CITY COUNCIL WORK SESSION
MEETING AGENDA

Online via Zoom and In Person at
Tumwater Fire Department
Headquarters, EOC, 311 Israel Rd. SW,
Tumwater, WA 98501

Monday, March 11, 2024
6:00 PM

1. Call to Order
2. Roll Call
3. Davis Meeker Oak (Mike Matlock)
4. Ordinance No. O2023-017, TMC 18.38 FP Floodplain Overlay (Erika Smith-Erickson and Brad Medrud)
5. Mayor/City Administrator's Report
6. Adjourn

Meeting Information
All Councilmembers will be attending remotely. The public are welcome to attend in person, by telephone or online via Zoom.

Watch Online
https://us02web.zoom.us/j/84339991202?pwd=VTFyN3BRK3I4NUJHQng5eEEvVXRJQT09

Listen by Telephone
Call (253) 215-8782, listen for the prompts and enter the Webinar ID 843 3999 1202 and Passcode 650498.

Public Comment
The public may submit comments by sending an email to council@ci.tumwater.wa.us, no later than 4:00 p.m. the day of the meeting. Comments are submitted directly to the Councilmembers and will not be read individually into the record of the meeting.

Post Meeting
Video recording of this meeting will be available within 24 hours of the meeting.
https://tcmedia.org/stream.php

Accommodations
The City of Tumwater takes pride in ensuring that people with disabilities are able to take part in, and benefit from, the range of public programs, services, and activities offered by the City. To request an accommodation or alternate format of communication, please contact the City Clerk by calling (360) 252-5488 or email CityClerk@ci.tumwater.wa.us. For vision or hearing impaired services, please

contact the Washington State Relay Services at 7-1-1 or 1-(800)-833-6384. To contact the City's ADA Coordinator directly, call (360) 754-4128 or email ADACoordinator@ci.tumwater.wa.us

TO: City Council

FROM: Michael Matlock, Community Development Director

DATE: March 11, 2024

SUBJECT: Davis Meeker Oak

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1) Recommended Action:

Staff will brief City Council on the health of the Davis Meeker Oak and discuss next steps to mitigate risk.

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2) Background:

The Davis Meeker Oak is a City-owned tree in the Old Highway 99 right of way adjacent to the airport. The tree is estimated to be over 400 years old and at the end of its natural life.

In June of 2023, an 18-inch diameter branch failed about 50 feet above grade and fell to the ground. A visual inspection showed there was rot where the failed branch connected to the main stem of the tree. The City contract Urban Forester was asked to conduct a detailed tree assessment which showed significant rot in the mainstem and branches of the tree. That assessment deemed the tree to be a hazard and identified risks to adjacent property. WCIA has reviewed the report and recommends removal of the tree.

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3) Policy Support:

Strategic Priorities: “Create and maintain a transportation system safe for all modes of travel.”

Urban Forestry Management Plan: “To ensure public safety in and around urban trees, the removal of trees identified as high risk through evaluation by an ISA Certified Arborist who is Tree Risk Assessment Qualified (TRAQ) should continue to be allowed. All tree risk assessments should identify and rate potential targets the tree could affect, including buildings and infrastructure, emergency service routes, etc.”

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4) Alternatives:

- ❑ None

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5) Fiscal Notes:
Tree assessment report
Removal or crowning of the tree will have a cost that is not determined at this time.

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6) Attachments:

A. Staff report
B. Davis Meeker Oak tree assessment

Attachment A

Staff Report
March 11, 2024

Davis Meeker Oak

Summary

Due to recent branch failures, the historic Davis Meeker Oak tree, located adjacent to the Olympia Regional Airport on Old Highway 99, was evaluated by the City Tree Professional with a detailed analysis of the tree to determine its health and condition. That assessment returned findings that are concerns from a liability and risk management perspective.

Background

In June 2023, an 18-inch diameter branch failed about 50 feet from the ground and fell in a parking lot on Port of Olympia owned property. A visual inspection showed there was rot where the failed branch connected to the main stem of the tree.

There are multiple targets this tree can impact in the event of future failures, including a historic hangar, parking areas, a state highway with significant traffic, and power lines. Because of the nature of the rot in the failed branch, and the numerous structures, vehicles, and people that must move under the tree, the City Tree Professional, Kevin McFarland, was retained to do a detailed analysis of the health of the tree.

That analysis included retaining a climbing arborist to do an assessment of the upper story of the tree, and a sonic tomography analysis that can “see” inside the tree to determine the presence of rot in the interior of the tree. Both analyses showed significant rot in the mainstem and scaffold branches of the tree that make future failures of the tree likely.

One option detailed in the report is to do a dramatic crown pruning, called a retrenchment pruning, of the tree to take about 15 feet off all the branches of the tree. This would reduce the weight and the wind loading on the weakened mainstem and branches. This option would significantly alter the appearance of the tree, introduce new areas for rot to take hold in the tree, and would require additional expenses every five years to prune again and to complete new sonic tomography studies to assess ongoing risk of failure. More information on this option can be found in the attached tree evaluation report.

The Tree Professional for the city has recommended tree removal over retrenchment pruning. The rational for this recommendation is removing this amount of tree by retrenchment pruning would significantly alter the appearance of the tree and would add considerable cost for ongoing testing and retrenchment pruning every five years. The risk of failure of the tree would remain high, and there are multiple targets that could be impacted in the event of failure. In addition, the tree has reached the end of its effective life, retrenchment pruning is not recommended.

This is a briefing in advance of the Historic Commission

Public Approval Process

The Davis Meeker Oak was placed on the Tumwater Register of Historic Places in 1995. Tree removal would require delisting the tree from the Historic Register, which in turn requires the Historic Preservation Commission to hold a public hearing and make a recommendation to the City Council for consideration.

Because the tree is in the right of way, and thus owned by the City, and must be de-listed from the register. the City Council has the final decision-making authority on delisting after receiving a recommendation from the Historic Preservation Commission.

If the tree is delisted, a tree removal permit would be issued by Community Development as a hazardous tree. The tree removal permit would include mitigation in the form of planting new Garry Oak trees. Parks and Recreation staff have already collected acorns from the Davis Meeker Oak, and new trees have sprouted from the acorns and are being raised as eventual replacement trees.

The Historic Preservation Commission and the Tree Board will meet jointly to discuss the most effective methods to commemorate and preserve the history of the tree, as well as examining the potential for possible use of any reclaimed wood.

Public Notification

Stakeholders have been notified regarding this issue and made aware of opportunities to review and comment on the proposal.

Review and Approval Criteria

The Historic Preservation Commission will hold a public hearing and make a recommendation on de-listing the tree from the Historic Register for City Council consideration.

The Transportation& Engineering Department has submitted an application for tree removal.

The Community Development would issue a permit for tree removal once delisted from the Historic Register. The Tumwater Municipal Code allows the removal of any hazardous tree that is evaluated and found to be a hazard with an administrative tree waiver permit.

Staff Contact

Michael Matlock, Community Development Director
City of Tumwater Community Development Department
(360) 754-4180

SUF

S O U N D U R B A N F O R E S T R Y, LLC

Appraisals ~ Site Planning ~ Urban Landscape Design and Management
Environmental Education ~ Environmental Restoration ~ Risk Assessments

10/10/2023

City of Tumwater
Marc LaVack
555 Israel Rd SW
Tumwater, WA 98501

RE: Meeker Oak Risk Assessment

Mr. LaVack:

Upon your request, a thorough evaluation of the Meeker Oak located at the Olympia Regional Airport has been conducted. This tree has become of concern due to the recent failure of a two large diameter scaffold branches on the north side. Per your direction, this evaluation has included a risk assessment by myself, an aerial assessment by a climbing certified arborist and a sonic tomography by Tree Solutions Inc, all conducted during the months of June -August of this year. The purpose of this report is to present the findings and offer my recommendations based on those findings to the City of Tumwater.

Tree Risk Assessment Methodology

The tree risk assessment methodology used for this report was developed by the International Society of Arboriculture in 2013. It replaces the original method adopted in 2011.

Tree risk assessment can be conducted at different levels of intensity, each employing varying methods and providing the client with varied options of reporting and recommendations. The level selected should be appropriate for the assignment.

The ANSI standard for risk assessment and ISA's *Best Management Practices: Tree Risk Assessment* defines three levels of tree risk assessment:

- Level 1: Limited visual
- Level 2: Basic
- Level 3: Advanced

Level 1 assessment involves a visual assessment of an individual tree or populations of trees near specified targets, conducted from a specified perspective in order to identify certain obvious defects or specified conditions. A limited visual assessment typically focuses on identifying trees with *imminent* and/ or *probable* likelihood of failure.

A Level 2 or basic assessment is the standard assessment performed by arborists in response to most private client requests for tree risk assessments. It consists of a detailed visual inspection of a tree and its surrounding site and a synthesis of the information collected. A basic assessment requires walking completely around the tree – looking at the site, buttress roots, trunk and branches. Looking at the tree from some distance away, as well as close up, to consider crown shape and surroundings.

Level 3 is an advanced assessment and it is performed to provide detailed information about specific tree parts, defects, targets, or site conditions. It may be in conjunction with or after a basic assessment if additional information is needed and the client approves the additional service. Specialized equipment, data collection and analysis, and/or expertise are usually required for advanced assessments. These assessments are, therefore, generally more time intensive and more expensive.

After determining the likelihood of failure and the likelihood of impacting a target, the combined likelihood of a failure impacting a target can be categorized. Matrix 1 can be used as a guide in relating these likelihood factors within a given time frame. The resulting terms (unlikely, somewhat likely, likely, very likely) are defined by their use within the table and are used to represent this combination of occurrences in Matrix 2.

Matrix 1. Likelihood of Failure

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	**Low**	**Medium**	**High**
Imminent	Unlikely	Unlikely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk Rating

Likelihood of Failure and Impact	Consequences of Failure			
	Negligible	**Minor**	**Significant**	**Severe**
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Field Data and Recommendations

A level 3 risk assessment was conducted by myself on June 14, 2023. The following table presents a summary of my findings. More detail can be found in Appendix 1, Tree Risk Assessment Form.

Table 3. Complete Risk Assessment Summary

Species	DBH (in)	Height (ft)	Live Canopy Ratio	Target	Distances to Target	Condition	Comments	Risk Rating
Oregon White Oak *Quercus garryana*	66	125	35	Hwy 99, south parking, north parking, power-lines, aircraft hangar	6', 30', 40', 4', 12'	Poor	Recent failure of an 18" scaffold branch on the north side at 50'. Also, a former failure of a 12" scaffold branch on the east side at 65'. There are signs of white rot infection on the upper sides of both points of failure. Failures were likely due to the infection along with the inclusions and end weight. Trunk soundings on the north and northeast sides at the base indicated probable interior decay up to 6'+. An open decay cavity is present within this location. Two core samples extracted from this area at 3' above grade: #1 taken above the cavity revealed 5" of solid wood, #2 revealed 4" of solid wood. A probe inserted into the cavity did not meet any resistance until 2' and the tip was covered in wet, decayed wood.	High

Aerial Assessment

An aerial assessment was conducted by Amanda Hancock (ISA Certified Arborist TX4155AU & TRAQ) with Waxwing Tree Specialists on June 29, 2023. This inspection found extensive white rot decay within the large scaffold that recently experienced failure at the union (see photo). Further examination determined that the main stem's decay column continues upward into the eastern co-dominant stem and large diameter scaffold branches (see attached diagram). The west facing co-dominant stem contains solid healthy interior wood upward into the large scaffold branches overhanging the drive and aircraft hangar.

Sonic Tomography

A sonic tomography was conducted on the tree by Tyler Bunton (ISA Certified Arborist PN-8715A and TRAQ) with Tree Solutions Inc. on August 24, 2023. A detailed summary of his findings can be found in Appendix 2 but essentially, his test conducted at 50 cm above the base found that due to the extent of decay, the tree has slightly more sound wood than required to support itself. He is recommending the tree receive retrenchment pruning to reduce the height and spread by 15 feet in order to lower the chance of future failures.

Comments

With the exception of the recent large branch failures, the Meeker Oak appears to be in very good health. The crown density, leaf color, leaf size and internode growth all indicate a vigorous tree. However, there are structural concerns associated with the significant decay found in the stem base, lower main stem, east facing co-dominant stem and large scaffold branches. Probable future failures include large diameter scaffold branches from the east facing co-dominant stem and the entire west facing co-dominant stem at the union. The associated inclusions and stress loads will contribute to future failures. Structural support systems in conjunction with pruning were considered but the extent of decay in the main stem and upper east side of the canopy removes that as a mitigation option in my opinion.

The other mitigation options are retrenchment pruning and removal. A considerable amount of thought has been put into my final recommendation. The retrenchment option would be controversial to say the least along with the potential of its ineffectiveness. The targets around this veteran tree are many and high-use and the risk rating would remain high. If the City of Tumwater and the community opts for retrenchment pruning, there will be a need for the development of pruning specifications and a long-term management plan.

Based on my findings and information I have been provided, I am recommending removal.

Professionally Submitted,

Kevin M. McFarland, Principal
Consulting Urban Forester, Contracted City of Tumwater Tree Protection Professional
ISA Certified Arborist PN-0373 & Tree Risk Assessment Qualified
Sound Urban Forestry, LLC
P.O. Box 489
Tahuya, WA 98588
360-870-2511

References

Dunster, Dr, Julian et al. 2017. *Tree Risk Assessment Manual. Second Edition* International Society of Arboriculture. Champaign, IL.

Mattheck, C. & Brelor, H (1998). *The body language of trees. A handbook for failure Analysis*. Research for Amenity Trees No. 4. The Stationary Office, London.

Smiley, E. Thomas, Nelda Matheny and Sharon Lilly. 2011. *Best Management Practices – Tree Risk Assessment.* International Society of Arboriculture. Champaign, IL.

Location of Assessed Tree

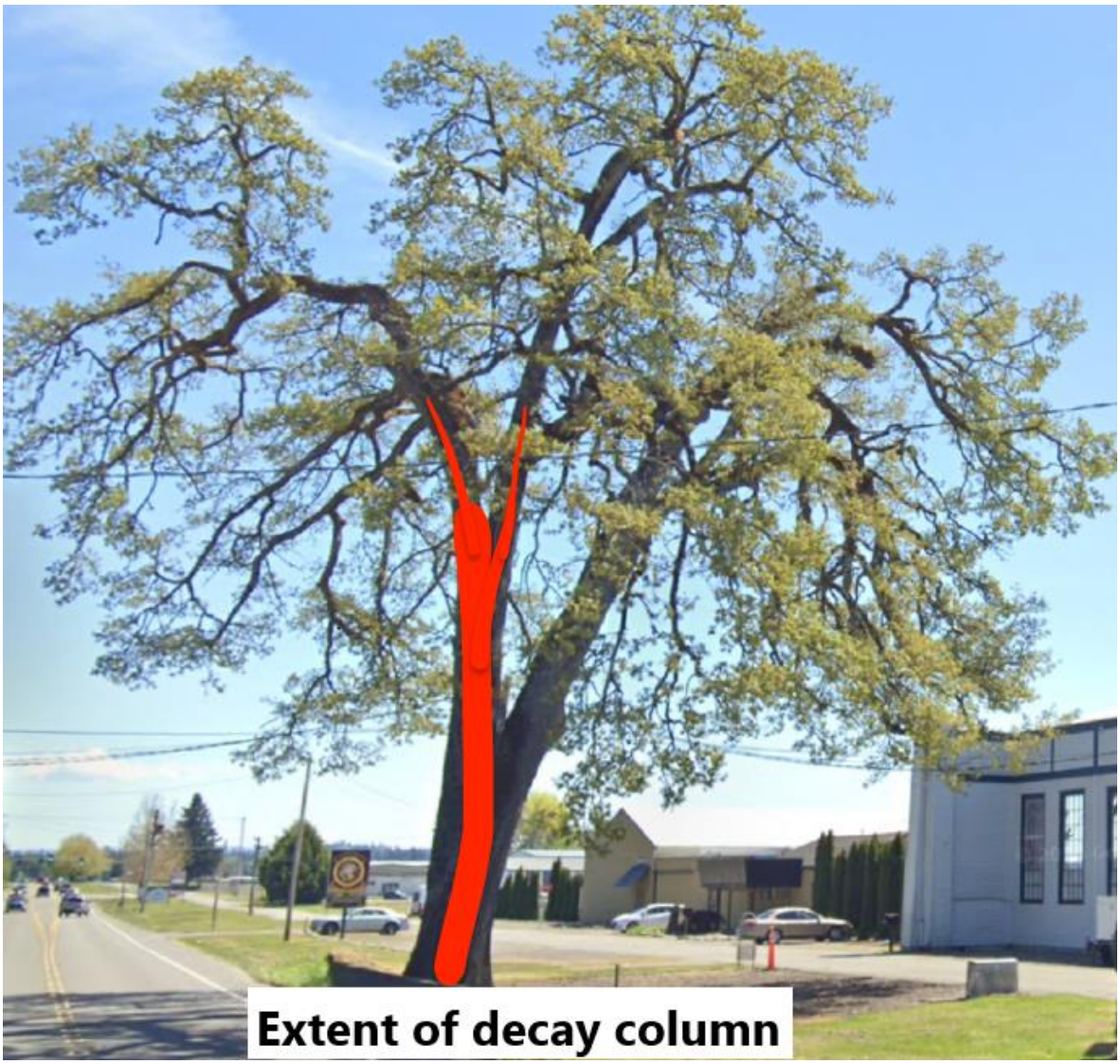
Photos


Point of recent failure


Open decay cavity at the base


Points of failure of eastern stem


Aerial assessment by climbing arborist


Extent of decay column

Appendix 1

ISA Basic Tree Risk Assessment Form

Client: City of Tumwater | Date: June 14, 2023 | Time: 10AM

Address/Tree location: 7637 Old Hwy 99 SW, between airport and Hwy 99 | Tree no. 1 | Sheet 1 of 2

Tree species: Oregon White Oak, Quercus garryana | dbh: 66" | Height: 125' | Crown spread dia.: 70'

Assessor(s): Kevin M. McFarland | Time frame: 1 year | Tools used: Mallet, increment borer, binoculars, probe, D-tape

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target within 1x Ht.	Target within 1.5 x Ht.	Occupancy rate (1–rare 2–occasional 3–frequent 4–constant)	Practical to move target?	Restriction practical?
1	Hwy 99	✓			4	No	No
2	Airplane hangar		✓		3	No	No
3	North and south parking		✓		3	No	No
4	Electric service drop	✓			4	No	No

Site Factors

History of failures Large scaffold branches, recent and past | **Topography** Flat ■ Slope ☐ ____% **Aspect** ____

Site changes None ■ Grade change ☐ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe ____

Soil conditions Limited volume ■ Saturated ☐ Shallow ☐ Compacted ■ Pavement over roots ■ 40 % Describe Road and parking

Prevailing wind direction SW **Common weather** Strong winds ■ Ice ☐ Snow ☐ Heavy rain ■ Describe ____

Tree Health and Species Profile

Vigor Low ☐ Normal ■ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 100 % Chlorotic ____% Necrotic ____%

Pests ____ **Abiotic** ____

Species failure profile Branches ■ Trunk ■ Roots ☐ Describe ____

Load Factors

Wind exposure Protected ☐ Partial ☐ Full ■ Wind funneling ☐ ____ **Relative crown size** Small ☐ Medium ☐ Large ■

Crown density Sparse ☐ Normal ■ Dense ☐ **Interior branches** Few ☐ Normal ■ Dense ☐ **Vines/Mistletoe/Moss** ☐ ____

Recent or planned change in load factors ____

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR 35 %

Dead twigs/branches ■ 5 % overall Max. dia. 5"

Broken/Hangers Number ____ Max. dia. ____

Over-extended branches ■

Pruning history

Crown cleaned ■ Thinned ☐ Raised ☐

Reduced ■ Topped ☐ Lion-tailed ☐

Flush cuts ☐ Other ____

Cracks ☐ ____ Lightning damage ☐

Codominant ■ ____ Included bark ■

Weak attachments ☐ ____ Cavity/Nest hole ____% circ.

Previous branch failures ■ ____ Similar branches present ☐

Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐

Conks ☐ Heartwood decay ■ White Rot

Response growth Normal

Main concern(s) ____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■

Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ☐

Codominant stems ■ Included bark ■ Cracks ☐

Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐

Lightning damage ☐ Heartwood decay ■ Conks/Mushrooms ☐

Cavity/Nest hole 50 % circ. Depth ____ Poor taper ☐

Lean ____° Corrected? ____

Response growth ____

Main concern(s) Decay present at co-dominant union

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■

Likelihood of failure

Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth ____ Stem girdling ☐

Dead ☐ Decay ■ Conks/Mushrooms ☐

Ooze ☐ Cavity ■ 50 % circ.

Cracks ☐ Cut/Damaged roots ☐ Distance from trunk ____

Root plate lifting ☐ Soil weakness ☐

Response growth ____

Main concern(s) Suspect root collar and flare decay

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure

Improbable ☐ Possible ■ Probable ☐ Imminent ☐

Page 1 of 2

Risk Categorization

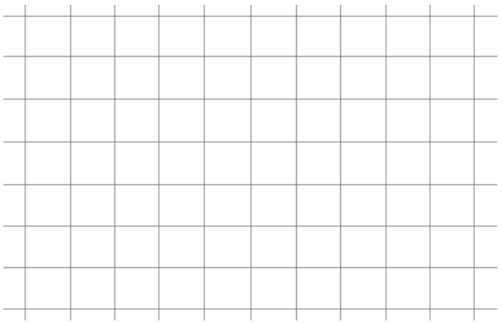
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1	Large scaffold branch	Failure due to decay	16"	6'	1	None		●						●			●					●	High
			16"	30'	3	None		●						●			●					●	High
2	Co-dominant stem	Suspect weak union at stem inclusion due to decay	30"	80'	2	None		●						●			●					●	High
3	Branch	Poor attachment	6"	4'	4	None		●					●		●						●		Low
4																							

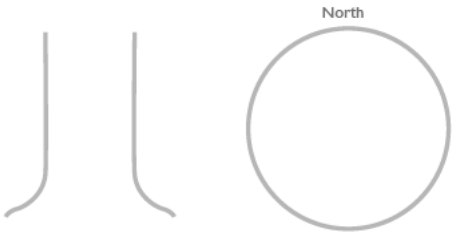
Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low





Notes, explanations, descriptions _____

Mitigation options Retrenchment pruning — **Residual risk** High

Removal — **Residual risk** None

Residual risk _____

Residual risk _____

Overall tree risk rating Low ☐ Moderate ☐ High ■ Extreme ☐ **Work priority** 1 ■ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ☐ Moderate ☐ High ■ Extreme ☐ **Recommended inspection interval** _____

Data ■ Final ☐ Preliminary **Advanced assessment needed** ☐ No ■ Yes-Type/Reason Aerial inspection, sonic tomography

Inspection limitations ■ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

Appendix 2

Tree Solutions Inc
Consulting Arborists

Project No. TS - 9053

Memorandum

To:	Kevin McFarland – Sound Urban Forestry LLC
Site:	Olympia Regional Airport 7525 Old Highway 99 SE Tumwater, WA 98501
Re:	Sonic Tomography of One Garry Oak Tree
Date:	September 5, 2023
Project Arborist:	Tyler Bunton ISA Certified Arborist PN-8715A ISA Qualified Tree Risk Assessor
Reviewed By:	George White, ISA Certified Arborist PN-8908A ISA Qualified Tree Risk Assessor

This memorandum documents the visit by Tyler Bunton of Tree Solutions Inc. to the above referenced site on August 24, 2023 to perform sonic tomography on one Garry oak (***Quercus garryana***) tree. Kevin McFarland requested these services to obtain additional information about the extent of decay at the base of the tree to provide the City of Tumwater with a more informed risk assessment and management recommendations. The sonic tomogram can be found in Appendix A.

I used a PiCUS sonic tomograph to obtain a tomogram 50 centimeters above the tree base. I selected this height based on soundings of the trunk which indicated the most extensive decay was located low in the trunk. I used the PiCUS Q74 program to analyze the data and obtain a rough estimate of the remaining sound wood shell wall required to maintain tree stability, indicated by the green line in Figure 1 in Appendix A.

The tomogram indicates there is slightly more sound wood than is required to support the tree. However, due to the extent of the decay and thin shell wall around measuring points 3, 4, and 18 it is my opinion that this tree should be managed as a veteran tree and have retrenchment pruning performed to reduce the tree height and spread by approximately 15 feet. Reducing the tree height and spread will result in lowered wind loads acting on the trunk and branch unions resulting in a lower likelihood of failure.

If this tree is retained, it should be reassessed with sonic tomography in five years to determine if the decay is continuing to spread and what the remaining shell wall is at that time. Additionally, 4 to 6 inches of wood chip mulch should be added within the dripline of the tree to improve soil conditions. The wood chip mulch should be kept 12 inches from the base of the tree.

Appendix A **Test Results**

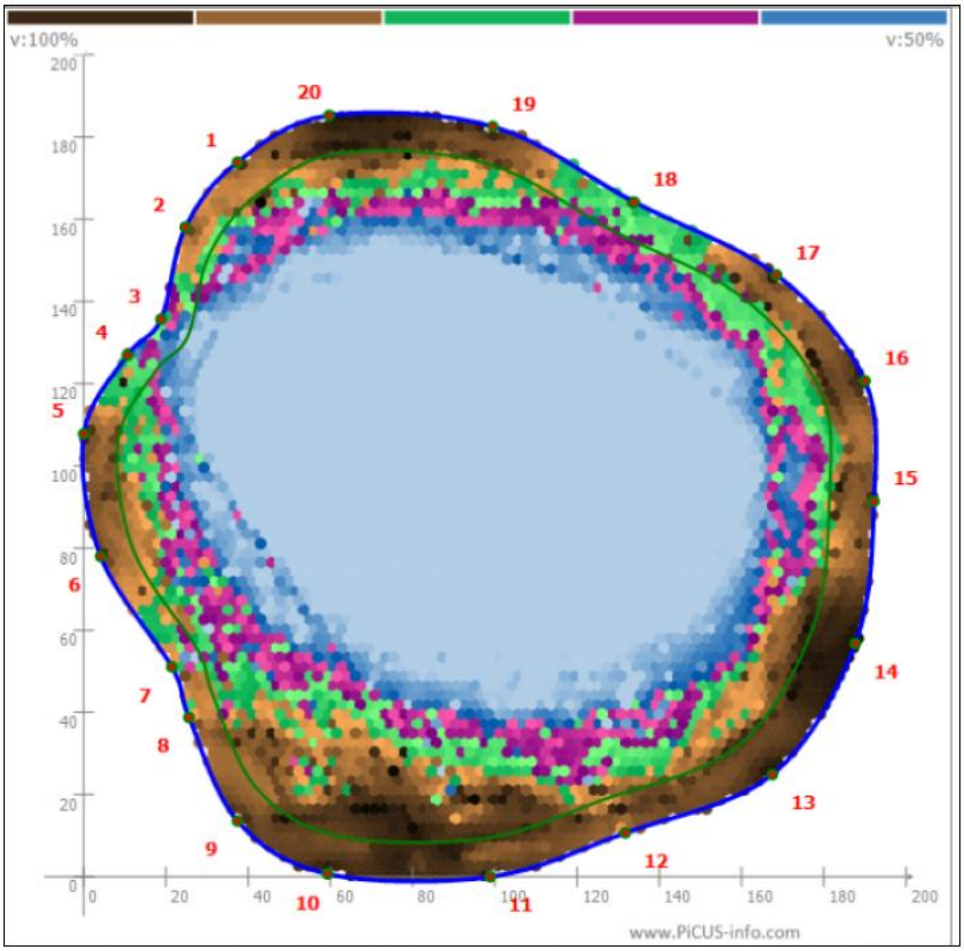


Figure 1. Sonic tomogram of the subject tree. North is located at measuring point 1, and the side of the tree towards the highway is along measuring points 17, 18, and 19. The blue areas indicate decay or a decay cavity, and the brown areas indicate sound wood. The purple and green areas indicate early or spreading decay. The green line is the calculated shell wall of sound wood required for the tree to remain stable.

Appendix B **Photographs**

Photograph 1. Measuring point 1 is circled in red. An opening into the decay cavity is indicated by the red arrow.

Photograph 2. The crown of the subject tree viewed from the southeast. The red line indicates approximately 15 feet of crown reduction.

Appendix C **Assumptions & Limiting Conditions**

1 Consultant assumes that the site and its use do not violate, and is in compliance with, all applicable codes, ordinances, statutes, or regulations.

2 The consultant may provide a report or recommendation based on published municipal regulations. The consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.

3 Any report by the consultant and any values expressed therein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.

4 All photographs included in this report were taken by Tree Solutions, Inc. during the documented site visit, unless otherwise noted. Sketches, drawings, and photographs (included in, and attached to, this report) are intended as visual aids and are not necessarily to scale. They should not be construed as engineering drawings, architectural reports, or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.

5 Unless otherwise agreed, (1) information contained in any report by consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.

6 These findings are based on the observations and opinions of the authoring arborist, and do not provide guarantees regarding the future performance, health, vigor, structural stability, or safety of the plants described and assessed.

7 Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.

8 Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

9 Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

Definitions

Included Bark (Inclusion): Bark that becomes embedded in a crotch (union) between branch and trunk or between co-dominant stems. Causes a weak structure.

Retrenchment: Natural process during which an overly mature tree reduces its crown and increases its girth to consolidate resources and increase longevity; the deliberate process of reducing tree height to mimic process.

Sounding: Process of striking a tree with a mallet or other appropriate tool and listening for tones that indicate dead bark, a thin layer of wood outside a cavity, or crack in wood.

Tomography: The use of multiple sensors placed around a trunk or limb to record sound or magnetic waves traveling through the wood, with measurements resulting in a picture of internal density characteristics. Typically used in arboriculture to measure the extent of decay in trees.

Assumptions and Limitations of Tree Risk Assessment

1. Tree risk assessment is limited in scope to the specific risks(s) of interest, and does not include any and all risks.

2. Tree risk assessment considers significant known and/or assigned targets and visible or detectable tree conditions.

3. Tree risk assessments represent the condition of the tree and site at the time of inspection.

4. Only those trees specified in the scope of work were assessed, and assessments were performed within the limitations specified.

5. Any tree, whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts.

6. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee not be responsible for the accuracy of information provided by others. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable.

7. Loss or alteration of any part of this report invalidates the entire report.

8. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of Sound Urban Forestry, LLC.

9. Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of Sound Urban Forestry, LLC – particularly as to the value considerations, identity of Sound Urban Forestry, LLC, or any reference to any professional society or to any initialed designation conferred upon Sound Urban Forestry, LLC as stated in its qualifications.

10. This report and any values expressed herein represent the opinion of Sound Urban Forestry, LLC and the fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence neither of a subsequent event, nor upon any finding to be reported.

11. Diagrams, graphs, photographs and sketches in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

12. Sound Urban Forestry, LLC shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made.

13. Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, drilling or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

14. The time frame for risk categorization should not be considered a “guarantee period” for the risk assessment.

TO: City Council

FROM: Erika Smith-Erickson, Land Use and Housing Planner, and Brad Medrud, Planning Manager

DATE: March 11, 2024

SUBJECT: Ordinance No. O2023-017, TMC 18.38 FP Floodplain Overlay

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1) Recommended Action:

Conduct a work session on Ordinance No. O2023-017 and place Ordinance No. O2023-017 on the City Council consideration calendar for approval on March 19, 2024.

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2) Background:

Close to three hundred towns, cities, counties, and tribes within the State of Washington participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). Continued enforcement of the City's floodplain management regulations (TMC 18.38 FP Floodplain Overlay) allows FEMA to make federally backed flood insurance available to property owners within the City of Tumwater. As a condition of participation in the NFIP, communities are required to adopt and enforce flood hazard reduction regulations that meet the minimum requirements of the NFIP.

In May 2023, City staff completed a FEMA floodplain community assistance visit (CAV) with State Department of Ecology staff to review the City's participation in the National Flood Insurance Program. It was determined that TMC 18.38 *FP Floodplain Overlay* should be updated to reflect current FEMA standards.

On November 8, 2023, FEMA notified the City of the final flood determinations for Thurston County, Washington, and Incorporated Areas, which includes the City of Tumwater. The FEMA flood hazard determinations for the City are considered final. The Flood Insurance Study (FIS) report and Flood Insurance Rate Maps (FIRM) covering the City will be effective May 8, 2024.

Prior to the May 8, 2024, effective date of the FIS and FIRM, the City must amend its existing floodplain regulations to be more consistent with the Model Ordinance for Floodplain Management under the NFIP, the Endangered Species Act, and to maintain its eligibility in the NFIP.

The Planning Commission received a briefing on the ordinance on January 9, 2024, held a work session on January 23, 2024, and held a public hearing on February 13, 2023. At the conclusion of the hearing, the Planning Commission recommended that the ordinance move forward to the City Council for approval.

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3) Policy Support:

Land Use Goal LU-6: Reduce impacts from flooding; encourage efficient stormwater management; and ensure the groundwater of Tumwater is protected and preserved.

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4) Alternatives:

❑ None

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5) Fiscal Notes:

Internally funded.

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6) Attachments:

A. Staff Report
B. Ordinance No. O2023-017
C. Presentation

Attachment A

STAFF REPORT

Date: March 11, 2024
To: City Council
From: Erika Smith-Erickson, Land Use and Housing Planner, and Brad Medrud, Planning Manager

Ordinance No. O2023-017 – TMC 18.38 *FP – Floodplain Overlay*

On November 8, 2023, the Federal Emergency Management Agency (FEMA) notified staff of the final flood determinations for Thurston County, Washington, and Incorporated Areas, which includes the City of Tumwater. The FEMA flood hazard determinations for the City are considered final. The Flood Insurance Study (FIS) report and Flood Insurance Rate Maps (FIRM) will be effective May 8, 2024.

Prior to the May 8, 2024, effective date of the FIS and FIRM, the City must amend its existing floodplain regulations to be more consistent with the Model Ordinance for Floodplain Management under the National Flood Insurance Program (NFIP), the Endangered Species Act, and to maintain its eligibility in the NFIP.

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Contents

Summary

The proposed amendments are intended to make alterations to the City's floodplain ordinance to bring it into compliance with NFIP and Washington state standards.

Background

Close to three hundred towns, cities, counties, and tribes within the State of Washington participate in the NFIP. Continued enforcement of the floodplain management ordinance allows FEMA to make federally backed flood insurance available to property owners within the City of Tumwater.

As a condition of participation in the NFIP, communities are required to adopt and enforce a flood hazard reduction ordinance that meets the minimum requirements of the NFIP.

The purpose of *TMC 18.38 FP Floodplain Overlay* is to:

> *"…promote the public health, safety, and general welfare by managing development in order to:*
>
> *A. Protect human life, health and property from the dangers of flooding;*

B. Minimize the need for publicly funded and hazardous rescue efforts to save those who are isolated by flood waters;

C. Minimize expenditure of public money for costly flood damage repair and flood control projects;

D. Minimize disruption of commerce and governmental services;

E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in the floodplain;

F. Maintain a stable tax base by providing for the sound use of floodprone areas so as to minimize future flood blight areas;

G. Encourage those who occupy areas subject to flooding and channel migration to assume responsibility for their actions;

H. Qualify the city of Tumwater for participation in the National Flood Insurance Program, thereby giving citizens and businesses the opportunity to purchase flood insurance;

I. Maintain the quality of water in rivers, streams, lakes, estuaries, and marine areas and their floodplains so as to protect public water supplies, areas of the public trust, and wildlife habitat protected by the Endangered Species Act;

J. Retain the natural channel, shoreline, and floodplain creation processes and other natural floodplain functions that protect, create, and maintain habitat for threatened and endangered species;

K. Prevent or minimize loss of hydraulic, geomorphic, and ecological functions of floodplains and stream channels."[1]

In May 2023, City staff completed a FEMA floodplain community assistance visit (CAV) with State Department of Ecology staff to review the City's participation in the National Flood Insurance Program. It was determined that TMC 18.38 *FP Floodplain Overlay* should be updated to reflect current standards.

To maintain eligibility in the NFIP, the City must update its ordinance to meet minimum Federal and State Standards by the time the updated FIS and FIRM become effective on May 8, 2024.

The amendments are a part of the approved 2024 Long Range Planning work program.

Floodplain Overlay Amendments

The following is a summary of the proposed amendments that make up the floodplain overlay code.

[1] TMC 18.38.010 *Purpose*.

1. Definitions

Clarify and add definitions as needed for enhanced interpretation of floodplain regulations.

Code Section to be amended:

- TMC 18.38.070 – Definitions.

Proposed amendment language:

18.38.070 Definitions.
[…]

"Alteration of watercourse" means any action that will change the location of the channel occupied by water within the banks of any portion of a riverine waterbody.

[...]

"Area of special flood hazard" means the land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. It is shown on the flood insurance rate map (FIRM) as zone A, AO, AH, A1-30, AE, A99, AR (V, VO, V1-30, VE). "Special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".

[...]

"Development" means any manmade change to improved or unimproved real estate in the special flood hazard area (SFHA), including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, subdivision of land, removal of more than five percent of the native vegetation on the property, ~~or~~ alteration of natural site characteristics, or storage of equipment or materials.

[…]

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

A. The overflow of inland or tidal waters; and/or

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

C. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (A) of this definition.

"Flood elevation study (FES)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards. Also known as a flood insurance study (FIS).

"Flood insurance rate map (FIRM)" means the official map on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas and the risk premium zones applicable to the city of Tumwater.

"Flood insurance study (FIS)" means the official report provided by the Federal Emergency Management Agency that includes flood profiles, the flood insurance rate map (FIRM), and the water surface elevation of the base flood.

[…]

"Floodplain administrator" means the community official designated by title to administer and enforce the floodplain management regulations.

"Flood proofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents. Flood proofed structures are those that have the structural integrity and design to be impervious to floodwater below the base flood elevation.

"Floodway" means the channel of a stream or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point. Also referred to as "regulatory floodway".

"Functionally dependent use" means a use that must be located or carried out close to water, e.g., docking or port facilities necessary for the unloading of cargo or passengers or shipbuilding and ship repair, and does not include long term storage or related manufacturing facilities.

"Highest adjacent grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

[…]

"Mean sea level" means for the purposes of the National Flood Insurance Program, the vertical datum to which base flood elevations shown on a community's flood insurance rate map are referenced.

[…]

"New construction" means structures for which the "start of construction" commenced on or after the effective date of this chapter and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

[…]

"Special flood hazard area (SFHA)" means the land subject to inundation by the base flood. Special flood hazard areas are designated on flood insurance rate maps (FIRMs) with the letters "A" or "V" including AE, AO, AH, A1-99 and VE. The special flood hazard area is also referred to as the area of special flood hazard or SFHA.

[…}

"Structure" means a walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

[…]

"Substantial improvement" means any repair, reconstruction, rehabilitation, addition, replacement, or other improvement of a structure, the cost of which equals or exceeds fifty percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not include any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure."

[…]

"Zone" means one or more areas delineated on the FIRM. The following zones may be used on the adopted FIRM. The special flood hazard area (SFHA) is comprised of the A and V zones.

"A" means SFHA where no base flood elevation (BFE) is provided.

"A#" means numbered A zones (e.g., A7 or A14), SFHA with a ~~base flood~~ elevation BFE.

"AE" means SFHA with a ~~base flood~~ elevation BFE.

"AO" means SFHA subject to inundation by shallow flooding usually resulting from sheet flow on sloping terrain, with average depths between one and three feet. Average flood depths are shown.

"AH" means SFHA subject to inundation by shallow flooding (usually areas of ponding) with average depths between one and three feet. ~~Base flood elevations~~ BFEs are shown.

"B" means the area between the SFHA and the five-hundred-year flood of the primary source of flooding. It may also be an area with a local, shallow flooding problem or an area protected by a levee.

"C" means an area of minimal flood hazard, as above the five-hundred-year flood level of the primary source of flooding. B and C zones may have flooding that does not meet the criteria to be mapped as a special flood hazard area, especially ponding and local drainage problems.

"D" means area of undetermined but possible flood hazard.

"V" means the SFHA subject to coastal high hazard flooding including waves of three feet or greater in height. There are three types of V zones: V, V#, and VE, and they correspond to the A zone designations.

"X" means the area outside the mapped SFHA.

"Shaded X" means the same as a zone B, above.

2. Special Flood Hazard Areas

The intent of this amendment is to update the FIS areas and FIRM identified by FEMA to the most current versions effective May 8, 2024.

Code Section to be amended:

- 18.38.090 – Special flood hazard areas.

Proposed amendment language:

18.38.090 Special flood hazard area.

A. The special flood hazard area (SFHA) is the area subject to flooding by the base flood and subject to the provisions of this chapter. It is identified by the Federal Emergency Management Agency in a scientific and engineering report entitled, "Flood Insurance Study for Thurston County, Washington and Incorporated Areas," dated ~~October 16, 2012~~ May 8, 2024 and any revisions thereto, with an accompanying Flood Insurance Rate Map (FIRM) for Thurston County, Washington and Incorporated Areas, dated ~~October 16, 2012~~ May 8, 2024, and any revisions thereto, which are hereby adopted by reference and declared to be a part of this chapter. The flood insurance study and the FIRM are on file at Tumwater City Hall, 555 Israel Road SW, Tumwater, Washington 98501.

B. Upon receipt of a floodplain development permit application, the floodplain administrator shall compare the elevation of the site to the base flood elevation. A development project is not subject to the requirements of this chapter if it is located on land that can be shown to be:

1. Outside the protected area; and

2. *Higher than the ~~base flood elevation~~ BFE as demonstrated by an elevation certificate.*

The floodplain administrator shall inform the applicant that the project will still be subject to the flood insurance purchase requirements unless the owner receives a letter of map amendment from FEMA.

C. The floodplain administrator shall make interpretations where needed, as to the exact location of the boundaries of the SFHA and the protected area (e.g., where there appears to

be a conflict between the mapped SFHA boundary and actual field conditions as determined by the ~~base flood elevation~~ BFE and ground elevations). The applicant may appeal the floodplain administrator's interpretation of the location of the boundary to the hearing examiner.

3. Flood Hazard Data

This code section amendment is intended to clarify the source of the most current flood data and maps.

Code Sections to be amended:

- TMC 18.38.100 – Flood hazard data.

Proposed amendment language:

18.38.100 Flood hazard data.

A. The base flood elevation (BFE) for the SFHAs of the city of Tumwater shall be as delineated on the one-hundred-year flood profiles in the Flood Insurance Study for Thurston County, Washington and Incorporated Areas.

B. The ~~base flood elevation~~ BFE for each SFHA delineated as a "zone AH" or "zone AO" shall be that elevation (or depth) delineated on the flood insurance rate map (FIRM). Where base flood depths are not available in zone AO, the base flood elevation shall be considered to be two feet above the highest grade adjacent to the structure.

C. The ~~base flood elevation~~ BFE for all other SFHAs shall be as defined in subsection F of this section and 18.38.120(C).

D. The flood protection elevation (FPE) shall be the base flood elevation plus one foot.

E. The floodway shall be as delineated on the ~~flood insurance rate map~~ FIRM or in accordance with subsection F of this section and TMC 18.38.120(D).

F. Where ~~base flood elevation~~ BFE and floodway data have not been provided in special flood hazard areas in accordance with 18.38.090, the floodplain administrator shall obtain, review, and reasonably utilize any ~~base flood elevation~~ BFE and floodway data available from a federal, state, or other source.

4. Floodplain Development Permit Required

This code section amendment is intended to clarify when and where a floodplain development permit is required.

Code Sections to be amended:

- TMC 18.38.130 – Floodplain development permit required.

Proposed amendment language:

18.38.130 ~~Establishment of f~~Floodplain development permit ~~shall be obtained~~ required.
A floodplain development permit ~~shall be obtained~~ is required before construction or development begins within the special flood hazard area (SFHA) established in TMC 18.38.090. The permit shall be for all development as set forth in TMC 18.38.070, Definitions.

5. Floodplain Development Permit

This code section amendment is intended to add new permit application requirements such as elevation certificate information requirements, elevations related to mean sea level, and engineering analysis requirements.

Code Sections to be amended:

- TMC 18.38.140 – Floodplain development permit application.

Proposed amendment language:

18.38.140 Floodplain development permit application.
Application for a floodplain development permit shall be made on forms furnished by the floodplain administrator and shall include, but are not limited to:

[...]

C. If the proposed project includes a new structure, substantial improvement, or repairs to a substantially damaged structure that will be elevated, the application shall include the flood protection elevation (FPE) for the building site and the proposed elevations of the following:

1. *The top of bottom floor (including basement, crawlspace, or enclosure floor).*
2. *The top of the next higher floor.*
3. *The bottom of the lowest horizontal structural member (in V zones only).*
4. *The top of the slab of an attached garage.*
5. *The lowest elevation of machinery or equipment servicing the structure.*
6. *The lowest adjacent (finished) grade next to structure.*
7. *The highest adjacent (finished) grade next to structure.*

8. The lowest adjacent grade at the lowest elevation of a deck or stairs, including structural support.

[…]

E. If a project will alter the base flood elevation data (BFE) or boundaries of the SFHA, the project applicant shall provide the floodplain administrator with engineering documentation and analysis regarding the proposed change. If the change to the BFE or boundaries of the SFHA would normally require a Letter of Map Change, the project approval shall be conditioned accordingly.

F~~E~~. The proposed project must be designed and located so that new structural flood protection is not needed.

G~~F~~. The application shall include a description of the extent to which a stream, lake, or other water body, including its shoreline, will be altered or relocated as a result of the proposed development.

1. Bank stabilization measures along salmonid-bearing streams, channel migration zones, and along estuarine and marine shorelines must be minimized to the maximum extent possible. If bank stabilization measures are necessary, bioengineered armoring of streambanks and shorelines must be used.

2. Channel Migration. No activity is allowed that limits the natural meandering pattern of the channel migration zone; however, natural channel migration patterns may be enhanced or restored.

H~~G~~. The application shall include documentation that the applicant will apply for all necessary permits required by federal, state, or local law. The application shall include written acknowledgment that the applicant understands that the final certification of use or certificate of occupancy will be issued only if the applicant provides copies of the required federal, state, and local permits or letters stating that a permit is not required. The floodplain permit is not valid if those other permits and approvals are not obtained prior to any ground disturbing work or structural improvements.

I~~H~~. The application shall include acknowledgment by the applicant that representatives of any federal, state or local unit of government with regulatory authority over the project are authorized to enter upon the property to inspect the development.

J. The application shall include the elevation in relation to mean sea level, of the lowest floor (including basement) of all structures recorded on a current elevation certificate with section B completed by the floodplain administrator.

K. The application shall include the elevation relation to mean sea level to which any structure has been flood proofed.

L. The application shall include, where development is proposed in a floodway, an engineering analysis indicating no rise of the base flood elevation (BFE).

M. The application shall include any other such information that may be reasonably required by the floodplain administrator in order to review the application.

6. Duties of the Floodplain Administrator

This code section amendment is intended to update language from protected area to floodway and add an additional role to the duties of the floodplain administrator.

Code Sections to be amended:

- TMC 18.38.170 – Duties of the floodplain administrator.

Proposed amendment language:

18.38.170 Duties of the floodplain administrator.
Duties of the floodplain administrator shall include, but not be limited to:

[...]

C. Review all floodplain development permits to determine if the proposed development is located in the ~~protected area~~ floodway. If located in the ~~protected area~~ floodway, ensure that the provisions of TMC 18.38.320 through 18.38.400 are met.

D. Ensure that all development activities within the special flood hazard area (SFHA) of the jurisdiction of the city of Tumwater meet the requirements of this chapter.

[…]

G. Submit reports to include the projects for which they issue floodplain development permits, including effects to flood storage, fish habitat, and all indirect effects of development and mitigation provided to FEMA as required for the National Flood Insurance Program (NFIP).

[…]

J. Interpretations as to exact location of the boundaries of the areas of special flood hazards where needed (e.g., where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation. Such appeals shall be granted consistent with the standards of 44 CFR 60.6 of the Rules and Regulations of the NFIP.

7. Records

This code section amendment is intended clarify what information is to be retained and what specific elevations are required for records.

Code Sections to be amended:

- TMC 18.38.180 – Records.

Proposed amendment language:

18.38.180 Records.

A. Where base flood elevation data (BFE) have been obtained pursuant to TMC 18.38.100 and 18.38.120, the floodplain administrator shall obtain, record, and maintain the actual "finished construction" elevations (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, for the locations listed in TMC 18.38.140(C), and whether or not the structure contains a basement. This information shall be recorded on a current FEMA Elevation Certificate ~~(FEMA Form 81-31)~~, signed and sealed by a professional land surveyor, currently licensed in the state of Washington.

B. For all new or substantially improved dry floodproofed nonresidential structures, where ~~base flood elevation~~ BFE data has been obtained pursuant to TMC 18.38.100 and 18.38.120, the floodplain administrator shall: ~~obtain~~

1. Obtain, record and maintain the elevation (in relation to ~~the datum of the effective FIRM~~ mean sea level) to which the structure was floodproofed.

2. This information shall be recorded on a current FEMA floodproofing certificate ~~(FEMA FORM 81-65)~~ by a professional engineer currently licensed in the state of Washington.

C. Where elevation data is not available, either through the FIS, FIRM, or from another authoritative source (as required by TMC 18.38.100(F)), the floodplain administrator shall review applications for floodplain development to assure that proposed construction will be reasonably safe from flooding based on the use of historical data, high water marks, photographs of past flooding, etc., where available.

Failure to elevate habitable buildings at least two feet above the highest adjacent grade in these zones may result in higher insurance rates.

D. The floodplain administrator shall obtain, record, and maintain the records for public inspection of the following:

1. Certification required by TMC 18.38.360(1).

2. Records of all variance actions, including justification for their issuance.

3. Improvement and damage calculations.

4. All records pertaining to the provisions of this ordinance.

8. Development and Subdivisions

The proposed amendments clarify which types of land division proposals are subject to the requirements of this section and add requirements for projects over a certain size.

Code Section to be amended:

- TMC 18.38.210 – Development and subdivisions.

Proposed amendment language:

18.38.210 Development and ~~S~~ subdivisions.
This section applies to all development and subdivision proposals~~,~~. Subdivision proposals include short subdivisions, short plats, binding site plans, planned developments, and new and expansions to manufactured housing parks.

A. All proposals shall be consistent with the need to minimize flood damage.

B. ~~The~~ A proposed subdivision must have one or more new lots in the special flood hazard area (SFHA) set aside for open space use through deed restriction, easement, subdivision covenant, or donation to a public agency.

1. In the ~~special flood hazard area~~ (SFHA) outside the protected area, zoning must maintain a low density of floodplain development.

2. In the ~~special flood hazard area~~ (SFHA) outside the protected area in which the current zoning is less than five acres must maintain the current zoning.

3. The density of the development in the portion of the development outside the ~~special flood hazard area~~ (SFHA) may be increased to compensate for the amount of land in the ~~special flood hazard area~~ (SFHA) preserved as open space in accordance with TMC Title 18.

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

D. All proposals shall have utilities and facilities, such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

E. All subdivision proposals shall ensure that ~~all subdivisions have~~ there is at least one access road connected to land outside the ~~special flood hazard area~~ (SFHA) with the surface of the road at or above the FPE wherever possible.

F. All proposals shall have adequate drainage provided to avoid exposure to water damage.

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

H. Where subdivision proposals and other proposed developments contain greater than fifty lots or five acres (whichever is the lesser) base flood elevation data (BFE) shall be included as part of the application.

9. Flood Protection Standards

An amendment to clarify standards for construction within specific flood zones.

Code Section to be amended:

- TMC 18.38.184 – Flood protection standards.

Proposed amendment language:

18.38.260 Flood protection standards.

A. In AE and A1-30 zones or other A zoned areas where the base flood elevation data (BFE) has been determined or can be reasonably obtained, ~~A~~ all new structures and substantial improvements of any structure shall have the lowest floor, including basement, elevated at least one foot above the ~~FPE~~ BFE.

B. The structure shall be aligned parallel with the direction of flood flows where practicable.

C. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

D. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

E. ~~The structure~~ All new construction and substantial improvements, including those related to manufactured homes, shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads including the effects of buoyancy.

F~~D~~. All materials below the FPE shall be resistant to flood damage and firmly anchored to prevent flotation. Materials harmful to aquatic wildlife, such as creosote, are prohibited below the FPE.

G~~E~~. Electrical, heating, ventilation, duct work, plumbing, and air-conditioning equipment and other service facilities shall be elevated above the FPE. Water, sewage, electrical, and other utility lines below the FPE shall be constructed so as to prevent water from entering or accumulating within them during conditions of flooding.

H~~F~~. Fully enclosed areas below the lowest floor that are subject to flooding shall be used only for parking, storage, or building access and shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall either be certified by a registered professional engineer or licensed architect and/or meet or exceed the following minimum criteria:

1. 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.

2. The bottom of all openings shall be no higher than one foot above grade.

3. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

I~~G~~. In zones V, V1-30 and VE, new structures and substantial improvements shall be elevated on pilings or columns so that:

1. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated above the FPE.

2. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one percent chance of being equaled or exceeded in any given year (one-hundred-year mean recurrence interval).

3. The areas below the lowest floor that are subject to flooding shall be free of obstruction.

4. The structure or improvement shall be located landward of the reach of mean high tide.

5. The use of fill for structural support of a structure or addition is prohibited.

6. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting these provisions.

J. New construction and substantial improvement of any residential structure in an Unnumbered A zone for which a BFE is not available and cannot be reasonably obtained shall be reasonably safe from flooding, but in all cases the lowest floor shall be at least two feet above the highest adjacent grade.

K. A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters.

10. Nonresidential construction

The amendment to this section is to make clear the nonresidential development and standards within certain flood zones.

Code Section to be amended:

- TMC 18.38.270- Nonresidential construction.

Proposed amendment language:

18.38.270 Nonresidential construction.

~~*New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall be elevated in accordance with TMC 18.38.260. As an alternative to elevation, a new or substantial improvement to a nonresidential structure and its attendant utility and sanitary facilities may be dry floodproofed in A zones. The project must meet the following:*~~

~~*A. The structure is not located in zones V, V1-30, or VE; and*~~

~~*B. Below the FPE the structure is watertight with walls substantially impermeable to the passage of water; and*~~

~~*C. The structural components are capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and*~~

~~*D. The plans are certified by a registered professional engineer or licensed architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the floodplain administrator as set forth in TMC 18.38.180(B) and 18.38.190(A)(1).*~~

New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet the requirements of TMC 18.38.270(A) or (B), below.

A. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

1. In AE and A1-30 zones or other A zoned areas where the base flood elevation data (BFE) has been determined or can be reasonably obtained:

New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated one foot or more above the BFE, or elevated as required by ASCE 24, whichever is greater. Mechanical equipment and utilities shall be waterproofed or elevated at least one foot above the BFE, or as required by ASCE 24, whichever is greater.

2. If located in an unnumbered A zone for which a BFE is not available and cannot be reasonably obtained, the lowest floor shall be at least two feet above the highest adjacent grade.

3. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited or shall meet the requirements of TMC 18.38.210.

B. If the requirements of TMC 18.38.270(A) are not met, new construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

1. Be dry flood proofed so that below one foot or more above the base flood level the structure is watertight with walls substantially impermeable to the passage of water or dry flood proofed to the elevation required by ASCE 24, whichever is greater;

2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

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 based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in TMC 18.38.180.

11. Manufactured Homes

The amendments proposed specify methods and practices to minimize flood damage.

Code Section to be amended:

- TMC 18.38.280- Manufactured homes.

Proposed amendment language:

18.38.280 Manufactured homes.
All manufactured homes to be placed or substantially improved on sites shall be:

A. Elevated on a permanent foundation in accordance with TMC 18.38.260; and

B. Securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors, and shall be installed using methods and practices that minimize flood damage. This requirement is in addition to other applicable anchoring requirements for resisting wind forces.

12. Detached Accessory Structures

A new section specific to detached accessory structures and standards for developing in the floodway.

Code Section to be added:

- TMC 18.38.285- Detached accessory structures.

Proposed amendment language:

18.38.285 Detached accessory structures.

A. Detached accessory structures used solely for parking of vehicles or limited storage may be constructed such that the floor is below the base flood elevation data (BFE), provided the structure is designed and constructed in accordance with the following requirements:

1. In special flood hazard areas other than coastal high hazard areas (Zones A, AE, AH, AO, and A1-30), the structure is not larger than a one-story two-car garage;

2. In coastal high hazard areas (Zones V, VE, V1 30, and VO), the structure is not larger than 100 sq. ft. in area;

3. The portions of the structure located below the BFE must be built using flood resistant materials;

4. The structure must be adequately anchored to prevent flotation, collapse, and lateral movement;

5. Any machinery or equipment servicing the structure must be elevated or floodproofed to or above the BFE;

6. The structure must comply with floodway encroachment provisions in TMC 18.38.360(1);

7. The structure must be designed to allow for the automatic entry and exit of flood waters in accordance with TMC 18.38.240(F);

8. The structure shall have low damage potential;

9. If the structure is converted to another use, it must be brought into full compliance with the standards governing such use; and

10. The structure shall not be used for human habitation.

13. Storage of Materials and Equipment

A new section proposed for the storage of certain materials in the floodway.

Code Section to be added:

- TMC 18.38.325- Storage of materials and equipment.

Proposed amendment language:

18.38.325 Storage of materials and equipment.

A. The storage or processing of materials that could be injurious to human, animal, or plant life if released due to damage from flooding is prohibited in special flood hazard areas.

B. Storage of other material or equipment may be allowed if not subject to damage by floods and if firmly anchored to prevent flotation, or if readily removable from the area within the time available after flood warning.

14. Floodway Standards

An amendment to clarify standards for projects within the floodway and state all construction shall comply with all flood hazard reduction provisions of TMC 18.38.

Code Section to be amended:

- TMC 18.38.360 – Floodway standards.

Proposed amendment language:

18.38.360 Floodway standards.

A. In addition to the other requirements of this chapter, a project to develop in the floodway as delineated pursuant to TMC 18.38.100(E) and (F) or 18.38.120(D) shall meet the following criteria:

1. Encroachments, including fill, new construction, substantial improvements, and other development is prohibited unless ~~T~~the applicant ~~shall~~ provide~~s~~ a certification by a registered professional engineer demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed development would not result in any increase in flood levels during the occurrence of the base flood discharge.

2. Construction or reconstruction of residential structures is prohibited within designated floodways, except for ~~the following~~ repairs, reconstruction, or improvements to a residential structure which do not increase the ground floor area. The following exceptions must still meet all other requirements in the chapter, including subsection (A)(1) of this section:

a. Repairs, reconstruction, or improvements to a residential structure that do not increase the ground floor area, providing the cost of which does not exceed fifty percent of the market value of the structure either:

i. Before the repair, or reconstruction is started; or

ii. If the structure has been damaged, and is being restored, before the damage occurred. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications that have been identified by a local code enforcement official, and which are the minimum necessary to assure safe living conditions, or to an historic structure, may be excluded from the fifty percent calculations;

b. Repairs, replacement, reconstruction, or improvements to existing farmhouses located in designated floodways and located on designated agricultural lands that do not increase the building's total square footage of encroachment and are consistent with all requirements of WAC 173-158-075;

c. Repairs, replacement, reconstruction, or improvements to substantially damaged residential dwellings other than farmhouses that do not increase the building's total square footage of encroachment and are consistent with all requirements of WAC 173-158-076; or

d. Repairs, reconstruction, or improvements to residential structures identified as historic structures that do not increase the building's dimensions.

B. In riverine special flood hazard areas where a floodway has not been delineated pursuant to TMC 18.38.100(E) and (F) or 18.38.120(D), the applicant for a project to develop in the SFHA shall provide a certification by a registered professional engineer demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed development and all other past or future similar developments would not cumulatively result in an increase of flood levels during the occurrence of the base flood discharge by more than one foot.

C. If TMC 18.38.360(A)(1) is satisfied or construction is allowed pursuant to TMC 18.38.360(A)(2), all new construction and substantial improvements in the floodway shall comply with all applicable flood hazard reduction provisions of this chapter.

15. Penalties

A new section establishing penalties for noncompliance with TMC 18.38. This section establishes a fine for violations. This section was amended after the Planning Commission work session to remove maximum fine and/or jail term for noncompliance as they are addressed in City's code enforcement procedures in TMC Title 1 *General Provisions*.

Code Section to be added.

- TMC 18.38.450- Penalties for noncompliance.

Proposed amendment language:

18.38.450 Penalties for noncompliance.

A. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions), shall constitute a misdemeanor. Nothing herein contained shall prevent the city of Tumwater from taking such other lawful action as is necessary to prevent or remedy any violation.

B. Enforcement under this section is in addition to and does not preclude or limit any other forms of enforcement available to the city including, but not limited to, enforcement under any provision of TMC Chapter 1.10, nuisance actions, actions for injunctions, or any other civil or equitable actions to abate, discontinue, or correct, acts in violation of this code.

Public Approval Process

An Environmental Checklist for a non-project action was prepared on December 13, 2023, under the State Environmental Policy Act (Chapter 43.21C RCW), pursuant to Chapter 197-11 WAC, and a Determination of Non-Significance was issued on December 29, 2023.

The ordinance was sent to the Washington State Department of Commerce on December 14, 2023, for their required 60-day review before the proposed text amendments are adopted, in accordance with RCW 36.70A.106.

The Planning Commission received a briefing on proposed code amendments on January 9, 2024, and held a work session on January 23, 2024. A Notice of Public Hearing for the Planning Commission was issued on February 2, 2024, ten days prior to a public hearing. The notice was posted, published as a press release, distributed to interested individuals and entities that have requested such notices, and published in *The Olympian*.

The Planning Commission held a public hearing on the final proposed amendments on February 13, 2024. Following the public hearing and deliberations, the Planning Commission recommended that the City Council consider the proposed amendments.

The City Council is scheduled to review the final proposed amendments at a work session on March 11, 2024. The City Council is scheduled to consider final proposed amendments on March 19, 2024.

Public Notification

A Notice of Public Hearing for the February 13, 2024, Planning Commission public hearing was issued, posted, mailed to interested parties, and published in *The Olympian* ten days prior to

the public hearing on February 2, 2024, after the Planning Commission set the public hearing date on January 23, 2024.

Staff Conclusions

1. The proposed text amendments will need to be consistent with the goals of the Washington State Growth Management Act.
    a. The ordinance will need to be consistent with Goal 7 of the Growth Management Act which states:

        Permits. Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.

        The ordinance will establish concise requirements for developments and allowed uses in the floodway. It will establish clear permitting application requirements.

    b. This ordinance will need to be consistent with Goal 10 of the Growth Management Act which states:

        Protect and enhance the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

        The ordinance will establish concise requirements and protections in the floodway.

    c. This ordinance will need to be consistent with Goal 14 of the Growth Management Act which states:

        Ensure that comprehensive plans, development regulations, and regional policies, plans, and strategies under RCW 36.70A.210 and chapter 47.80 RCW adapt to and mitigate the effects of a changing climate; support reductions in greenhouse gas emissions and per capita vehicle miles traveled; prepare for climate impact scenarios; foster resiliency to climate impacts and natural hazards; protect and enhance environmental, economic, and human health and safety; and advance environmental justice.

        The ordinance will establish concise development regulations to protect development and people from natural flood hazards and protect and enhance the environment.

2. The proposed amendments will need to be consistent with the Conservation Element of the Comprehensive Plan because the proposed amendments address permitting, development regulations, allowable uses, and critical areas.
    a. Goal 2 of the Conservation Element states:

        Designate and protect critical areas including wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas in accordance with the Growth Management Act to protect the functions and values of these areas as well as to protect against threats to health, safety, and property.

b. Action item C-2.1 of the Conservation Element states:

Include best available science in developing policies and development regulations to protect the functions and values of critical areas and consider conservation or protection measures necessary to preserve or enhance anadromous fisheries, consistent with the Growth Management Act.

3. The proposed amendments will need to be consistent with the Land Use Element by improving and updating the existing regulations for floodways, permitted uses in flood zones, and update the review and approval of applications for development in floodways.

   a. Goal LU-2 of the Land Use Element states:

   Ensure development takes place in an orderly and cost-efficient manner in order to best utilize available land and public services, conserve natural resources, protect critical areas, preserve open space, and reduce sprawl.

   b. Goal LU-8 of the Land Use Element states:

   Ensure physical limitations of the land are observed during the development process.

4. Based on the above review and analysis, staff will need to conclude that the proposed text amendments are consistent with the requirements of the Washington State Growth Management Act and the Tumwater Comprehensive Plan.

Planning Commission Recommendation

After a public hearing, the Planning Commission recommended that the City Council approve the ordinance.

Effects of the Proposed Amendments

The proposed text amendments would necessitate changes to the Tumwater Municipal Code.

Staff Contacts

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ORDINANCE NO. O2023-017

AN ORDINANCE of the City Council of the City of Tumwater, Washington, amending Chapter 18.38, FP Flood Plain Overlay, of the Tumwater Municipal Code to address updates needed to bring the regulations into compliance with National Flood Insurance Program and State of Washington standards.

WHEREAS, the Legislature of the State of Washington has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare; and

WHEREAS, areas of the City are subject to periodic inundation and channel migration which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for protection and relief from flooding and channel migration, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare; and

WHEREAS, when floodplains and watersheds are developed without taking appropriate care and precautions, flood heights, frequencies, and velocities increase, causing a greater threat to humans, damage to property, destruction of natural floodplain functions, and adverse impacts to water quality and habitat; and

WHEREAS, rivers, streams, lakes, estuarine and marine areas, and their floodplains are major elements of healthy aquatic and riparian habitats and conveyance of flood waters. If watersheds, rivers, streams, lakes, estuaries, floodplains and other systems are not viewed holistically as biological and geomorphologic units, it can lead to serious degradation of habitat and increased flood hazards to people and human development; and

WHEREAS, over the years, natural processes have evolved that manage flood waters and channel flows in the most effective and efficient manner. Disruption of these processes through alterations to land cover, stream channels, wetlands, and other water bodies leads to increased flood hazards, loss of life and property, threats to public health, and loss of habitat; and

WHEREAS, State Department of Ecology staff completed a Federal Emergency Management Agency floodplain community assistance visit with City staff in May 2023 to review the City's participation in the National Flood Insurance Program (NFIP); and

WHEREAS, State Department of Ecology staff and City staff reviewed the City's NFIP community profile; and

WHEREAS, State Department of Ecology staff prepared a field report and completed an ordinance review based on 44 CFR 60, the Washington Model Ordinance and the checklist used to review local ordinances for NFIP compliance; and

WHEREAS, it was determined that Tumwater Municipal Code (TMC) 18.38 *FP Floodplain Overlay* should be updated to reflect current standards; and

WHEREAS, the Federal Emergency Management Agency has produced a new digital Flood Insurance Study and Flood Insurance Rate Map for the Deschutes River that will become effective on May 8, 2024; and

WHEREAS, the City is required to adopt the new digital Flood Insurance Study and Flood Insurance Rate Map for the Deschutes River and to regulate development within flood prone areas by the effective date using up to date regulations; and

WHEREAS, it is timely to amend the City's existing floodplain regulations to be more consistent with the Model Ordinance for Floodplain Management under the NFIP and the Endangered Species Act prior to May 8, 2024; and

WHEREAS, this Ordinance meets the goals and requirements of the Growth Management Act; and

WHEREAS, the proposed amendments to the City's existing floodplain regulations are consistent with the City's Comprehensive Plan; and

WHEREAS, the Attorney General *Advisory Memorandum and Recommended Process for Evaluating Proposed Regulatory or Administrative Actions to Avoid Unconstitutional Takings of Private Property* (September 2018) was reviewed and utilized by the City in objectively evaluating the proposed amendments; and

WHEREAS, this Ordinance was sent to the Washington State Department of Commerce on December 14, 2023 at least sixty days before the proposed code amendments were adopted, in accordance with RCW 36.70A.106; and

WHEREAS, on December 14, 2023, the Washington State Department of Commerce notified the City of Tumwater that the requirements for State Agency notification for the proposed amendments had been met, as required by RCW 36.70A.106; and

WHEREAS, an Environmental Checklist for a non-project action was prepared under the State Environmental Policy Act (Chapter 43.21C RCW),

pursuant to Chapter 197-11 WAC on December 13, 2023, and a Determination of Non-Significance (DNS) was issued on December 29, 2023; and

WHEREAS, the Planning Commission had a briefing on the code amendments on January 9, 2024, and a work session on the code amendments on January 23, 2024; and

WHEREAS, the Planning Commission held a public hearing on the code amendments on February 13, 2024; and

WHEREAS, following the public hearing and deliberations, the Planning Commission recommended approval of the code amendments by the City Council; and

WHEREAS, the City Council discussed the Planning Commission's recommendation on the code amendments at a work session on March 12, 2024; and

WHEREAS, the City Council considered the proposed code amendments on March 19, 2024; and

WHEREAS, the City Council finds that the provisions of this Ordinance are in the best interest of and protect the health, safety, and welfare of the residents of the City.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF TUMWATER, STATE OF WASHINGTON, DOES ORDAIN AS FOLLOWS:

Section 1. Section 18.38.070, Definitions, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.070 Definitions.

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

"Adversely affect/adverse effect" means effects that are a direct or indirect result of the proposed action, or its interrelated or interdependent actions, and the effect is not discountable, insignificant or beneficial. Discountable effects are extremely unlikely to occur. Insignificant effects relate to the size of the impact and should never reach the scale where a take occurs. Based on best judgment, a person would not: (A) be able to meaningfully measure, detect, or evaluate insignificant effects; or (B) expect discountable effects to occur. Beneficial effects are contemporaneous positive effects without any adverse effects. In the event that the overall effect of the proposed action is beneficial, but is also likely to cause some adverse effects, then the proposed action is considered to result in an adverse effect.

"Alteration of watercourse" means any action that will change the location of the channel occupied by water within the banks of any portion of a riverine waterbody.

"Appurtenant structure" means a structure which is on the same parcel of property as the principal structure to be insured and the use of which is incidental to the use of the principal structure.

"Area of special flood hazard" means the land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. It is shown on the flood insurance rate map (FIRM) as zone A, AO, AH, A1-30, AE, A99, AR (V, VO, V1-30, VE). "Special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".

"Base flood" means the flood having a one percent chance of being equaled or exceeded in any given year (also referred to as the "one-hundred-year flood"). The area subject to the base flood is the special flood hazard area (SFHA) designated on flood insurance rate maps (FIRMs) as zones "A" or "V" including AE, AO, AH, A1-99 and VE.

"Base flood elevation (BFE)" means the elevation of the base flood above the datum of the effective FIRM.

"Basement" means any area of the structure having its floor sub-grade (below ground level) on all sides.

"Channel migration zone" means the area within the lateral extent of likely stream channel movement due to stream bank destabilization and erosion, rapid stream incision, aggradation, avulsions, and shifts in location of stream channels.

"Critical facility" means a facility necessary to protect the public health, safety and welfare during a flood. Critical facilities include, but are not limited to, schools, nursing homes, hospitals, police, fire and emergency operations installations, water and wastewater treatment plants, electric power stations, and installations which produce, use, or store hazardous materials or hazardous waste (other than consumer products containing hazardous substances or hazardous waste intended for household use).

"Development" means any manmade change to improved or unimproved real estate in the special flood hazard area (SFHA), including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, subdivision of land, removal of more than five percent of the native vegetation on the property, ~~or~~ alteration of natural site characteristics, or storage of equipment or materials.

"Dry floodproofing" means any combination of structural and nonstructural measures that prevent flood waters from entering a structure.

"Elevation certificate" means the official form ~~(FEMA Form 81-31)~~ used to provide elevation information necessary to ensure compliance with provisions of this chapter and determine the proper flood insurance premium rate.

"FEMA" means the Federal Emergency Management Agency, the agency responsible for administering the National Flood Insurance Program (NFIP).

"Fish and wildlife habitat conservation area" means lands needed to maintain species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created. These areas are designated by the city of Tumwater pursuant to the Washington State Growth Management Act and implementing regulations.

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

A. The overflow of inland or tidal waters; and/or

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

C. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (A) of this definition.

"Flood elevation study (FES)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards. Also known as a flood insurance study (FIS).

"Flood insurance rate map (FIRM)" means the official map on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas and the risk premium zones applicable to the city of Tumwater.

"Flood insurance study (FIS)" means the official report provided by the Federal Emergency Management Agency that includes flood profiles, the flood insurance rate map (FIRM), and the water surface elevation of the base flood.

"Flood protection elevation (FPE)" means the elevation above the datum of the effective FIRM to which new and substantially improved structures must be protected from flood damage.

"Floodplain administrator" means the community official designated by title to administer and enforce the floodplain management regulations.

"Flood proofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents. Flood proofed structures are those that have the structural integrity and design to be impervious to floodwater below the base flood elevation (BFE).

"Floodway" means the channel of a stream or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point. Also referred to as "regulatory floodway".

"Functionally dependent use" means a use that must be located or carried out close to water, e.g., docking or port facilities necessary for the unloading of cargo or passengers or shipbuilding and ship repair, and does not include long term storage or related manufacturing facilities.

"Highest adjacent grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

"Historic structure" means a structure that:

A. Is listed on the National Register of Historic Places, the Washington Heritage Register, or the Washington Heritage Barn Register; or

B. Has been certified to contribute to the historical significance of a registered historic district.

"Hyporheic zone" means a saturated layer of rock or sediment beneath and/or adjacent to a stream channel that contains some proportion of channel water or that has been altered by channel water infiltration.

"Impervious surface" means a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.

"Lowest floor" means the lowest floor of the lowest enclosed area (including basement or crawlspace). 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 structure's lowest floor; provided, that such enclosure is compliant with TMC 18.38.260(F) (i.e., provided there are adequate openings to allow floodwaters into the area).

"Manufactured home" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

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

"Mean sea level" means for the purposes of the National Flood Insurance Program (NFIP), the vertical datum to which base flood elevations (BFEs) shown on a community's flood insurance rate map (FIRM) are referenced.

"Native vegetation" means plant species that are indigenous to the community's area and that reasonably could be expected to naturally occur on the site.

"Natural floodplain functions" means the contribution that a floodplain makes to support habitat, including, but not limited to, providing flood storage and conveyance, reducing flood velocities, reducing sedimentation, filtering nutrients and impurities from runoff, processing organic wastes, moderating temperature fluctuations, and providing breeding and feeding grounds, shelter, and refugia for aquatic or riparian species.

"New construction" means structures for which the "start of construction" commenced on or after the effective date of this chapter and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

"Protected area" means the lands that lie within the boundaries of the floodway, the riparian habitat zone, and the channel migration area. Because of the impact that development can have on flood heights and velocities and habitat, special rules apply in the protected area.

"Recreational vehicle" means a vehicle:

A. Built on a single chassis; and

B. Four hundred square feet or less when measured at the largest horizontal projection; and

C. Designed to be self-propelled or permanently towable by an automobile or light duty truck; and

D. Designed primarily for use as temporary living quarters for recreational, camping, travel, or seasonal use, not as a permanent dwelling.

"Riparian" means of, adjacent to, or living on the bank of a river, lake, pond, ocean, sound, or other water body.

"Riparian habitat zone" means the water body and adjacent land areas that are likely to support aquatic and riparian habitat as detailed in TMC 18.38.110(C).

"Special flood hazard area (SFHA)" means the land subject to inundation by the base flood. Special flood hazard areas are designated on flood insurance rate maps (FIRMs) with the letters "A" or "V" including AE, AO, AH, A1-99 and VE. The special flood hazard area is also referred to as the area of special flood hazard or SFHA.

"Start of construction" includes substantial improvement, and means the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement that occurred before the permit's expiration date. The actual

start is either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory structures not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"Structure" means a walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

"Substantial damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty percent of the market value of the structure before the damage occurred. Substantial damage also means flood-related damage sustained by a structure on two separate occasions during a ten-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds twenty-five percent of the market value of the structure before the damage occurred.

"Substantial improvement" means any repair, reconstruction, rehabilitation, addition, replacement, or other improvement of a structure, the cost of which equals or exceeds fifty percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not include any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure."

"Variance" means a grant of relief from the requirements of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter.

"Water typing" means a system for classifying water bodies according to their size and fish habitat characteristics. The Washington Department of Natural Resources' Forest Practices Water Typing classification system is hereby adopted by reference. The system defines four water types:

A. Type "S" = shoreline: streams that are designated "shorelines of the state," including marine shorelines.

B. Type “F” = fish: streams that are known to be used by fish or meet the physical criteria to be potentially used by fish.

C. Type “Np” = nonfish perennial streams.

D. Type “Ns” = nonfish seasonal streams.

“Zone” means one or more areas delineated on the FIRM. The following zones may be used on the adopted FIRM. The special flood hazard area (SFHA) is comprised of the A and V zones.

“A” means SFHA where no base flood elevation (BFE) is provided.

“A#” means numbered A zones (e.g., A7 or A14), SFHA with a ~~base flood~~ elevation BFE.

“AE” means SFHA with a ~~base flood~~ elevation BFE.

“AO” means SFHA subject to inundation by shallow flooding usually resulting from sheet flow on sloping terrain, with average depths between one and three feet. Average flood depths are shown.

“AH” means SFHA subject to inundation by shallow flooding (usually areas of ponding) with average depths between one and three feet. ~~Base flood elevations~~ BFEs are shown.

“B” means the area between the SFHA and the five-hundred-year flood of the primary source of flooding. It may also be an area with a local, shallow flooding problem or an area protected by a levee.

“C” means an area of minimal flood hazard, as above the five-hundred-year flood level of the primary source of flooding. B and C zones may have flooding that does not meet the criteria to be mapped as a special flood hazard area, especially ponding and local drainage problems.

“D” means area of undetermined but possible flood hazard.

“V” means the SFHA subject to coastal high hazard flooding including waves of three feet or greater in height. There are three types of V zones: V, V#, and VE, and they correspond to the A zone designations.

“X” means the area outside the mapped SFHA.

“Shaded X” means the same as a zone B, above.

(Ord. O2015-007, Amended, 02/02/2016)

Section 2. Section 18.38.090, Special flood hazard area, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.090 Special flood hazard area.

A. The special flood hazard area (SFHA) is the area subject to flooding by the base flood and subject to the provisions of this chapter. It is identified by the Federal Emergency Management Agency in a scientific and engineering report entitled,

"Flood Insurance Study for Thurston County, Washington and Incorporated Areas," dated ~~October 16, 2012~~May 8, 2024 and any revisions thereto, with an accompanying Flood Insurance Rate Map (FIRM) for Thurston County, Washington and Incorporated Areas, dated ~~October 16, 2012~~May 8, 2024, and any revisions thereto, which are hereby adopted by reference and declared to be a part of this chapter. The flood insurance study (FIS) and the FIRM are on file at Tumwater City Hall, 555 Israel Road SW, Tumwater, Washington 98501.

B. Upon receipt of a floodplain development permit application, the floodplain administrator shall compare the elevation of the site to the base flood elevation (BFE). A development project is not subject to the requirements of this chapter if it is located on land that can be shown to be:

1. Outside the protected area; and

2. Higher than the ~~base flood elevation~~ BFE as demonstrated by an elevation certificate.

The floodplain administrator shall inform the applicant that the project will still be subject to the flood insurance purchase requirements unless the owner receives a letter of map amendment from FEMA.

C. The floodplain administrator shall make interpretations where needed, as to the exact location of the boundaries of the SFHA and the protected area (e.g., where there appears to be a conflict between the mapped SFHA boundary and actual field conditions as determined by the ~~base flood elevation~~ BFE and ground elevations). The applicant may appeal the floodplain administrator's interpretation of the location of the boundary to the hearing examiner.

(Ord. O2016-009, Amended, 07/09/2016; Ord. O2015-007, Amended, 02/02/2016)

Section 3. Section 18.38.100, Flood hazard data, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.100 Flood hazard data.

A. The base flood elevation (BFE) for the SFHAs of the city of Tumwater shall be as delineated on the one-hundred-year flood profiles in the Flood Insurance Study for Thurston County, Washington and Incorporated Areas.

B. The ~~base flood elevation~~ BFE for each SFHA delineated as a "zone AH" or "zone AO" shall be that elevation (or depth) delineated on the flood insurance rate map (FIRM). Where base flood depths are not available in zone AO, the base flood elevation shall be considered to be two feet above the highest grade adjacent to the structure.

C. The ~~base flood elevation~~ BFE for all other SFHAs shall be as defined in subsection F of this section and 18.38.120(C).

D. The flood protection elevation (FPE) shall be the base flood elevation plus one foot.

E. The floodway shall be as delineated on the ~~flood insurance rate map~~ FIRM or in accordance with subsection F of this section and TMC 18.38.120(D).

F. Where ~~base flood elevation~~ BFE and floodway data have not been provided in special flood hazard areas in accordance with 18.38.090, the floodplain administrator shall obtain, review, and reasonably utilize any ~~base flood elevation~~ BFE and floodway data available from a federal, state, or other source.

(Ord. O2015-007, Amended, 02/02/2016)

Section 4. Section 18.38.130, Establishment of floodplain development permit, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.130 ~~Establishment of f~~Floodplain development permit required.
A floodplain development permit ~~shall be obtained~~ is required before construction or development begins within the special flood hazard area (SFHA) established in TMC 18.38.090. The permit shall be for all development as set forth in TMC 18.38.070, Definitions.

(Ord. O2015-007, Amended, 02/02/2016)

Section 5. Section 18.38.140, Floodplain development permit application, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.140 Floodplain development permit application.
Application for a floodplain development permit shall be made on forms furnished by the floodplain administrator and shall include, but are not limited to:

A. One or more site plans, drawn to scale, showing:

1. The nature, location, dimensions, and elevations of the property in question;

2. Names and location of all lakes, water bodies, waterways and drainage facilities within three hundred feet of the site;

3. The elevations of the ten-, fifty-, one-hundred-, and five-hundred-year floods, where such data are available;

4. The boundaries of the SFHA, floodway, riparian habitat zone, and channel migration area, delineated in accordance with TMC 18.38.080 through 18.38.120;

5. The proposed drainage system including, but not limited to, storm sewers, overland flow paths, detention facilities and roads;

6. Existing and proposed structures, fill, pavement and other impervious surfaces, and sites for storage of materials;

7. All wetlands;

8. Designated fish and wildlife habitat conservation areas, and habitat areas identified for conservation or protection under state or federal or local laws or regulations (e.g., Endangered Species Act, Magnuson-Stevens Fishery

Conservation and Management Act, Growth Management Act, Shorelines Management Act, Priority Habitat and Species List); and

9. Existing native vegetation and proposed revegetation.

B. If the proposed project involves grading, excavation, or filling, the site plan shall include proposed post-development terrain at one-foot contour intervals.

C. If the proposed project includes a new structure, substantial improvement, or repairs to a substantially damaged structure that will be elevated, the application shall include the flood protection elevation (FPE) for the building site and the proposed elevations of the following:

1. The top of bottom floor (including basement, crawlspace, or enclosure floor).
2. The top of the next higher floor.
3. The bottom of the lowest horizontal structural member (in V zones only).
4. The top of the slab of an attached garage.
5. The lowest elevation of machinery or equipment servicing the structure.
6. The lowest adjacent (finished) grade next to structure.
7. The highest adjacent (finished) grade next to structure.
8. The lowest adjacent grade at the lowest elevation of a deck or stairs, including structural support.

D. If the proposed project includes a new structure, substantial improvement, or repairs to a substantially damaged nonresidential structure that will be dry floodproofed, the application shall include the FPE for the building site, the elevation in relation to the datum of the effective FIRM to which the structure will be dry floodproofed, and a certification by a registered professional engineer or licensed architect that the dry floodproofing methods meet the floodproofing criteria in TMC 18.38.270.

E. If a project will alter the base flood elevation data (BFE) or boundaries of the SFHA, the project applicant shall provide the floodplain administrator with engineering documentation and analysis regarding the proposed change. If the change to the BFE or boundaries of the SFHA would normally require a Letter of Map Change, the project approval shall be conditioned accordingly.

F~~E~~. The proposed project must be designed and located so that new structural flood protection is not needed.

G~~F~~. The application shall include a description of the extent to which a stream, lake, or other water body, including its shoreline, will be altered or relocated as a result of the proposed development.

1. Bank stabilization measures along salmonid-bearing streams, channel migration zones, and along estuarine and marine shorelines must be minimized

to the maximum extent possible. If bank stabilization measures are necessary, bioengineered armoring of streambanks and shorelines must be used.

2. Channel Migration. No activity is allowed that limits the natural meandering pattern of the channel migration zone; however, natural channel migration patterns may be enhanced or restored.

HG. The application shall include documentation that the applicant will apply for all necessary permits required by federal, state, or local law. The application shall include written acknowledgment that the applicant understands that the final certification of use or certificate of occupancy will be issued only if the applicant provides copies of the required federal, state, and local permits or letters stating that a permit is not required. The floodplain permit is not valid if those other permits and approvals are not obtained prior to any ground disturbing work or structural improvements.

IH. The application shall include acknowledgment by the applicant that representatives of any federal, state or local unit of government with regulatory authority over the project are authorized to enter upon the property to inspect the development.

J. The application shall include the elevation in relation to mean sea level, of the lowest floor (including basement) of all structures recorded on a current elevation certificate with section B completed by the floodplain administrator.

K. The application shall include the elevation relation to mean sea level to which any structure has been flood proofed.

L. The application shall include, where development is proposed in a floodway, an engineering analysis indicating no rise of the base flood elevation (BFE).

M. The application shall include any other such information that may be reasonably required by the floodplain administrator in order to review the application.

(Ord. O2015-007, Amended, 02/02/2016)

Section 6. Section 18.38.170, Duties of the floodplain administrator, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.170 Duties of the floodplain administrator.

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

A. Review all floodplain development permits to determine that the permit requirements of this chapter have been satisfied.

B. Review all floodplain development permits to determine that all necessary permits have been obtained from those federal, state, or local governmental agencies from which prior approval is required, including those local, state or federal permits that may be required to assure compliance with the Endangered Species Act and/or other appropriate state or federal laws.

C. Review all floodplain development permits to determine if the proposed development is located in the ~~protected area~~ floodway. If located in the ~~protected area~~ floodway, ensure that the provisions of TMC 18.38.320 through 18.38.400 are met.

D. Ensure that all development activities within the special flood hazard area (SFHA) of the jurisdiction of the city of Tumwater meet the requirements of this chapter.

E. Inspect all development projects before, during and after construction to ensure compliance with all provisions of this chapter, including proper elevation of the structure.

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

G. Submit reports to include the projects for which they issue floodplain development permits, including effects to flood storage, fish habitat, and all indirect effects of development and mitigation provided to FEMA as required for the National Flood Insurance Program (NFIP).

H. Notify FEMA of any proposed amendments to this chapter.

I. Cooperate with state and federal agencies to improve flood and other technical data and notify FEMA of any new data that would revise the FIRM.

J. Interpretations as to exact location of the boundaries of the areas of special flood hazards where needed (e.g., where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation. Such appeals shall be granted consistent with the standards of 44 CFR 60.6 of the Rules and Regulations of the NFIP.

(Ord. O2015-007, Amended, 02/02/2016)

Section 7. Section 18.38.180, Records, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.180 Records.

A. Where base flood elevation data (BFE) have been obtained pursuant to TMC 18.38.100 and 18.38.120, the floodplain administrator shall obtain, record, and maintain the actual "finished construction" elevations (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, for the locations listed in TMC 18.38.140(C), and whether or not the structure contains a basement. This information shall be recorded on a current FEMA Elevation Certificate ~~(FEMA Form 81-31)~~, signed and sealed by a professional land surveyor, currently licensed in the state of Washington.

B. For all new or substantially improved dry floodproofed nonresidential structures, where ~~base flood elevation~~ BFE data has been obtained pursuant to TMC 18.38.100 and 18.38.120, the floodplain administrator shall~~:~~ ~~obtain~~

1. Obtain, record and maintain the elevation (in relation to ~~the datum of the effective FIRM~~ mean sea level) to which the structure was floodproofed.

2. This information shall be recorded on a current FEMA floodproofing certificate ~~(FEMA FORM 81-65)~~ by a professional engineer currently licensed in the state of Washington.

C. Where elevation data is not available, either through the FIS, FIRM, or from another authoritative source (as required by TMC 18.38.100(F)), the floodplain administrator shall review applications for floodplain development to assure that proposed construction will be reasonably safe from flooding based on the use of historical data, high water marks, photographs of past flooding, etc., where available.

Failure to elevate habitable buildings at least two feet above the highest adjacent grade in these zones may result in higher insurance rates.

D. The floodplain administrator shall obtain, record, and maintain the records for public inspection of the following:

1. Certification required by TMC 18.38.360(1).

2. Records of all variance actions, including justification for their issuance.

3. Improvement and damage calculations.

4. All records pertaining to the provisions of this ordinance.

(Ord. O2015-007, Amended, 02/02/2016)

Section 8. Section 18.38.210, Subdivisions, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.210 Development and ~~S~~ subdivisions.

This section applies to all development and subdivision proposals~~,~~. Subdivision proposals include short subdivisions, short plats, binding site plans, planned developments, and new and expansions to manufactured housing parks.

A. All proposals shall be consistent with the need to minimize flood damage.

B. ~~The~~ A proposed subdivision must have one or more new lots in the special flood hazard area (SFHA) set aside for open space use through deed restriction, easement, subdivision covenant, or donation to a public agency.

1. In the ~~special flood hazard area~~ (SFHA) outside the protected area, zoning must maintain a low density of floodplain development.

2. In the ~~special flood hazard area~~ (SFHA) outside the protected area in which the current zoning is less than five acres must maintain the current zoning.

3. The density of the development in the portion of the development outside the ~~special flood hazard area~~ (SFHA) may be increased to compensate for the amount of land in the ~~special flood hazard area~~ (SFHA) preserved as open space in accordance with TMC Title 18.

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

D. All proposals shall have utilities and facilities, such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

E. All subdivision proposals shall ensure that ~~all subdivisions have~~ there is at least one access road connected to land outside the ~~special flood hazard area~~ (SFHA) with the surface of the road at or above the FPE wherever possible.

F. All proposals shall have adequate drainage provided to avoid exposure to water damage.

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

H. Where subdivision proposals and other proposed developments contain greater than fifty lots or five acres (whichever is the lesser) base flood elevation data (BFE) shall be included as part of the application.

(Ord. O2015-007, Amended, 02/02/2016)

Section 9. Section 18.38.260, Flood protection standards, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.260 Flood protection standards.

A. In AE and A1-30 zones or other A zoned areas where the base flood elevation data (BFE) has been determined or can be reasonably obtained, ~~A~~ all new structures and substantial improvements of any structure shall have the lowest floor, including basement, elevated at least one foot above the ~~FPE~~ BFE.

B. The structure shall be aligned parallel with the direction of flood flows where practicable.

C. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

D. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

E. ~~The structure~~ All new construction and substantial improvements, including those related to manufactured homes, shall be anchored to prevent flotation,

collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads including the effects of buoyancy.

F~~D~~. All materials below the FPE shall be resistant to flood damage and firmly anchored to prevent flotation. Materials harmful to aquatic wildlife, such as creosote, are prohibited below the FPE.

G~~E~~. Electrical, heating, ventilation, duct work, plumbing, and air-conditioning equipment and other service facilities shall be elevated above the FPE. Water, sewage, electrical, and other utility lines below the FPE shall be constructed so as to prevent water from entering or accumulating within them during conditions of flooding.

H~~F~~. Fully enclosed areas below the lowest floor that are subject to flooding shall be used only for parking, storage, or building access and shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall either be certified by a registered professional engineer or licensed architect and/or meet or exceed the following minimum criteria:

1. 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.

2. The bottom of all openings shall be no higher than one foot above grade.

3. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

I~~G~~. In zones V, V1-30 and VE, new structures and substantial improvements shall be elevated on pilings or columns so that:

1. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated above the FPE.

2. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one percent chance of being equaled or exceeded in any given year (one-hundred-year mean recurrence interval).

3. The areas below the lowest floor that are subject to flooding shall be free of obstruction.

4. The structure or improvement shall be located landward of the reach of mean high tide.

5. The use of fill for structural support of a structure or addition is prohibited.

6. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify

that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting these provisions.

J. New construction and substantial improvement of any residential structure in an Unnumbered A zone for which a BFE is not available and cannot be reasonably obtained the lowest floor shall be at least two feet above the highest adjacent grade.

K. A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters.

(Ord. O2015-007, Amended, 02/02/2016)

Section 10. Section 18.38.270, Nonresidential construction, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.270 Nonresidential construction.

~~New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall be elevated in accordance with TMC 18.38.260. As an alternative to elevation, a new or substantial improvement to a nonresidential structure and its attendant utility and sanitary facilities may be dry floodproofed in A zones. The project must meet the following:~~

~~A. The structure is not located in zones V, V1-30, or VE; and~~

~~B. Below the FPE the structure is watertight with walls substantially impermeable to the passage of water; and~~

~~C. The structural components are capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and~~

~~D. The plans are certified by a registered professional engineer or licensed architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the floodplain administrator as set forth in TMC 18.38.180(B) and 18.38.190(A)(1).~~

New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet the requirements of TMC 18.38.270(A) or (B), below.

A. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

1. In AE and A1-30 zones or other A zoned areas where the base flood elevation data (BFE) has been determined or can be reasonably obtained:

New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated one foot or more above the BFE, or elevated as required by ASCE 24,

whichever is greater. Mechanical equipment and utilities shall be waterproofed or elevated at least one foot above the BFE, or as required by ASCE 24, whichever is greater.

2. If located in an unnumbered A zone for which a BFE is not available and cannot be reasonably obtained, the lowest floor shall be at least two feet above the highest adjacent grade.

3. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited or shall meet the requirements of TMC 18.38.210.

B. If the requirements of TMC 18.38.270(A) are not met, new construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

1. Be dry flood proofed so that below one foot or more above the base flood level the structure is watertight with walls substantially impermeable to the passage of water or dry flood proofed to the elevation required by ASCE 24, whichever is greater;

2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

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 based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in TMC 18.38.180.

(Ord. O2015-007, Amended, 02/02/2016)

Section 11. Section 18.38.280, Manufactured homes, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.280 Manufactured homes.

All manufactured homes to be placed or substantially improved on sites shall be:

A. Elevated on a permanent foundation in accordance with TMC 18.38.260; and

B. Securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors, and shall be installed using methods and practices that minimize flood damage. This requirement is in addition to other applicable anchoring requirements for resisting wind forces.

(Ord. O2015-007, Amended, 02/02/2016)

Section 12. A new Section TMC 18.38.285, Detached accessory structures, is hereby added to the Tumwater Municipal Code to read as follows:

18.38.285 Detached accessory structures.

A. Detached accessory structures used solely for parking of vehicles or limited storage may be constructed such that the floor is below the base flood elevation data (BFE), provided the structure is designed and constructed in accordance with the following requirements:

1. In special flood hazard areas other than coastal high hazard areas (Zones A, AE, AH, AO, and A1-30), the structure is not larger than a one-story two-car garage;

2. In coastal high hazard areas (Zones V, VE, V1 30, and VO), the structure is not larger than 100 sq. ft. in area;

3. The portions of the structure located below the BFE must be built using flood resistant materials;

4. The structure must be adequately anchored to prevent flotation, collapse, and lateral movement;

5. Any machinery or equipment servicing the structure must be elevated or floodproofed to or above the BFE;

6. The structure must comply with floodway encroachment provisions in TMC 18.38.360(1);

7. The structure must be designed to allow for the automatic entry and exit of flood waters in accordance with TMC 18.38.240(F);

8. The structure shall have low damage potential;

9. If the structure is converted to another use, it must be brought into full compliance with the standards governing such use; and

10. The structure shall not be used for human habitation.

Section 13. A new Section TMC 18.38.325, Storage of materials and equipment, is hereby added to the Tumwater Municipal Code to read as follows:

18.38.325 Storage of materials and equipment.

A. The storage or processing of materials that could be injurious to human, animal, or plant life if released due to damage from flooding is prohibited in special flood hazard areas.

B. Storage of other material or equipment may be allowed if not subject to damage by floods and if firmly anchored to prevent flotation, or if readily removable from the area within the time available after flood warning.

Section 14. Section 18.38.360, Floodway standards, of the Tumwater Municipal Code is hereby amended to read as follows:

18.38.360 Floodway standards.

A. In addition to the other requirements of this chapter, a project to develop in the floodway as delineated pursuant to TMC 18.38.100(E) and (F) or 18.38.120(D) shall meet the following criteria:

1. Encroachments, including fill, new construction, substantial improvements, and other development is prohibited unless ~~T~~the applicant ~~shall~~ provide~~s~~ a certification by a registered professional engineer demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed development would not result in any increase in flood levels during the occurrence of the base flood discharge.

2. Construction or reconstruction of residential structures is prohibited within designated floodways, except for ~~the following~~ repairs, reconstruction, or improvements to a residential structure which do not increase the ground floor area. The following exceptions must still meet all other requirements in the chapter, including subsection (A)(1) of this section:

a. Repairs, reconstruction, or improvements to a residential structure that do not increase the ground floor area, providing the cost of which does not exceed fifty percent of the market value of the structure either:

i. Before the repair, or reconstruction is started; or

ii. If the structure has been damaged, and is being restored, before the damage occurred. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications that have been identified by a local code enforcement official, and which are the minimum necessary to assure safe living conditions, or to an historic structure, may be excluded from the fifty percent calculations;

b. Repairs, replacement, reconstruction, or improvements to existing farmhouses located in designated floodways and located on designated agricultural lands that do not increase the building's total square footage of encroachment and are consistent with all requirements of WAC 173-158-075;

c. Repairs, replacement, reconstruction, or improvements to substantially damaged residential dwellings other than farmhouses that do not increase the building's total square footage of encroachment and are consistent with all requirements of WAC 173-158-076; or

d. Repairs, reconstruction, or improvements to residential structures identified as historic structures that do not increase the building's dimensions.

B. In riverine special flood hazard areas where a floodway has not been delineated pursuant to TMC 18.38.100(E) and (F) or 18.38.120(D), the applicant for a project to develop in the SFHA shall provide a certification by a registered professional engineer demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed development and

all other past or future similar developments would not cumulatively result in an increase of flood levels during the occurrence of the base flood discharge by more than one foot.

C. If TMC 18.38.360(A)(1) is satisfied or construction is allowed pursuant to TMC 18.38.360(A)(2), all new construction and substantial improvements in the floodway shall comply with all applicable flood hazard reduction provisions of this chapter.

(Ord. O2015-007, Amended, 02/02/2016)

Section 15. A new Section TMC 18.38.450, Penalties for noncompliance, is hereby added to the Tumwater Municipal Code to read as follows:

18.38.450 Penalties for noncompliance.

A. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions), shall constitute a misdemeanor. Nothing herein contained shall prevent the city of Tumwater from taking such other lawful action as is necessary to prevent or remedy any violation.

B. Enforcement under this section is in addition to and does not preclude or limit any other forms of enforcement available to the city including, but not limited to, enforcement under any provision of TMC Chapter 1.10, nuisance actions, actions for injunctions, or any other civil or equitable actions to abate, discontinue, or correct, acts in violation of this code.

Section 16. Corrections. The City Clerk and codifiers of this ordinance are authorized to make necessary corrections to this ordinance including, but not limited to, the correction of scrivener/clerical errors, references, ordinance numbering, section/subsection numbers and any references thereto.

Section 17. Ratification. Any act consistent with the authority and prior to the effective date of this ordinance is hereby ratified and affirmed.

Section 18. Severability. The provisions of this ordinance are declared separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section, or portion of this ordinance or the invalidity of the application thereof to any person or circumstance, shall not affect the validity of the remainder of the ordinance, or the validity of its application to other persons or circumstances.

Section 19. Effective Date. This ordinance shall become effective thirty (30) days after passage, approval and publication as provided by law.

ADOPTED this _____day of _____, 2024.

CITY OF TUMWATER

_____
Debbie Sullivan, Mayor

ATTEST:

_____
Melody Valiant, City Clerk

APPROVED AS TO FORM:

_____
Karen Kirkpatrick, City Attorney

Published:_____

Effective Date:_____

Attachment C

Ordinance No. O2023-017
FP Floodplain Overlay Amendments

March 11, 2024

City Council Work Session

Background

- Close to three hundred towns, cities, counties, and tribes in the state participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP)
- Continued enforcement of the City's floodplain management regulations (TMC 18.38 *FP Floodplain Overlay*) allows FEMA to make federally backed flood insurance available to property owners within the City

Background

- As a condition of participation in the NFIP, communities are required to adopt and enforce flood hazard reduction regulations that meet the minimum requirements of the NFIP
- In May 2023, City staff completed a FEMA floodplain community assistance visit (CAV) with State Department of Ecology staff to review the City's participation in the National Flood Insurance Program
- The CAV determined that TMC 18.38 *FP Floodplain Overlay* should be updated to reflect FEMA current standards

Background

- On November 8, 2023, FEMA notified the City of the final flood determinations for Thurston County, Washington, and Incorporated Areas, which includes the City of Tumwater
- The FEMA flood hazard determinations for the City are considered final
- The Flood Insurance Study (FIS) report and Flood Insurance Rate Maps (FIRM) covering the City will be effective May 8, 2024

FEMA Requirements

- Prior to the May 8, 2024, effective date of the FIS and FIRMs, the City must amend its existing floodplain regulations to be more consistent with the Model Ordinance for Floodplain Management under the NFIP, the Endangered Species Act, and to maintain its eligibility in the NFIP

Staff Report

The staff report includes:

- Summaries of the fifteen proposed amendments
- The code sections amended or added
- Proposed amendment language

TMC 18.38.017 – Definitions

- Clarify and add definitions as needed for enhanced interpretation of floodplain regulations.
- Eight new definitions added addressing:
  1. Alteration of watercourse
  2. Area of special flood hazard
  3. Flood elevation study (FES)
  4. Floodplain administrator
  5. Flood proofing
  6. Highest adjacent grade
  7. Mean sea level
  8. Structure

18.38.090 – Special Flood Hazard Areas

- Updating language to reflect most current versions of the FIS and FIRMs that are effective May 8, 2024
- For consistency with the definitions section, used the acronym “BFE” for Base Flood Elevation

TMC 18.38.100 – Flood Hazard Data

- For consistency with the definitions section, used FIRM as acronym
- Added reference to TMC 18.38.090 for BFE and Floodway areas when data has not been provided or is not available in the Flood Insurance Study and Flood Insurance Rate Maps

TMC 18.38.130 – Floodplain Development Permit Required

- Revised the section name to be more clear
- Removed passive language
- States a permit is required in special flood hazard areas (SFHAs) defined in TMC 18.39.090

TMC 18.38.140 – Floodplain Development Permit Application

- Updated acronyms to be consistent with the definitions section
- Added five subsections addressing additional elements required for applications

TMC 18.38.180 – Records

- Code requirements for regulating development and collection of records
- Updated acronyms
- Clarified information required to be obtained for record
- Removed passive language
- Provided a process for floodplain administrator to ensure proposed construction will be safe from flooding when elevation data is not available
- Added a list of information the floodplain administrator shall obtain and make available to the public

TMC 18.38.210 – Development and Subdivisions

- Clarified short subdivisions, short plats, and binding site plans are subject to TMC 18.38.210
- Updated language to acronyms
- Subdivisions or developments with over 50 lots or 5 acres must provide base flood elevation data with the application

TMC 18.38.184 – Flood Protection Standards

- In areas where the BFE data has been determined or obtained (A zones), all new development must be elevated at least one-foot above BFE
- Materials used shall be resistant to flood damage
- Construction methods that minimize flood damage
- All structures, including manufactured homes and substantial improvements, shall be anchored properly
- New construction and substantial improvement of any residential structure in an Unnumbered A zone and BFE is not available shall be raised two feet above highest adjacent grade
- An attached garage constructed with the floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters

TMC 18.38.270 – Nonresidential Construction

- Reformatted the whole section
- Created clear standards for non-residential development
- In AE and A1-30 zones or other A zoned areas: New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated one foot or more above the BFE

TMC 18.38.280 – Manufactured Homes

- Added clarifying requirements for anchoring of manufactured homes that minimize flood damage
- States other anchoring requirements throughout TMC 18.38 are applicable

TMC 18.38.285 – Detached Accessory Structures

- New section
- Adds standards to allow for structures to be built below the BFE for used solely for parking of vehicles or limited storage
- Different flood zones have different requirements for detached structure such as size, elevation, materials, item stored, and anchoring

TMC 18.38.325 – Storage of Materials and Equipment

- New section
- The storage or processing of materials that could be injurious to human, animal, or plant life if released due to damage from flooding is prohibited in special flood hazard areas
- Storage of other material or equipment may be allowed if not subject to damage by floods and if firmly anchored to prevent flotation, or if readily removable from the area within the time available after flood warning

TMC 18.38.360 – Floodway Standards

- Encroachments, including fill, new construction, substantial improvements, and other development is prohibited unless a certification by a registered professional engineer demonstrating development would not result in any increase in flood levels during the occurrence of the base flood discharge
- Clarifies that repairs, reconstruction, or improvements to a residential structure which do not increase the ground floor area may be allowed subject to outlined requirements
- TMC 18.38.360(A)(1) is satisfied, or construction is allowed pursuant to TMC 18.38.360(A)(2), all new construction and substantial improvements in the floodway shall comply with all applicable flood hazard reduction provisions of TMC 18.38

TMC 18.38.450- Penalties for Noncompliance

- New section
- Ties into the civil and criminal enforcement processes in TMC Title 1

SEPA and Notice of Intent

- 60-Day Notice of Intent for Ordinance No. O2023-017 was sent to the State Department of Commerce December 14, 2023, and that process is complete with no comments received
- SEPA Checklist for Ordinance No. O2023-017 was completed December 13, 2023, and a determination of nonsignificance was issued on December 29, 2023, and that process is complete

FEMA Notification – Draft Maps

- FEMA is required to publish two notices in the newspaper of record for the communities affected by the map change
- There was a 90-day appeal period, no appeals were received

FEMA Notification – Draft Maps

- Thurston County Lakes Flood Map Update (arcgis.com) – Map Updates through TC Lakes Flood Map Update
- Thurston County Lakes Preliminary Flood Hazard Map Update Comparison Viewer (arcgis.com) – View comparison of current maps and maps effective May 8, 2024

Next Steps

City Council

- Recommend that the City Council schedule Ordinance for March 19, 2024, City Council consideration