



# CITY OF TROUTDALE

"Gateway to the Columbia River Gorge"

## AGENDA

### JOINT WORK SESSION

#### City Council and Planning Commission

Troutdale Police Facility – Community Room

234 SW Kendall Court

Troutdale, OR 97060-2078

Tuesday, January 21, 2014 – 6:30pm

Mayor

Doug Daoust

City Council

Norm Thomas

Glenn White

David Ripma

Rich Allen

Eric Anderson

John L. Wilson

City Manager

Craig Ward

City Attorney

David J. Ross

1. Roll Call
2. A presentation on code amendments to address floodplain enforcement requirements of the Oregon Department of Land Conservation and Development. Craig Ward, City Manager
3. Adjourn

Doug Daoust, Mayor

Dated: 1/14/14

**A City Council Work Session will be held immediately following this Joint Work Session**

Further information and copies of agenda packets are available at: Troutdale City Hall, 219 E. Historic Columbia River Hwy., Monday through Friday, 8:00 a.m. - 5:00 p.m.; on our Web Page [www.troutdaleoregon.gov](http://www.troutdaleoregon.gov) or call Debbie Stickney, City Recorder at 503-674-7237.

The meeting location is wheelchair accessible. A request for an interpreter for the hearing impaired or for other accommodations for persons with disabilities should be made at least 48 hours before the meeting to: Debbie Stickney, City Recorder 503-674-7237.

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# CITY OF TROUTDALE



## STAFF REPORT

**SUBJECT / ISSUE:** A Presentation on Code Amendments to Address Floodplain Development Standards Required under the National Flood Insurance Program and State Building Codes as identified by the Oregon Department of Land Conservation and Development (DLCD) during a Community Assistance Visit in 2013

**MEETING TYPE:**  
City Council Work Session

**MEETING DATE:** Tuesday, January 21, 2014

**STAFF MEMBER:** Craig Ward  
**DEPARTMENT:** Community Development

**ACTION REQUIRED**  
Information/Discussion

**ADVISORY COMMITTEE/COMMISSION RECOMMENDATION:**  
Not Applicable

**PUBLIC HEARING**  
No

**Comments:** Planning Commission review is pending

**STAFF RECOMMENDATION:** Direct Planning Commission to consider the proposed amendments and recommend policy responses

**EXHIBITS:** A. Community Assistance Visit Report (CAV) from DLCD October 11, 2013  
B. Draft Development Code Amendments to address CAV TDC-related findings

**Subject / Issue Relates To:**

Council Goals                       Legislative                       Other (describe)

**Issue / Council Decision & Discussion Points:**

- ◆ The State of Oregon DLCD NFIP Coordinator conducted a Community Assistance Visit (CAV) in 2013 to evaluate the City's Development Code (TDC) standards and procedures followed for administering Flood Hazard Permits. The results of that CAV are detailed in the report labelled Exhibit A.
- ◆ Staff subsequently prepared draft TDC amendments designed to address the CAV findings. Those draft amendments are detailed in Exhibit B.
- ◆ Enforcement of these provisions will clarify standards and process and to some extent, expand the scope of activities requiring Flood Hazard permits as several activities and uses previously exempt will require permits.

Reviewed and Approved by City Manager:

**BACKGROUND:**

The Community Assistance Visit (CAV) is a component of the National Flood Insurance Program's (NFIP's) Community Assistance Program. The CAV involves a visit to a community by FEMA or staff of a State agency on behalf of FEMA to assure that the community is appropriately enforcing its floodplain management regulations and building permits for properties within the one percent annual chance floodplains as mapped by FEMA, as required by the National Flood Insurance Program (NFIP) and codified in 44 CFR Part 60.3 and State Building Codes.. Community Assistance Visits of cities participating in the NFIP are conducted by DLCD for the communities in the State of Oregon.

Generally, a CAV consists of a tour of the floodplain, an inspection of community permit files, and meetings with local appointed and elected officials. If administrative problems or potential violations are identified during a CAV the community is given the opportunity to correct those administrative procedures and remedy the violations within established deadlines. In extreme cases where the community does not bring itself into compliance, FEMA may initiate and enforcement action against the community.

This work session is specific only to the changes to the Troutdale Development Code (TDC) standards identified in the CAV. Seven (7) aspects of the TDC, primarily within section 4.600, were found to require improvement, including modifying and adding definitions, removing exemptions, clarifying regulations for accessory structures, and some minor amendments. Three (3) other revisions were recommended but not required. Staff subsequently prepared draft TDC amendments designed to address all of the CAV findings. Those draft amendments are detailed in Exhibit B.

Administrative, enforcement and inspection processes and procedures were also found to require improvement, which the staff is already implementing and requires no policy action.

The October 11, 2013 CAV report imposed a deadline of November 29 to submit a "Corrective Action Plan" to DLCD identifying a schedule to comply with all of the CAV requirements and recommendations. DLCD extended that deadline until January 29, 2014 at the City's request. Following this presentation to the City Council and Planning Commission, staff will submit a Corrective Action Plan.

**Pros**

- Secures continued participation in the NFIP
- Clarifies certain standards required under the NFIP

**Cons**

- Expands the scope of the City's responsibility to enforce Floodplain permitting

|   |
|---|
| <p><b>Current Year Budget Impacts</b>    <input type="checkbox"/> Yes (<i>describe</i>)    <input checked="" type="checkbox"/> N/A</p> <p><b>Future Fiscal Impacts:</b>    <input type="checkbox"/> Yes (<i>describe</i>)    <input checked="" type="checkbox"/> N/A</p> <p><b>Community Involvement Process:</b>    <input checked="" type="checkbox"/> Yes (<i>describe</i>)    <input type="checkbox"/> N/A</p> <p>Planning Commission</p> |
|---|



# Oregon

John A. Kitzhaber, MD, Governor

## Department of Land Conservation and Development

635 Capitol Street NE, Suite 150

Salem, OR 97301-2540

(503) 373-0050

Fax (503) 378-5518

www.lcd.state.or.us



October 11, 2013

Doug Daoust, Mayor  
City of Troutdale  
219 E. Historic Columbia River Highway  
Troutdale, OR 97060

RE: Community Assistance Visit

Dear Mayor Daoust,

I am writing to inform you of results from the Department of Land Conservation and Development (DLCD) review of the City of Troutdale's floodplain management program. This Community Assistance Visit (CAV) provided a comprehensive review of your floodplain management program as a means of technical assistance and to ensure continued compliance with minimum requirements of the National Flood Insurance Program (NFIP).

DLCD began the CAV by asking the City of Troutdale to answer a set of questions in writing (Attachment A). A field tour was conducted on April 5, 2013. This was followed by two office visits on May 2 and July 19. The CAV focused on five areas:

- I. **Floodplain Management Regulations** – a review to determine if the City has a flood hazard ordinance that meets or exceeds minimum performance standards for participation in the National Flood Insurance Program (NFIP), found in 44 CFR Part 60.3
- II. **Administrative and Enforcement Process and Procedures** – a review of City procedures for implementing Troutdale's Floodplain Management Standards
- III. **Field Inspection** – a windshield survey of development located in the Special Flood Hazard Area
- IV. **Flood Hazard Mapping**
- V. **Staff Questions**

Overall we found Troutdale has a strong floodplain management program, however some corrective actions will need to be completed for Troutdale to be found in full compliance with the NFIP. This CAV cannot be closed until the required actions are completed.

### I. Floodplain Management Regulations

The City of Troutdale Floodplain Management Standards, Troutdale Development Code Chapter 1, Definitions, and Chapter 4.6 Floodplain Management Area were reviewed for compliance

with 44 CFR Part 60.3. The review found several sections that did not reflect these minimum NFIP standards. Required changes include modifying the definition of development, adding a definition of substantial damage, clarifying regulations for accessory structures, and other minor amendments. DLCDC also recommends a few editorial changes.

1. **Required:** Modify 1.040.12 definition of Development to remove the exemptions a. and b. Both of these activities are considered development by the NFIP.
2. **Recommended:** Modify 1.040.22 Federal Emergency Management Agency definition; FEMA is now a part of Department of Homeland Security
3. **Recommended:** Modify 1.040 .48 to add pre-FIRM date to the definition of Pre-FIRM structures.
4. **Required:** Add a definition of Substantial Damage to 1.040: Substantial Damage is damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
5. **Required:** Add to 4.616 that Flood Hazard Permits expire if construction does not commence within 180 days.
6. **Required:** Delete paragraph 4.616 B “unless it is very clear on plan view that the structure is on a portion of the site that is naturally elevated one foot or more above the base flood elevation.” A flood hazard permit is required if an existing or proposed building is located in the SFHA as shown on plan view, regardless of elevation. If the existing or proposed lowest adjacent grade (LAG) is above BFE, the applicant should be advised to obtain a LOMA. Until the LOMA is granted by FEMA development must proceed as if the building is in the SFHA if any portion of the building is shown to be in the SFHA on the Flood Insurance Rate Map.
7. **Required:** Modify Section 4.619 to address substantial damage. Clarify that substantial damage/improvement applies to both residential and non-residential structures.
8. **Required:** Modify 4.617.H.5: Only low-value accessory structures may be wet floodproofed without a variance. DLCDC suggests that 4.617.H.5 be removed from residential construction standards section and added to a new section that applies to both residential and non-residential accessory structures. Add a definition for low-value accessory structures in the FLMA standards or TDC Chapter 1 based a upon size and/or dollar value limitation. Many Oregon jurisdictions limit the size of accessory structures to 200 square feet because buildings larger than that are subject to building codes. The NFIP will not insure a structure worth less than \$5,000. As a result, a sensible size/dollar value limitation is 200 square feet and \$5,000.
9. **Required:** TDC 4.617 seems to indicate that all detached garages may be wet-floodproofed and no variance procedure is mentioned. Clarify that wet-floodproofing of buildings, other than small accessory structures as defined above, require variances and these can be allowed in very limited circumstances, which are specified in 44 CFR Part 60.6.

10. Recommended: clarify whether a BFE is required in approximate A zones for developments on less than 5 acres or 50 lots. For smaller parcels where no BFE is required, clarify how high above highest adjacent grade buildings must be elevated. NFIP does not require a BFE for developments on parcels less than 5 acres, or 50 lots (whichever is less), however insurance costs are high without a BFE. Buildings may be elevated at least one foot above HAG when no BFE is supplied, but elevating 2 feet will provide more affordable insurance.

There are three ways to inexpensively get a BFE in an approximate A zone for lots 5 acres or less:

1. Find one from a Federal or State Agency, i.e. ODOT
2. Provide FEMA with a cross section on the upstream side of the building and use it to apply for a LOMA. If the LOMA is denied, it comes back with a BFE.
3. Hire DOGAMI to develop one using lidar.

## **II. Administrative and Enforcement Process and Procedures**

The City requires those seeking to develop in the Special Flood Hazard Area to complete a Flood Hazard Permit Application. The Application was updated in 2011. The City uses information from the application to determine whether a Flood Hazard Permit is needed, and if so, what plan review, field inspections, and documentation are needed to obtain an occupancy/use permit.

DLCD's walked through the application and review process with Troutdale staff and then reviewed documentation for development that had taken place since 2005. Overall we found Troutdale to have a sound program. However some of the earlier development documentation packages were incomplete. DLCD also found that while the floodplain manager and building official know who was expected to review and inspect floodplain development, these responsibilities were not always well documented.

DLCDs specific findings in this category are as follows:

1. Several building permits issued since 2005, but before 2011, have no accompanying flood hazard permit (see attached spreadsheet). We are confident that Troutdale has put procedures in place to correct this problem. However, to ensure compliance, we ask that Troutdale review the building permits for the projects listed on the attached Corrective Actions Report spreadsheet to verify that the projects were completed according to provisions of Troutdale's flood hazard regulations, including verification that the activities did not constitute substantial improvement as defined by the NFIP. Please report findings of this review on the Corrective Action Plan, requested below.

2. The City of Troutdale Job Description for the Building Official does not include "compliance with City codes and ordinances" in item b. Review plans and specifications..." DLCD recommends that Troutdale change the Job Description or develop an SOP to ensure that all building permits issued for structures in flood zones receive appropriate plan review.

3. The City of Troutdale Job Description for the Building Inspector does not mention compliance with City codes and ordinances. DLCD recommends that Troutdale change the Job Description

or develop an SOP to ensure that all buildings under construction in the flood zones receive appropriate inspections.

4. Field inspection responsibilities for projects located in the flood zone that do not require a building permit are not documented. NFIP requires a development permit for nearly all development, defined as "any man-made change to improved or unimproved real estate." Troutdale needs to develop Standard Operating Procedures (SOPs) for structures that do not require building permits, including public works projects.

5. Troutdale indicated in the written interview that permit records are archived in accordance with State requirements. Please verify and report to DLCD that floodplain development records are permanently retained. If necessary, stamp older records to indicate permanent retention.

### **III. Field Inspection**

DLCD identified several buildings during the field and record review where more information is needed to confirm compliance. The attached Corrective Actions Report (Appendix B) describes specific deficiencies.

Please provide DLCD with a written report addressing each project listed in the Corrective Action Report, including whether building modifications will be needed to bring the project into compliance with Troutdale's flood hazard regulations.

### **IV. Flood Mapping**

Troutdale requested assistance from DLCD in obtaining detailed studies in approximate A zone areas surrounding Arata and Beaver Creeks. DLCD added this request to FEMA's mapping needs database.

### **V. Staff Questions**

City staff had three questions that will require DLCD follow-up:

- DLCD will verify that one foot rise analysis is not needed in areas where no floodway is defined and the area is protected by levees (I-84 ditches).
- DLCD will work with DEQ on procedures for permitting septic systems in flood hazard areas. DLCD and DEQ conferred on Sept. 25; DLCD will prepare a memo describing NFIP requirements for DEQ review.
- Troutdale asked whether the BPA I-5 Corridor Project needs a FHP permit. DLCD will follow up with Nancy Wittpenn, [nawittpenn@bpa.gov](mailto:nawittpenn@bpa.gov)

### **Corrective Action Plan**

We recognize that some of the action items presented in this report will take some time to achieve. **Please provide DLCD with a Corrective Action Plan, including an implementation schedule by November 29, 2013.** Include responses to any clarifications or data requests made

in this letter and Appendix B. DLCD is happy to advise Troutdale staff on the Corrective Action Plan and to correct any program deficiencies or building violations.

In closing, although this letter points out specific deficiencies, I want to reiterate that Troutdale's flood hazard program is sound. I look forward to working with Troutdale to improve and strengthen the program. Please feel free to contact me with any questions or concerns. My new direct telephone line is 503-934-0027.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Christine Shirley".

Christine Shirley  
NFIP Coordinator

cc: Craig Ward, Troutdale City Manager  
Elizabeth McCallum, Troutdale Floodplain Manager  
Mark Riebau, FEMA Region X  
Mike Riedy, FEMA Region X

Attachments

Appendix B:  
 Corrective Action Report, Troutdale CAV 2013

| DATE FLOOD HAZARD PERMIT APPROVED | PROJECT NAME                                 | SITE ADDRESS                     | SUBSTANTIAL IMPROVEMENT | DLC Comments/<br>ACTION NEEDED?   |
|-----------------------------------|--|----------------------------------|-------------------------|---|
| <b>No FHP issued</b>              | New dormer over kitchen in pre-FIRM dwelling | 750 SE Jackson Park Rd.          | <b>Unknown</b>          | Review building permits to ensure that modification was not a substantial improvement.  |
| <b>No FHP issued</b>              | Glenn Otto Park Building                     | 1102 / 1106 E Historic Col R Hwy | Unknown                 | Provide DLCD with Troutdale's procedures to ensure that projects at city-owned buildings are reviewed for floodplain compliance.  |
| <b>No FHP</b>                     | Colt building improvement                    | 885 NW Dunbar Ave.               | Unknown                 | Review building permits to ensure that modification was not a substantial improvement.  |
| <b>No FHP</b>                     | Pellet stove install                         | 1076 SE Jackson Park Rd.         | Unknown                 | Review Elevation Certificate. Possible insufficient flood vents per NFIP records. Troutdale needs to consider reviewing flood vents for every post-FIRM building that comes in for a FHP, since insufficient vents is a common problem throughout Oregon. |
| 10/8/2007                         | Shed A                                       | 950 SE Jackson Park Rd.          | No                      | This structure appears to be wet-floodproofed without variance. Remediation may be necessary.   |
| 10/8/2007                         | Shed B                                       | 950 SE Jackson Park Rd.          | No                      | Possible residential structure; floodproofing not allowed. Remediation may be necessary.  |
|                                   | Knife River Asphalt and Aggregate            | 5700 NW Sundial Road             |                         | Review building permits to ensure that modifications were not a substantial improvement.  |

| DATE FLOOD HAZARD PERMIT APPROVED | PROJECT NAME  | SITE ADDRESS                       | SUBSTANTIAL IMPROVEMENT                            | DLC Comments/<br>ACTION NEEDED?   |
|-----------------------------------|---|------------------------------------|--|---|
|                                   | Site  |                                    |  |   |
| 8/18/09                           | Mahoney Remodel. Pre-FIRM dwelling built in 1954.   | 1104 SE Jackson Park Rd.           | Unknown. Info requested as a condition of the FHP. | Inspect to ensure that project was not executed.  |
| <b>No FHP</b>                     | Electrical, mechanical, gas line, furnace, water heater, cook top, gas line to future fireplace | 1024 SE Jackson Park Rd.           | Unknown  | Review building permits to ensure that modifications were not a substantial improvement.  |
| ?                                 | This residence is in the floodway. It appears that a new roof was installed after 2011.         | 1409 E Historic Columbia River Hwy |  | Provide: <ul style="list-style-type: none"> <li>• Floodplain development permit for roof replacement</li> <li>• Original floodway analysis</li> </ul> |

**Action Items****DLCD Comments in Blue 5/1/2013****CAV Questions**

Except as otherwise noted, the response to these questions are from City of Troutdale Floodplain Administrator, Elizabeth A. McCallum.

**A. Floodplain Management Regulations and Administration****1. What is the date of your last flood hazard ordinance update?**

*December 18, 2009.*

**2. Do you have any questions about administering the regulations? Yes.**

*Are the City's standards of TDC 4.617 H.5. for accessory structures compliant with State building codes?*

NFIP requires a development permit for all development, even for buildings that do not require a building permit. NFIP requires that all accessory structures be elevated or floodproofed unless granted a variance.

The building code requires that a building permit be obtained for residential structures 200 square feet or greater, or non-residential (not associated with a residential structure) structures greater than 150 square feet. The building code does not explicitly allow wet floodproofing.

Therefore TDC 4.617 H.5 is not fully compliant with the NFIP because wet floodproofing is allowed on any size building without a variance. For buildings greater than 200/150 sq. ft., it is not compliant with the building code because wet floodproofing is not allowed, although the building code does allow enclosed areas to be vented if the enclosed area is to be used solely for parking, building access, and storage. It is assumed that these enclosed areas are NOT standalone buildings, but rather crawlspaces and attached garages. However I can see that readers not steeped in the NFIP may interpret these provisions differently than intended.

**Action item: Revise TDC 4.617 to disallow wet floodproofing unless a variance is granted, or the enclosed area is an attached garage.**

*Is TDC 4.617 H.2 clear? It appears to permit a fully enclosed area (basement) if designed to automatically equalize hydrostatic forces with flood vents / openings—but that is nonsensical and likely not the intent.*

Fully enclosed areas are not necessarily basements; FEMA defines a basement as below grade on all sides. You can allow a fully enclosed (vented) area and disallow that area to be a basement (as building codes does). The ordinance could be clarified on this point. The building code only allows fully enclosed areas to be vented that have at least one side at grade.

Clarify TDC 4.167.

*Who has the responsibility to assure that anchoring and floodproofing are done in accordance with structural plans?*

City Building official; these provisions are spelled out in the building code.

*Is the City Building Official responsible for enforcing local floodplain management conditions as described in the Flood Hazard Permit?*

The City Building Official may only enforce provisions in the building code, unless his or her duties are specifically expanded by the city to include ordinances and regulations outside of the building codes. Thus, there may be conditions in the flood hazard permit that the building official is not able to inspect or enforce.

Suggest that Troutdale clarify roles and responsibilities.

*What procedure should a Community use to evaluate when development within approximate A zones is "small" and how should the Community document how it decides how high "small" development should be elevated in the approximate A zone?*

FEMA allows buildings in approximate A zones to be elevated above highest adjacent grade, rather than above BFE, when a BFE can't be reasonably obtained. FEMA will supply BFE on parcels smaller than 5 acres if the applicant shows proof that they made an attempt to obtain one from an authoritative source and failed.

FPM must require that the building be "reasonably safe from flooding," a determination based on local knowledge and professional judgment. FEMA recommends that buildings be elevated at least 2 feet above HAG to qualify for reasonably priced insurance.

So, to answer the question: use a BFE when it can be obtained, otherwise require that the building be elevated at least 2 feet above HAG. Be forewarned, however, that HUD/FHA require a BFE to finance a manufactured dwelling.

Suggest that Troutdale create a brochure/procedures for obtaining a BFE in approximate A zones, and what to do if no BFE is available.

3. Who gets involved when a project is located in the flood zone? For example, floodplain administrator, building official, inspector, etc.?

*The floodplain administrator (Senior Planner), Community Development Director and the building division are involved when a project is located in the flood zone.*

4. Does one person serve as the floodplain administrator? How long have they held this position? Are they a Certified Floodplain Manager (CFM)?

*Yes. Name: Elizabeth A. McCallum. She has been in this position for 16 years 9 months. She is not a Certified Floodplain Manager (CFM).*

5. How many applications do you receive each year for development in the flood hazard zone? Do you charge a fee for reviewing flood zone development?

*The number of applications varies each year. In 2012 there were five. In 2011 there were six.*

*The fee for a Flood Hazard Permit is \$50.00.*

## **B. Map Availability and Accuracy**

1. How do you access flood zone information? Do you use the FIRM, or a geographical information system?

*The floodplain administrator uses: paper and digital FIRMs and the Flood Insurance Study flood profiles, the City's GIS maps that include current aerial photographs and 2-foot LiDAR elevations. These are cross referenced with the FIRMs to pin-point properties and where possible, the actual structure or development site on the property.*

2. Under what circumstances do you use the Flood Insurance Study?

*The floodplain administrator uses it to identify the BFE based upon the mapped flood profiles available in the FIS.*

3. How do you keep track of any Letters of Map Amendment or Letters of Map Revision issued by FEMA?

*A notebook is kept with the various Letters of Map Change that have been issued.*

*How do you know the coverage area of these LOMCs?*

4. Do you have any problems using the FEMA Flood Insurance Rate Maps (FIRMs)?

*Generally, no.*

5. Are there places where the FIRMs seem inaccurate?

*According to some property owners the FIRMs are inaccurate. These areas are along generally the west bank of the Sandy River along SE Jackson Park Road.*

*Some man-made ponds are not included on the FIRMs: is this an oversight?  
No, this is not something FEMA maps unless they are larger than an acre.*

6. Are there places that flood regularly that are not shown on the FIRMs?

*The floodplain administrator is unaware of any places of flooding not shown on the FIRMs.*

### **C. Applicant Challenges to the Flood Zone Requirements**

#### **1. What do you do when an applicant claims that their property or building is really out of the flood zone?**

*The floodplain administrator explains that the City must apply the floodplain development standards if their property is mapped on the FIRM and the building falls within the SFHA on the property as it is a federal law adopted by the State and then the City.*

*The floodplain administrator reviews the FIRM, flood profiles, the best available topographic information for the property and shares that information with the applicant to explain why the lot has been identified as being in the flood zone.*

*If their argument is that FEMA engineering facts are in error, the floodplain administrator explains that the current adopted FIRM and Flood Insurance Study must be used until such a time as the data is revised. A City may initiate a Letter of Map Revision but it would require financial backing from Council barring any other options previously initiated by FEMA. The property owner would need to make the case to Council to initiate a new study if one wasn't already initiated by FEMA.*

Applicants can initiate a LOMC with City cooperation.

#### **2. How would you advise an applicant on when and how to obtain a Letter of Map Amendment or Letter of Map Revision?**

*A LOMA may be appropriate if a comparison of the best available topographic information for the property, including a completed Elevation Certificate, establishes that the structure is above the BFE naturally (not just because it was an elevated structure when built) or may have been built on pre-FIRM fill in the floodplain.*

*A LOMR-F may be appropriate if the applicant is going to fill within the SFHA to elevate the structure above the BFE.*

*The floodplain administrator provides instructions for LOMAs and LOMRs from FEMA reference materials off of the FEMA.gov website.*

### **C. Development Review Process**

#### **1. Describe the process you use to review development applications when the project is located in a special flood hazard area.**

*See attached procedure and application form for the Flood Hazard Permit.*

*Upon receipt of the applicant's application and topographic information, the floodplain administrator compares it with the SFHA as mapped on the FIRM and flood profile elevations to identify whether it is in the SFHA.*

2. When and how do you obtain the "as built" lowest floor elevation?

*A certified Elevation Certificate must be submitted to the City upon completion of a structure prior to occupancy.*

3. Where do you maintain this information and how long is it kept?

*Elevation Certificates are kept in the Planning Division and are kept forever.*

4. How do you ensure that buildings were constructed according to terms of the development permit?

*A condition of a Flood Hazard Permit is that an Elevation Certificate based upon construction plans must be submitted with the building permit application. The building permit should not be issued if the construction plans or elevations on the EC based upon the construction plans do not meet the standards for elevating structure, flood openings, etc.*

*Construction drawings are compared to the location approved and elevation required.*

*Once the structure is completed, a final certified EC must be submitted based upon finished construction.*

*Who reviews the final EC? Suggest that Troutdale develop a final check-off to obtain C of O.*

5. Are there approximate A zones within your jurisdiction?

*Yes. There are approximate A zones in Troutdale.*

If so, what procedures do you use to permit development in approximate A zones?

*The City's Development Code standards for development in the floodplain (TDC 4.600) apply to development in SFHA Zone A as well as Zone AE. However, the standards do not specify to what elevation a structure must be elevated or floodproofed when there is no BFE.*

*In accordance with 44 CFR 60.3 (b)(4), the City will endeavor to obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal,*

*State, or other source to identify a BFE for the subject site that is in an approximate A zone.*

- *If other BFE data is available for other sites and the topographic changes between the subject site and nearest site within a mapped SFHA Zone AE is insignificant, the nearby BFE may be considered.*
- *But if no BFE can be established, FEMA "Floodplain Management Requirements," (Chapter 5, page 5-11) says that for small developments that the community is responsible to require the building to be "elevated to above an elevation that you determine."*
  - *FEMA generally recommends 2 feet above HAG as a minimum, Oregon model ordinance uses 3 feet.*

What procedures do you use for parcels larger than 5 acres, or subdivisions greater than 50 lots?

*A BFE must be established by the developer before development is permitted per 44 CFR 60.3(b)(3). This federal standard applies to "other proposed developments including manufactured home parks and subdivisions" as well as the division of parcels larger than 5 acres or with 50 lots or more. However, the City's development code standard is narrow as it is only found under the standards for subdivisions: even so staff has told interested parties that it applies to lots greater than 5 acres in area that are only being developed and not subdivided.*

**This should be revised.**

*TDC 4.617 T. Subdivision Proposals. In addition to compliance with the underlying zoning district standards of this code and this chapter, the construction of the subdivision shall be subject to the following additional criteria:*

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 flood damage.*
3. *All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.*
4. *Where the base flood elevation data has not been provided or is not available from another authoritative source for Zone A, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres, whichever is less.*
  - a. *BFE data is not required when the actual building envelopes are clearly outside of Zone A or are on naturally higher ground (not created by fill) that is above the grade of Zone A by five feet or more.*

- b. *BFE data is required when the building envelope outside of Zone A is elevated above Zone A by a five foot or less change in grade of the natural ground elevation (not created by fill).*

6. Are there AE zones with no floodway defined? What procedures do you use to permit development in AE zones where there is no floodway defined?

*Yes. A BFE was established for drainage ditches north of I-84 to the levee and there is no floodway. These ditches are part of the flood control management.*

*The floodplain development standards of TDC 4.600 apply to all A zone areas whether there is a floodway or not.*

**Let's talk about the need (or not) to do the one-foot rise analysis in these areas. The need depends on information in the flood study.**

7. Under what conditions would you grant a variance from your flood hazard regulations?

*TDC 4.618 outlines the variance criteria for variances from the flood hazard regulations. No variances from the standard to elevate or floodproof a structure may be considered.*

8. What criteria and procedures do you use to review subdivision proposals?

*The criteria applied to subdivisions that are within the SFHA are TDC 4.617 T.*

9. How are your permit records stored and maintained? How long are these records retained?

*The paper copies of permits are stored in the Planning and Building departments. They are eventually archived in accordance with State requirements.*

**Verify that floodplain records are retained forever. Troutdale does have a "do not destroy" stamp.**

10. When and how do you evaluate development applications for substantial improvement or substantial damage?

*When improvements are planned to an existing structure in the SFHA, the applicant must provide the City with the valuation of those improvements. See the Flood Hazard Permit Form, Section II, page 2. It is understood by the floodplain administrator that the substantial construction / destruction rule applies to non-residential (commercial, institutional, etc.) structures as well as residential. The City Code covers substantial improvement / substantial damage only in the residential construction standards of the TDC 4.617H. Because the standard also applies to structures in the SFHA, amendments to the Code appear to be warranted.*

**Yes, I agree that changes are warranted.**

*TDC 4.617 Development Standards. H. Residential Construction, ....*

*4. Substantial improvements of existing dwellings will require elevation of any non-elevated structure to one foot above the Base Flood Elevation in compliance with this section. 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. Substantial improvements include:*

- a. Any repair, reconstruction, or improvement of a structure, the cost of which exceeds 50% of the market value of the structure as established by the County appraiser or a licensed professional appraiser.*
- b. Reconstruction or repair of a structure that exceeds 50% of the market value of the building before it was damaged.*
- c. Additions to an existing structure when the addition increases the market value of the structure by more than 50% or the floor area by more than 20%.*
- d. The term does not include the following:*
  - i. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or*
  - ii. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.*

11. How do you handle detached garages and accessory buildings?

We need to discuss these standards.

*A Flood Hazard Permit is required for detached garages and accessory buildings. The standards that apply are:*

*TDC 4.617 Development Standards.*

*H. Residential Construction, including accessory structures associated with residential dwellings.*

- 5. Accessory structures may either be elevated or meet these standards:*
  - a. Be equipped with adequate flood vents;*
  - b. Be constructed of flood resistant materials;*
  - c. Utilities and mechanicals, if used, comply with section M of this Section.*
  - d. Be anchored.*

Or

- K. Nonresidential Construction. New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated to no less than one foot above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:*
- 1. Be dry floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water. A dry floodproofing certificate shall be filed with the City following the form and procedure established by the Federal Emergency Management Agency.*
  - 2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy, in accordance with standards established by the Federal Emergency Management Agency and the National Flood Insurance Program.*
  - 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 National Flood Insurance Program regulations (CFR 60.3(c)(4) and (5)) based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the City.*
  - 4. Nonresidential structures that are elevated, not dry floodproofed, must meet the same standards for space below the lowest floor as described in subsection (H)(2) of this section. If elevated, an Elevation Certificate shall be submitted with the construction plans, prior to pouring the foundation, and after construction, unless there is a LOMA for the site or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the Base Flood Elevation.*
  - 5. Applicants dry 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 elevation will be rated as one foot below).*
  - 6. Comply with other standards of this Section as applicable.*

12. Do you review fences and walls for flood hazard compliance? Do you have any special criteria for permitting fences in the SFHA?

*No. There are no standards in the Troutdale Development Code about fences in the SFHA.*

13. How do you handle agricultural buildings that are proposed to be located in the SFHA?

*A Flood Hazard Permit is required and the standards of TDC 4.617H(5) or TDC 4.617 K apply.*

**How does Troutdale decide whether H(5) or K applies?**

**D. Building Permits and Inspection**1. How does your building official learn that a project is located in the Special Flood Hazard Area, and what is the base flood elevation?

*Using the Flood Insurance Rate Maps (FIRMs), the floodplain administrator identifies whether the building is within the SFHA or not and tells the building official.*

DLCD Note: plans are stamped with red ink. See attached samples.

2. Is your building official an employee? Contractor? From another community?

*The Building Official is an employee of the City of Troutdale.*

3. When does the building official hand off to the floodplain manager documents such as certified elevation of the "as-built" lowest floor and other certifications?

*The procedure is that the applicant for a building permit in the floodplain submits all documents pertaining to construction to the Building Permit Specialist, including the ECs based upon construction plans and finished construction. The Building Permit specialist then notifies the floodplain manager that an EC has been submitted.*

4. Does the floodplain administrator visit buildings under construction that are located in the Special Flood Hazard Area?

*The floodplain administrator has infrequently visited buildings under construction in the SFHA prior to the request for the final inspections.*

5. For the Building Inspectors: When and how do you verify: Elevation of the lowest floor before vertical walls are erected? Mechanical and electrical equipment is elevated above the BFE? Flood openings are adequate, fixed in an open position, and located no higher than one foot above grade? Flood resistant material is used below the base flood elevation?

*The following responses are from Building Official, Bill Woods and Building Inspector, Tom Sheirbon.*

*The elevations are verified in the field that they have been properly determined by a surveyor or the registered design professional that has been approved to determine these elevations.*

*Flood opening information is included on the approved building plans and can be site verified using a tape measure and visual inspection of the site. The calculation for these openings would have been approved by the qualified engineer and verified by Troutdale's floodplain Manager.*

*When the flood elevation has been determined and the Building Plan has been approved by all involved parties at this point you would verify that the proper materials were being used. The 2011 Oregon Residential Specialty Code covers this in Section R322 "Flood Resistant Construction." Among other things this sections covers protection of mechanical and electrical systems, protection of water supply and sanitary sewer systems, flood-resistant materials, manufactured homes, enclosed area below design flood elevation, foundation design and construction, and various other related topics.*

6. How do you ensure that below BFE enclosed areas will be used only for parking and storage?

*This evolves through the permit and planning process. From Planning, this would be a condition of approval of the Flood Hazard Permit. These are communicated between departments and code review.*

7. How would you discover unpermitted floodplain development, and once discovered, what do you do?

*By a complaint received.*

*By field observation.*

*When discovered:*

*Building Official: Post a stop work with property phone numbers and contact names.*

*Building Official: Ask for elevation verification by plans submitted by design professional.*

*The floodplain administrator states that a Flood Hazard Permit is required and as necessary, the structure must be rebuilt to comply with the floodplain development standards and the NFIP. If the floodplain development standards cannot be met the structure must be removed from the regulatory floodplain.*

**E. Planning**

1. Do you anticipate further development taking place in the flood zone? Yes.

*Development of underdeveloped areas within SFHA Zone A that are zoned for commercial and residential use is anticipated. The City has requested assistance in establishing the BFE as part of FEMA Risk MAP Discovery effort in the Lower Willamette Watershed.*

*Development of undeveloped industrial zoned areas protected from the one percent annual chance flood by levees and/or series of drainage ditches. A BFE has been established for the drainage ditches.*

*Additional high density residential, neighborhood commercial and mixed office/housing property in SFHA zone AE along Beaver Creek and the Sandy River is anticipated.*

*Rebuilding / remodeling projects of existing homes in SFHA Zone AE of the Sandy River is becoming more common as many of the homes are more than 50 years old.*

2. Have you considered limiting future development in the flood zone? If so, what impediments do you see and how can DLCD help you to address these impediments?

*This question has never been posed to the elected officials.*

3. Do you have a natural hazard mitigation plan? Does it specify specific projects or areas that you would like to see mitigated?

*Troutdale adopted a hazard mitigation plan in December 2010.*

*Section 6.7 in the Hazard Mitigation Plan addresses action items. See attached.*

4. Are you familiar with FEMA's mitigation grants? Would you like more information about them?

*The floodplain administrator is familiar with mitigation grants but not the qualification criteria.*

*If there are properties in Troutdale that meet the "Benefit Cost Analysis" for qualifying for a mitigation grant it would be worthwhile to learn more. The floodplain administrator receives repetitive loss data each year but is not familiar enough with the Benefit Cost Analysis to conduct one on the repetitive loss properties or even provide the owner with information.*

## **F. Questions**

1. What are some of the more common questions that you get from applicants and residents? Do you feel comfortable answering those questions? What sort of material can DLCD provide to assist with answering these questions?

*Common questions heard by the floodplain administrator:*

*How can I be in the 100-year floodplain when my property didn't even flood in the Christmas Day 1965 flood and 1996 flood?*

*The floodplain administrator is comfortable answering this question. It would be helpful to have a letter from DLCD that explains that the 1965 and 1996 floods were not a one percent annual chance flood everywhere along the Sandy River, which is the floodplain administrator's understanding.*

How am I supposed to anchor a shed?

*The floodplain administrator is not comfortable responding to this question and has not been able to find a satisfactory response in FEMA publications.*

See ASCE 24 and ASCE 7

Why do I need a Flood Hazard Permit for a septic tank?

Why do I need a Flood Hazard Permit for a gas line?

*The floodplain administrator is somewhat confident in responding to these questions as they pertain to the fact that all development in the SFHA must comply with NFIP standards. Assistance from DLCD in the form of more detailed instructions would be useful. Also assistance from DLCD to communicate the NFIP standards that apply to these utilities to the City of Portland Environmental Services staff that reviews DEQ permits for onsite sanitation and water wells throughout Multnomah County.*

Agree. I get many questions. A jointly produced State guidance would be helpful.

Why do I need a Flood Hazard Permit to replace windows?

*The floodplain administrator is comfortable answering this question: it relates to determining if the improvement is substantial.*

Why is the floodplain higher today than it was when I bought the house?

*The floodplain administrator is comfortable responding to this question. Responses are based upon FEMA's switch from the NGVD 29 datum to NAVD 88 datum as part of the map modernization program. The new FIRMs and FIS were adopted December 18, 2009 in Troutdale. The conversion for the vertical adjustment in Multnomah County is to add 3.43 feet to the NGVD 29 datum to get the NAVD 88 elevation per page 65 of the FIS for Multnomah County, Oregon. The actual floodplain elevation is not physically higher on the land but the reference number for the elevation is higher because of a different reference gauge is now used. For example, there are two common temperature gauges used in North America: Celsius and Fahrenheit. Water freezes at zero degree Celsius and 32 degrees Fahrenheit but the properties of the water did not change.*

2. What questions do you have about the NFIP and its requirements?

*NFIP requirements are very complex. Does NFIP have a cadre of Certified Floodplain Managers for each Community in the NFIP to review plans for development in the SFHA as a service to the NFIP communities?*

FEMA Region X does have floodplain managers assigned to Oregon. Mike Riedy has been assigned to the Troutdale area. 425-487-4654

3. What can DLCD do to assist you with administering the program?

*Some of the standards in the Troutdale Development Code for development in the Special Flood Hazard Area (one percent annual chance flood) have some gaps in providing clear and objective standards for the local floodplain manager's use. Assistance from DLCD in identifying those gaps and recommended amendments would be appreciated.*

*Anything DLCD can do to assist the City in obtaining the necessary data to establish a BFE in all the approximate A zones in the City would be appreciated. In September 2009, the City of Troutdale requested FEMA Region X's assistance to re-map the Sandy River floodplain in Troutdale and establish a BFE for A zone areas that are zoned for development: residential, commercial and industrial development. A study is now underway for a revision to the FIRM and FIS for the lower Columbia and Sandy Rivers but it does not cover the approximate Zone A areas of Arata Creek and Beaver Creek.*

*The approximate A zones in Troutdale are within important industrial, commercial and residential areas of the City. See attached map.*

*Assistance for the GIS Analyst for the City to incorporate FEMA dFIRM layers with City GIS would be appreciated. Who is the contact with FEMA to work with local City GIS people?*

Start with Steve Lucker at DLCD.

4. What training do you need?

*At a minimum, all designated floodplain administrators, the Community Development Director, the Public Works Director, the Chief Engineer, the Building Official, the Building Inspector, the Plumbing Inspector and the Electrical Inspector should take the FEMA course: Managing Floodplain Development through the National Flood Insurance Program. The current floodplain administrator completed this training December 3, 2009.*

*Additional training for the current floodplain administrator needed includes:*

- *Training in how the NFIP standards applies to utilities, water lines, sewer lines, septic systems or sanitary drain fields and water wells in the SFHA. The staff at the City of Portland Environmental Services wears the DEQ hat for approval of permits for wells, septic systems or sanitary drain fields in Multnomah County, including incorporated city-limits. The Portland staff has indicated to the floodplain administrator that not all NFIP standards are evaluated before permits are issued. The floodplain administrator has attempted to explain that the installation of septic and well systems must comply with NFIP standards for utilities. Training for the City of Portland Environmental Services staff is also needed. This training would be beneficial for the City's Public Works and plumbing inspector.*
- *How to interpret the BFE for properties that are affected by two flooding sources.*
  - Use most stringent
- *Regulating development in approximate A-zones.*
  - Use LOMA process to get FEMA to establish BFE (< 5 acres)
  - Army Corps?
  - DOGAMI method where LiDAR is available
- *Clarification as to whether a Flood Hazard Permit is required in the absence of a LOMA if the area being developed is less than five acres and it is easily determined to be above the BFE through comparing a good topographic map or LiDAR with the FIRM map.*
  - If the area is on the FIRM, plan view, then a LOMA is required to remove it from the SFHA, even if it is obviously above BFE.
- *Standards that apply to construction of accessory structures in the SFHA.*
  - *In residential zones.*
  - *In commercial or industrial zones or for non-residential uses.*

# Exhibit B

## PROPOSED TEXT AMENDMENTS TO THE FLOOD MANAGEMENT DEFINITIONS of the TROUTDALE DEVELOPMENT CODE

for compliance with the 2013 Community Assistance Visit Report Of October 11, 2013  
issued by the State of Oregon Department of Land Conservation and Development / National  
Flood Insurance Program Coordinator

### CHAPTER 1 INTRODUCTORY PROVISION SECTION 1.040

#### 1.040 Vegetation Corridor and Slope District, and Water Quality and Flood Management Definitions.

- .01 100-Year Flood. The flood that is equaled or exceeded once in 100 years on the average; equivalent to the one percent annual chance flood. Also called the Special Flood Hazard Area, Base Flood, and 100-year floodplain.
- .02 Appeal. A request for a review of the Director's interpretation of any provision of this code or request for a variance from requirements of chapter 4.600, Flood Management Area, of this code.
- .03 Bankfull Stage. As defined in the Oregon Administrative Rules pertaining to removal/fill permits, the stage or elevation at which water overflows the natural banks of a stream or other waters of the state and begins to inundate upland areas. In the absence of physical evidence, the two-year recurrent flood elevation (storm level) may be used to approximate the bankfull stage. The bankfull stage is the starting point for measuring the width of a vegetation corridor from a protected water feature. In the absence of any data to establish the bankfull stage or two-year storm event, the starting point for measuring the vegetation corridor is determined by the following indicators:
  - a. Water marks on fixed objects (vegetation, rocks, buildings, etc.);
  - b. Drift lines (deposited waterborne twigs, litter, etc.); or
  - c. Waterborne sediment deposits on the soil surface or fixed objects (vegetation, rocks, buildings, etc.)
- .04 Base Flood. A flood having a one percent chance of being equaled or exceeded in any given year. Also referred to as the "100-year" flood.
- .05 Basement. Any area of the building having its flood subgrade (below ground level) on all sides.
- .06 Conservation Easement. An easement applied to environmentally sensitive lands including, but not limited to, lands identified as hillsides, wetlands,

floodplains, and floodways. The field verification shall be done by a licensed surveyor, engineer, hydrologist, or any other licensed specialist in the fields of engineering, hydrology, or botany. A conservation easement prohibits most forms of development and assures that native vegetation will be maintained or enhanced. Conservation easements usually affect privately owned land and are enforceable by the City. Trails and limited public facilities may be permitted under carefully controlled conditions within conservation easements.

- .07 Construction, Start of. Start of construction includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction on a site, such as the pouring of slab or footings, paving a parking lot, installation of piles, 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; installation of streets and/or walkways; excavation for a basement, footings, piers, or foundation; erection of temporary forms; or installation of accessory buildings on the property, such as garages or sheds not occupied as dwelling units or not part of the main structure.
- .08 Debris. Debris includes discarded manmade objects and may include tires, vehicles, litter, scrap metal, construction waste, lumber, plastic, or styrofoam. Debris does not include objects necessary to a use allowed by this code, or ornamental and recreational structures. Debris does not include existing natural plant materials or natural plant materials which are left after flooding, downed or standing dead trees, or trees which have fallen into protected water features.
- .09 Department of Environmental Quality (DEQ) Water Quality Standards. DEQ water quality standards are the numerical criteria or narrative condition needed in order to protect an identified beneficial use.
- .10 Design Flood Elevation. The elevation of the 100-year storm as defined in the Federal Emergency Management Agency Flood Insurance Studies or, in areas without Federal Emergency Management Agency floodplains, the elevation of the 25-year storm or the edge of mapped flood-prone soils or similar methodologies.
- .11 Developer. The owners of property, their agents or contractors, or their successors and assigns, who have undertaken or are proposing development which is regulated by chapters 4.300, Vegetation Corridor and Slope District; 4.600, Flood Management Area; 5.600, Erosion Control and Water Quality Standards; and 5.800, Stormwater Management, of this code.

- .12 Development. Any manmade change to improved or unimproved real estate including, but not limited to, construction, installation, or change of a building or structure; land division; storage on the land; tree cutting; drilling; and site alteration such as that due to land surface mining, dredging, grading, paving, excavating, or clearing. ~~Development[EM1]~~ does not include the following:
- a. ~~Stream enhancement or restoration projects approved by any of the following: Oregon Division of State Lands, Oregon Department of Fish and Wildlife, U.S. Army Corps of Engineers, the City, or Multnomah County.~~
  - b. Farming practices and farm use, as defined in the Oregon Revised Statutes, which were actively occurring prior to December 1999, and all modifications to existing buildings. Construction of new buildings associated with farm practices and farm uses are subject to the requirements of section 5.080, Agricultural Use Permitted, and subsection 5.611(E) of this code.
- .13 Disturb. Any manmade changes to the existing physical status of the land which are made in connection with development. The following uses are excluded from the definition:
- a. Enhancement or restoration of the Water Quality Resource Area.
  - b. Planting native cover identified in the Metro Native Plant List.
- .14 Elevation Certificate. A form supplied by the Federal Emergency Management Agency (FEMA) and used to document the lowest floor elevation of a building.
- .15 Emergency. Any manmade or natural event or circumstance causing or threatening loss of life, injury to person or property, and includes, but is not limited to, fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation disruptions, and disease.
- .16 Engineer. A registered professional engineer licensed by the State of Oregon.
- .17 Enhancement. The process of improving upon the natural functions and/or values of an area or feature which has been degraded by human activity. Enhancement activities may or may not return the site to a pre-disturbance condition, but create/recreate processes and features that occur naturally.

- .18 Erosion. Erosion is the detachment and movement of soil particles, rock fragments, or other material, organic or inorganic, resulting from actions of water, wind, human, or animal activity.
- .19 Erosion Prevention and Sediment Control Plans, Technical Guidance Handbook. The reference authority for erosion control, abbreviated as “The Handbook”, published by the City of Portland Bureau of Environmental Services and Unified Sewerage Agency of Washington County. The most current edition shall be used. The Community Development Director and Public Works Director may also develop regulations and procedures in accordance with “The Handbook” to implement erosion control measures as needed.
- .20 Erosion, Visible or Measurable. Visible or measurable erosion includes, but is not limited to:
- a. Deposits of mud, dirt sediment, or similar material exceeding one-half cubic foot in volume on public or private streets, adjacent property, or onto the storm and surface water system, either by direct deposit, dropping discharge, or as a result of the action of erosion.
  - b. Evidence of concentrated flows of water over bare soils, turbid or sediment laden flows, or evidence of onsite erosion such as rivulets on bare soil slopes where the flow of water is not filtered or captured on the site.
  - c. Earth slides, mudflows, earth sloughing, or other earth movement that leaves the property.
- .21 Excavation. Any act by which soil or rock is cut into, dug, quarried, uncovered, removed, displaced, or relocated.
- .22 Federal Emergency Management Agency (FEMA), ~~Department~~ of Homeland Security. An independent federal agency reporting to the President. FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or manmade disasters and providing disaster assistance to states, communities, and individuals. FEMA administers the National Flood Insurance Program (NFIP).
- .23 Fill. Any material such as, but not limited to, sand, soil, rock, gravel, clay, or mud that is placed on a site for the purposes of development or redevelopment.
- .24 FIRM. See Flood Insurance Rate Map.

- .25 Flood or Flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from:
- a. The overflow of inland or tidal waters; and/or
  - b. The unusual and rapid accumulation of runoff of surface waters from any source.
- .26 Flood Insurance Rate Map (FIRM). The official map of a community for which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.
- .27 Flood Insurance Study (FIS). A report published by FEMA that provides detailed information on a community's flood hazard areas. The FIS normally includes topographic information, floodplain and floodway data charts, study information, and stream profiles.
- .28 Flood Management Area (FLMA). All lands contained within the 100-year floodplain and floodway as shown on the Flood Insurance Rate Map, and the area of inundation for the February 1996 flood. In addition, all lands which have documented evidence of flooding.
- .29 Floodplain. Any land area, such as the lowland and relatively flat areas adjoining inland waters, susceptible to being inundated by water from any source, including land that may be covered temporarily by water as a result of a storm event.
- .30 Floodplain, 100-Year. See Base Flood.
- .31 Floodway. The portion of a watercourse required for the passage or conveyance of a given storm event as identified and designated on the Flood Insurance Rate Map as produced by the Federal Emergency Management Agency. The floodway shall include the channel of the watercourse and the adjacent floodplain that must be reserved in an unobstructed condition in order to discharge the base flood without increasing the flood levels by more than one foot.
- .32 Invasive Non-native or Noxious Vegetation. Plant species that are listed as nuisance plants or prohibited plants on the Metro Native Plant List as adopted by Metro Council resolution because they are plant species that have been introduced and, due to aggressive growth patterns and lack of natural enemies in the area where introduced, spread rapidly into native plant communities.

- .33 Joint Fill Permit/404 Removal/Fill Permit. A permit issued jointly by the Oregon Division of State Lands and U.S. Army Corps of Engineers to allow, with conditions and mitigation, the removal or fill of wetlands determined to be of either local or state significance by the Oregon Division of State Lands.
- .34 Lowest Floor. The lowest floor of the lowest enclosed area of a building (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 the flood hazard regulations.
- .35 Mitigation. The reduction of adverse effects of a proposed project by considering, in this order:
- a. Avoiding the impact altogether by not taking a certain action or parts of an action;
  - b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
  - c. Rectifying the impact by repairing, rehabilitating, or restoring the effected environment;
  - d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action by monitoring and taking appropriate measures; and
  - e. Compensating for the impact by replacing or providing comparable substitute water quality resource areas.
- .36 Mulch. Application of plant residue, netting, or other suitable materials to the land surface to conserve moisture, hold soil in place, and aid in establishing plant cover.
- .37 NAVD 88. The North American Vertical Datum of 1988 (NAVD 88) is the vertical control datum established in 1991 by the minimum-constraint adjustment of the Canadian-Mexican-U.S. leveling observations. This is the data used on FIRMs and in flood insurance studies adopted in 2009.
- .38 NGVD 29. "The National Geodetic Vertical Datum of 1929: The name, after May 10, 1973, of (the) Sea Level Datum of 1929." (Vertical control datum established for vertical control in the United States by the general adjustment

of 1929.) This is the datum used on FIRMs and in flood insurance studies prior to 2009.

- .39 National Flood Insurance Program (NFIP). A federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.
- .40 Native Vegetation or Native Plant. Vegetation listed as a native plant on the Metro Native Plant List as adopted by Metro Council resolution and any other vegetation native to the Portland metropolitan area provided that it is not listed as a nuisance plant or a prohibited plant on the Metro Native Plant List.
- .41 National Wetland Inventory (NWI) Map. The City is mapped on the Camas and Washougal, Washington-Oregon wetland maps prepared by the U.S. Department of the Interior, Fish and Wildlife Service.
- .42 NPDES Permit. The National Pollutant Discharge Elimination System 1200-C Permit is a State of Oregon, Department of Environmental Quality permit that covers federal stormwater regulations as they pertain to construction activities in Oregon. The permit is administered by the City.
- .43 ODFW Construction Standards. The Oregon Department of Fish and Wildlife construction guidelines for building roads, bridges, and culverts, or any transportation structure within a waterway.
- .44 One Percent Annual Chance Flood. The flood that has a one percent chance of being equaled or exceeded on the average in any given year; equivalent to the 100-year flood.
- .45 Open Space. Land that is undeveloped and that is planned to remain so indefinitely. The term encompasses parks, forests, and farmland. It may also refer only to land zoned as being available to the public, including playgrounds, watershed preserves, and parks.
- .46 Perennial Streams. All primary and secondary perennial waterways mapped by the U.S. Geological Survey, having year-round flow.
- .47 Practicable. Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose.
- .48 Pre-FIRM Structures. Buildings that were built before ~~September 30, 1988~~ September 30, 1988, the date the Community entered into the Regular Program of the National Flood

Insurance Program the flood risk was known and identified on the community's FIRM.

- .49 Protected Water Features, Primary. Includes:
- a. Title 3 wetlands.
  - b. Rivers, streams (creeks or brooks) and drainages downstream from the point at which 100 acres or more are drained to that water feature (regardless of whether it carries year-round flow).
  - c. Streams carrying year-round flow.
  - d. Springs which feed streams and wetlands and have perennial (year-round) flow.
  - e. Natural lakes.
- .50 Protected Water Features, Secondary. Includes intermittent streams and seeps downstream of the point at which 50 acres are drained and upstream of the point at which 100 acres are drained to that water feature.
- .51 Restoration. The process of returning a disturbed or altered area or feature to a previously existing natural condition. Restoration activities reestablish the structure, function, and/or diversity to that which occurred prior to impacts caused by human activity.
- .52 Resource. A functioning natural system such as a wetland or stream.
- .53 Riparian. Those areas associated with streams, lakes, and wetlands where vegetation communities are predominately influenced by their association with water.
- .54 Routine Repair and Maintenance. Activities directed at preserving an existing allowed use or facility, or nonconforming use, without expanding the development footprint or site use.
- .55 Sediment. Any material that is in suspension, is being transported, or has been moved from its site of origin by water, wind, or gravity as a result of erosion.
- .56 Site. The lot, or contiguous lots, under the same ownership that are subject to a development permit or erosion control plan.

- .57 Slope District. Slopes of 25% or greater throughout the City that have a minimum horizontal distance of 50 feet. Engineered slopes associated with public streets or roads are not included.
- .58 Special Flood Hazard Area (SFHA). The term used by the National Flood Insurance Program for areas inundated by 100-year flood. The SFHA is mapped on the flood insurance rate maps (FIRM). The SFHA is the area where floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.
- .59 Statewide Planning Goal 5. Oregon's statewide planning goal that addresses open space, scenic and historic areas, and natural resources. The purpose of the goal is to conserve open space and protect natural and scenic resources.
- .60 Statewide Planning Goal 6. Oregon's statewide planning goal that addresses air, water, and land resources quality to "maintain and improve the quality of the air, water, and land resources of the state" as implemented by the Land Conservation and Development Commission (LCDC).
- .61 Statewide Planning Goal 7. Oregon's statewide planning goal that addresses areas subject to natural disasters and hazards to "protect life and property from natural disasters and hazards" as implemented by the Land Conservation and Development Commission.
- .62 Stockpile. Onsite storage of any soil, sand, gravel, clay, mud, debris, vegetation, refuse, or any other material, organic or inorganic, in a concentrated state.
- .63 Stream. A body of running water moving over the earth's surface in a channel or bed, such as a creek, rivulet, or river, that flows at least part of the year, including perennial and intermittent streams. Streams are dynamic in nature and their structure is maintained through build-up and loss of sediment.
- .64 Stream Bank, Top of. See Bankfull Stage.
- .65 Structure. A building or other improvement that is built, constructed, or installed.
- .XX Substantial Damage. Substantial damage is damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
- .66 Substantial Improvement.

- a. There are three occasions when work on an existing building is considered a substantial improvement.
  - 1. Any improvement of a structure, the cost of which exceeds 50% of the market value of the structure.
  - 2. Reconstruction or repair of a building, that exceeds 50% of the market value of the structure before it was damaged.
  - 3. Additions to an existing structure when the addition increases the market value of a structure by more than 50% or the floor area by more than 20%.
- b. The term does not include:
  - 1. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
  - 2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

.67 Surface Water Management System. All natural and constructed facilities used to regulate the quantity and quality of surface water, including drainage easements, culverts, storm drains, catch basins, drainage ditches, natural drainageways, stream corridors, rivers, ponds, wetlands, and impoundments.

.68 Title 3. Title 3 is part of the Metro Urban Growth Management Functional Plan pertaining to water quality, flood management, and fish and wildlife conservation, and directly pertains to Statewide Planning Goals 5, Open Spaces, Scenic and Historic Areas, and Natural Resources; 6, Air, Water, and Land Resources Quality; and 7, Areas Subject to Natural Disasters and Hazards.

69 Vegetation, Approved. Vegetation which typically does not require irrigation or fertilization because it is adapted to natural soil, water, and climatic conditions. The list of approved vegetation species is based on the Metro Native Plant List, and is on file in the Community Development Department.

.70 Vegetation Corridor. The undisturbed area between a development and a protected water feature as designated in sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code, or slopes of 25% or greater throughout the City, except engineered slopes associated with public streets or roads.

- .71 Vegetation, Invasive, Non-Native, or Noxious. Plant species that have been introduced and due to aggressive growth patterns and lack of natural enemies in the area where introduced, spread rapidly into native plant communities, or which are not listed on the Metro Native Plant List.
- .72 Vegetation, Native. Any vegetation native to the Portland Metropolitan Area or listed on the Metro Native Plant List.
- .73 Water-dependent. A use which can be carried out only on, in or adjacent to water because it requires access to the water for waterborne transportation or recreation. Water-dependent also includes development which by its nature can be built only on, in, or over water. Bridges supported by piers or pillars as opposed to fill are water-dependent development.
- .74 Water Features. See Protected Water Features, primary and secondary.
- .75 Water Quality Facility. A created or constructed structure or drainageway that is designed, constructed, and maintained to collect, filter, retain, or detain, surface water runoff during and after a storm event for the purpose of stormwater management and water quality improvement. The facility may take on characteristics of a wetland, but it does not become a resource.
- .76 Watershed. A geographic unit defined by the flows of rainwater or snowmelt. All land in a watershed drains to a common outlet, such as a stream, lake, or wetland.
- .77 Wetlands. Areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are those areas identified and delineated by qualified wetland specialists as set forth in the 1987 Corps of Engineers Wetland Delineation Manual.
- a. Wetland determinations. The identification of an area as either wetland or non-wetland.
  - b. Wetlands, constructed. Wetlands developed as a water quality or quantity facility, subject to change and maintenance as such. These areas must be clearly defined and/or separated from naturally occurring or created wetlands.

- c. Wetlands, created. Those wetlands developed in an area previously identified as a non-wetland to replace or mitigate wetland destruction or displacement. A created wetland shall be regulated and managed the same as an existing wetland.
  
- d. Wetlands, Title 3. Wetlands of metropolitan concern as shown on the Metro Water Quality and Flood Management Overlay District Map and other wetlands not mapped but determined significant by the Oregon Department of State Lands, consistent with the criteria in Title 3, Section 7.C. of the Metro Urban Growth Management Functional Plan. Title 3 wetlands include created wetlands approved and monitored by the Oregon Department of State Lands and U.S. Army Corps of Engineers. Title 3 wetlands do not include artificially constructed and managed stormwater and water quality treatment facilities.

[Adopted by Ord. 550, ef. 9/25/90; Amended by Ord. 607, ef. 8/11/94; Amended by Ord. 702, ef. 11/24/00; Amended by Ord No. 798, ef. 12/18/09; Amended by Ord. 814, ef. 7/12/2012]

CHAPTER 4.600 FLOOD MANAGEMENT AREA TEXT AMENDMENTS

**4.600 FLOOD MANAGEMENT AREA**

**FLMA**

4.610 Purpose. The purpose of this chapter is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions or degradation of water quality in specific areas by provisions designed to:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;
- E. 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;
- F. 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;
- G. Ensure that potential buyers are notified that property is in an area of special flood hazard;
- H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;
- I. Maintain and improve water quality;
- J. Minimize erosion and loss of native vegetation;
- K. Maintain wetlands, including swamps, marshes, bogs, and similar areas within the City, because wetlands help to maintain water quality and flood storage capacities; and
- L. Avoid any increase in base flood elevations as a result of development;
- M. Comply with Statewide Planning Goal 7 Areas Subject to Natural Disasters and Hazards. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.611 Methods of Reducing Flood Losses and Maintaining Water Quality. This chapter includes methods and provisions for:

- A. 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, flood heights, or velocities.
- B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- C. Controlling the alteration of natural, floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters.
- D. Controlling filling, grading, dredging, and other development which may increase flood damage.
- E. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or may increase flood hazards in other areas.
- F. Maintaining and reintroducing approved vegetation which minimizes erosion and helps to maintain and improve water quality.
- G. Coordinating and supplementing the provisions of the state building code. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.612 Applicability.

- A. This chapter shall apply to all development of land within the Flood Management Area (FLMA) and wetlands within the planning jurisdiction of the City, which includes land in unincorporated Multnomah County within the City's Urban Planning Area.
- B. The Flood Management Area development standards apply to the 100-year floodplain as mapped by the Department of Homeland Security, Federal Emergency Management Agency (FEMA) on the county-wide Flood Insurance Rate Map (FIRM) covering the cities of Fairview, Gresham, Troutdale and Wood Village, and the unincorporated areas of Multnomah County and titled: "FIRM Flood Insurance Rate Map, Multnomah County, Oregon and Incorporated Areas, Map Number 41051C," effective December 18, 2009, areas of flooding in 1996 as mapped by Metro, and wetlands. The FIRM is supported by county-wide Flood Insurance Study Number 41051CV000A, effective December 18, 2009, entitled "Flood Insurance Study, Multnomah County, Oregon and Incorporated Areas," published by FEMA, covering the cities of Fairview, Gresham, Troutdale, and Wood Village, and the unincorporated areas of Multnomah County. Metro mapped

the flood hazard areas from the Flood Insurance Rate Map and areas inundated by flooding in 1996 on the Title 3 map. The Title 3 maps, the Flood Insurance Study, and the Flood Insurance Rate Map are adopted for reference only. The applicant for development within this area shall be responsible for precisely establishing base flood elevations and delineating the boundaries of the Flood Management Area based upon site-specific field surveys and delineations certified by a licensed engineer or surveyor. Contested base flood elevations are to be reviewed under the provisions of subsection 4.613(C) of this chapter. The City will keep a record of all surveys, delineations, and any Letter of Map Amendments (LOMA) approved by the Federal Emergency Management Agency, as revisions to the local copy of the Title 3 map. The City will submit this information to Metro for future updates of the Title 3 map. A field survey shall consist of the following:

1. 100-year floodplain boundaries, and the base flood elevation based upon the North American Vertical Datum of 1988 (NAVD 88).
2. The 1996 flood boundaries established by Metro.
3. Floodway boundaries as determined by datum available from the FIRM and Flood Insurance Study.
4. The name, location, and dimensions of affected streams or rivers, and the bankfull stage or the two-year storm level.
5. The area comprising the vegetation corridor as established by sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code.
6. Wetlands that are determined significant by the Oregon Division of State Lands or have the following characteristics. All wetland determinations made prior to development must be reviewed and acknowledged by the Oregon Division of State Lands prior to issuance of City permits. The characteristics shall be determined by a qualified scientist.
  - a. The wetland is fed by surface flows, sheet flows, or precipitation; has evidence of flooding during the growing season; at least 60% of the area is vegetation; and is over one-half acre in size; or, the wetland qualifies as having "intact water quality function" under the 1996 Oregon Freshwater Wetland Assessment Methodology; or
  - b. The wetland is in the Flood Management Area; has evidence of flooding during the growing season; is five acres or more in size; and has a restricted outlet or no outlet; or, the wetland qualifies as having "intact

hydrologic control function” under the 1996 Oregon Freshwater Wetland Assessment Methodology; or

- c. The wetland, or a portion of the wetland, is within a horizontal distance of less than one-fourth mile from a water body which meets the Department of Environmental Quality definition of “water quality limited water body” in OAR Chapter 340, Division 41 (1996).
- C. **Warning and Disclaimer of Liability.** The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This code 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 damage. This code shall not create liability on the part of the City, any officer or employee thereof, or the Federal Insurance Administration, for any damages that result from reliance on this code or any administrative decision lawfully made hereunder. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.613 Administration and Interpretation of Flood Insurance Rate Map Boundaries and Edge of Bankfull Stage or Two-Year Storm Level.

- A. The Community Development Director, or designee, is the Local Administrator and shall implement the provisions and standards of the National Flood Insurance Program, the standards of this chapter, and make interpretations, where needed, as to the exact location of the boundaries of the floodplain (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). In the interpretation and application of this chapter, all provisions shall be:
  - 1. Considered as minimum requirements;
  - 2. Judged by established historical facts of flooding as known by, or made known to, the governing body;
  - 3. Deemed neither to limit nor repeal any other powers granted under state statutes; and
  - 4. Defined in section 1.040, Vegetation Corridor and Slope District, and Water Quality and Flood Management Definitions, of this code.
- B. **Use of Other Base Flood Data.** When base flood elevation data is not available through the Flood Insurance Study, FIRM, or has not been provided in accordance with section 4.612, Applicability, of this chapter, the City may obtain, review, and utilize any reasonable base flood elevation and floodway data available from the

developer or property owner, or a federal, state, or other source, in order to manage development within the Flood Management Area. The test of reasonableness shall be based upon historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate the lowest floor at least two feet above grade in these zones may result in higher insurance rates.

- C. Contested Boundaries. A person contesting the location of the boundary has the opportunity to submit a Letter of Map Amendment directly to the Federal Emergency Management Agency to change the Flood Insurance Rate Map mapping of their property. If a land use application is submitted before a Letter of Map Amendment is approved by the Federal Emergency Management Agency, the application will be processed under the standards of this chapter. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

#### 4.614 Uses Within the Floodplain but Outside the Floodway and Outside Wetlands.

##### A. Prohibited Uses.

1. Any prohibited use in the underlying zoning district.
2. Excavation, fill, or vegetation removal without an approved land use permit.
3. Expansion of legal nonconforming uses.
4. Outside storage of hazardous materials as defined by the Department of Environmental Quality.
5. No new land divisions will be approved for properties exclusively within the floodplain or that propose to create a buildable lot that is exclusively within the floodplain.

##### B. Permitted Uses.

1. Any use permitted in the underlying zoning district, subject to the standards for development outlined in section 4.617, Development Standards, of this chapter, including stormwater management facilities developed in accordance with the standards of chapter 5.800, Stormwater Management, of this code.
2. Open space, trails, walkways, and bike paths-as designated by the Troutdale Parks Plan, or as approved with a land use application and constructed in compliance with subsection 4.315D of this code.
3. Removal of refuse and unauthorized fill.

4. Removal of nuisance or invasive plant species, and/or the restoration of approved plant species on the Metro Native Plant List kept on file at the Community Development Department.
5. Removal of dead or dying trees that are an imminent danger to public safety as determined by a certified arborist or the equivalent.
6. Construction of new roadways and utilities necessary to support permitted development within and outside the Flood Management Area, subject to the standards of section 4.617, Development Standards, of this chapter and the construction standards on file in the Public Works Department or the applicable jurisdiction of the roadway.
7. New culverts, stream crossings, and transportation projects may be permitted if designed as balanced cut and fill projects, or designed to not significantly raise the design flood elevation, and in compliance with the standards of section 4.617, Development Standards, of this chapter. Such projects shall be designed to minimize the area of fill in Flood Management Areas and to minimize erosive velocities. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable.
8. Excavation and fill required for the construction of detention facilities or structures, and other facilities such as levees specifically designed to reduce or mitigate flood impacts. Levees shall not be used to create vacant buildable land.
9. Emergency temporary bank stabilization necessitating immediate action during a flood event to prevent the loss of an existing structure, or to repair a bank damaged during a natural flooding event.
10. Routine repair and maintenance of existing structures (conforming and nonconforming uses), streets, driveways, utilities, culverts, drainageways and levees constructed for flood control, accessory uses, and other existing development on the site (including landscaped yards, decks, patios, boat ramps, etc.).
11. Rehabilitation or replacement of a structure that is damaged or destroyed to any extent, whether it is partially or fully within the Flood Management Area, and in compliance with section 4.619, Prescribed Conditions for the Rehabilitation or Replacement of Pre-Existing Structures, of this chapter. Any structure or use deliberately removed or demolished may not be restored,

replaced, or rebuilt, except in compliance with all applicable provisions of the Development Code, federal, state, and county regulations.

12. Any development that must implement a Federal Aviation Administration (FAA) compliant wildlife hazard management plan on property owned by the Port of Portland or within 10,000 feet of an Aircraft Operating Area, as defined by the FAA, and removal of trees that interfere with the landing or takeoff flight path of aircraft at the Troutdale Airport or otherwise interferes with the safe operation of the airport as determined by the Port of Portland. The removal of trees that interfere with the operation of the Troutdale Airport are permitted outright. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.615 Uses within the Floodway or within Wetlands.

A. Prohibited Uses within the Floodway or within Wetlands. Unless specifically permitted under this section, the following uses are prohibited within floodways and wetlands:

1. Manmade structures.
2. Vegetation removal, fill, or excavation.
3. Private road construction.
4. Alterations and relocations of the watercourses of Arata, Salmon, or Beaver Creeks, the Sandy and Columbia Rivers, or the watercourse of any unnamed perennial or intermittent stream except as provided for in subsection (B)(12) of this section and section 4.617(O) of this chapter.
5. Fill of wetlands without both an approved land use application and an approved Joint Fill Permit issued by the Oregon Division of State Lands and the U.S. Army Corps of Engineers.
6. Storage of uncontained hazardous materials as defined by the Department of Environmental Quality.
7. Expansion of nonconforming uses.
8. New installation of manufactured dwellings.

B. Permitted Uses within the Floodway or within Wetlands. The following uses are permitted subject to review under the standards for development of section 4.617, Development Standards, of this chapter:

1. Open space, trails, walkways, and bike paths, as designated by the Troutdale Parks Plan, or as approved with a land use application.
2. Removal of refuse and unauthorized fill.
3. Projects for stream habitat restoration, removal of nuisance or invasive plant species, and/or the restoration of approved plant species from the Metro Native Plant List subject to the approval of a removal/revegetation plan prepared by a licensed landscape architect, landscape designer, botanist, or arborist with specific knowledge of native plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation in compliance with chapter 5.600, Erosion Control and Water Quality Standards, of this code. A copy of the Metro plant list is available from the Planning Division.
4. Removal of dead or dying trees that are an imminent danger to public safety as determined by a certified arborist or the equivalent.
5. Routine repair and maintenance of existing structures (conforming and nonconforming uses), streets, driveways, utilities, culverts, drainageways and levees constructed for flood control by the Sandy Drainage Improvement Company or its successor, accessory uses, and other existing development on the site (including landscaped yards, decks, patios, boat ramps, and the operation, maintenance, and repair of manmade water control facilities such as irrigation and drainage ditches, constructed ponds or lakes, wastewater facilities, and stormwater quality facilities, and similar development.
6. Construction, expansion, and/or maintenance of public roadways and public utility facilities necessary to support permitted development.
7. Balanced excavation and fill required for the construction of detention facilities or structures and other facilities such as levees specifically designed to reduce or mitigate flood impacts. Levees shall not be used to create vacant buildable lands.
8. New culverts, stream crossings, and transportation projects necessary to implement the City, County, or State Transportation System Plans or other development permitted under this chapter, and as applicable, meets the specifications of the Oregon Department of State Lands, Oregon Department of Fish and Wildlife, and federal regulations.
9. Permanent bank stabilization necessary to preserve an existing structure provided the balanced cut and fill standard is met if the work is in the

floodplain or a "No-Rise" certification if the work is within the floodway. Exception: Bank stabilization is not permitted for development on a vacant lot of record.

10. Emergency temporary bank stabilization necessitating immediate action during a flood event to prevent the loss of an existing structure. Following the flood event, the owner shall submit a plan to the City that outlines removal of the temporary bank stabilization or shall apply for a permit for permanent bank stabilization.
11. Fill of wetlands when there is no other practicable way to build on the site as established through subsection 4.617 of this chapter, and provided fill of wetlands within the floodplain is balanced with cut elsewhere within the floodplain, and a Fill/Removal Permit is issued from the Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (Corps), as applicable. The application to DSL and the Corps may be processed concurrently with a land use application for site and design review, land division, a planned development application, or a conditional use. A joint fill permit may be applied for prior to application for a land use permit. However, if a joint fill permit is approved by the Oregon Division of State Lands and the U.S. Army Corps of Engineers prior to applying for the land use application, fill may not proceed until the final decision for the land use application has been made by the City. Mitigation for fill of wetlands and the location of the mitigation shall be as prescribed by the DSL/Corps permit.
12. New drainageways, levees, or alteration of watercourses to accommodate public projects administered by the Sandy Drainage Improvement Company or its successor, the City, Multnomah County, the state, or a federal agency, provided it is in compliance with subsections 4.616(A) and 4.617(R) and (S) of this chapter.
13. Any development that must implement a Federal Aviation Administration (FAA) compliant wildlife hazard management plan on property owned by the Port of Portland or within 10,000 feet of an Aircraft Operating Area, as defined by the FAA, and removal of trees that interfere with the landing or takeoff flight path of aircraft at the Troutdale Airport or otherwise interferes with the safe operation of the airport as determined by the Port of Portland. The removal of trees that interfere with the operation of the Troutdale Airport are permitted outright. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.616 Permit Required. A Flood Hazard Permit is required for all development within the Flood Management Area ~~as EMS~~ defined in TDC Chapter 1 Introductory Provisions, Section

1.040 Vegetation Corridor and slope District, and Water Quality and Flood Management Definitions, except (EM6) as noted:

~~A. The following activities do not require a Flood Hazard Permit:~~

- ~~1. Routine repair of public streets and public utilities that occurs entirely within the right-of-way.~~
- ~~2. Routine repair of railroads that occurs entirely within the railroad right-of-way.~~
- ~~3. Flood management activities conducted by the Sandy Drainage Improvement Company (SDIC). Routine operations, repair, maintenance, reconfiguration, rehabilitation, or replacement of existing drainage and flood control facilities, and existing related facilities, including any structures, pump stations, water control structures, culverts, irrigation systems, roadways, utilities, accessory uses (such as off load facilities that facilitate water-based maintenance), erosion control projects, levees, soil and bank stabilization projects, dredging and ditch clearing within the hydraulic cross-section in existing storm water conveyance drainageways, or other water quality and flood storage projects applicable to existing facilities and required to be undertaken pursuant to ORS Chapters 547 or 554 or Titles 33 or 44 of the Code of Federal Regulations, provided that:
  - ~~a. These activities are conducted by the Sandy Drainage Improvement Company or its successor or designee;~~
  - ~~b. The activities are consistent with all other applicable local, state, and federal laws and regulations;~~
  - ~~c. The activities do not encroach closer to a surface stream or river, wetland, or other body of open water than existing operations and development;~~
  - ~~d. Disturbed areas are replanted with vegetation and no bare soils remain after project completion; the planting of native vegetation and removal of invasive non-native or noxious vegetation is encouraged; invasive non-native or noxious vegetation shall not be planted; and~~
  - ~~e. The SDIC or its successor submits an annual report to all local permitting agencies in which the district operates, describing the projects the district completed in the previous year and how those projects complied with all applicable federal and state laws and requirements.~~~~

4. The removal of refuse.
5. Removal of nuisance or prohibited plant species that exposes the ground, provided a revegetation plan approved or prepared by the City, state, a federal agency, Metro, SOLV, the West Multnomah Soil & Water Conservation District, or other similar organization, is carried out to provide shade and habitat, prevent erosion of steep slopes and/or sedimentation into the protected water feature. A copy of the plan shall be provided to the Planning Division prior to beginning the work.
6. Emergency tree removal. In the event that a tree poses an immediate danger to life or property, removal is allowed without a tree removal permit. Following the emergency, the owner shall provide the tree species, diameter, and approximate location on the property to the Planning Division.
7. Development within an area of the site that has been excluded from the Special Flood Hazard Area through a Letter of Map Amendment (LOMA) ~~or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the base flood elevation.~~
8. Continued use and maintenance of existing gardens or other landscaped areas, orchards or agricultural fields provided no fill is added to the floodplain.
9. Operation, maintenance, and repair of manmade water control facilities such as irrigation and drainage ditches, constructed ponds or lakes, wastewater facilities, and stormwater quality facilities. An expansion of these facilities will require a Type II Flood Hazard Permit.

~~B. A.~~ A Type I Flood Hazard Permit is required ~~prior to applying for building permits for the following:~~

- ~~1. Routine repair of public streets and public utilities that occurs entirely within the right-of-way.~~
- ~~2. Routine repair of railroads that occurs entirely within the railroad right-of-way.~~
- ~~3. Flood management activities conducted by the Sandy Drainage Improvement Company (SDIC). Routine operations, repair, maintenance, reconfiguration, rehabilitation, or replacement of existing drainage and flood control facilities, and existing related facilities, including any structures, pump stations, water control structures, culverts, irrigation systems, roadways, utilities, accessory uses (such as off-load facilities that facilitate water-based maintenance).~~

erosion control projects, levees, soil and bank stabilization projects, dredging and ditch clearing within the hydraulic cross-section in existing storm water conveyance drainageways, or other water quality and flood storage projects applicable to existing facilities and required to be undertaken pursuant to ORS Chapters 547 or 554 or Titles 33 or 44 of the Code of Federal Regulations, provided that:

- a. These activities are conducted by the Sandy Drainage Improvement Company or its successor or designee;
- b. The activities are consistent with all other applicable local, state, and federal laws and regulations;
- c. The activities do not encroach closer to a surface stream or river, wetland, or other body of open water than existing operations and development;
- d. Disturbed areas are replanted with vegetation and no bare soils remain after project completion; the planting of native vegetation and removal of invasive non-native or noxious vegetation is encouraged; invasive non-native or noxious vegetation shall not be planted; and
- e. The SDIC or its successor submits an annual report to all local permitting agencies in which the district operates, describing the projects the district completed in the previous year and how those projects complied with all applicable federal and state laws and requirements.

4. The removal of refuse.

5. Removal of nuisance or prohibited plant species that exposes the ground, provided a revegetation plan approved or prepared by the City, state, a federal agency, Metro, SOLV, the West Multnomah Soil & Water Conservation District, or other similar organization, is carried out to provide shade and habitat, prevent erosion of steep slopes and/or sedimentation into the protected water feature. A copy of the plan shall be provided to the Planning Division prior to beginning the work.

6. Emergency tree removal. In the event that a tree poses an immediate danger to life or property, removal is allowed without a tree removal permit. Following the emergency, the owner shall provide the tree species, diameter, and approximate location on the property to the Planning Division.

7. Development within an area of the site that has been excluded from the Special Flood Hazard Area through a Letter of Map Amendment (LOMA) or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the base flood elevation.
8. Continued use and maintenance of existing gardens or other landscaped areas, orchards or agricultural fields provided no fill is added to the floodplain.
9. Operation, maintenance, and repair of manmade water control facilities such as irrigation and drainage ditches, constructed ponds or lakes, wastewater facilities, and stormwater quality facilities. An expansion of these facilities will require a Type II Flood Hazard Permit.
- 1-7 Construction of a single-family dwelling, including the placement of a manufactured home or repair or alteration of existing single-family dwellings and manufactured homes. An elevation certificate and the information required in subsection (F) of this section shall be submitted with the Flood Hazard Permit application unless it is very clear on the plan view that the structure is on a portion of the site ~~that is naturally elevated one foot or more above the base flood elevation~~ outside the Special Flood Hazard Area. Single-family dwellings and manufactured homes shall be built in compliance with the applicable development standards in section 4.617, Development Standards, of this chapter.
- 2-8 Any use in the underlying zoning district requiring a Development Permit.
- 3-9 Emergency bank stabilization necessary to preserve an existing structure during an emergency. During the event the permit is not required; however, immediately following the event a Flood Hazard Permit shall be obtained that documents the bank stabilization measures taken during the emergency and the schedule and procedure that will be used to remove any temporary fill, including sand bags. If the stabilization measures will not be removed, a Type II Flood Hazard Permit will be required as well as a "No-Rise" certification and LOMR-F, if applicable.
- 4.—10. Projects for stream habitat restoration subject to the following standards:
  - a. The project qualifies for a U.S. Army Corps of Engineer's "Regional General Permit" for Stream Habitat Restoration (NWP-2007-1023) and complies with applicable Oregon Department of State Lands standards, as applicable; and
  - b. If within the floodway, a qualified professional (a Registered Professional Engineer) provides 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

- c. No structures would be impacted by a potential rise in flood elevation; and
- d. An agreement to monitor the project, correct problems, and ensure that flood carrying capacity remains unchanged is included in the application.

C.B. Type II site and design review and Flood Hazard Permit is required for:

1. Any use in the underlying zoning district requiring a Type II site and design review.
2. New or expanded streets or bridges.
3. New or expanded railroads or trestles.
4. Permanent bank stabilization or fill within the floodplain or floodway.
5. Balanced cut and fill activity within the floodplain, with a Letter of Map Revision--Fill.
6. Fill of wetlands, but if the wetland is outside of the floodplain, a Flood Hazard Permit is not required, only the Site and Design Review.

D.C. A Type III procedure and Flood Hazard Permit shall be processed for uses requiring a Type III review in the underlying zoning district, and for all special variances requested from the standards of this chapter.

E.D. A Type IV site and design review shall be processed for any proposed alteration of a watercourse of any perennial or intermittent streams.

F.—E. Submission Requirements. An application for development within the Flood Management Area shall include the following:

1. Topographic survey. Where development, excavation, or vegetation removal is proposed within the Flood Management Area, an on-the-ground topographical survey shall be prepared for the entire site. The survey shall show trees or tree clusters, existing roads, utilities, and structures with two-foot contours. The survey maps shall be provided by the property owner or applicant for development approval.

2. Base flood elevation data. Where base flood elevation data is provided through the City's Flood Insurance Study, or by other means as permitted in this chapter, the developer shall obtain and record the actual elevation lowest floor (including basement) of all new or substantially improved structures, including the placement of a manufactured home, and whether or not the structure contains a basement. This information shall be based upon NAVD 88 and provided on a City Flood Hazard Permit form.
  - a. For all new or substantially improved, elevated, or floodproofed structures, verify and record the actual elevation.
  - b. Where development occurs within Zone A of the Flood Management Area and the Base Flood Elevation (BFE) data is not available either through the Flood Insurance Study or from another authoritative source as authorized in subsection 4.613(B) of this chapter, the Flood Hazard Permit shall be reviewed for compliance with FEMA Publication 265 issued July 1995 "Managing Floodplain Development in Approximate Zone A Areas" and applicable State of Oregon building codes.
3. Hydrology and soils report. This report shall include information on the hydrological activities of the site, the effect of hydrologic conditions on the proposed development, and any hydrological or erosion hazards. This report shall also include characteristics of the soils on the site, suitability for development, its carrying capacity, and erosion or slumping characteristics that might present a hazard to life and property, or adversely affect the use or stability of a public facility or utility. Finally, this report shall include information on the nature, distribution, and strength of existing soils; the adequacy of the site for development purposes; and an assessment of grading procedures required to impose the minimum disturbance to the natural state. The report shall be prepared by a professional engineer registered in Oregon.
4. Grading plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain (two-foot intervals of property), drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, post-grading, and finished contours or elevations, including all cut and fill slopes and proposed drainage channels. Project designs including, but not limited to, locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission. The grading plan shall also include a construction phase erosion control plan and a schedule of operations and shall be prepared by a professional engineer registered in Oregon.

5. Vegetation report. This report shall consist of a survey of existing vegetation, whether it is native or introduced, and how it will be altered by the proposed development. Measures for enhancement of the site, including revegetation with approved plant species, will be clearly stated, as well as methods for immediate and long-term stabilization of slopes and control of soil erosion. The vegetation report shall be prepared by a landscape architect, landscape designer, botanist, or arborist with specific knowledge of approved plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation. The contractor for installation and maintenance will be responsible for replacing any approved plant species that do not survive the first two years after planting.
6. A "No-Rise" certification and a Letter of Map Revision-Fill (LOMR-F) shall be submitted with the land use application for the following activities within the floodway as mapped by FEMA:
  - a. Permanent bank stabilization that occurs in the floodway.
  - b. Development, alterations or relocations of the floodway, including any permanent fill within the floodway. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.617 Development Standards. The land use application shall establish through the use of narrative, site plans, and professional reports, the following:

- A. New development, including additions or alterations to existing structures, in the Flood Management Area may be allowed, provided that:
  1. The applicant shall demonstrate that there is no reasonable nor practical alternative design or method of development that would have a lesser impact on the Flood Management Area than the one proposed.
  2. If there is no reasonable nor practical alternative design or method of development the project shall be designed in compliance with applicable parts of subsections (C) through (U) of this section, so that the impacts on the Flood Management Area are limited and the plans shall include restoration, replacement, or rehabilitation of the vegetation within the Flood Management Area.
  3. The applicant shall provide mitigation to ensure that impacts to the functions and values of the vegetation corridor and integrity of the slope will be mitigated or restored to the extent practicable.

- B. A professional engineer registered in Oregon must certify that the development will not result in any increase in flood levels during the occurrence of the base flood discharge, and that water quality will not be adversely affected.
- C. As applicable, the development must be authorized by the Oregon Department of State Lands, U.S. Army Corps of Engineers, and the Oregon Department of Fish and Wildlife. The applicant shall obtain and submit a copy of all required state and federal permits for any proposed development in the Flood Management Area, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1334.
- D. Unless otherwise authorized under the provisions of this chapter, the development shall comply with the underlying zoning district dimensional standards and the minimum vegetation corridor as established in sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code.
- E. Protect the water quality resource and Flood Management Area functions and values from uncontained areas of hazardous materials as defined by the Department of Environmental Quality water quality standards.
- F. Limit impervious surface areas in the Flood Management Area.
  - 1. The impervious surface of the development may not exceed 30% of the flood plain area, provided the standards of this code are met. Exception: Public roads necessary to serve the transportation needs of the City may exceed 30% of the Flood Management Area.
  - 2. Clustering of houses and multiple-family units, zero lot line developments, and/or modifications to setbacks may be approved under the Type II procedure in order to accommodate the density permitted within the underlying zoning district and not exceed the impervious surface limitation of 30% of the Flood Management Area on the site.
  - 3. The Director may grant an administrative variance of up to 50% of any dimensional standard in the underlying zoning district where necessary to avoid construction within the Flood Management Area.
- G. Maintain flood storage capacity. Balanced cut and fill is required for permitted development in the Flood Management Area. Excavation and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations. A professional engineer registered in Oregon must certify that the development will not result in any increase in flood levels during the occurrence of the base flood discharge, and that

water quality will not be adversely affected. The applicant shall obtain a Conditional Letter of Map Revision-Fill (CLOMR-F) from FEMA prior to grading and filling the site and then obtain and submit the final Letter of Map Revision-Fill (LOMR-F) prior to final inspections, or issuance of a certificate of completion, or issuance of the certificate of occupancy.

1. All fill placed at or below the design flood elevation in the Flood Management Area shall be balanced with at least an equal amount of soil material removal. The development shall be designed to minimize development within the Flood Management Area and amount of fill necessary. Balanced cut and fill may be used to elevate structures but shall not be used for density transfer. Residential density must be calculated prior to changes to the floodplain as a result of balanced cut and fill.
  2. Excavation shall not be counted as compensating for fill if such areas will be filled with water in non-storm winter conditions.
  3. The cumulative effect of any proposed development shall not increase the water surface elevation of the base flood. Onsite flood storage capacity shall not decrease as a result of development, vegetation removal, or excavation.
  4. A "No-Rise" certification is required for any fill or permitted development within the floodway pursuant to section 60.3(d)(3) of the National Flood Insurance Program.
    - a. The "No-Rise" supporting data and a copy of the engineering certification must be submitted to, and reviewed by, the City prior to approval of development, and the data shall be submitted with the Flood Hazard Permit.
    - b. The "No-Rise" certification and supporting technical data must stipulate no impact on the 100-year flood elevations, floodway elevations, or floodway widths at the new cross-sections and at all existing cross-sections anywhere in the model.
    - c. A sample "No-Rise" certification is available in the Community Development Department.
- H. Residential Construction, including accessory structures associated with residential dwellings. Note: if more than 50% of the lot being developed is affected by the floodplain, then the minimum density standard of this Code does not apply.
1. Elevate structures. The minimum finished floor elevations, including basement floor, for all new, substantially damaged, or substantially improved

residential structures in the Flood Management Area shall be at least one foot above the base flood elevation, as established by the Federal Emergency Management Agency.

- a. A Federal Emergency Management Agency National Flood Insurance Program Elevation Certificate shall be submitted with the construction plans unless there is a LOMA for the site or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the Base Flood Elevation. The Elevation Certificate shall include the elevation of the lowest floor (including basement). The Elevation Certificate shall be certified by a land surveyor, engineer, or architect who is authorized by state or local law to certify elevation information for construction within specific flood hazard areas.
  - b. A second certified Elevation Certificate shall be submitted to the City of Troutdale prior to pouring the foundation.
  - c. A third certified Elevation Certificate shall be submitted after the structure is completed based upon finished construction.
  - d. The City shall maintain the elevation certificates for public inspection.
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 flood waters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect, or must meet or exceed the following minimum criteria:
- a. 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.
  - b. The bottom of all openings shall be no higher than one foot above grade.
  - c. Openings may be equipped with screens, louvers, or other devices provided that they permit the automatic entry and exit of floodwaters.
3. Below-grade crawlspaces are allowed only when in compliance with the design requirements of FEMA Technical Bulletin 11-01, "Crawlspace Construction for Buildings Located in Special Flood Hazard Areas." Buildings that have below-grade crawlspaces will have higher flood insurance premiums than buildings that have the preferred crawlspace

construction with an interior elevation at or above the lowest adjacent exterior grade.

- a. 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:
  - i. Openings that equalize hydrostatic pressures by allowing for the automatic entry and existence of floodwaters is required. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade. See FEMA Technical Bulletin 1-93, Opening in Foundation Walls, for guidance.
  - ii. All portions of the building below the base flood elevation 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. Ductwork or other utility systems located below the insulation may pull away from their supports. See page 8 of Technical Bulletin 1-93 and FEMA Technical Bulletin 2-93 Flood Resistant Materials Requirements.
  - iii. Any building utility systems within the crawlspace must be elevated above the base flood elevation 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. For further guidance, see FEMA 348, Protecting Building Utilities from Flood Damage.
- b. The interior grade of a crawlspace below the base flood elevation must not be more than two feet below the lowest adjacent exterior grade.
- c. 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. Crawlspaces may not be converted to basements.

- d. 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.
  - e. Crawlspace construction is not recommended 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. For velocities in excess of five feet per second, other foundation types should be used.
4. Substantial improvements or repair following substantial damage of existing dwellings will require elevation of any non-elevated structure to one foot above the Base Flood Elevation in compliance with this section. 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. Substantial improvements include:
- a. Any repair, reconstruction, or improvement of a structure, the cost of which exceeds 50% of the market value of the structure as established by the County appraiser or a licensed professional appraiser.
  - b. Reconstruction or repair of a structure that exceeds 50% of the market value of the building before it was damaged.
  - c. Additions to an existing structure when the addition increases the market value of the structure by more than 50% or the floor area by more than 20%.
  - d. The term does not include the following:
    - i. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
    - ii. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

5. Low-value Accessory structures 200 square feet in floor area or less, may either be elevated or meet these wet-floodproofing standards:
  - a. Be equipped with adequate flood vents;
  - b. Be constructed of flood resistant materials;
  - c. Utilities and mechanicals, if used, comply with section M of this Section.
  - d. Be anchored.
6. Comply with other standards of this section, as applicable.

**I. Manufactured Homes within the Special Flood Hazard Area. [css]**

1. All manufactured homes to be placed or substantially improved on sites that are outside of a manufactured home park or subdivision; in a new manufactured home park or subdivision; in an expansion to an existing manufactured home park or subdivision, or in an existing manufactured home park or subdivision on which a manufactured home has incurred “substantial damage” as the result of a flood shall be elevated on a permanent foundation such that the finished floor of the manufactured home is elevated to a minimum 18 inches (46 cm) above the base flood elevation and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.
2. Manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within the Special Flood Hazard Area on the community’s FIRM that are not subject to the above manufactured home provisions shall be elevated so that either:
  - a. The finished floor of the manufactured home is elevated to a minimum of 18 inches (46 cm) above the base flood elevation; or
  - b. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.
3. Comply with the other standards of this Section as applicable.

- J. Recreational Vehicles (RV) within the Special Flood Hazard Area, whether in a park or on private property outside of a park, are subject to the following standards:
1. The RV is built on a single chassis.
  2. The RV is 400 square feet or less in area when measured at the largest horizontal projection.
  3. The RV is self-propelled or permanently towable by a light duty truck.
  4. The RV is designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
  5. The RV is fully licensed and ready for highway use (street legal), on its wheels or jacking system, and attached to the site only by quick disconnect type utilities (water, electricity, sewer) and security devices, and having no permanent attached additions.
  6. The occupancy of the RV site is for fewer than 180 consecutive days.
  7. The RV "pads" shall be paved with asphaltic concrete or comparable, and have a special water quality facility for the collection of the stormwater from the site.
  8. The RV "pads" shall be wide enough to accommodate a trailer parked next to the towing vehicle or be long enough to accommodate both towing vehicle and trailer.
  9. National Flood Insurance Program regulations (reference Code of Federal Regulations (CFR) 60.3(c)(14)(iii)) require that if a recreational vehicle does not meet the criteria of this subsection, then the vehicle must "meet the elevation and anchoring requirements for manufactured homes" pursuant to subsection (I) of this section.
- K. Nonresidential Construction. New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated to no less than one foot above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:
1. Be dry floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water. A dry floodproofing certificate shall be filed with the City following the form and procedure established by the Federal Emergency Management Agency.

2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy, in accordance with standards established by the Federal Emergency Management Agency and the National Flood Insurance Program.
  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 National Flood Insurance Program regulations (CFR 60.3(c)(4) and (5)) based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the City.
  4. Nonresidential structures that are elevated, not dry floodproofed, must meet the same standards for space below the lowest floor as described in subsection (H)(2) of this section. If elevated, an Elevation Certificate shall be submitted with the construction plans, prior to pouring the foundation, and after construction, unless there is a LOMA for the site or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the Base Flood Elevation.
  5. Applicants dry 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 elevation will be rated as one foot below) and that an operations and maintenance plan is required by the insurance provider.
  6. Comply with other standards of this Section as applicable.
- L. Remove temporary fills. Temporary fills permitted during construction or emergency bank stabilization shall be removed if not in compliance with the balanced cut and fill standard of this code or prior to issuance of a Certificate of Occupancy or release of any bond issued for the development.
- M. Preserve and/or restore the vegetation corridor within the disturbed areas, and retain the existing tree canopy as established in sections 4.316, Width of Vegetation Corridor, and 4.317, Methods for Determining Vegetation Corridors Next to Primary Protected Water Features, of this chapter. An enhancement plan for disturbed areas shall be prepared and implemented to stabilize slopes to prevent landslides on slopes and sedimentation of water features. This plan shall provide for the replanting and maintenance of approved plant species designed to achieve pre-disturbance conditions.
- N. Maintain or reduce stream temperatures.

- O. Minimize erosive velocities, nutrient, and pollutant loading into water. Use filtering, infiltration, and natural water purification for stormwater runoff in compliance with the Erosion Control and Water Quality Standards of chapter 5.600 of this code. The applicant's engineering plans shall certify that runoff and sedimentation from the site will comply with the standards of chapter 5.600, Erosion Control and Water Quality Standards, of this code.
- P. Anchoring. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
- Q. Construction Materials and Methods. All new construction and substantial improvements shall use flood-resistant materials in accordance with the requirements of FEMA Technical Bulletin 2-93 "Flood Resistant Materials Requirements" and utilities shall be designed and installed in accordance with FEMA Publication 348 "Protecting Building Utilities from Flood Damage." The following standards are only a summary of those requirements:
  - 1. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
  - 2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
  - 3. Electrical, heating, ventilation, plumbing, and air conditioning equipment, and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
  - 4. No construction materials or methods may be used within the floodplain that would impair or damage water quality or native vegetation.
  - 5. All development shall have adequate drainage provided to reduce exposure to flood damage and maintain water quality.
- R. Utilities and Roads.
  - 1. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable, and comply with the Oregon Department of Fish and Wildlife construction standards.
  - 2. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

3. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.
  4. Onsite 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.
  5. Utility and road placement shall occur outside the floodway unless the utility or road is necessary to serve permitted development, and there is no reasonable alternative.
  6. Stormwater management and water quality facilities shall comply with the siting and construction standards of chapter 5.800, Stormwater Management, of this code.
- S. For any alterations or relocations of a watercourse, the floodplain or floodway, the developer shall obtain the required authorization and permits from the Oregon Department of Land Conservation and Development, Oregon Division of State Lands, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife Service, Federal Emergency Management Agency, and other affected agencies, as applicable. The flood carrying capacity of the altered or relocated watercourse shall not be diminished and shall be maintained. Alterations will require a "No-Rise" certification for changes to the floodway, and changes that relocate the floodplain will require a Letter of Map Revision-Fill (LOMR-F) from FEMA or may require a revised Flood Insurance Study and Flood Insurance Rate Map for the City. The burden for all engineering studies required to process these forms is the applicant's, not the City's.
- T. Subdivision Proposals. In addition to compliance with the underlying zoning district standards of this code and this chapter, the construction of the subdivision shall be subject to the following additional criteria:
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 flood damage.
  3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

4. Where the base flood elevation data has not been provided or is not available from another authoritative source for Zone A, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres, whichever is less.
    - a. BFE data is not required when the actual building envelopes are clearly outside of Zone A or are on naturally higher ground (not created by fill) that is above the grade of Zone A by five feet or more.
    - b. BFE data is required when the building envelope outside of Zone A is elevated above Zone A by a five foot or less change in grade of the natural ground elevation (not created by fill).
  5. If more than 50% of the lot being partitioned or subdivided is affected by the floodplain, then the minimum density standard of this code does not apply.
- U. Critical Facilities. A 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, congregate care facilities, clinics and/or hospitals, police, fire and emergency response installations, water pollution control facilities, and installations which produce, use, or store hazardous materials or hazardous waste.
1. 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).
  2. Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available.
  3. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet or to the height of the 500-year flood, whichever is higher. Submit Elevation Certificates with the construction plans, prior to pouring the foundation, and upon completion of the structure in accordance with subsections G1(a), (b), and (c) of this Section.
  4. Access to and from the critical facility should also be protected to the height utilized above.
  5. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.
  6. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

7. Comply with the other standards of this section as applicable. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.618 Flood Management Area Variance Procedures. Variances from dimensional standards of the underlying zoning district or other provisions of this code not part of this chapter shall be processed in accordance with chapter 6.200, Variance, of this code.

- A. The Director may grant an administrative variance of up to 50% of any dimensional standard in the underlying zoning district where necessary to avoid construction within the Flood Management Area.
- B. The Planning Commission shall hear and decide requests for variances from the dimensional standards of this chapter and the maximum impervious surface area in accordance with the City's participation in the National Flood Insurance Program.
- C. Variances shall only be issued upon consideration of the purpose of this chapter. The Planning Commission may attach such conditions to the granting of variances as it deems necessary to further the purpose of this chapter.
- D. As a participant in the National Flood Insurance Program, the City is not authorized to grant a variance from the requirement to elevate or floodproof structures in accordance with state and federal regulations, whichever is most restrictive.
- E. The City cannot grant a variance from the special flood hazard designation assigned by the Federal Emergency Management Agency to a site. However, a property owner may request a Letter of Map Amendment (LOMA), a Letter of Map Revision (LOMR), or a Letter of Map Change (LOMC) from the Federal Emergency Management Agency.
- F. In approving variance applications, the Planning Commission shall consider all technical evaluations, relevant factors, and standards specified in other sections of this chapter and other chapters of this code, and make affirmative findings, with or without conditions, for each of the following criteria:
  1. A showing of good and sufficient cause that the need for the variance is not of the applicant's making and will not result in a use of the site that is not otherwise permitted in the underlying zoning district.
  2. A determination that failure to grant the variance would result in exceptional hardship to the applicant and is the minimum necessary to grant relief. The test being that there is no possible relief from the current tax rate on an undeveloped lot currently being zoned for the denied use, and that the owner has attempted to sell the property within the past six months to conservation

agencies or the City for the taxable value of the property, as determined by the Multnomah County Tax Assessor's Office.

3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on, or victimization of, the public, or conflict with existing local laws and ordinances.
4. The safety of access to the property in times of flood for ordinary and emergency vehicles. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.619 Prescribed Conditions for the Rehabilitation or Replacement of Pre-Existing Structures.  
The replacement of pre-existing structures or development that is damaged or destroyed accidentally is not subject to the limitations and standards of section 5.345, Reconstruction of a Damaged Nonconforming Structure or Development, and/or section 5.350, Destruction of a Nonconforming Structure or Development, of this code, provided the following standards are met:

- A. The structure or development was in existence within the Flood Management Area prior to November 24, 2000.
- B. The use is allowed in the underlying zoning district at the time the application is made to rehabilitate or replace the structure.
- C. A Type I Flood Hazard Permit is approved prior to applying for building permits.
- D. The rehabilitation or replacement is rebuilt on the same footprint of the original structure and does not increase the impervious area within the 100-year floodplain.
- E. The rehabilitated or replaced structure is elevated, if residential, or floodproofed or elevated, if non-residential, in accordance with the applicable standards of this chapter. [Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]