMA. .

18.96.080(D)(4) Below-grade crawlspace is allowed subject to the standards in FEMA Technical Bulletin 11-01.

Comment: Although Deschutes County Code and the Oregon Model Floodplain Ordinance both reference FEMA Technical Bulletin 11-01, the Oregon Model Floodplain Ordinance sections 5.2-6 explicitly lists specific requirements that create more transparent expectations for development. Note: the definition and appropriate crawlspace code must be included in the flood hazard development ordinance if below grade crawlspaces are allowed, otherwise below grade crawlspaces will be considered to be basements. Structures built with below grade crawlspaces will have higher insurance premiums. Sections 5.2-6 (1)-(8) of the Oregon Model Floodplain Ordinance and FEMA Technical Bulletin 11-01 outline specific requirements for below-grade crawl spaces:

Section 5.2-6 Below-Grade Crawl Spaces:

(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 Section B 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 (5) feet per second for any crawlspace. For velocities in excess of five (5) feet per second, other foundation types should be used.

18.96.080(E) Subdivision and Partition Proposals

1. All subdivision and partition proposals shall be consistent with the need to minimize flood damage.
2. All subdivision and partition proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
3. All subdivision and partition proposals shall have adequate drainage provided to reduce exposure to flood damage.

Comment (1): The Deschutes County Code currently lacks requirements regarding density of development and the provision of open space within subdivisions. The Model Washington NFIP-ESA Ordinance addresses this concern by combining floodplain management with the provision of open space as an amenity to residents and a method of preserving the natural environment. The Model Washington NFIP-ESA Ordinance provides an example of use of open space requirements to manage density in the floodplain:

Section 5.1 Subdivisions:

B. The proposed subdivision must have one or more new lots in the Special Flood Hazard Area set aside for open space use through deed restriction, easement, subdivision covenant, or donation to a public agency.

1. In the Special Flood Hazard Area outside the Protected Area, zoning must maintain a low density of floodplain development.

2. In the Special Flood Hazard Area outside the protected area in which the current zoning is less than 5 acres must maintain the current zoning.

3. The density of the development in the portion of the development outside the Special Flood Hazard Area may be increased to compensate for the amount of land in the Special Flood Hazard Area preserved as open space in accordance with _____ (section of the community's zoning or other development ordinance that allows PUDs and/or transfers of development rights).

C. If a parcel has a buildable site outside the Special Flood Hazard Area, it shall not be subdivided to create a new lot, tract, or parcel within a binding site plan that does not have a buildable site outside the Special Flood Hazard Area. This provision does not apply to lots set aside from development and preserved as open space.

Comment (2): The Deschutes County Code lacks regulations to ensure subdivisions are accompanied by access roads that are both above the floodplain elevation and connect to land outside the floodplain. The Model Washington NFIP-ESA Ordinance Section 5.1(E) has specific language intended to ensure residents are able to safely evacuate in the event of a flood.

Section 5.1 Subdivisions:

E. All proposals shall ensure that all subdivisions have at least one access road connected to land outside the Special Flood Hazard Area with the surface of the road at or above the FPE wherever possible.

Comment (3): Deschutes County Code does not currently require subdivisions located within the special flood hazard areas (floodplain), a riparian habitat zone, or a channel migration area to be accompanied by a filed notice on the final recorded subdivision plat. Inclusion of this requirement would qualify for CRS credit. The Model Washington NFIP-ESA Ordinance provides notification language:

Section 5.1 Subdivisions:

G. The final recorded subdivision plat shall include a notice that part of the property is in the SFHA, riparian habitat zone and/or channel migration area, as appropriate.

18.96.080(G)(2): Nonresidential Construction

Comment: The Deschutes Code does not currently include provisions for a comprehensive Maintenance Plan or an Emergency Action Plan as outlined in the Oregon Model Floodplain Ordinance. Including such provisions may provide the community assurance that floodproofing protection measures are maintained and that the operators of the building exercise a plan of

action for the installation and sealing of the structure prior to a flooding event. Presented below for consideration are model sections from the Oregon Model Floodplain Ordinance:

5.2.2(6) Applicants shall supply a comprehensive Maintenance Plan for the entire structure to include but not limited to: exterior envelope of structure; all penetrations to the exterior of the structure; all shields, gates, barriers, or components designed to provide floodproofing protection to the structure; all seals or gaskets for shields, gates, barriers, or components; and, the location of all shields, gates, barriers, and components as well as all associated hardware, and any materials or specialized tools necessary to seal the structure.

5.2.2 (7) Applicants shall supply an Emergency Action Plan (EAP) for the installation and sealing of the structure prior to a flooding event that clearly identifies what triggers the EAP and who is responsible for enacting the EAP.

18.96.080(G)(3): Manufactured Homes

All manufactured homes to be placed or substantially improved shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is at least one foot above the base flood elevation. Such manufactured homes shall be securely anchored to an adequately anchored foundation system subject to the provisions of Deschutes County Code 18.96.080(C)(1).

Comment: There is a typographical error in this code section. Deschutes County Code provisions for foundation anchoring are located in 18.96.080(D)(1). The manufactured homes provisions may be enhanced by including additional standards for the elevation of electrical crossover connections to be at least 12 inches above BFE.

ADDITIONAL INFORMATION

Oregon Residential Specialty Code (Oct. 1, 2014)

The new residential building code relies upon the local floodplain administrator to provide building officials with elevation of lowest floor, base flood elevation, and required freeboard rests (102.4.1). In addition, the building code includes a note that local communities can designate a building official or other staff as the local floodplain administrator, however, per ORS 455.210(3)(c), local communities are prohibited from using building permit fees for any purpose other than administration and enforcement of the building code (as such administration and implementation of NFIP requirements are not considered part of the building code).

Federal Emergency Management Agency and National Marine Fisheries Service

In July 2010 a lawsuit was settled in The US District Court between a coalition of environmental groups (Audubon Society of Portland, North West Environmental Defense Center, the National Wildlife Federation, and Association of Northwest Steelheaders), and the Federal Emergency

Management Agency (FEMA). The plaintiffs complained that FEMA had not consulted with National Oceanic and Atmospheric Administration, Fisheries Service (NOAA-F) under Section 7 of the Endangered Species Act (ESA) on the effects of the National Flood Insurance Program (NFIP) on ESA-listed anadromous fish. As a result, FEMA initiated consultation with NOAA-F in August of 2012. A final biological opinion, with accompanying reasonable and prudent alternatives, has yet to be published. It appears, however, that NOAA-F and FEMA might expect local government adopt and enforce development and avoidance standards based on revised maps provided by FEMA. Revised maps might include, for example, expanded flood zones, erosion zones and future conditions flood mapping. In addition, NOAA-may ask local government to regularly provide FEMA with statistics on how much and what type of development had been permitted in the flood hazards areas. FEMA and NOAA to ensure that regional development limits are not exceeded would monitor the flood zone acreage developed over time.

NOAA-F and FEMA appear to recognize that it will take some time to publish revised maps and fully implement the proposed changes. So it is expected that local government will be offered interim measures that if adopted will provide local government with take coverage under ESA Section 7 when development permits are issued in Special Flood Hazard Areas. These interim measures are likely to be modeled on EPA's Low Impact Development and Green Infrastructure program and are intended to maintain natural and beneficial functions in the floodplain.

ATTACHMENT I: RESOURCES

Association of State Floodplain Managers: A Guide for Higher Standards in Floodplain Management (2013). The higher standards options provided in the Association of State Floodplain Managers (ASFM) guide are described in detail because they are recommended for safer development and use the natural protection provided by the natural functions and resources of the floodplain. The model language presented in the document was developed to promote effective floodplain management, and mesh with the FEMA minimum flood damage reduction standards. ASFPM strongly believes the minimum NFIP floodplain regulations do not provide adequate long-term flood risk reduction for communities and that the benefits of flood risk reduction achieved by higher regulatory standards far outweighs the burden of administering them.

Floodplain Management: Higher Regulatory Standards (2002) This report from FEMA - Region 10 provides local communities with examples of regulatory land-use best practices that balance the need between floodplain development and maintaining the natural and beneficial functions of the floodplain. The report documents floodplain management strategies which include: modifications to local flood ordinances to reduce physical flood damages to structures, strategies to protect and enhance aquatic and riparian habitat, and upland runoff controls to reduce peak flood flows and improve water quality.

Floodplain Management: NFIP Guidebook (2009) This guidebook from FEMA – Region 10 is a local administrator’s guide to floodplain management and the National Flood Insurance Program (NFIP). The guide includes an overview of floodplain management concepts, mapping revision information, and detailed information regarding the NFIP’s floodplain development standards.

National Flood Insurance Program Community Rating System: Coordinator’s Manual (2013) The National Flood Insurance Program (NFIP) offers a voluntary incentive program called the Community Rating System (CRS). The CRS recognizes and rewards communities that exceed the minimum requirements for floodplain management as identified in the NFIP. The CRS provides premium insurance discounts, ranging between 5% and 45%, for communities that go beyond the minimum requirements. To participate in the CRS, a community must implement additional CRS management activities and earn CRS credit points for each activity. A community rating number is assigned to a community based on the number of CRS credits they have earned. The community rating scale ranges from 1 to 10. One is the highest rating available and offers a 45% flood insurance discount; 10 is the lowest rating available and offers no insurance discount. Examples of CRS activities range from providing citizens with information regarding flood insurance and ways to reduce flood damage, increase protection to new development, reduce flood risk to existing development, and provide early flood warning.

Planning for Natural Hazards: Flood Technical Resource Guide (2000) The guide is a resource and planning tool for local governments to develop land use strategies that reduce the risks posed by flood hazards. The guide provides information on flood hazards, state and

federal laws that address flooding, and technical information on reducing the risk of flooding. The guide also addresses flood hazard issues through effective comprehensive inventories, policies and implementing measures.

Ramping Up Salmon Recovery Efforts through Floodplain Management (2014) The document provides a framework for local governments to amend local floodplain management programs to better address potential impacts to aquatic life. The document also describes changes that FEMA has made regarding how it will evaluate map revisions to include the Endanger Species Act.

Technical Bulletin 11-01: Crawlspace Construction for Buildings Located in Special Flood Hazard Areas (2001). This technical bulletin from FEMA provides interim guidance on minimum NFIP requirements as well as best practices for crawlspace construction in the Special Flood Hazard Area. The Technical Bulletins provide guidance concerning the building performance standards of the NFIP. The bulletins do not create regulations, rather they provide specific guidance for complying with the minimum requirements of existing NFIP regulations.

OREGON MODEL FLOOD DAMAGE PREVENTION ORDINANCE

**Effective January 2009
Modified August 2009
Modified January 2014
Modified March 2015**

Adoption of this ordinance will ensure compliance with the standards for participation in the National Flood Insurance Program (NFIP). The model includes standards and provisions that encourage sound flood plain management and if implemented allows property owners to obtain flood insurance at a more affordable rate.

Development Permits

NFIP requires that a permit be issued for all development (see DEFINITIONS) in the regulatory floodplain. A floodplain development permit is intended to provide a mechanism for jurisdictions to review all proposed development in the regulatory floodplain. A floodplain development permit is not the same as a building permit.

Association with Building Codes

On October 1, 2014 a new residential building code went into effect that relies on the local flood plain administrator to provide building officials with key information needed to administer the building code in Special Flood Hazard Areas. Specifically, the authority to establish the base flood elevation and any required freeboard rests with the flood plain administrator. Furthermore, the Building Code Division added the following note to the residential code:

Local communities may choose to designate their local building official as the Flood Plain Administrator or may designate other staff. When a building official functioning in the capacity of Flood Plain Administrator exercises authority under the NFIP, such decisions are not part of this code nor subject to the building official duties and responsibilities as adopted by the Oregon Building Codes Division.

Per ORS 455.210(3)(c), local communities are prohibited from using building permit monies for any matter other than administration and enforcement of the State Building Code. Administration and implementation of NFIP requirements are not part of the State Building Code.

Below-grade Crawlspace

Below-grade refers to the inside of the crawlspace being below-grade on all sides, similar to how FEMA defines basement. FEMA would prefer that NFIP communities prohibit below-grade crawl spaces in Special Flood Hazard Areas. If, however, your community decides to allow below grade crawl spaces, specific language must be included in your code. The model code contained herein was derived from Technical Bulletin 11-01: Crawlspace Construction for Buildings located in Special Flood Hazard Areas.

If crawlspace standards are not included in local code, FEMA considers crawlspaces to be basements, which are not allowed as new construction or substantial improvements.

Manufactured Dwellings

The 2011 Oregon Manufactured Dwelling and Park Specialty Code requires that manufactured dwellings be elevated such that the bottom of the chassis is at base flood elevation. The Code also requires that electrical cross-over connections be elevated at least 12" above Base Flood Elevation. Furthermore, the Code makes no distinction between existing and new manufactured dwelling parks. All new installations, repair of substantial damage, or substantial improvements must be elevated above the base flood elevation.

Accessory and Agricultural Buildings

Finally, the NFIP requires that accessory structures, including agricultural buildings be elevated or floodproofed. Agricultural buildings located in the Special Flood Hazard Area are not exempt from building codes.

Agricultural Buildings:

ORS 455.315 exempts certain agricultural buildings from application of the Oregon Structural Specialty Code, however, **the exemption does not apply to:**

- (A) A dwelling;
- (B) A structure used for a purpose other than growing plants in which 10 or more persons are present at any one time;
- (C) A structure regulated by the State Fire Marshal pursuant to ORS chapter 476;
- (D) A structure used by the public; or
- (E) **A structure subject to sections 4001 to 4127, title 42, United States Code (the National Flood Insurance Act of 1968) as amended, and regulations promulgated thereunder.**

If you have any questions concerning adoption of this model or participation in the NFIP, please contact our Regional Office at (425) 487-4677.

KEY

Items in *underlined italics* (on electronic copies) or *underlined italics* (on paper copies) of the ordinance need to be filled in by the community.

Highlighted text recommended but not required

Blue means V-zone only requirement

**OREGON MODEL
FLOOD DAMAGE PREVENTION ORDINANCE**

	SECTION 1.0 AUTHORIZATION, FINDINGS OF FACT, PURPOSE, AND OBJECTIVES
	1.1 AUTHORIZATION The State of Oregon has delegated ¹ the responsibility to local governmental to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the <i>city/town/county</i> , does ordain as follows: <i>{change for tribal government}</i>
	1.2 FINDINGS OF FACT
	(1) The <i>{city/ county/tribe}</i> has the primary responsibility for planning, adoption and enforcement of land use regulations to accomplish proper management of special flood hazard areas. [44 CFR Part 59.22]
	(2) The special flood hazard areas of <i>city/town/county/tribe</i> are subject to periodic inundation which results in loss of life and property, 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.
	(3) These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protected from flood damage also contribute to the flood loss.
	1.3 STATEMENT OF PURPOSE The purpose of this ordinance to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed. Specific objectives are:
	(1) To protect human life and health;
	(2) To minimize expenditure of public money and costly flood control

¹ Almost all Oregon cities and some Oregon counties will derive their authority to adopt a flood damage prevention ordinance from the home rule provisions of the Oregon Constitution. See Article XI, Section 2 of the Oregon Constitution and your local government charter, if applicable. All counties, including those without home rule charters, have been granted authority to enact ordinances under Oregon Revised Statute 203.035.

	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.
	(9) To manage the alteration of special flood hazard areas, stream channels and shorelines to maintain their natural and beneficial functions.
	1.4 METHODS OF REDUCING FLOOD LOSSES In order to accomplish these objectives, this ordinance includes methods and provisions for:
	(1) Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
	(2) Requiring that uses vulnerable to floods, including facilities which 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, which help accommodate or channel flood waters;
	(4) Controlling filling, grading, dredging, and other development which may increase flood damage;
	(5) Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas.

	<p>SECTION 2.0 DEFINITIONS</p> <p>Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.</p>
	<p><u>“APPEAL”</u> means a request for a review of the interpretation of any provision of this ordinance or a request for a variance.</p>
	<p><u>“AREA OF SHALLOW FLOODING”</u> 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 as sheet flow and AH indicates ponding.</p>
	<p><u>“AREA OF SPECIAL FLOOD HAZARD”</u> 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.</p>
	<p><u>“BASE FLOOD”</u> 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.</p>
	<p><u>“BASEMENT”</u> means any area of the building having its floor subgrade (below ground level) on all sides.</p>
	<p><u>“BELOW-GRADE CRAWL SPACE”</u> 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</p> <p><i>Note: this definition and appropriate crawlspace code must be included in the flood hazard development ordinance if below grade crawlspaces are allowed, otherwise below grade crawlspaces will be considered to be basements. Structures built with below grade crawlspaces will have higher insurance premiums.</i></p>
	<p><u>“BREAKAWAY WALL”</u> 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.</p>
	<p><u>“COASTAL HIGH HAZARD AREA”</u> means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on the FIRM as Zone V1-V30, VE or V.</p>

	<p>“CONDITIONAL LETTER OF MAP REVISION (CLOMR)” means a letter from FEMA commenting on whether a proposed project, if built as proposed, would meet the minimum NFIP standards or proposed hydrology changes.</p>
	<p>“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 which produce, use or store hazardous materials or hazardous waste.</p>
	<p>“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.</p>
	<p>“ELEVATED BUILDING” means for insurance purposes, a nonbasement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.</p>
	<p>“FLOOD” OR “FLOODING” means a general and temporary condition of partial or complete inundation of normally dry land areas from:</p> <ol style="list-style-type: none"> (1) The overflow of inland or tidal waters and/or (2) The unusual and rapid accumulation of runoff of surface waters from any source.
	<p>“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.</p>
	<p>“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.</p>
	<p>“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.</p>
	<p>“HIGHEST ADJACENT GRADE” means the highest natural elevation of the ground surface prior to construction, adjacent to the proposed walls of a structure.</p>

“HISTORIC STRUCTURE” means a structure that is:

(1) 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;

(2) 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;

(3) Individually listed on a state inventory of historic places which have been approved by the Secretary of the Interior, or;

(4) Individually listed on a local inventory of historic places in 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.

[Note: Oregon has an approved state program]

	<p>“LETTER OF MAP CHANGE (LOMC)” means an official FEMA determination, by letter, to amend or revise effective Flood Insurance Rate Maps and/or Flood Insurance Studies. LOMCs are issued in the following categories:</p> <p>(1) Letter of Map Amendment (LOMA)</p> <p>An amendment to the Flood Insurance Rate Maps based on technical data showing that an existing structure or parcel of land that has not been elevated by fill (natural grade) was inadvertently included in the special flood hazard area because of an area of naturally high ground above the base flood.</p> <p>(2) Letter of Map Revision (LOMR)</p> <ul style="list-style-type: none"> i. LOMR-F (Letter of Map Revision based on Fill) is a letter from FEMA stating that an existing structure or parcel of land that has been elevated by fill would not be inundated by the base flood. ii. A LOMR revises the current Flood Insurance Rate Map and/or Flood Insurance Study to show changes to the floodplains, Floodways or flood elevations. LOMRs are generally based on manmade alterations that affected the hydrologic or hydraulic characteristics of a flooding source and thus result in modification to the existing regulatory Floodway, the effective Base Flood Elevation, or the Special Flood Hazard Area. It is recommended a Conditional Letter of Map Revision be approved by FEMA prior to issuing a permit to start a project if the project has a potential to affect the special flood hazard area. (See Conditional Letter of Map Revision)
	<p>“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 ordinance found at Section 5.2-1(2).</p>
	<p>“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 dwelling” does not include a “recreational vehicle.”</p>

	<p><u>“MANUFACTURED HOME PARK OR SUBDIVISION”</u> means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.</p>
	<p><u>“NEW CONSTRUCTION”</u> means structures for which the “start of construction” commenced on or after the effective date of this ordinance.</p>
	<p><u>“RECREATIONAL VEHICLE”</u> means a vehicle which is:</p> <ol style="list-style-type: none"> (1) Built on a single chassis; (2) 400 square feet or less when measured at the largest horizontal projection; (3) Designed to be self-propelled or permanently towable by a light duty truck; and (4) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
	<p><u>“START OF CONSTRUCTION”</u> 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 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 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.</p>
	<p><u>“STRUCTURE”</u> means a walled and roofed building, a modular or temporary building, or a gas or liquid storage tank that is principally above ground.</p>
	<p><u>“SUBSTANTIAL DAMAGE”</u> 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 percent of the market value of the structure before the damage occurred.</p>

	<p><u>“SUBSTANTIAL IMPROVEMENT”</u> 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:</p> <ul style="list-style-type: none"> (1) Before the improvement or repair is started; or (2) 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. <p>The term does not, however, include either:</p> <ul style="list-style-type: none"> (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum 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 Historic Places.
	<p><u>“VARIANCE”</u> means a grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.</p>
	<p><u>“WATER DEPENDENT”</u> means a 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.</p>

	SECTION 3.0
	GENERAL PROVISIONS
	<p>3.1 LANDS TO WHICH THIS ORDINANCE APPLIES This ordinance shall apply to all areas of special flood hazards within the jurisdiction of <u>city/town/county/tribe</u>.</p>
	<p>3.2 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 the <u>city/town/county/tribe – use county if FIRMs are in countywide format</u>," dated <u>month day</u>, 20<u>yr</u>, with accompanying Flood Insurance Maps are hereby adopted by reference and declared to be a part of this ordinance. The Flood Insurance Study is on file at <u>location</u>. The best available information for flood hazard area identification as outlined in Section 4.3-2 shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized under section 4.3-2.</p> <p><i>Note: Jurisdictions may regulate a larger area than that depicted on the FIRM. Any larger area (such as an historic inundation area) must be identified in this ordinance. Add the expanded area description to this section.</i></p>
	<p>3.3 PENALTIES FOR NONCOMPLIANCE No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance 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 ordinance or fails to comply with any of its requirements shall upon conviction thereof be fined not more than <u>\$ amount</u> or imprisoned for not more than <u>number</u> days, or both, for each violation, and in addition shall pay all costs and expenses involved in the case. Nothing herein contained shall prevent the <u>city/town/county/tribe</u> from taking such other lawful action as is necessary to prevent or remedy any violation.</p>

	<p>3.4 ABROGATION AND SEVERABILITY This ordinance 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 restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail. If any section clause, sentence, or phrase of the Ordinance 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 Ordinance.</p>
	<p>3.5 INTERPRETATION In the interpretation and application of this ordinance, all provisions shall be:</p> <ul style="list-style-type: none"> (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.
	<p>3.6 WARNING AND DISCLAIMER OF LIABILITY The degree of flood protection required by this ordinance 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 ordinance 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 ordinance shall not create liability on the part of <u>city/town/county/tribe</u>, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.</p>

	SECTION 4.0
	ADMINISTRATION
	4.1 ESTABLISHMENT OF DEVELOPMENT PERMIT
	<p>4.1-1 <u>Development Permit Required</u> A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 3.2. The permit shall be for all structures including manufactured homes, as set forth in the “DEFINITIONS,” and for all development including fill and other activities, also as set forth in the “DEFINITIONS.”</p>
	<p>4.1-2 <u>Application for Development Permit</u> Application for a development permit shall be made on forms furnished by the <i>dept., e.g. Planning, Engineering, etc.</i> and may 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 or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information is required:</p> <ol style="list-style-type: none"> (1) Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures; (2) Elevation in relation to mean sea level of floodproofing in any structure; (3) Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in Section 5.2-2; and (4) Description of the extent to which a watercourse will be altered or relocated as a result of proposed development.
	<p>4.2 DESIGNATION OF THE LOCAL FLOODPLAIN ADMINISTRATOR The _____ is hereby appointed to administer and implement this ordinance by granting or denying development permit applications in accordance with its provisions.</p>

	<p>4.3 DUTIES AND RESPONSIBILITIES OF THE LOCAL ADMINISTRATOR Duties of the local administrator shall include, but not be limited to:</p>
	<p>4.3-1 <u>Provide Base Flood Elevation and Freeboard</u> (1) When base flood elevation has been provided in accordance with Section 3.2, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD, the local floodplain administrator shall provide it to the Building Official along with any freeboard requirements established in Section 5.2 SPECIFIC STANDARDS.</p> <p>(2) When base flood elevation data has not been provided (A and V Zones) in accordance with Section 3.2, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD, the local floodplain administrator shall obtain, review, and provide any base flood elevation and floodway data available from a Federal, State or other source, in order to administer Sections 5.2, SPECIFIC STANDARDS, and 5.3 FLOODWAYS and the Building Codes.</p>
	<p>4.3-2 <u>Permit Review</u> (1) Review all development permits to determine that the permit requirements of this ordinance have been satisfied. (2) 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. (3) 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 5.4 are met.</p>

	<p>4.3-3 <u>Information to be Obtained and Maintained</u></p> <ul style="list-style-type: none"> (1) Maintain for public inspection all records pertaining to the provisions of this ordinance. (2) Where base flood elevation data is provided through the Flood Insurance Study, FIRM, or required as in Section 4.3-1, 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. (3) For all new or substantially improved floodproofed structures where base flood elevation data is provided through the Flood Insurance Study, FIRM, or as required in Section 4.3-1: <ul style="list-style-type: none"> (i) Verify and record the actual elevation (in relation to mean sea level), and (ii) Maintain the floodproofing certifications required in Section 4.1-2(3). (4) Maintain for public inspection all records pertaining to the provisions of this ordinance.
	<p>4.3-4 <u>Alteration of Watercourses</u></p> <ul style="list-style-type: none"> (1) Development shall not diminish the flood carrying capacity of a watercourse. If any watercourse will be altered or relocated as a result of the proposed development the applicant must submit certification by a registered professional engineer that the flood carrying capacity of the watercourse will not be diminished. (2) 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. (3) Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished. (4) Applicants shall obtain a Conditional Letter of Map Revision (CLOMR) from FEMA before any encroachment, including fill, new construction, substantial improvement, or other development, in the regulatory floodway is permitted. The applicant shall be responsible for preparing technical data to support the CLOMR application and paying any processing or application fees to FEMA. .

4.3-5 Requirement to Submit New Technical Data

- (1) Notify FEMA within six months of project completion when an applicant had obtained a Conditional Letter of Map Revision (CLOMR) from FEMA, or when development altered a watercourse, modified floodplain boundaries, or modified Base Flood Elevations. This notification shall be provided as a Letter of Map Revision (LOMR).
- (2) The applicant shall be responsible for preparing technical data to support the LOMR application and paying any processing or application fees to FEMA.
- (3) The Floodplain Administrator shall be under no obligation to sign the Community Acknowledgement Form, which is part of the CLOMR/LOMR application, until the applicant demonstrates that the project will or has met the requirements of this code and all applicable State and Federal laws.

4-3-6 Non-Conversion of Enclosed Areas below the Lowest Floor

To ensure that enclosed areas below the lowest floor continue to be used solely for parking vehicles, limited storage, or access to the building and not be finished for use as human habitation/recreation/bathrooms, etc., the Floodplain Administrator shall:

- (1) Determine which applicants for new construction and/or substantial improvements have fully enclosed areas below the lowest floor that are 5 feet or higher;
- (2) Require such applicants to enter into a "NON-CONVERSION DEED DECLARATION FOR CONSTRUCTION WITHIN FLOOD HAZARD AREAS" or equivalent. The deed declaration shall be recorded with {city, county, tribe}, and shall be in a form acceptable to the Floodplain Administrator.

	<p>4.3-7 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 4.4.</p> <p><i>If you do not include Section 4.4 (Variance Procedure), end the above sentence after the word "interpretation," and add the following sentence: "such appeals shall be granted consistent with the standards of Section 60.6 of the Rules and Regulations of the National Flood Insurance Program (44 CFR 59-76)."</i></p>
	<p>4.4 VARIANCE PROCEDURE</p>
	<p>4.4-1 Appeal Board</p>
	<p>(1)The _____ as established by <i>ordinance</i> shall hear and decide appeals and requests for variances from the requirements of this ordinance.</p>
	<p>(2)The _____ shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the <i>city/town/county/tribe</i> in the enforcement or administration of this ordinance.</p>
	<p>(3)Those aggrieved by the decision of the _____, or any taxpayer, may appeal such decision to the _____, as provided in <i>ordinance</i>.</p>

	<p>(4) In passing upon such applications, the _____ shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and:</p> <ul style="list-style-type: none"> (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 which 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.
	<p>(5) Upon consideration of the factors of Section 4.4-1(4) and the purposes of this ordinance, the _____ may attach such conditions to the granting of variances as it deems necessary to further the purposes of this ordinance.</p>
	<p>(6) The <i>local floodplain administrator</i> shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.</p>

	4.4-2 <u>Conditions for Variances</u>
	<p>(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 (i-xi) in Section 4.4-1(4) have been fully considered. As the lot size increases the technical justification required for issuing the variance increases.</p>
	<p>(2) 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.</p>
	<p>(3) Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.</p>
	<p>(4) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.</p>
	<p>(5) Variances shall only be issued upon:</p> <ul style="list-style-type: none"> (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 as identified in Section 4.1-4(4), or conflict with existing local laws or ordinances.
	<p>(6) 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. They primarily address small lots in densely populated residential neighborhoods. As such, variances from the flood elevations should be quite rare.</p>

	<p>(7) 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 4.4-2(1), and otherwise complies with Sections 5.1-1 through 5.1-3 of the GENERAL STANDARDS.</p>
	<p>(8) 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.</p>
	<p>SECTION 5.0</p>
	<p>PROVISIONS FOR FLOOD HAZARD REDUCTION</p>
	<p>5.1 GENERAL STANDARDS</p>
	<p>5.1-1 <u>Anchoring</u></p> <p>(1) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.</p> <p>(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 Home Installation in Flood Hazard Areas" guidebook for additional techniques).</p>
	<p>5.1-2 <u>Construction Materials and Methods</u></p> <p>(1) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.</p> <p>(2) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.</p> <p>(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.</p>

	<p>5.1-3 <u>Utilities</u></p> <ul style="list-style-type: none"> (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.
	<p>5.1-4 <u>Subdivision Proposals</u></p> <ul style="list-style-type: none"> (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 which contain at least 50 lots or 5 acres (whichever is less).
	<p>5.1-5 <u>Review of Building Permits</u></p> <p>Where elevation data is not available either through the Flood Insurance Study, FIRM, or from another authoritative source (Section 4.3-2), 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 at least two feet above grade in these zones may result in higher insurance rates.</p>
	<p>5.1-6 <u>AH Zone Drainage</u></p> <p>Adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.</p>
	<p>5.2 SPECIFIC STANDARDS</p> <p>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 3.2, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD or Section 4.3-2, Use of Other Base Flood Data (In A and V Zones), the following provisions are required:</p>

	<p>5.2-1 <u>Residential Construction</u></p> <p>(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.</p> <p>(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 be either certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:</p> <ul style="list-style-type: none"> (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.
	<p>5.2-2 <u>Nonresidential Construction</u></p> <p>(1) Be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water;</p> <p>(2) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;</p> <p>(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 4.3-3(2);</p> <p>(4) Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in 5.2-1(2);</p> <p>(5) 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 floodproofed to the base flood level will be rated as one foot</p>

	<p>below.</p> <p>(6) Applicants shall supply a Maintenance Plan for the entire structure to include but not limited to: exterior envelope of structure; all penetrations to the exterior of the structure; all shields, gates, barriers, or components designed to provide floodproofing protection to the structure; all seals or gaskets for shields, gates, barriers, or components; and, the location of all shields, gates, barriers, and components as well as all associated hardware, and any materials or specialized tools necessary to seal the structure.</p> <p>(7) Applicants shall supply an Emergency Action Plan (EAP) for the installation and sealing of the structure prior to a flooding event that clearly identifies what triggers the EAP and who is responsible for enacting the EAP.</p>
	<p>5.2-3 <u>Manufactured Dwellings</u></p> <p>(1) Manufactured dwellings supported on solid foundation walls shall be constructed with flood openings that comply with 5.1-1(2) above;</p> <p>(2) The bottom of the longitudinal chassis frame beam in A zones, shall be at or above BFE;</p> <p>(3) The manufactured dwelling shall be anchored to prevent flotation, collapse, and lateral movement during the base flood. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA’s “Manufactured Home Installation in Flood Hazard Areas” guidebook for additional techniques), and;</p> <p>(4) Electrical crossover connections shall be a minimum of 12 inches above BFE.</p>
	<p>5.2-4 <u>Recreational Vehicles</u></p> <p>Recreational vehicles placed on sites are required to:</p> <p>(1) Be on the site for fewer than 180 consecutive days, and</p> <p>(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 permanently attached additions; or</p> <p>(3) Meet the requirements of 5.2-3 above and the elevation and anchoring requirements for manufactured homes.</p>

5.2-5 Small Accessory Structures

Relief from elevation or floodproofing as required in 5.2-1 or 5.2-2 above may be granted for small accessory structures that are:

- (1) Less than 200 square feet and do not exceed one story;
- (2) Not temperature controlled;
- (3) Not used for human habitation and are used solely for parking of vehicles or storage of items having low damage potential when submerged;
- (4) Not used to store toxic material, oil or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality shall unless confined in a tank installed in compliance with this ordinance or stored at least one foot above Base Flood Elevation
- (5) Located and constructed to have low damage potential;
- (6) Constructed with materials resistant to flood damage;
- (7) Anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood;
- (8) Constructed to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater. Designs for complying with this requirement must be certified by a licensed professional engineer or architect or
 - (i) provide a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
 - (ii) the bottom of all openings shall be no higher than one foot above the higher of the exterior or interior grade or floor immediately below the opening;
 - (iii) openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwater in both directions without manual intervention.
- (9) Have electrical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

5.2-6 Below-grade crawl spaces

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 Section B below. Because of hydrodynamic loads, crawlspace construction is not allowed in areas with flood velocities greater than five (5) 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 (1) 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 (2) 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 (4) 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.

	<p>5.3 BEFORE REGULATORY FLOODWAY</p> <p>(1) 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.</p> <p>(2) Applicants of proposed projects that increase the Base Flood Elevation more than one foot shall obtain from FEMA a Conditional Letter of Map Revision (CLOMR) before the project may be permitted. As soon as possible, but no later than 6 months after project completion, an application for a Letter of Map Revision (LOMR) shall be submitted by the applicant to FEMA. The applicant is responsible for paying any costs associated with the CLOMR and LOMR process.</p>
	<p>5.4 FLOODWAYS</p> <p>Located within areas of special flood hazard established in Section 3.2 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:</p> <p>(1) Except as provided in paragraph (3), 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.</p> <p>(2) If Section 5.4(1) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 5.0, PROVISIONS FOR FLOOD HAZARD REDUCTION.</p>

	<p>(3) Projects for stream habitat restoration may be permitted in the floodway provided:</p> <ul style="list-style-type: none"> (i) The project qualifies for a Department of the Army, Portland District <i>Regional General Permit for Stream Habitat Restoration</i> (NWP-2007-1023); and, (ii) 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, (iii) No structures would be impacted by a potential rise in flood elevation; and, (iv) An agreement to monitor the project, correct problems, and ensure that flood carrying capacity remains unchanged is included as part of the local approval.
	<p>(4) Temporary structures placed in the floodway: Relief from no-rise evaluation, elevation or dry flood-proofing standards may be granted for a non-residential structure placed during the dry season (June – October) and for a period of less than 90 days. A plan for the removal of the temporary structure after the dry season or when a flood event threatens shall be provided. The plan shall include disconnecting and protecting from water infiltration and damage all utilities servicing the temporary structure.</p>
	<p>(5) Temporary storage of goods and materials, not including hazardous materials, is allowed in the floodway for a period of less than 90 days within the dry season (June – October).</p>
	<p>5.5 STANDARDS FOR SHALLOW FLOODING AREAS (AO ZONES) Shallow flooding areas appear on FIRMs as AO zones with depth designations. The base flood depths in these zones range from 1 to 3 feet above ground 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:</p>
	<p>(1) New construction and substantial improvements of residential structures and manufactured homes within AO zones shall have the lowest floor (including basement) elevated above the highest grade adjacent to the building, a minimum of one foot above the depth number specified on the FIRM (at least two feet if no depth number is specified).</p>

	<p>(2) New construction and substantial improvements of nonresidential structures within AO zones shall either:</p> <p>(i) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, one foot or more above the depth number specified on the FIRM (at least two feet if no depth number is specified); or</p> <p>(ii) Together with attendant utility and sanitary facilities, be completely flood proofed to or 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 having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as in section 5.2-2(3).</p>
	<p>(3) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.</p>
	<p>(4) Recreational vehicles placed on sites within AO Zones on the community's FIRM either:</p> <p>(i) Be on the site for fewer than 180 consecutive days, and</p> <p>(ii) 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 permanently attached additions; or</p> <p>(iii) Meet the requirements of 5.5 above and the elevation and anchoring requirements for manufactured homes.</p>

	<p>5.6 COASTAL HIGH HAZARD AREAS Located within areas of special flood hazard established in Section 3.2 are Coastal High Hazard Areas, designated as Zones V1-V30, VE and/or V. These areas have special flood hazards associated with high velocity waters from surges and, therefore, in addition to meeting all provisions in this ordinance the following provisions shall also apply:</p>
	<p>(1) All new construction and substantial improvements in Zones V1-V30 and VE (V if base flood elevation data is available) shall be elevated on pilings and columns so that:</p> <ul style="list-style-type: none"> (i) The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated a minimum of one foot above the base flood level; and (ii) 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 and given year (100-year mean recurrence interval);
	<p>(2) 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 (i) and (ii) of this Section.</p>
	<p>(3) Obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures in Zones V1-30, VE, and V, and whether or not such structures contain a basement. The local administrator shall maintain a record of all such information.</p>
	<p>(4) All new construction shall be located landward of the reach of mean high tide.</p>

	<p>(5) Provide that all new construction and substantial improvements have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads 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 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:</p> <ul style="list-style-type: none"> (i) Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and (ii) 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 (100-year mean recurrence interval).
	<p>(6) If breakaway walls are utilized, such enclosed space shall be useable solely for parking of vehicles, building access, or storage. Such space shall not be used for human habitation.</p>
	<p>(7) Prohibit the use of fill for structural support of buildings.</p>
	<p>(8) Prohibit man-made alteration of sand dunes which would increase potential flood damage.</p>
	<p>(9) All manufactured homes to be replaced or substantially improved within Zones V1-V30, V, and VE on the community's FIRM shall meet the standards of paragraphs 5.6(1) through (8) of this section.</p>

	<p>(10) Recreational vehicles placed on sites within Zones V1-30, V, and VE on the community's FIRM either:</p> <ul style="list-style-type: none"> (i) Be on the site for fewer than 180 consecutive days, (ii) 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 permanently attached additions; or (iii) Meet the requirements of Section 4.1-1(Permitting requirements) and paragraphs 5.6(1) through (8) of this section.
	<p>5.7 CRITICAL FACILITY</p> <p>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. 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 flood elevation shall be provided to all critical facilities to the extent possible.</p>